

City of Santa Clara

CityPlace Santa Clara

Item 14A: Public Hearing

June 8, 2016



Presentation Overview

- Introduction
- Entitlements
 - General Plan Amendments
 - Master Community Plan
 - Environmental Impact Report
- Disposition and Development Agreement
- Development Agreement
- Recommendation

Materials Provided in Packet

- Draft EIR; Final EIR; Enhanced Open Space Variant (CityPlace Park); Responses to Comments
- CEQA Findings Statement of Overriding Considerations (SOC) and Mitigation Monitoring and Reporting Program (MMRP);
- General Plan Amendment #83 and General Plan Consistency Findings;
- Development Plans: Master Community Plan including Infrastructure Master Plan and MCP Supplement, Conditions of Approval

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Materials Provided in Packet

- Development Agreement
- Disposition and Development Agreement
- Correspondence Received as of June 23, 2016
- June 8, 2016 Planning Commission Staff Report and Excerpt Planning Commission Meeting Minutes
- Fiscal Impact Analysis

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Materials Provided in Packet

- Resolutions:
 - Certifying EIR and Adopting CEQA Findings, SOC and MMRP
 - GPA #83
 - Rezoning to PD-MC
 - Disposition and Development Agreement
 - Overriding Airport Land Use Commission Determination of Inconsistency
- Ordinances:
 - Approving Development Agreement
 - Authorizing Leases of the Project Site in Excess of 55 Years

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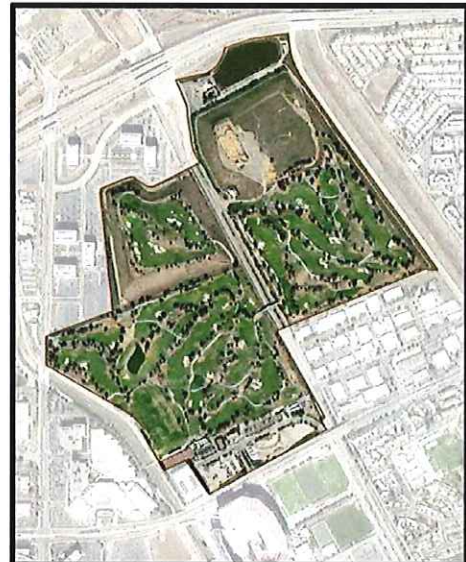
The Project

Public Private Partnership

Retail/Entertainment focus

Regional draw

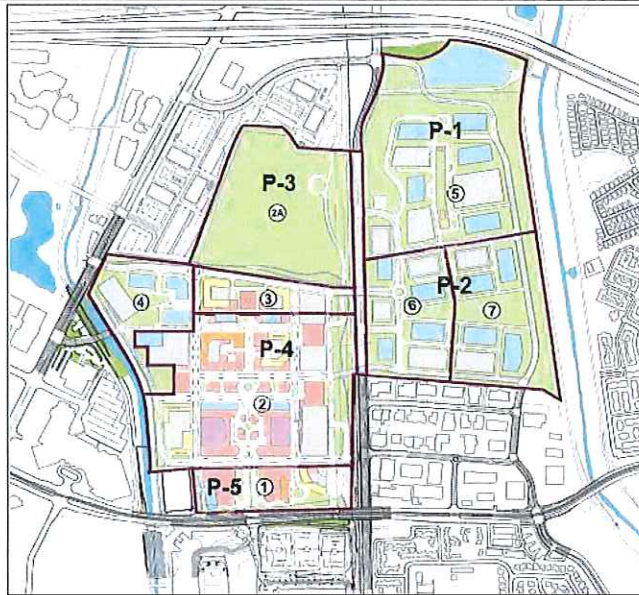
Supports City General Fund



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The Parcels and Phasing



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Outreach

The CityPlace Project (and Centennial Gateway) have had extensive public outreach:

- 11 City Council meetings (including 6 for Centennial Gateway)
- 9 City Council Study Sessions
- 4 Planning Commission Study Sessions
- 2 EIR scoping meetings (including 1 for Centennial Gateway)
- 3 Community Open Houses (2 in Santa Clara; 1 Sunnyvale)

Numerous small group meetings including: Chamber of Commerce, SV Bike Coalition, BPAC, and others

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2016 Study Sessions

- Planning Commission Joint Study Sessions
 - **March 10, 2016:** Project overview; Landfill; Transportation
 - **March 21, 2016:** Parcels and Phasing; Infrastructure
 - **April 26, 2016:** EIR
 - **May 3, 2016:** Master Community Plan
- City Council Study Session
 - **June 7, 2016:** Development Agreement; Disposition and Development Agreement; and Ground Lease

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Overall Fiscal Benefits

- Average Annual Rent: \$9M to \$14M in current dollars
- Net annual tax benefits to the General Fund at full build out: approximately \$16.9 million
- Provides for significant tax benefits to other taxing agencies including SCUSD at \$22.1 million annually.
- City property tax share (approximately 10.17%)
- SCUSD property tax share (approximately 38.36%)

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Challenges

- Large scale project on landfill with no infrastructure
- Lack of clarity on ability to include housing on landfill
- Balancing development with potential loss of open space
- Regional issues of concern:
 - Transportation network
 - Housing: balancing policy objectives
 - Jobs/Housing balance
 - Affordable housing
 - Schools

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Entitlements

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Existing Uses

Landfill Boundary



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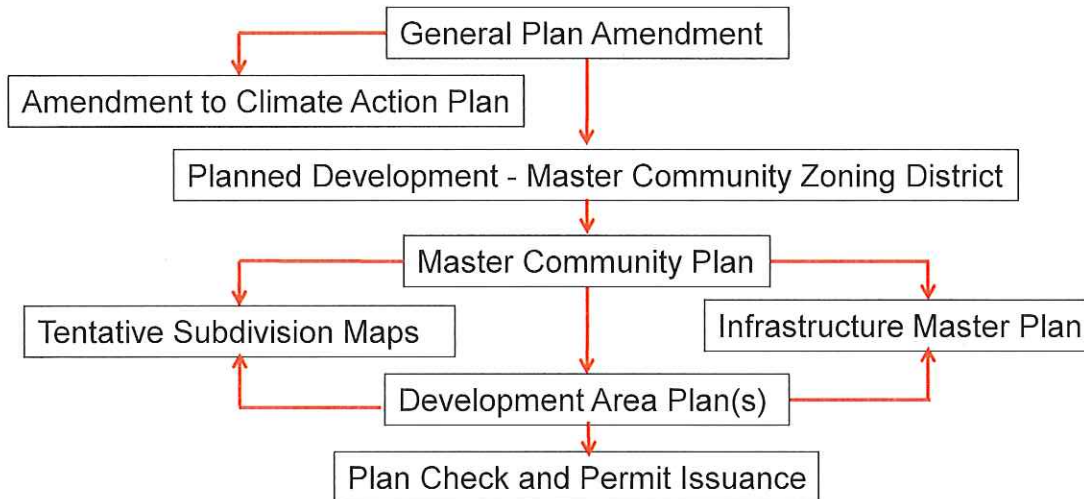
Entitlements

- EIR
- GPAs
- Rezone to PD-MC, & MCP
 - ALUC Override
- DA
- DDA
 - Ord. change re: >55 year lease
- DAPs & Tentative Maps (at a later date)

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Entitlements Flow Chart



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GPA – Add Urban Center/Entertainment District

- Pedestrian-oriented mix commercial & residential
 - Retail / restaurant / commercial services
 - Office
 - Hotel
 - Urban residential: 37 – 90 DU/AC
- Open space

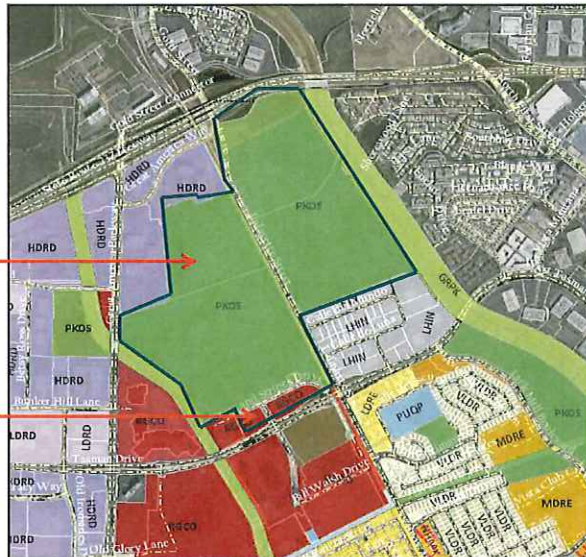
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General Plan Designation

Existing: Parks and Open Space

Existing: Regional Commercial

**Proposed: Urban Center /
Entertainment District**



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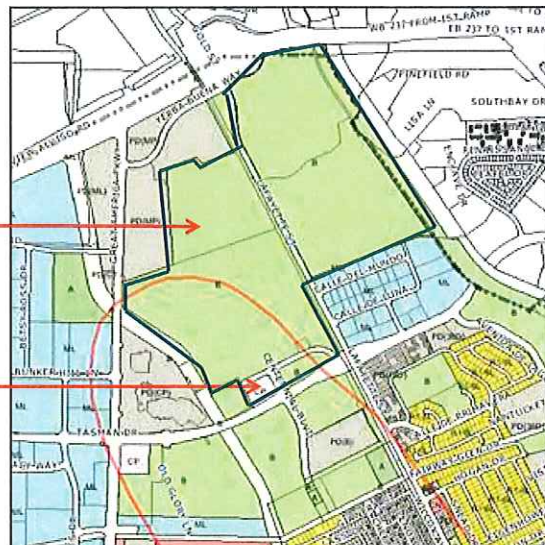


Zoning Designations

Public, Quasi-Public, and
Public Park or Recreation (B)

Commercial Park (CP)

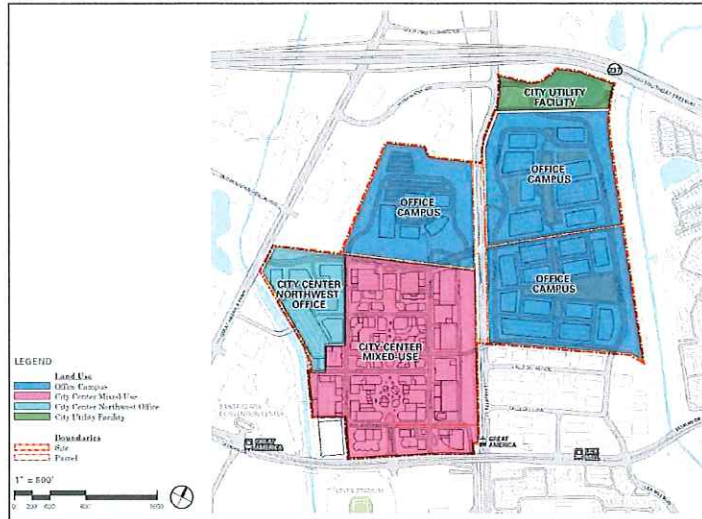
**Proposed: Planned Development –
Master Community (PD-MC)**



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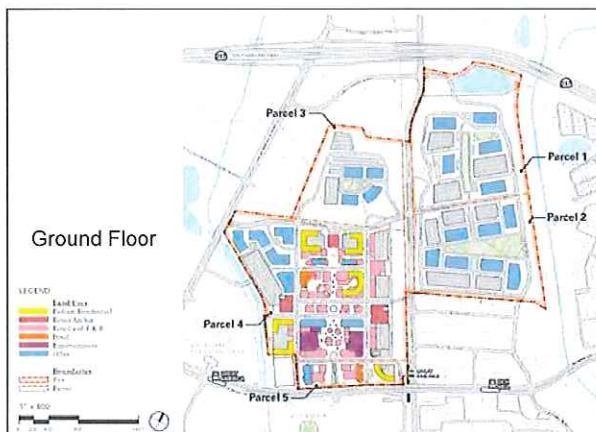


Scheme A Land Use Areas

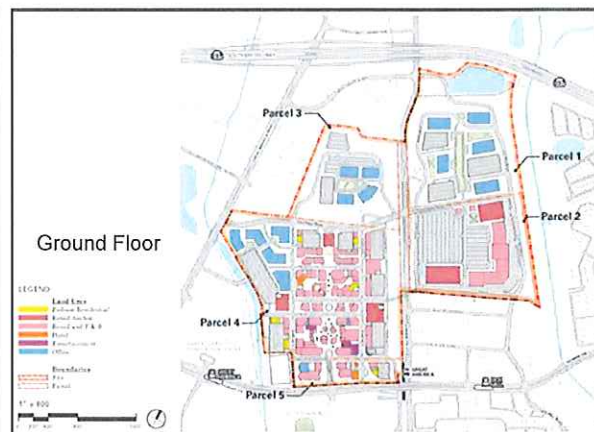


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Scheme A Development Scenario

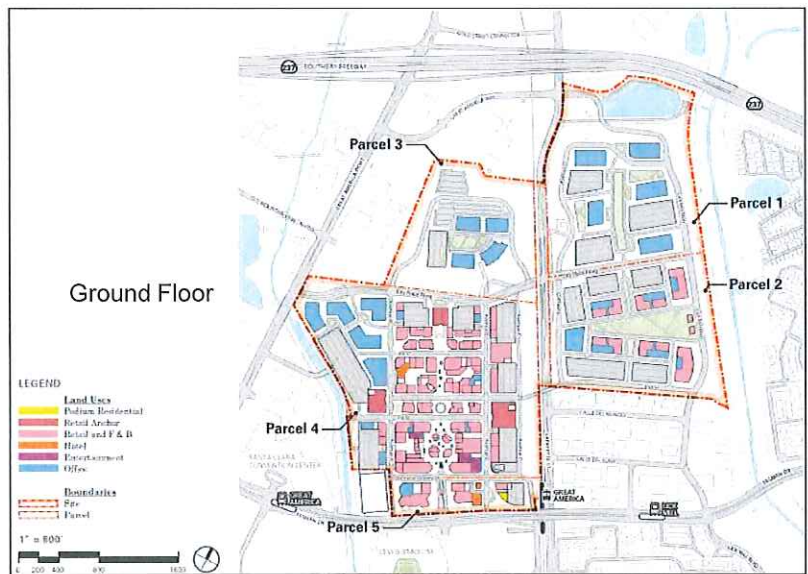


Scheme A Variant



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Scheme B Conceptual Land Use Plan



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Enhanced Open Space Variant



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Changes to Zoning Ordinance

- Allowable Uses
- Transfer of Square Footage between Parcels
- Parking
- Signage

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Infrastructure Master Plan (IMP)

- Access
- Stormwater Drainage
- Potable Water
- Recycled Water
- Wastewater
- Electric, Gas, and Telecommunications
- Landfill Infrastructure

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Development Area Plans (DAPs)

- Ordinance adopting City Place MCP will also adopt special procedures for submittal and approval of DAPs
- Process reflects unique nature of the project
- Executive Project Clearance Committee and Priority Project Manager
- CityPlace DAP Procedures: architectural materials may be approved with DAP by Council. Architectural materials may be submitted after DAP approval by Council, and approved by Planning Director

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EIR Presentation Topics

- EIR Conclusion Overview
- Enhanced Open Space Variant Environmental Analysis
- Key Topics Raised in Comments on the FEIR
 - General Plan Consistency and the Jobs/Housing Balance
 - Burrowing Owls
 - Transportation Issues

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EIR Summary: Significant After Mitigation

- Jobs/Housing Balance
- Air Quality: Emissions from Traffic
- Greenhouse Gas Emissions for 2030 (primarily, but not exclusively due to traffic)
- Noise Impacts from Airport and Traffic
- Bird Collision with new high-rise buildings
- Traffic

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EIR Summary: Key Mitigation Measures

- Jobs/Housing Balance: Increase Residential Density in next General Plan
- Air Quality: Clean Diesel equipment, Filtration Systems
- Greenhouse Gases: Clean Fuels, Renewable Energy, Energy Efficiency, Electric Vehicle Charging Stations, etc.
- Noise Impacts: Noise reduction barriers along Lafayette between Tasman and Hogan; Interior noise control plan

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EIR Summary: Key Mitigation Measures

- Biological resources: Bird-safe design standards; burrowing owl surveys and habitat mitigation (if owls detected on-site), wetlands compensation (if necessary)
- Landfill impacts: Revisions to Post-closure plans approved by local, regional and state regulators
- Traffic: Intersection improvements, funding freeway improvements, Transportation Demand Management (TDM) program, Multi-modal Improvement Plan (MIP)

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Enhanced Open Space (EOS) Variant

Proposed Development

- Park uses at Parcel 3 instead of office
- Office square footage (720k s.f.) distributed to Parcels 1, 2, and 5 (those parcels increased s.f. up to 20%)
- Overall construction levels same as original project.
- Intensify development on Parcels, 1, 2 and 5; lower on Parcel 3
- Will shift traffic distribution on adjacent streets



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EOS Variant

Environmental Impact Analysis

- *Footprint/Construction:* Same overall level of construction. Intensify construction in Parcels 1, 2, and 5 but lower on Parcel 3. Would disturb same areas.
- *Traffic:* Changes in trip distribution close to site, but same generation overall. Some intersections slightly worse; some slightly better. No new significant impacts.
- *Noise:* Change in trip distribution results in one additional soundwall element (on south side of Tasman between Lafayette & Calle del Sol) as part of the existing mitigation measure. No new significant impacts.
- *Air Quality:* Change in trip distribution results in slight change in roadway particulate matter. No new significant impacts.

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Key FEIR Comments

General Plan Consistency

- Consistency is determined by the City weighing and balancing the range of competing interests reflected in a General Plan in determining whether a project is consistent overall; not merely by considering individual policies.
- EIR identified and evaluated project consistency with over 150 General Plan goals and policies that are (1) applicable to the Project and (2) were adopted for the purpose of avoiding or mitigating an environmental impact. The Project is consistent with the vast majority of the applicable General Plan goals and policies except airport noise and jobs/housing balance.

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Key FEIR Comments

General Plan Consistency – Jobs/Housing Balance

- Project would be consistent with vast majority of GP policies
- Project would be inconsistent with isolated policies related to the jobs/housing balance.
 - General Plan Policy 5.3.1-P18 – Meter net new industrial and commercial development so that it does not exceed listed square footages, excluding listed allowed projects
 - General Plan Policy 5.10.2-P2 – Encourage development patterns that reduce vehicle miles traveled and air pollution.
- The proposal includes an amendment to 5.3.1-P18 to add the project to the list of allowed projects, to remove the inconsistency.

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Key FEIR Comments

General Plan Consistency – Jobs/Housing Balance

- Adoption of the Increased Housing Alternative (minimum of 200 units, entitled up to 1,680 units)
- Current pending/conceptual planning underway for ~9,500 units more than anticipated in General Plan.
- Mitigation Measure LU-1.1 requires City to explore additional housing potential for up to 11,000 units in the next General Plan update, which would maintain the City's jobs/housing balance as projected in current General Plan.
- Requirement for 10% of Project housing units to be affordable.
- TDM to help reduce air quality and GHG emissions associated with project traffic (and other project design and mitigation to address GHG emissions)

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Key FEIR Comments

Burrowing Owl

- City Council Direction from 2000 regarding preservation of 44.5 acres of owl habitat
 - Not a specific mandate
 - Can still be met through preservation of 44.5 acres at Regional Wastewater Treatment Plan habitat.
- Definition of “Occupied Habitat”
 - EIR used California Department of Fish and Wildlife 2012 protocol
 - No burrowing owls observed on or immediately adjacent (within 250 feet) to the project site within last 3 years
 - Last nesting on site was in 2006; nearest current nesting is approximately 0.4 miles from project

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Key FEIR Comments

Burrowing Owl

- Consistency with HCP
 - City not a party to the HCP; not legally applicable within City
- Mitigation Measures include:
 - Protection of nesting birds during construction
 - Conducting annual burrowing owl surveys
 - Replacement of habitat if owls are found on site

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Project Impacts and Mitigation

Transportation

- Full responsibility
 - 25 intersections in Santa Clara, County of Santa Clara, and San José
- Fairshare contribution
 - 40 intersections on expressways and adjacent city intersections
- VTA voluntary contribution to regional freeway and transit
- Multimodal Improvement Plan/Deficiency Plan

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Transit Improvements

- VTA Requested Improvements
 - Signal pre-emption
 - Tasman Drive pedestrian bridge
 - Tasman Drive light rail grade separation

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TDM Plan

- Enhanced the TDM mitigation measure (TRA-1.1)
- Vehicle trip thresholds
- Transportation Management Association
- Group of transportation strategies
- Monitoring and reporting process
- Remedial action

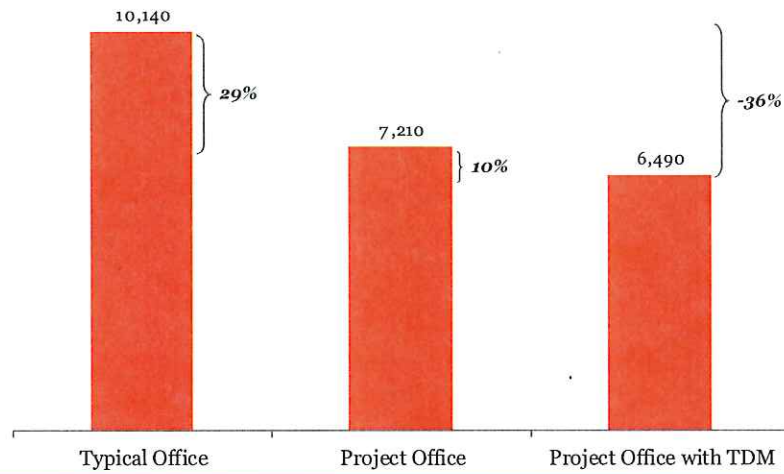
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Example of TDM Measures

- On-site support facilities
- In-building support facilities
- Private shuttles
- Ridesharing
- Guaranteed ride home
- Financial incentives
- Flexible work culture
- TDM marketing and education
- Bicycle and/or car share programs

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Office Trip Reduction



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Transaction

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Disposition and Development Agreement

Key terms:

- Phasing and Uses
- Schedule of Performance
- Minimum Development
- Rent and Rent Escalations
- Responsibility for Infrastructure
- Conditions to Ground Lease Conveyance

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Minimum Development

- Phase I: 600,000 sf office, hotel, retail
 - 300 key hotel and 50,000 sf retail
- Phase 2: 700,000 sf
 - 500,000 sf retail plus 200k sf of office OR 300 key hotel
- 200 residential units in Phase 1 or 2
- Minimum retail
 - Phase 1: 50,000
 - Phase 2 and 3: 750,000 sf

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Beginning Annual Rent

- Phase 1 – \$750,000 @ take down;
\$1.0M @ opening; \$1.5M @ 4th Anniversary
- Phase 2 – \$1,500,000;
- Phase 2A – \$750,000;
- Phase 3 – \$500,000;
- Phase 4 – \$750,000;
- Phase 5 – \$750,000;
- Phase 6 – \$875,000; and
- Phase 7 – \$875,000.

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Escalations on Rent – Phase 1

- Annual 3% per year in addition to the beginning annual rents except for the following
- Years 25, 35, 53, 61, 80 and 90 – rent increases by 10%
- In Year 20: Fair Market Rent Adjustment. Adjustment has a floor and ceiling.
- In Years 45, 70: Fair Market Rent Adjustment. Adjustment has a floor.

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Escalations on Rent – Phases 2 - 7

- Annual 3% per year except for the following
- Years 15, 25, 35, 53, 61, 80 and 90 – rent increases by 10%
- In Year 45: Fair Market Rent Adjustment based on the development and taking into account the premium costs associated with the extraordinary infrastructure needed to develop the site. Adjustment has a floor and ceiling.
- In Year 70: Fair Market Rent Adjustment similar to Year 45 with a higher floor and ceiling.

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Funding for Public Services and Facilities

- Project will pay for all infrastructure necessary to develop the project.
- Project will pay for all park maintenance except City Place Park
- Project will pay for any enhanced public services such as street maintenance, repair of streets due to settlement of landfill
- Project will pay for the construction of a replacement of FS #10 and staffing for a new hazardous materials unit if necessary for landfill conditions
- Project will pay for enhanced police services (e.g., evenings/weekends)

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Key Development Agreement Provisions

- Vests Entitlements for 30 Years
- Affordable Housing
 - At least 10% of the units developed
- Development Fees
 - In general: type of fee and rates static for 7 years from first DAP

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Key DA Provisions

- Traffic & Transit
 - Local traffic fee capped for 7 years from first DAP
 - Voluntary regional traffic fees will be paid
 - Local and regional fees fund Multimodal Improvement Plan (MIP)
 - Developer and City MIP funding beyond local and regional fees
 - MIP prepared in 1 year – approved by Council and VTA Board
 - Voluntary ~\$16M payment to VTA for freeway improvements

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Net Annual Fiscal Impacts – City General Fund

	Phases 1-3	Phases 4-8	Total Project
Proposed Project			
General Fund Revenues	\$16.1M	\$4.6M	\$20.7M
(less) General Fund Expenditures	(\$3.0M)	(\$0.7M)	(\$3.8M)
Net Fiscal Impact (<i>annual</i>)	\$13.1M	\$3.9M	\$16.9M
Minimum Development at Full Buildout			
General Fund Revenues	\$7.6M	\$2.6M	\$10.1M
(less) General Fund Expenditures	(\$1.1M)	(\$0.7)	(\$1.8M)
Net Fiscal Impact (<i>annual</i>)	\$6.5M	\$1.9M	\$8.3M

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Summary of Annual Tax Revenues to Agencies

	County	SCUSD	VTA
Proposed Project			
Property Tax Revenues	\$10.7M	\$22.1M	–
Sales Tax Revenues	\$0.9M	–	\$8.0M
Total Tax Revenues	\$11.6M	\$22.1M	\$8.0M

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Recommend Approval

1. EIR, Statement of Overriding Considerations, & MMRP
2. GPA
3. Rezoning & MCP
4. Disposition and Development Agreement
5. Development Agreement
6. ALUC Override

**City of
Santa Clara**



06/28/2016

14A.



RELATED SANTA CLARA

SANTA CLARA, CALIFORNIA

JUNE, 28 2016

RELATED

RTKL

ELKUS | MANFREDI
ARCHITECTS

POST MEETING MATERIAL

COMMUNITY & PUBLIC MEETING PROCESS

The project team has spent over **three and a half years** working with city officials, government agencies and community members developing the program and plans for Related Santa Clara. The following is a list of public meetings, study sessions and community meetings:

March 9, 2013	City Council Hearing – Project announcement (Noticed Public Hearing)
October 30, 2013	City Council Study Session – Project review (Noticed Public Hearing)
December 3, 2013	City Council Hearing – Project update (Noticed Public Hearing)
February 11, 2014	City Council Hearing – Project update (Noticed Public Hearing)
July 1, 2014	Project Clearance Committee – Pre-planning application meeting
July 1, 2014	City Council Hearing – Project update (Noticed Public Hearing)
July 31, 2014	Environmental Impact Report Scoping Meeting for the Centennial Gateway Mixed Use Project (Noticed Public Hearing)
August 12, 2014	Environmental Impact Report Scoping Meeting for City Place Santa Clara
February 18, 2015	Chamber of Commerce Presentation
April 21, 2015	City Council Study Session (Noticed Public Hearing)
April – Dec. 2015	Small Group Community Meetings
June 16, 2015	City Council Hearing – Project update (Noticed Public Hearing)
October 9, 2015	Draft Environmental Impact Report Issued
October 20, 2015	Community Open House

COMMUNITY & PUBLIC MEETING PROCESS - Continued

October 21, 2015	City of Santa Clara Bicycle and Pedestrian Advisory Committee & Silicon Valley Bike Coalition Meeting
October 26, 2015	Community Open House
November 2015	Project Clearance Committee, Master Community Plan Meeting
December 8, 2015	Draft Environmental Impact Report Comment Period Concludes
January 14, 2016	Sunnyvale Open House
March 10, 2016	Joint City Council/Planning Commission Study Session #1 (General Overview of Project)
March 21, 2016	Joint City Council/Planning Commission Study Session #2 (Phasing Scenarios & Infrastructure)
April 26, 2016	Joint City Council/Planning Commission Study Session #3 (EIR & Transportation)
May 3, 2016	Joint City Council/Planning Commission Study Session #4 (MCP)
June 7, 2016	Joint City Council/Planning Commission Study Session #5 (Transactional Documents & Fiscal Analysis)
June 8, 2016	Planning Commission Hearing and Affirmative Recommendation (Noticed Public Hearing)
June, 28 2016	City Council Hearing (Noticed Public Hearing)

15 Publicly Noticed Public Hearings

PROGRAM SUMMARY



239 ACRES
9.2 M SF
TOTAL PROJECT

96 ACRES
PARKS & OPEN SPACE
(40% OF TOTAL SITE)



5.4 M SF
OFFICE



1.1 M SF
RETAIL



1,680 UNITS
RESIDENTIAL



700 ROOMS
HOTEL



250,000 SF
FOOD & BEVERAGE



190,000 SF
ENTERTAINMENT

LEGEND

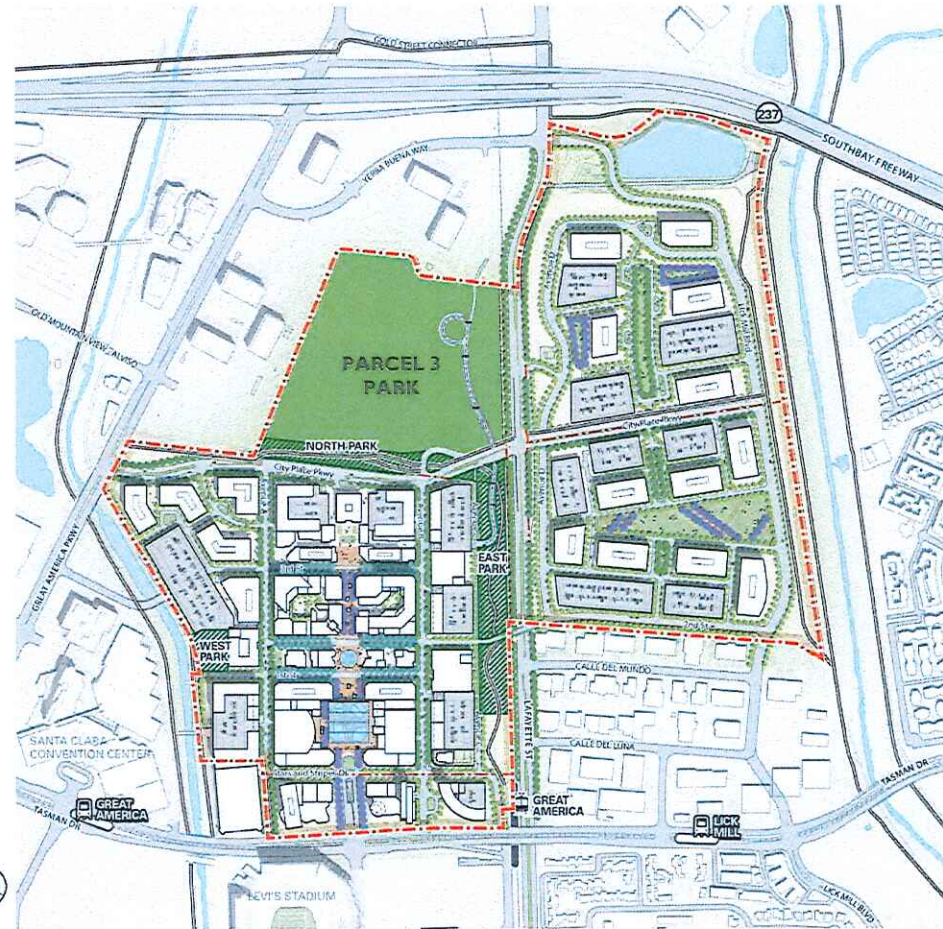
Land Uses

- Podium Residential
- Retail Anchor
- Retail and F & B
- Hotel
- Entertainment
- Office

Boundaries

- Site
- Parcel

1" = 800'



PARKS & OPEN SPACE

Public Parks
(Parcel 3 Park, North Park,
East Park and West Park)

38 acres

Other Open Space

14 acres

Sloped Habitat Areas

22 acres

Pedestrian Concourse,
Plazas and Paseos

10 acres

Retention Pond Area

12 acres

Total

96 acres

(40% parks &
open space)



AFFORDABILITY

Residential Affordability Program

Related has a tradition of developing affordable housing throughout California at a variety of affordability levels and is proposing the inclusion of 10% affordable units as a component within the project's residential component.

10%

of rental units will
be set aside as
affordable for
sale and/or
rental units

Plan is for all on-site
affordable units

100%

**Of the affordable
units will be
reserved for
moderate income
residents**

The affordable
units will be
**built to market
rate quality
standards**

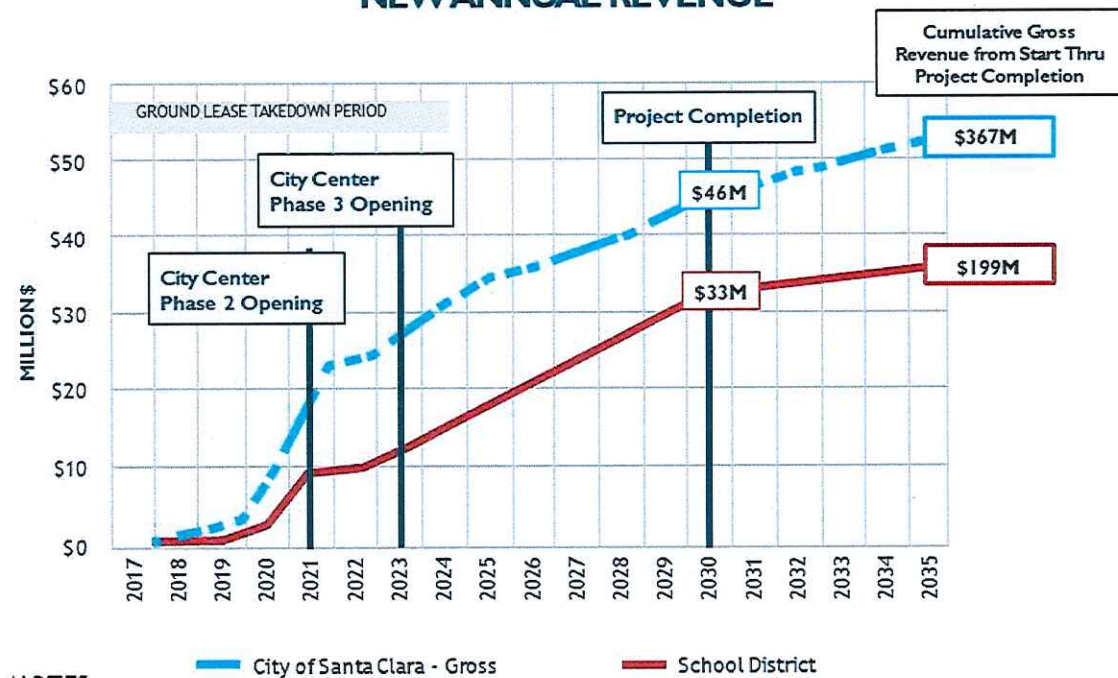
SCHOOL

One Time Fees and Revenue to District

ONETIME SCHOOL IMPACT FEES

Commerical Statutory Fee	\$4,191,000
Residential Statutory Fee	\$5,846,000
Voluntary Funding	\$5,846,000
Total Funding	\$15,883,000
Residential Units	1,680
Generated Students ¹	84
Total \$ Per Residential Unit	\$9,500
Total \$ Per Student	\$190,000

NEW ANNUAL REVENUE



NOTES:

1.5 student generation based on SCUSD's report at highest rate (250% higher than current forecast)

CONSTRUCTION JOBS: A Union Construction Project

BY THE NUMBERS

Total Cost
Of Development
\$6.7B

Construction Costs
\$5.0B¹

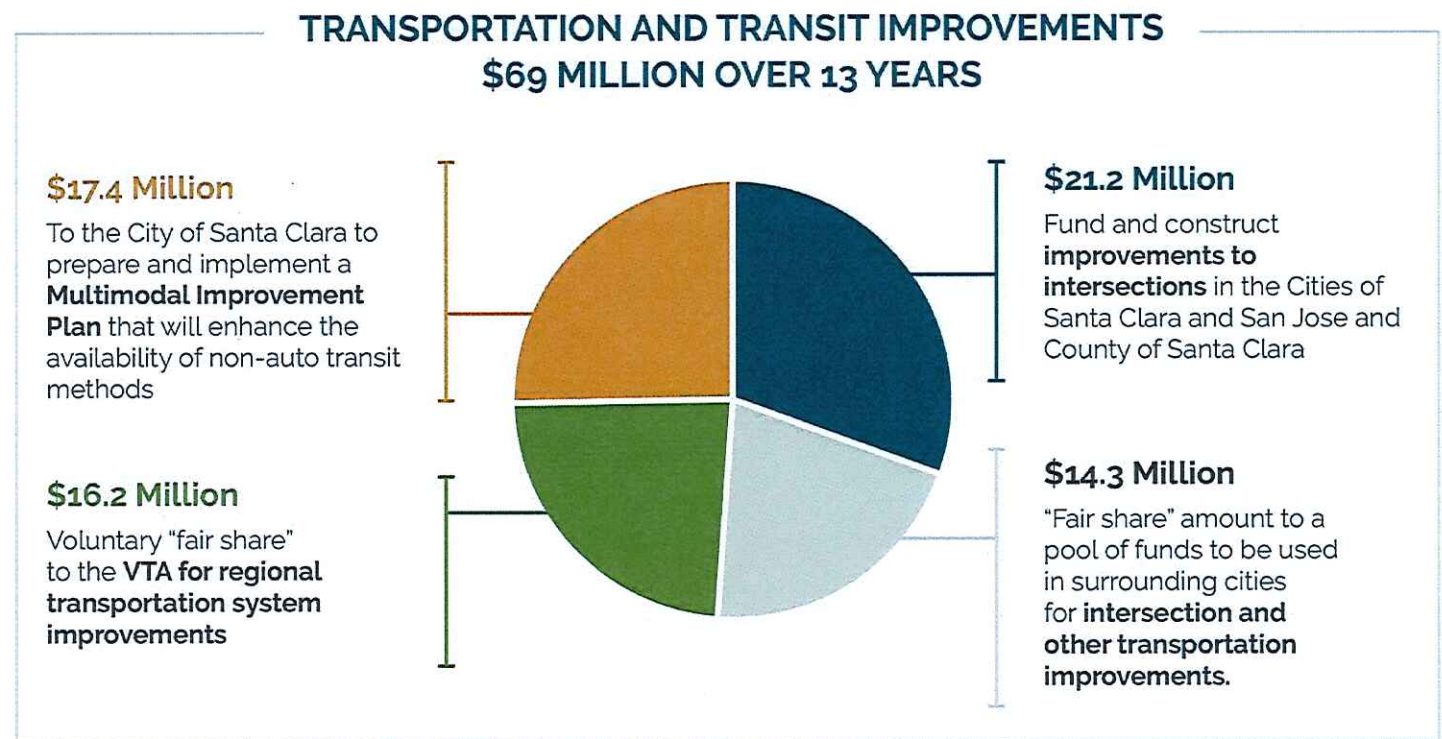
Built by Union Workers
\$4.3 - \$4.6B²

% Union Work
86% - 92%

PROJECTED TOTAL CONSTRUCTION BUDGET/JOBS/WAGES BY YEAR

Year	Volume	Construction Jobs	Wages/Benefits
Year 1	\$154M	350	\$ 60.0M
Year 2	\$669M	1,345	\$230.0M
Year 3	\$735M	1,500	\$270.0M
Year 4	\$613M	1,330	\$235.0M
Year 5	\$235M	514	\$ 90.0M
Year 6	\$162M	350	\$ 60.0M
Year 7	\$265M	550	\$100.0M
Year 8	\$147M	320	\$ 55.0M
Year 9	\$363M	750	\$120.0M
Year 10	\$216M	500	\$ 40.0M
Year 11	\$451M	930	\$170.0M
Year 12	\$252M	525	\$ 90.0M
Year 13	\$319M	725	\$120.0M
Year 14	\$270M	560	\$100.0M
Year 15	\$149M	345	\$ 60.0M
TOTAL	\$5.0B¹	10,600³	\$1.8B³

TRAFFIC & TRANSPORTATION FUNDING



TRANSPORTATION DEMAND MANAGEMENT (TDM)

Preparation and Implementation of a TDM plan that will succeed in meeting auto trip reduction goals. The project's TDM Plan will be independently monitored, with annual reporting to the Planning Commission, summarizing TDM efforts throughout the City. TDM measures under consideration include:

- **Private shuttles** from nearby public transit
- **Ridesharing options** such as carpool and vanpool matching services
- **Commuter Checks, Clipper Cards or VTA passes** for all employees
- **Bicycle support facilities** such as showers and changing rooms, storage rooms and racks, and bicycle repair stands throughout the project site.
- **Bike share pods** to enable trips on-site and to nearby destinations
- **Car share services** such as ZipCar
- **Ride-share services** such as Uber Pool, and Lyft Line
- **Parking management strategies** such as paid parking and unbundled parking to restrict the parking supply and discourage private vehicle use

SUPPORTING VTA AND OTHER REGIONAL PUBLIC TRANSIT*

8,320

Estimated number of new daily public transit riders the project will generate, bringing new fare revenue to VTA, ACE and Capitol Corridor trains

\$14 Million

Estimated amount VTA will be receiving in annual tax revenues

* At project completion

NEW ANNUAL REVENUE (ESTIMATED)

\$20 MILLION

CITY NET ANNUAL REVENUE
@ COMPLETION OF PHASE 2

\$41 MILLION

CITY NET ANNUAL REVENUE @
PROJECT COMPLETION

\$33 MILLION

SCHOOL DISTRICT ANNUAL
REVENUE @ PROJECT COMPLETION

\$17 MILLION

COUNTY REVENUE @ PROJECT
COMPLETION

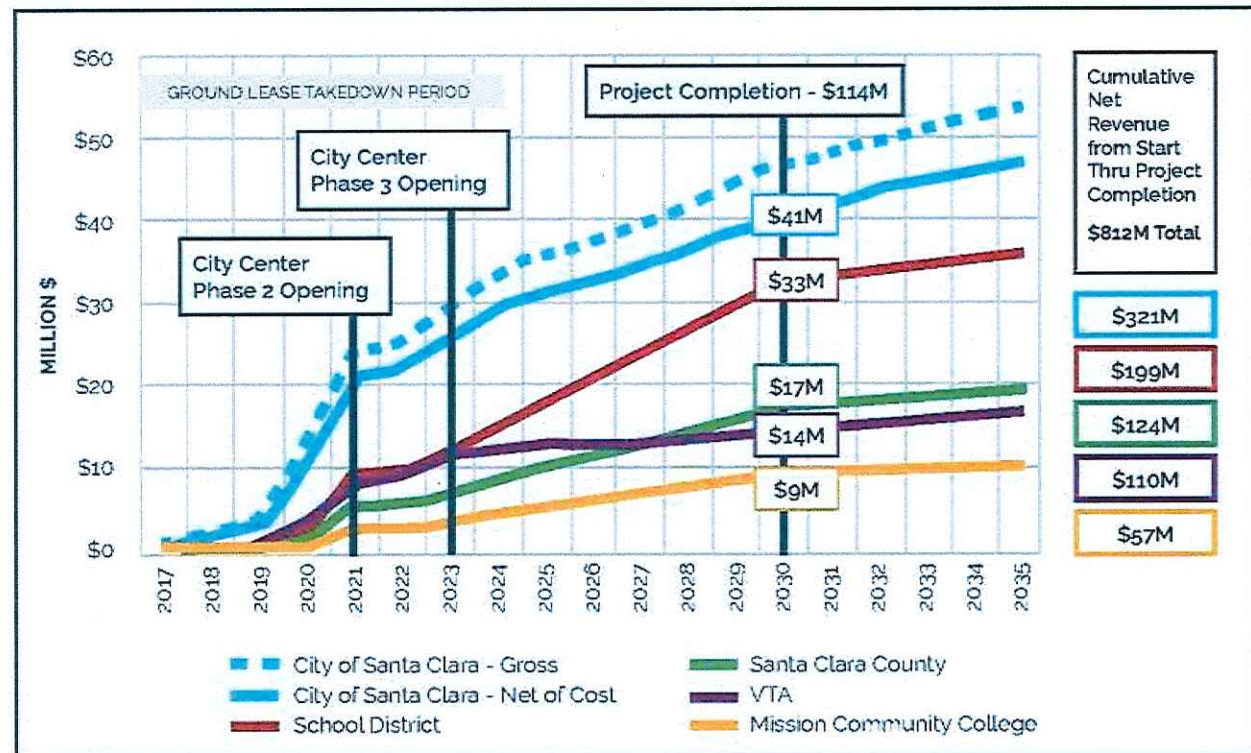
\$14 MILLION

VTA REVENUE GROWTH -
PLUS LOCAL RIDERSHIP
INCREASE OF 52%

\$114 MILLION

TOTAL ANNUAL
RECURRING REVENUE
TO ALL JURISDICTIONS
AT COMPLETION

RELATED SANTA CLARA Santa Clara, CA



NOTES:

1. Schedule assumes construction start of Phase I in 2018 and the first office park Phase 2 in 2022
2. Annual inflation rate projected at 3% with multi-year period of 5% growth in retail and hotel sales once Project opens
3. Annual property tax growth capped at 2% and City operating expenses inflate annually at 3%
4. Without project, the property would generate approximately \$0.3 Million in property tax residual distributions at project completion to the above taxing authorities (\$4.2 million cumulative over a 13-year buildout period thru 2031)



 **RELATED**

06/28/2016

14A



SANTA CLARA
Valley Transportation Authority

3331 North First Street • San Jose, California 95134-1906

VTA Talking Points for Public Presentation

Santa Clara City Council

Item 14.A City Place Santa Clara

June 28, 2016

- Thank you, Mayor Gillmor and Councilmembers. On behalf of the Santa Clara Valley Transportation Authority (VTA) allow me to express my appreciation for the opportunity to participate in the planning process for the City Place Development.
- VTA has provided consistent and clear input to the City regarding the project's implications for transportation and mobility. VTA has submitted comment letters on the Draft and Final Environmental Impact Report (EIR), and provided public testimony at all five City Place Study Sessions, and at the June 8th Planning Commission hearing.
- In response to City Place's projected delay to light rail, VTA requested strengthened Transit Signal Priority (TSP) for light rail along Tasman Drive, and traffic signal monitoring and maintenance during the construction period. In recent discussions with Acting City Manager Rajeev Batra, City staff has verbally agreed to an updated Memorandum of Understanding (MOU) between the City and VTA to improve TSP by the end of 2016, and has committed the City to signal monitoring and maintenance during the construction period of City Place. We appreciate City staff's cooperation in rectifying the ongoing, existing delays and working to prevent future delays with this tangible solution.
- However, VTA continues to have significant concerns that have not been addressed:
 - The City Place project will allow a roadway variant that would locate a new intersection and traffic signal along the Tasman VTA light rail tracks. VTA's Director of Safety spoke at the Planning Commission hearing on June 8th, strongly discouraging new at-grade crossings of the tracks because they present new areas of conflict between all users along an alignment. Federal and state policy discourages new at-grade rail crossings, and recommends grade-separated crossings, and yet the new Avenue C intersection contradicts such policy. Avenue

POST MEETING MATERIAL

C appears to be located at a very dangerous position due to the topography and grade of that section of our system. Rather than adding a new left turn crossing of the tracks, VTA would support a right-in/right-out configuration at Avenue C, which would address VTA's safety concerns.

- Secondly, in order to safeguard the travelling public along Tasman Drive, VTA requests that a grade-separated pedestrian-bicycle crossing be required as part of the approval. While this crossing would improve safety during Levi's Stadium events, we believe that the level of pedestrian activity generated by City Place will also justify it on non-event days. While City staff has stated that there is no nexus to require such a crossing with City Place, we note that the project will provide a range of improvements and community benefits beyond what is justified by a CEQA nexus, through the Development Agreement.
 - Thirdly, the City's staff report acknowledges VTA and ACE's request for near-term transit center improvements at ACE/Capitol Corridor Great America Station by supporting an "enhanced transit station plan to be added to the MCP as a possible amenity" if Avenue C is constructed. While a step in the right direction, these improvements are still conditioned upon the presence of the new Avenue C intersection. VTA believes there is a middle ground: VTA can support the new intersection if unsafe left turns on Tasman are prohibited. VTA requests that the City Council prohibit left turns at Avenue C.
 - Lastly, VTA believes that the Developer's contribution toward Multimodal Improvement Plan (MIP) transportation improvements should be increased given the extraordinary scale of City Place and considering the size of contributions from other recent development projects in Santa Clara County. We believe that these are reasonable requests given the strong fiscal benefits discussed in the City's economic analysis.
- We appreciate the City's efforts to work with us. We look forward to building on our mutual interests and enhancing our partnership as City Place moves ahead and on future efforts.



June 28, 2016

Debby Fernandez, Associate Planner
City of Santa Clara
1500 Warburton Avenue
Santa Clara, CA 95050

Subject: Traffic Analysis of LRT on Tasman Drive with City Place Project

Dear Ms. Fernandez:

VTA has reviewed the *Traffic Analysis of LRT on Tasman Drive with City Place Project* memo by Brian Sowers (Kimley-Horn) for the City of Santa Clara, dated May 23, 2016. The memo attempts to estimate the delay to VTA light rail operations attributed to the addition of a new signalized intersection at Tasman Drive and the proposed Avenue C. The memo concludes that a "maximum LRT delay will be between 15 to 20 seconds, with the most probably delay less than 5 seconds per train" (pg. 2).

While the Kimley-Horn memo of May 23, 2016 does not state this explicitly, the Traffic Analysis summarized in the Kimley-Horn memo appears to constitute the City's justification for claims made in the Final Environmental Impact Report that "that this new signalized intersection would cause small increases in light rail vehicle delay (an average of less than 5 seconds per train and a maximum of 15 to 20 seconds per train)" (FEIR page 4-74). As VTA noted in our comment letter on the FEIR dated April 29, 2016, "The documentation in the EIR regarding delay to light rail due to the proposed new intersection is inadequate, and VTA has determined that the delay will be substantially greater than stated in the FEIR." Based on our review of the Kimley-Horn memo (which was released to VTA nearly a month after the conclusion of the FEIR comment period established by the City, and only after repeated requests), VTA still maintains that **the EIR documentation regarding delay to light rail is inadequate.**

VTA does not support the conclusions of the Kimley-Horn memo due to the following omitted or incomplete analyses:

1. The Kimley-Horn memo makes no reference to the City Place DEIR's identified significant impact to transit travel times on Tasman Drive corridor. While the Kimley-Horn memo attempts to perform an isolated analysis of transit delay at the new Avenue C intersection, the report fails to highlight the overall impacts to light rail operations in the Tasman Drive corridor due to the City Place project. The total delay on Tasman Drive corridor should be estimated based upon a coordinated signal system which inevitably is linked to the delay of the adjacent intersections. In addition, the controlling signalized intersection that specifies the cycle lengths for the corridor should be identified, but this memo has not done so.

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2. Based on Automated Vehicle Location (AVL) data from the VTA light rail system as well as field observations, light rail delay at individual intersections along Tasman Drive between Calle del Sol and Convention Center can exceed 60 seconds per train. Therefore, the claim that adding a new intersection would lead to a maximum of 15 to 20 seconds of delay per train does not withstand scrutiny. Furthermore, the addition of a new intersection and the projected increases in vehicular traffic generated by City Place across the Tasman Drive corridor at existing intersections (documented in the EIR) will pose far greater delay impacts to light rail operations. As such, in addition to the review of signal priority coordination in the Tasman Drive corridor, the EIR should also propose mitigation to impacts caused by new vehicular traffic, and look at ways to address the balance of transit, automobile, and pedestrian activity along Tasman Drive corridor.
3. The analysis fails to account for the safe stopping distances required for light rail vehicles considering the crested profile of the Tasman Drive alignment at the location of the new Avenue C intersection. Adding the required stopping distance would increase the amount of delay.
4. The 2020 analysis does not assume the correct number of projected VTA light rail trains, and therefore it underestimates delay. The analysis looks at 8 trains per hour; however, 16 trains per hour are projected based on the anticipated light rail service plan to meet the opening of BART in Milpitas in Fall 2017. More light rail trains would result in more total delay.
5. The signal timing data from July 2014 does not accurately reflect VTA's actual observed existing conditions. The analysis uses hypothetical signal timing assumptions, which has the effect of underestimating delay.
6. The analysis uses Synchro, which models traffic signal timing but does not model light rail vehicle operations. This simplified analysis ignores other potential impacts such as queue spill-backs or cascading delays to light rail, which are a common occurrence.
7. In the absence of an effective cooperative agreement between the City and VTA regarding the operation traffic signals along Tasman Drive, the City is under no obligation to operate the traffic signal controllers in the manner outlined in the Kimley-Horn analysis. Therefore, there is no guarantee for the controllers to perform as presented. The EIR analysis of auto delay at the new intersection shows very high delays for the southbound approach on Avenue C. It is likely is that the City will retime the signal to reduce delay on Avenue C and delay to light rail will be significantly greater.

City of Santa Clara
June 28, 2016
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Finally, VTA notes that the City, in its role as Lead Agency under CEQA, should have provided an analysis of the significant impact to transit travel times on Tasman Drive corridor identified in the City Place DEIR. The issues raised above underscore the current vulnerability of light rail operations to impacts from this project, with or without the proposed Avenue C intersection. The City Place EIR fails to comprehensively study the project's significant impact to transit travel times, and comprehensively propose and implement mitigations. Therefore, the EIR is inadequate in these areas.

Sincerely,



John Ristow
Director, Planning & Program Development

cc: Vice Mayor Teresa O'Neill, Santa Clara City Council
Rajeev Batra, Ruth Shikada, Dennis Ng, City of Santa Clara
Inez Evans, Jim Lawson, Rob Fabela, Chris Augenstein, VTA

06/28/2016

14A.

Good Evening,

I want to continue to express my support for the City Place project, something I have done from day one. We are lucky to have a quality company like Related that wants to take on this project and vision.

I attended the Planning Commission meeting where this project was presented and there was great concern for the lack of housing. I'd like to make a friendly suggestion that might help this tension. Related can't go back to the State departments about the land fill issues and have given a specific number for housing units. What if there was a friendly amendment to the motion for accepting all staff recommendations to further state that: Should the City and Related agree that more housing is needed on site, Related will make Good Faith efforts to figure out how to integrate more housing with the needed authorities. This way, the door stays open for discussion.

Lastly, learning of the new 3~~5~~ acre park space, I feel there is a great opportunity to for an agriculture component. For one thing, it could be a research center or Center of Excellence for how to clean contaminated landfill soil to organic soil standards through

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bioremediation, phytoremediation, and other methods maybe not even created yet.

I see a **HUGE** opportunity here for an Ecology Center, like the one I recently visited in San Juan Capistrano. It could provide education for youth and adults, show examples of green technologies, how our ecosystem services function in harmony, how to work your backyard effectively, and show how we can localize a portion of our food requirements...maybe even provide herbs and veggies to the restaurants and residents of this new complex.

This Ecology Center can duplicate what already exists and is wildly successful in southern California.

Thank you for your time.

06/28/2016

14A.



SANTA
CLARA
UNIFIED
SCHOOL
DISTRICT

1889 Lawrence Road
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95051
408-423-2000

Stanley Rose III, Ed.D.
Superintendent

June 28, 2016

Stephen Eimer
Executive Vice President
Related Urban
333 South Grand Avenue
Suite 3550
Los Angeles, CA 90071

Re: City Place Development

Dear Mr. Eimer:

I am in receipt of the letter you sent me dated June 23, 2016 concerning the school impact mitigation discussions between the Santa Clara Unified School District ("District") and the Related Company ("Related") in regards to Related's City Place Development Project ("Project"). In the District's discussions with Related, it has been the District's position, that any agreement with Related must provide for full school impact mitigation through voluntary community payments at two times the current statutory development fee, in addition to the current statutory development fee. The District has reviewed the terms of your recent letter, and for the reasons discussed below, believes its counter-proposal represents a better solution consistent with the District's obligation to provide necessary school facilities. The District's counter-proposal is as follows:

In addition to the payment of the then current District's developer fees collected pursuant to the provisions of Education Code section 17620, et seq. and Government Code section 65995, et seq. ("Developer Fees"), Related will contribute one of the following as a voluntary community benefit ("Voluntary Community Payment").*

Option 1: A Voluntary Community Payment equal to two times the District's statutory residential Developer Fees and one time the District's statutory commercial Developer Fees. Such payment shall be due and payable at the time the District's then current Developer Fees are paid for each building permit.

Option 2: A Voluntary Community Payment equal to \$10,000,000. Such payment is calculated to be approximately two times the Project's total District's Developer Fees at full build out and shall be due and payable at the time the District's then current Developer Fees are paid for the first Project building permit issued by the City of Santa Clara.

Board
of Education

...

Jim Canova
Albert Gonzalez
Jodi Muirhead
Andrew Ratermann
Michele Ryan Ph.D.
Noelani Sallings
Christopher Stampolis

Under the District's counter-proposal, the Voluntary Community Payments are premised upon Related's payment to the District of the then current Level 1 development impact fees and that in consideration of Related's payment of the Voluntary Community

Payments, the District shall not levy any Level 2 or Level 3 development impact fees against Related's development under the provisions of Government Code sections 65995.5 and 65995.7.

*(Please Note: The annual property taxes and the property tax represented by the District's General Obligation Bond program will continue to be collected and are outside the scope of the terms contemplated herein.)

It is important to understand the context of the District's position as to the reason for the Voluntary Community Payment. Under the State School Facility Program, development impacts on schools are funded through a combination of 1) SB 50 developer fees which are calculated based on square footage; 2) state bond funds under the State School Facility Program; and 3) local contributions including, but not limited to, general obligation bonds and voluntary community payments. Given the uncertainty over the availability of state bond funds, it is crucial that the District have adequate funds from SB 50 fees and voluntary community payments to meet its future facility needs resulting from Related's proposed development. The District appreciates the reference to a voluntary payment or "Voluntary Community Benefit Payment" as a defined term in the draft development agreement between the City of Santa Clara and Related Santa Clara, LLC.

Please note that we did not include the District's share of non-general obligation bond ad valorem property tax revenues generated by the Project as part of the funds available for school construction. This is because these revenues are applied to the District's General Fund for school district operation; are not used for construction; and are not authorized by the voters to be bonded against.

The combination of constantly increasing construction costs combined with lack of capacity in existing District schools make it imperative that the District constantly plan for and collect adequate funding for school construction. The District believes that the options presented above provide for an equitable solution and would allow the District to support the Project.

Both options are conditioned on the following actions:

1. Related commits to executing a mitigation agreement prepared by the District's counsel (in consultation with Related's counsel), within 60 days of the Council's approval of the Project, which contains the terms contemplated in this letter and is acceptable to the District.
2. The execution of the mitigation agreement will be required as a Condition of Approval for the Project.

The District looks forward to working with you on future projects. The District will have representatives attending the Santa Clara City Council Meeting on June 28, 2016 to provide public comments pertaining to this Project. Please contact me with any questions.

Sincerely,

A handwritten signature in cursive script that reads "Stanley Rose III, Ed.D.".

Stanley Rose III, Ed.D.
Superintendent

cc: City of Santa Clara City Council

Mark Allgire, CPA
Assistant Superintendent Business Services

06/28/2016

14A.

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June 27, 2016

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Mayor and City Council
City of Santa Clara
1500 Warburton Avenue
Santa Clara, CA 95050

Re: Council Meeting June 28, 2016, Agenda Item 14A, Santa Clara CityPlace

Dear Mayor Gillmor and Members of the City Council:

This letter is submitted on behalf of David and Jean Ebrahimi, owners and operators of David's Restaurant and Banquet Center.

David's Restaurant has served City of Santa Clara residents for nearly 30 years and has great goodwill in the community.

The uncertainty and timing of the Santa Clara CityPlace project has already adversely affected their banquet business and damaged their ability to future book events. The City has also damaged their restaurant business on game days by restricting access for patrons.

As the CityPlace project moves forward, it may destroy the restaurant and banquet center and all the goodwill that has been built over 30 years. That would be a loss for the community and devastating to the Ebrahimi family.

While the City has grand plans for the Ebrahimi's property, the City also has the obligation to fairly compensate them for their losses under state and federal law.

Perhaps those losses can be mitigated with an agreed upon solution. The Ebrahimis are willing to work with the City and Related to find a reasonable resolution as the project moves forward. However, the Ebrahimis have rights under their leases and under law, and the City must abide by its obligations under the leases and the law until a mutually agreeable solution has been found.

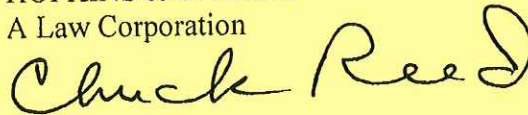
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We are ready to begin a discussion of how the CityPlace project can proceed consistent with Ebrahimi's rights pursuant to a Lease (in which City is the landlord) that grants D.E. II Restaurants, Inc. the option to extend its leasehold until 2030. Please contact Jeff Essner, Dori Yob or me to move forward with that discussion.

Sincerely,

HOPKINS & CARLEY
A Law Corporation

A handwritten signature in black ink that reads "Chuck Reed". The signature is written in a cursive, flowing style.

Chuck Reed

CRR/tsa

06/28/2018

14A.

Section 1 – New Definitions

“**School District**” shall mean the Santa Clara Valley School District.

“**School Facilities Impact Fee**” shall mean the sum payable to the School District pursuant to Government Code Section 65995.

“**Voluntary School Benefit**” shall have the meaning set forth in Section 3.8.

New Section 3.8

Voluntary School Fee Contribution. In addition to paying the School Facilities Impact Fee as required under State law, Developer shall make a voluntary school contribution (the “**Voluntary School Benefit**”) to the School District. The Voluntary School Benefit shall be in an amount equal to the School Facilities Impact Fee levied by the District with respect to residential space as of the Effective Date (i.e., Three Dollars and Fifty-Four Cents [\$3.54] per square foot of residential space). The Voluntary School Benefit shall be payable as and when School Facilities Impact Fees are due.

MARGARET MOORE SOHAGI
NICOLE HOEKSMAN GORDON

R. TYSON SOHAGI
LAUREN K. CHANG

ALBERT I. HERSON
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June 28, 2016

City of Santa Clara City Council
(MayorandCouncil@santaclaraca.gov)
Santa Clara City Hall
1500 Warburton Avenue
Santa Clara, CA 95050

Re: *City Place Santa Clara Project*
Environmental Impact Report SCH No. 2014072078
Planning/CEQA File No. PLN2014-10554/CEQ2013-01180

Dear Mayor Gillmor and Honorable Councilmembers:

The City of San José respectfully requests that the Santa Clara City Council ("Council") delay further consideration of the proposed City Place Santa Clara Project ("Project") until such time as the Project's General Plan inconsistencies are cured, and a legally adequate Environmental Impact Report ("EIR") is prepared that complies with the California Environmental Quality Act ("CEQA").

The City of San José ("San José") reiterates its strong opposition to the Project as proposed, which would site 9.16 million square feet of unplanned commercial and retail development in a location designated primarily for recreational use through the year 2035. The Project's 140,000 daily vehicle trips will clog area roadways and intersections, many located within San José, without adequate mitigation. The Project proposes almost no housing to support the 29,230 jobs it will create, confirmed by the recently available Development Agreement ("DA"), which requires the Project developer to construct only 200 residential units. The Planning Commission's recommendation that the City Council adopt the "Increased Housing Alternative" with 1,680 housing units is window dressing at best. Even the Project applicant has acknowledged that the construction of these residences is highly speculative, given their proposed location on a former landfill.

By adding almost 150 times more jobs than likely housing units, the Project would dramatically increase the City's existing jobs/housing imbalance, and require its

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enormous induced housing demand to be borne by other jurisdictions in the region, including neighboring San José. In short, while the Project would create a financial windfall for the City of Santa Clara, bringing millions of dollars in revenue and fees to the City's coffers, its numerous significant and unavoidable environmental effects would fall squarely on the shoulders of the region, with no attendant benefits. The Project is not sustainable or "green" and, by focusing on commercial and retail uses over housing, conflicts with the balanced growth objectives of *Plan Bay Area*, the Bay Area's Sustainable Communities Strategy ("SCS") under SB 375. The City's consideration of this Project as currently proposed does not comport with any accepted notion of responsible planning. Even the State Water Resources Control Board ("SWRCB"), the agency tasked with protecting and regulating the State's drinking water, has opined that the Project would pose serious risks to the public drinking water system.¹ In a letter to the City dated June 6, 2016, the SWRCB questions the viability of the Project given the proximity of proposed water mains to the landfill and the associated risk to public health, noting that the mitigation proposed for impacts to the drinking water system is inadequate. The letter also raises concerns regarding the potential for catastrophic failures during the life of the Project, and the lack of sufficient long-term planning. San José echoes these serious concerns.

San José submitted extensive written comments to the City's Planning Department on April 29, 2016, detailing the Project's numerous General Plan inconsistencies as well as the legal inadequacy of the Final EIR ("Final EIR Comment Letter").² The City's responses to the Final EIR Comment Letter failed to remedy or cure any of the deficiencies in the Project or the Final EIR identified by the City and other commenters.

Since the publication of the Final EIR on April 19, 2016, City Planning staff has produced a massive amount of new information, much of which is highly detailed and technical, requiring time consuming and in depth review. Most of this new information, consisting of new Project documents and environmental analysis and comprising well over 2,000 pages of text and data, has been available for review by members of the public

¹ See Letter to Chris de Groot, Director of Water and Sewer Utilities, City of Santa Clara from Eric Lacy, P.E., District Engineer, Santa Clara District, Division of Drinking Water, State Water Resources Control Board, dated June 6, 2016, attached as Exhibit A and incorporated in full by this reference.

² See Comment Letter on the Final EIR from Margaret M. Sohagi, representing the City of San José, to Sharon Goei, Acting Director of Planning & Inspection and Debby Fernandez, Associate Planner, City of Santa Clara, dated April 29, 2016, attached as Exhibit B and incorporated in full by this reference.

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and affected agencies for less than one month.³ Some of the new information, like the Project Disposition and Development Agreement (“DDA”), a whopping 625 pages (including exhibits) with key details about Project implementation, has been available for less than two days, as have other newly prepared analyses. (See, e.g., 6/28/16 City Council Agenda Report, Attachments 13 (DDA), 23 (peer review of fiscal impact analysis) and 24 (analysis re intersection mitigation).) The City Council must continue its consideration of the Project and recirculate the EIR to allow members of the public and interested agencies adequate time to review and comment upon the new information and analysis, including the following key items:

- A brand new Project variant – the Enhanced Open Space (“EOS”) Variant – that was not identified or analyzed in the EIR;
- Additional General Plan amendments revising Citywide limitations on office development, including textual modifications to exclude the Project from policies with which it is inconsistent;
- A new Final EIR Exhibit A analyzing the impacts of the EOS Variant, totaling almost 300 pages, and including a new traffic study;
- A new Final EIR Exhibit B with over 200 pages of responses to individual and agency comments on the Final EIR as well as proposed revisions to the EIR’s analysis and mitigation measures;
- A Project Development Agreement (“DA”) with a 30-year term, establishing the terms, order and timing of site development, provisions regarding the payment of fees, and details regarding land uses;⁴

³ The lack of sufficient time to review the voluminous new materials, made publicly available on June 3, 2016, was commented upon by a number of Planning Commissioners at the Commission’s June 8, 2016 hearing on the Project and the EIR. San José concurs that there has been insufficient time to review the new material and urges the Council to direct staff to recirculate the EIR so that the new documents and supporting analysis may be appropriately considered.

⁴ The DA, the MCP and the DDA contain significant provisions that have never been available for public review. (See, e.g., DA provisions freezing Project development and traffic fees.) The DDA has been available for only two days, virtually precluding any review. Issuing key documents at the last minute effectively eliminates the ability of the public and other agencies to review and comment on the Project, and to determine whether the EIR’s analysis of these documents is legally adequate.

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- A Master Community Plan (“MCP”) setting forth Project land uses, development standards, and design guidelines, including detailed technical appendices, totaling more than 800 pages, and;
- The Project DDA, setting forth key details regarding Project implementation.

Given the sheer quantity of new data, information and analysis, the City’s failure to recirculate the EIR precludes meaningful public review and comment in violation of CEQA. (CEQA Guidelines § 15088.5.)

Recirculation is triggered when “significant new information” is added to an EIR. (Pub. Resources Code § 21092.1; CEQA Guidelines § 15088.5.) The purpose of recirculation is to give the public and other agencies an opportunity to evaluate the new data and the validity of the conclusions drawn from it. (*Silverado Modjeska Recreation and Park Dist. v. County of Orange* (2011) 197 Cal.App.4th 282, 305.) The CEQA Guidelines specify that new information may include changes in the project or environmental setting as well as additional data or other information. (CEQA Guidelines § 15088.5.)

The “significant new information” prepared by the City and released in the past month fails to remedy or cure the deficiencies in the Project and the EIR, which continue to suffer from the following legal flaws:

- The Project is fundamentally inconsistent with General Plan policies designed to promote a jobs/housing balance.
- The General Plan Amendment proposed for the Project renders the General Plan internally inconsistent.
- The EIR fails to identify feasible mitigation measures to reduce significant land use impacts, and associated significant secondary impacts.
- The EIR’s evaluation of Project area intersections is under-inclusive and fails to evaluate significant traffic impacts in the City of San José.
- The fee-based transportation mitigation measures in the Final EIR are not based on an actual plan of mitigation that will be implemented, nor do they accurately estimate total costs or Project fair share costs for mitigation measures within San José.
- The Project air quality analysis fails to explain how air pollutants emitted by the Project, which greatly exceed Bay Area Air Quality Management District (“BAAQMD”) thresholds, would impact public health.

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- The EIR fails to incorporate feasible mitigation measures to reduce the Project's significant air quality impacts, and improperly rejects a measure requiring the Project sponsor to purchase emissions offsets.
- The analysis of greenhouse gas emissions fails to analyze the impacts of sea level rise on the Project's future users and residents.
- The EIR's consideration of the Santa Clara Valley Habitat Conservation Plan/Natural Community Conservation Plan is legally inadequate and fails to acknowledge the Project's location in the Plan's extended study area.
- The biological resources analysis understates impacts to burrowing owl and fails to adequately analyze the effects of Project nitrogen deposition on grassland habitat.
- The EIR fails to consider a reasonable range of alternatives, omitting alternatives that would reduce the Project's significant effects while meeting its basic objectives.
- The EIR's project description fails to include the whole of the action, resulting in an understatement of Project impacts.

In light of the inadequate analysis in the EIR, the City's proposed findings, statement of overriding considerations and mitigation monitoring and reporting program are also legally inadequate.

I. THE PROJECT REMAINS INCONSISTENT WITH THE CITY OF SANTA CLARA'S GENERAL PLAN

San José reiterates its comments regarding the Project's inconsistency with Santa Clara's 2010-2035 General Plan, specifically its inconsistency with General Plan goals and policies that promote a jobs/housing balance. The proposed EOS Variant, which would reserve Parcel 3 for park uses and result in increased office uses on Parcels 1, 2 and 5, does not cure this inconsistency, nor does the City's proposal to adopt the Increased Housing Alternative which would include 1,680 housing units. While the Increased Housing Alternative proposes to replace 320,000 gross square feet of office space with housing, it would still create 23,610 new net employees (EIR at 5-64) and negatively impact the City's existing jobs/housing imbalance. More importantly, this alternative is unlikely to be implemented, given that the City's Development Agreement with the Project applicant requires only 200 units on the Project site, and construction of

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additional units on the landfill would require a massive amount of expensive and highly technical remediation.⁵

The City's responses to San José's comments regarding the Project's inconsistency with policies promoting a jobs/housing balance are unpersuasive and do not cure the identified inconsistencies. The City asserts that Housing Element Policy B-5, which requires the City to work towards mitigating the jobs/housing ratio impacts created by developments with significant employment, has been met simply by analyzing the Project's impacts on the jobs/housing balance in the EIR, and preparing a nexus study for an affordable housing impact fee. (Final EIR, Exhibit B, at B.2-10.) Contrary to the City's assertions, funding such a study would not mitigate or otherwise cure the Project's negative impacts on the jobs/housing balance and the resulting significant effects on traffic, noise, air quality, and greenhouse gas ("GHG"). More specifically, the Developer's agreement to provide 20 units of affordable housing (10 percent of the 200 units required by the DA) does nothing to mitigate the Project's impacts on the existing jobs/housing imbalance.

The City has addressed other glaring General Plan policy inconsistencies by proposing last minute amendments to the policy so that it would no longer apply to the Project, eviscerating its long-range planning document in the process. As an example, Policy 5.3.1-P18 requires the City to "[m]eter net new industrial and commercial development excluding 'Approved/Not Constructed and Pending Projects' identified on Figure 2.1-1 so as not to exceed 2.75 million square feet in Phase I, 5.5 million square feet in Phase II and 5.5 million square feet in Phase III in order to maintain the City's jobs/housing balance and ensure adequate infrastructure and public services." The Project would result in over 9 million square feet of unplanned development, almost twice the development allowed in either General Plan Phase II or Phase III, which, as acknowledged by the City (see, e.g., EIR at 3.1-24), conflicts with the policy's fundamental purpose of imposing commercial caps to maintain the jobs/housing balance. In response to San José's comments to this effect, the City now proposes to add the Project to its list of "Approved/Not Constructed and Pending Projects," so that the policy will no longer apply to the Project. The City proposes a similar approach with other policy inconsistencies. (See Planning Commission Staff Report at p. 7.)

⁵ See Final EIR Comment Letter from Terry Seward, Division Chief, Groundwater Protection Division, San Francisco Bay Regional Water Quality Control Board, dated May 9, 2016 and Final EIR Comment Letter from Jim Blamey, Director, County of Santa Clara Department of Environmental Health, dated April 29, 2016, both included in Final EIR Exhibit B and incorporated in full by this reference.

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II. THE EIR'S ANALYSIS OF PROJECT TRAFFIC REMAINS LEGALLY INADEQUATE

San José reiterates its comments regarding the legal inadequacy of the Project's traffic analysis, specifically the EIR's failure to propose feasible mitigation measures to avoid or minimize the Project's significant transportation impacts on San José, which shares a border with the Project site. The City's responses to traffic-related comments and its new analysis of the traffic impacts of the EOS Variant do not remedy or cure any of the legal inadequacies previously identified by San José.

By adding nearly 6,000 unplanned peak hour trips to the transportation system without a commensurate fair share contribution, the Project threatens the balance of land use and transportation in North San José, planned for in conformance with the goals and policies in the Envision San José 2040 General Plan ("San José General Plan"). The San José General Plan and the North San José Area Development Policy identify transportation improvements to address all planned future growth in San José and surrounding jurisdictions. The unplanned growth proposed by the Project must contribute a reasonable fair share to ensure that its traffic impacts can be accommodated in the region, as well as in North San José.

A. The EIR's Evaluation of Project Area Intersections Remains Inadequate and Fails to Identify a Significant Impact

The City has failed to adequately respond to San Jose's comments on the Project's impacts on area intersections. The June 20, 2016 memorandum on the Project's intersection mitigation, included in the City Council agenda report as Attachment 24, does not remedy the identified legal inadequacies.

San José continues to request that the EIR evaluate impacts on the twelve (12) key North San José intersections identified in the Final EIR Comment Letter. A proper CEQA analysis will reveal that Project impacts at the intersection of North First Street and Old Bayshore Parkway are significant.⁶ The intersection is already operating at Level of Service ("LOS") F and, with the Project, critical delay would increase by more

⁶ When "significant new information" is added to an EIR, the lead agency must recirculate the EIR for additional public review and comment. (Pub. Resources Code § 21092.1; CEQA Guidelines § 15088.5.) "Significant new information" includes, in part, a disclosure showing that a new significant environmental impact would result from the project. Because the new significant impact at the identified intersection was not analyzed in the EIR, the requested analysis would require that the document be recirculated unless the impact was mitigated.

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than four seconds and the V/C ratio would increase by more than 0.01, a significant impact.⁷ This intersection should be added to the EIR and the document should be recirculated for additional public review and comment.

B. The EIR's Calculation of the Project's Fair Share Contribution Remains Inaccurate

The City has also failed to adequately respond to San José's comments on the calculation of the Project's fair share contribution. The June 2, 2016 memorandum on the Project's fair share contribution and attached tables included in the Planning Commission's staff report ("Fair Share Memo"), does not remedy the identified legal inadequacies.⁸ Moreover, the Project's fair share responsibility for the San José mitigation measures set forth in Table 2 of the Fair Share Memo does not accurately reflect the cost breakdown illustrative in Table 1. By calculating the Project's fair share as the Project's percent contribution to total traffic, the EIR continues to incorrectly assume that both existing and future roadway users are financially responsible for Project mitigation measures. Only new roadway users contribute to the cost of mitigation measures.

San José reiterates its comments regarding the Project's responsibility to make a fair share contribution towards intersection improvements at the Montague/Trimble Flyover and Montague/McCarthy-O'Toole Square Loop Interchange. The City claims that the Project is not required to make a fair share contribution to these intersections, but this argument fails to recognize that the mitigation obligations were developed based on *planned* growth in San José and surrounding jurisdictions. These mitigation measures were not intended to address the impacts caused by a project of this magnitude that is well beyond the level of planned growth anticipated in the 2005 North San José EIR.

Also of great concern to San José, the Project DA places a seven-year freeze on Project development fees and a similar freeze on traffic impact fees until building permits have been issued for at least three million square feet of space on the Project site (or the end of the development fee freeze, whichever is later), calling into question whether there will be sufficient funding to make any contribution to identified improvements. (See DA,

⁷ The impact is significant based on the EIR's significance criteria for San José intersections.

⁸ San José's technical traffic comments and responses to the City's new fair share contribution analysis are attached to this letter as Exhibit C.

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Sections 3.3.1, 3.4.1.) After expiration of the initial freeze on traffic impact fees, fees for hotel and office uses are capped for the duration of the DA.⁹ (See Section 3.4.2.)

C. Mitigation Measure TRA-1.1 is Legally Inadequate

San José shares the concerns of the Santa Clara Valley Transportation Authority (“VTA”) and other commenters regarding the effectiveness of the Project’s Transportation Demand Management (“TDM”) Plan (Mitigation Measure TRA-1.1), and disagrees with the City’s assertion that the measure is fully enforceable as required by CEQA.¹⁰ (Pub. Resources Code § 21081.6(b); CEQA Guidelines § 15126.4(a)(2); see *Woodward Park Homeowners Ass’n v City of Fresno* (2007) 150 Cal.App.4th 683, 730 [project proponent’s agreement to a mitigation measure by itself is insufficient; the measure must be adopted in a way that makes it a legally enforceable requirement].)

While Mitigation Measure TRA-1.1 requires the Project applicant to prepare a TDM Plan including measures from a comprehensive list set forth in the EIR, it includes no penalties for failure to actually meet identified TDM targets. Without such penalties, or any other assurance that TDM goals would actually be met, the measure is illusory and does not reduce or avoid the Project’s numerous significant traffic impacts. The measure’s ineffectiveness was underscored in statements by the Project applicant at the June 8, 2016 Planning Commission hearing, during which it confirmed that it cannot control the actions of its lessees at the Project site, and therefore cannot assure that TDM targets will be met and traffic impacts reduced as concluded in the EIR.

III. THE EOS VARIANT WOULD RESULT IN NEW SIGNIFICANT NOISE IMPACTS

The Final EIR’s analysis of the EOS Variant identifies a new significant cumulative noise impact. Specifically, based on the increase in traffic noise on the segment of Tasman Drive between Centennial Blvd. and Calle Del Sol, the EOS Variant’s contribution to cumulative noise impacts would be an increase of 3.0 dBA, which, according to the thresholds set forth in the EIR, is a significant impact. (Final

⁹ Under Section 3.4.2 of the DA, traffic impact fees for office uses may not exceed \$2.25/sf or \$900/hotel room.

¹⁰ Comment Letter on the Final EIR from Nuria Fernandez, General Manager/CEO, VTA, dated April 29, 2016; Comment Letter on the Final EIR from Stacey Mortensen, Executive Director, San Joaquin Regional Rail Commission, dated May 4, 2016; Comment Letter on the Final EIR from Jeannie Bruins, Vice Chairperson, VTA Board of Directors, dated May 5, 2016, all included in Final EIR Exhibit B and incorporated in full by this reference.

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EIR, Exhibit A, Table 4 note 3, at A-12.) The EIR declines to characterize the increase as significant, claiming that the overall level of noise impacts would not change with the EOS Variant while acknowledging that the “details of the location of significant impacts would be different at one location.” (Final EIR, Exhibit A, at A-10.) Contrary to the EIR’s claim, noise impacts occur at individual locations, and their significance must be assessed where they occur. To assert differently would be to take the position that the residential receptors on the south side of Tasman Drive between Lafayette and Calle Del Sol would not actually experience Project traffic noise at a level of 3.0 dBA. The EIR, tacitly acknowledging that the cumulative impact to the Tasman Drive receptors would be significant, proposes a modification to Mitigation Measure NOI-1.3 to include *investigation* of a soundwall at this location, but ultimately concludes that impacts would be significant and unavoidable due to questions of feasibility. Based on the new significant noise impact, the EIR must be recirculated for additional public review and comment.

The impact analysis of the EOS Variant also fails to reach a significance conclusion regarding the secondary impacts of the proposed noise soundwall mitigation (revised Mitigation Measure NOI-1.2), calling into question whether the newly identified impacts would require recirculation of the EIR.¹¹ (Final EIR Exhibit A at A-13.)

IV. THE EIR’S ANALYSIS OF BIOLOGICAL RESOURCES IMPACTS REMAINS LEGALLY INADEQUATE

San José reiterates its comments regarding the legal inadequacy of the Project’s biological resources analysis, specifically the EIR’s failure to adequately analyze and mitigate the Project’s impacts on burrowing owl and burrowing owl habitat. The City’s responses to comments on biological resources impacts and its new analysis of the EOS Variant do not remedy or cure any of the legal inadequacies previously identified by San José.

As discussed in some detail in the Final EIR Comment Letter, Project commenters have provided evidence demonstrating the City’s previous commitment to managing a portion of the Project site as mitigation for burrowing owl.¹² The City continues to characterize this commitment as voluntary, stating that there was “no strict mandate.”

¹¹ The analysis of the EOS Variant’s impacts to population and housing suffers from the same flaw. (Final EIR Exhibit A at A-18.)

¹² See Comment Letter on Final EIR from Shani Kleinhaus, Ph.D., Santa Clara Valley Audubon Society, dated May 23, 2016, and Comment Letter on Final EIR from Jan Hintermeister, undated, both included in Final EIR Exhibit B and incorporated in full by this reference.

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(Final EIR Exhibit B at B.3-2.) The City goes on to argue that even if the mitigation was required, the entire 44.5 acres could be accommodated on the site of the San José /Santa Clara Water Pollution Control Plant (the “WPCP”). This contention is not only lacking evidentiary support, but is highly questionable, given that the WPCP property and most of the WPCP is owned by San José (the City of Santa Clara owns only 22 percent of the WPCP itself). While 180 acres of WPCP property are currently managed as burrowing owl habitat, this acreage is set aside to mitigate WPCP projects, not the projects of other agencies.¹³ In any event, Santa Clara may not make unilateral decisions regarding use of the WPCP, and has no authority to set aside land at the facility to mitigate the impacts of private projects within its jurisdiction. Any use of the WPCP site for non-WPCP purposes would, at minimum, require approval of both the San José and Santa Clara City Councils.

V. THE EIR’S ANALYSIS OF THE PROJECT’S IMPACTS TO WATER SUPPLY REMAINS INADEQUATE

The EIR concludes that the Project would have sufficient water supplies, even though City water supply would be inadequate in 2035 under every scenario save a “normal” year, and only then with the assumption that Hetch-Hetchy water is available from the San Francisco Public Utilities Commission (“FPUC”). The analysis of the EOS Variant does not remedy this flaw, reaching a conclusion that water supply would be adequate even with the increased demand of 35 acre feet/year for the park uses on Parcel 3. (Final EIR, Exhibit A, at A-19.) Again, the analysis provides no evidence to support the assertion that shortfall would not likely occur.¹⁴

VI. THE PROJECT DESCRIPTION REMAINS LEGALLY INADEQUATE FOR ITS FAILURE TO DESCRIBE THE WHOLE OF THE ACTION

San José reiterates its comments regarding the legal inadequacy of the project description. The City’s responses to the Final EIR Comment Letter and its new analysis of the EOS Variant do not remedy or cure the identified deficiencies.

San José notes the addition of the California Public Utilities Commission (“CPUC”) as a responsible agency due to its need to approve a new crossing of the VTA

¹³ See background information regarding WPCP, available at:
<http://www.sanjoseca.gov/index.aspx?NID=1666>;
<http://www.sanjoseca.gov/DocumentCenter/View/34681>.

¹⁴ Comment Letter on the Final EIR from Usha Chatwani, Associate Civil Engineer, Santa Clara Valley Water District, dated April 29, 2016, included in Final EIR Exhibit B and incorporated in full by this reference.

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light rail tracks proposed with New Tasman Drive Intersection Variants 1 and 2. (Final EIR, Revisions to Draft EIR at 5-19.) However, the EIR's project description does not identify the crossing nor does the EIR include any analysis of this Project component. The EIR also fails to identify two overpasses over Lafayette that would be converted to public use to serve the Project, even though the CPUC must approve such conversions.

Of further concern to San José, according to a CPUC representative who appeared at the June 8, 2016 Planning Commission, are two at grade rail crossings (Gold Street connector and Great America Way) that would be impacted by the Project but were not identified or analyzed in the EIR. Specifically, the modified crossings would result in traffic impacts at nearby intersections, and the need to upgrade and install signals to keep cars off of the track when trains are approaching.

VII. CONCLUSION

The City's consideration of a project that will create dramatically more jobs than housing units, in a region already suffering from a severe housing shortage, flies in the face of responsible planning and environmental stewardship. The Project as currently proposed will result in a host of significant unavoidable environmental impacts to area traffic, air quality and noise, and will require San José to bear the burden of providing housing and other municipal services to Project employees. We urge the City Council to take a step back and to continue its consideration of the Project and the EIR in order to rectify the severe deficiencies identified by San José and other commenters, to consider the mitigation measures and alternatives previously proposed by San José, and to recirculate the EIR for further review and comment. San José looks forward to working with the City to ensure each of its concerns are sufficiently addressed in a revised Project and environmental document.

Very truly yours,

MARGARET M. SOHAGI
for THE SOHAGI LAW GROUP, PLC

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June 28, 2016
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Very truly yours,



MARGARET M. SOHAGI
for THE SOHAGI LAW GROUP, PLC



EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIGUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board
Division of Drinking Water

June 6, 2016

Mr. Chris de Groot
Director of Water and Sewer Utilities
City of Santa Clara
1500 Warburton Avenue
Santa Clara, CA 95050

CITY PLACE SANTA CLARA
City of Santa Clara, Water System No. 4310012

Dear Mr. de Groot:

This letter is in response to the proposed City Place Santa Clara (City Place) development at the site of the former Santa Clara All-Purpose Landfill submitted by the City of Santa Clara (City). The State Water Resources Control Board Division of Drinking Water (Division) has serious concerns regarding the viability of this project due to the proposed proximity of water mains to the landfill.

Specifically, Section 64572(f), Title 22, California Code of Regulations (CCR) states that, "New water mains shall not be installed within 100 horizontal feet of the nearest edge of any sanitary landfill." The City is requesting a waiver from this requirement due to planned mitigations. Based on the information provided thus far, it does not appear that adequate mitigations have been proposed in order to allow for less than a 100 horizontal foot separation between new water mains and the sanitary landfill. Due to the Division's concerns regarding this proposed project, the following items need to be addressed.

Due to the highly technical nature of this project, please provide information regarding the experience of the contractors and design team. Also of interest would be any examples that can be provided of similar existing projects of the same scale.

The provided documentation appears to be concept oriented. The Division is interested in receiving information that demonstrates a design based on past experiences, engineering analysis, and other such methods in order to show a proposed engineered design. The design should demonstrate that it provides a comparable or better protection than maintaining a 100-foot horizontal separation. The proposal included two different designs, Type A and Type B. Please provide a rationale for how the proposed mitigation measures for each design type provides a comparable protection as maintaining a 100-foot separation.

FELICIA MARCUS, CHAIR | THOMAS HOWARD, EXECUTIVE DIRECTOR

850 Marina Bay Parkway, Bldg. P, 2nd Floor, Richmond, CA 94804-6403 | www.waterboards.ca.gov

Due to the site being a closed landfill, on-going control measures for gas collection and remediation as well as leachate collection and removal are required as part of the Post-Closure Land Use Plan. It appears that the City is proposing to use some of the of the landfill closure mitigations as part of the mitigation measures for not maintaining a 100-foot separation between new water mains and the sanitary landfill. The Division recommends that mitigation measures be individualized to their particular purpose and feels that it is not appropriate to apply landfill closure mitigations as mitigations for failure to meet separation requirements.

The Division is interested in learning more about the landfill leachate system; specifically, how the leachate system was built and how it will drain. The Division is also interested in any proposed modifications to the leachate system and the rationale behind the modifications.

Part of the proposal included reconstruction of the clay cap. The clay cap is a low permeability layer over all landfill refuse, and maintaining its integrity is an integral part of preventing contamination. Please explain how the City will verify the construction and integrity of the clay cap following construction activities.

Due to the construction style and location of the proposed project, the Division has concerns regarding the impact of a major seismic event. The Division is interested in the susceptibility of the proposed development to a major seismic event and how both the utilities and mitigation measures will be designed to withstand a seismic event.

The proposed design appears to rely heavily on the membrane functioning as a barrier; however, the proposal does not appear to include a means to verify the integrity of the membrane. Please demonstrate how the City will verify the integrity of the membrane both during construction and throughout the lifetime of the project. Additionally, please document what actions the City would take should the membrane fail.

The proposal should explain how surface water infiltration would be controlled, particularly around the membrane. Provide information explaining the effect of surface water infiltration on the membrane and other materials that are part of the proposed design. The City should also explain what measures will be taken to counter any negative effects of surface infiltration.

If the Division considers the proposed design of the project favorably, additional plans and contingencies must be prepared, funded, and implemented for the life of the project.

The Division is interested in the long-term viability of the development. Specifically, how land settlement over an extended period of time may affect the pipelines and connections, how they will be protected, and what plans will be put in place if there is differential settlement that affects the pipelines. Also, please provide information explaining the impact to the membrane during any repair work to nearby pipelines and how the integrity of the membrane will be maintained both during and after repairs.

Due to the long-term nature of this development, and the on-going operational impact of the proposal, please provide a post-construction management plan. Specifically, describe how resources, expertise, and finances will be assured for the longevity of maintaining this development. The City should demonstrate adequate technical, managerial, and financial capacity to maintain City Place. An Operations Plan should be created to deal with the unique situation at the City Place development, which differs from the rest of the City's water system. The City will also need to ensure that appropriately trained staff is available. Due to the financial responsibility

represented by this project, the City will need to identify a separate, dedicated funding source to operate and maintain the project.

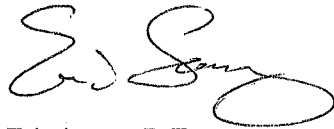
A contingency plan will also need to be established in the event of catastrophic failures that may occur during the life of the project such as seismic events, backflow incidents, or main breaks. Also, include how an incident within the City Place project may affect the rest of the City's water system and any proposed actions the City would take.

In order to assist the City with the review of the City Place project, the Division highly encourages the City to convene an Expert Panel to get specialized input and opinions from experts in a variety of fields in order to help the City to put forth the best possible alternative and help protect their community from potential harm.

Based on a review of the documentation provided thus far, it appears the only unique mitigation measure for failing to meet the 100-foot separation requirement is the proposed membrane. The City has not adequately demonstrated proposed mitigations to allow a waiver of Section 64572(f), Title 22, CCR. This project appears to not be in the best interest of public health and insufficient mitigation measures have been proposed in order to ameliorate the risks to the public drinking water system associated with this project.

If you have any questions regarding this letter, please feel free to contact me at (510) 620-3453.

Sincerely,

A handwritten signature in black ink, appearing to read "Eric Lacy", with a stylized flourish at the end.

Eric Lacy, P.E.
District Engineer, Santa Clara District
Division of Drinking Water
State Water Resources Control Board

cc: Santa Clara County Environmental Health Department

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April 29, 2016

VIA E-MAIL AND FEDERAL EXPRESS

Debby Fernandez, Associate Planner
(DFernandez@SantaClaraCA.gov)
City of Santa Clara
Planning Division
1500 Warburton Avenue
Santa Clara, CA 95050

Sharon Goei, Acting Director of Planning & Inspection
(SGoei@SantaClaraCA.gov)
City of Santa Clara
Planning Division
1500 Warburton Avenue
Santa Clara, CA 95050

Re: *City Place Santa Clara Project*
Environmental Impact Report SCH No. 2014072078
Planning/CEQA File No. PLN2014-10554/CEQ2013-01180

Dear Ms. Fernandez:

We have been retained by the City of San José in the above-referenced matter. San José appreciates the opportunity to comment on the Final Environmental Impact Report ("Final EIR") for the proposed City Place Santa Clara Project ("Project"). San José has reviewed the Project from the outset, and has submitted comments on the Draft Environmental Impact Report released in 2015 ("Draft EIR"), as well as on the previous environmental documents prepared for the Project.¹

¹ See Comment Letters A17a and A17b from Harry Freitas, Director, Department of Planning, Building & Code Enforcement, dated November 23, 2015, and incorporated in

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San José is gravely concerned about the Project's numerous and far-reaching significant, unavoidable environmental effects on a site currently planned for recreational use through 2035. The growth that would result from the Project is not envisioned in the City's recently adopted General Plan, or in *Plan Bay Area*, the Bay Area's Sustainable Communities Strategy ("SCS") under SB 375, adopted in 2013. Instead of a golf course, the City now proposes to approve a massive commercial center that will flood the area with traffic, clogging roadways and intersections surrounding the Project site, including North San José.

There is nothing remotely sustainable or green about the Project as proposed, which would add more than 140,000 daily vehicle trips to a transportation network that is already bursting at the seams, and would dump thousands of additional vehicles into the City of San José without proposing feasible mitigation measures. By adding almost 20 times more jobs than housing units, the Project would conflict with numerous General Plan policies designed to reduce the City's existing jobs/housing imbalance. By focusing on commercial and retail uses over housing, the Project would also conflict with the balanced growth objectives of *Plan Bay Area*, and its mandate to reduce greenhouse gas emissions from vehicle use. The environmental consequences of this unplanned growth are severe. The Final EIR identifies 28 significant unavoidable impacts, ten of which are cumulative, including impacts to traffic, air quality, greenhouse gas emissions, and noise. The Final EIR also recognizes that, due to the unplanned nature of the development, the Project's induced housing demand would have to be borne by other jurisdictions in the region, including the City of San José. In short, while the Project would bring more than \$80 million in annual revenue to the City of Santa Clara, its impacts would be borne by the residents of neighboring San José. The City's consideration of a Project that in one fell swoop would bring tens of thousands of people and cars to a site planned for recreational use turns responsible planning on its head.

To address the Project's General Plan inconsistency, the City proposes to amend the General Plan to add a new land use designation designed to accommodate the Project. This amendment does nothing to cure the Project's inconsistency with General Plan policies balancing jobs and housing or the resulting severe secondary environmental effects. Equally problematic, the limited scope of the amendment creates internal inconsistencies, resulting in a legally inadequate General Plan.

The City of San José opposes any action on the Project until these issues are resolved, and requests that the City delay further consideration of this Project until it cures the Project's General Plan inconsistencies, and a legally adequate EIR is prepared

full by this reference. See also Comment Letter A1 from the Norman Y. Mineta San José International Airport, dated October 27, 2015.

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in compliance with CEQA. As currently designed and drafted, the Project and the EIR suffer from the following legal flaws:

- The Project is fundamentally inconsistent with General Plan policies designed to promote a jobs/housing balance.
- The General Plan Amendment proposed for the Project renders the General Plan internally inconsistent.
- The Final EIR fails to identify feasible mitigation measures to reduce significant land use impacts, and associated significant secondary impacts.
- The Final EIR's evaluation of Project area intersections is under-inclusive and fails to evaluate significant traffic impacts in the City of San José.
- The fee-based transportation mitigation measures in the Final EIR are not based on an actual plan of mitigation that will be implemented, nor do they accurately estimate total costs or Project fair share costs for mitigation measures within San José.
- The Project air quality analysis fails to explain how air pollutants emitted by the Project, which greatly exceed Bay Area Air Quality Management District ("BAAQMD") thresholds, would impact public health.
- The Final EIR fails to incorporate feasible mitigation measures to reduce the Project's significant air quality impacts, and improperly rejects a measure requiring the Project sponsor to purchase emissions offsets.
- The analysis of greenhouse gas emissions fails to analyze the impacts of sea level rise on the Project's future users and residents.
- The Final EIR's consideration of the Santa Clara Valley Habitat Conservation Plan/Natural Community Conservation Plan is legally inadequate and fails to acknowledge the Project's location in the Plan's extended study area.
- The biological resources analysis understates impacts to burrowing owl and fails to adequately analyze the effects of Project nitrogen deposition on grassland habitat.

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- The Final EIR fails to consider a reasonable range of alternatives, omitting alternatives that would reduce the Project's significant effects while meeting its basic objectives.
- The Final EIR's project description fails to include the whole of the action, resulting in an understatement of Project impacts.

I. THE PROJECT IS INCONSISTENT WITH THE CITY OF SANTA CLARA'S GENERAL PLAN

The majority of the Project site is designated in the 2010-2035 General Plan as Parks/Open Space and assumed to operate as a golf course through 2035. (Draft EIR at 3.1-2.) The 9.16 million square feet of new development proposed by the Project, equal to almost 160 football fields of development, and the 25,270 new employees that would result, is not part of any planned development identified in the City's General Plan. As acknowledged in the Final EIR, the Project would be inconsistent with goals and policies in the City's General Plan that promote a jobs/housing balance and "would exacerbate the city's job/housing imbalance significantly" by proposing development that would create 24,760 net new jobs but at most 1,360 residential units (Scheme A proposes to house 3,270 residents). (See Draft EIR at 3.1-20; Table 3.12-6.) This exacerbated imbalance would lead to other General Plan inconsistencies, including inconsistency with Housing Element policies, policies on reducing VMT and traffic congestion, as well as policies promoting local and regional air quality and reduced GHG emissions.

The Project proposes a new General Plan land use designation – "Urban Center/Entertainment District" – intended for local and regional scale destinations that feature a mixture of uses, including commercial retail and services, urban residential, hotel, and employment generating uses. (Draft EIR at 2-3.4.) The City also proposes to amend the Climate Action Plan element of the General Plan to reflect the new land use designation. (Draft EIR at 2-34.) Unfortunately, the City stops far short of its legal mandate to maintain an internally consistent General Plan.

A. General Plan Consistency Requirements

The California Supreme Court has held that the General Plan is the "constitution for all future development." (*Leshar Communications, Inc. v. City of Walnut Creek* (1990) 52 Cal.3d 531, 540; see also *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 570-71; *Friends of Lagoon Valley v. City of Vacaville* (2007) 154 Cal.App.4th 807, 815 [General Plan provides "a charter for future development" and sets forth "a city or county's fundamental policy decisions about such development."].) Development projects can only be approved when they are consistent with the General

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Plan (“vertical consistency”). (See *Friends of Lagoon Valley*, 154 Cal.App.4th at 815; *Citizens of Goleta Valley*, 52 Cal.3d at 570.)

The General Plan also must be internally consistent. (Gov. Code § 65300.5.) If not, the General Plan is legally inadequate and the required finding of consistency for land use approvals cannot be made. (*Garat v. City of Riverside* (1991) 2 Cal.App.4th 259, 286 [overruled on other grounds in *Morehart v. County of Santa Barbara* (1994) 7 Cal.4th 725, 743 n.11].)

B. The Project is Inconsistent with the General Plan

As proposed, the Project is inconsistent with numerous General Plan policies designed to improve the jobs/housing balance. Santa Clara’s charter city status does not exempt it from the Government Code’s vertical consistency requirements. (See, e.g., Gov. Code §§ 66473.5; 66474(a); 65867.5.)

1. The Project Would Negatively Impact the City’s Existing Jobs/Housing Imbalance Resulting in Fundamental General Plan Policy Inconsistencies

The City of Santa Clara has an existing and substantial jobs/housing imbalance. As of 2008 (existing conditions at the time the City’s General Plan was prepared), Santa Clara had 106,680 jobs and only 44,166 housing units, a jobs/housing ratio of 2.42. (General Plan Table 5.2-1, Ch. 5, p. 6). With construction of the Project, the jobs/housing ratio would increase to 2.73 by 2035, significantly worse than the predicted ratio without the Project. (Draft EIR, Table 3.1-3, at 3.1-11.) Per Association of Bay Area Government’s (“ABAG”) forecasts, the ratio with the Project would be even worse – 3.15 in 2030 and 3.04 in 2040.²

According to the City’s General Plan Housing Element, “[a]t a regional scale, a jobs-housing imbalance results in longer commutes and increases traffic congestion and transportation-related environmental impacts.” (General Plan, p. 8.12-25.) This is particularly true in the Bay Area, a region that has experienced robust job growth without

² Draft EIR Table 3.1-6 at 3.1-13 (Source: ABAG, Projections 2013, <http://www.abag.ca.gov/planning/housing/projections13.html>). ABAG’s 2000-2025 growth projections for Santa Clara County show the City of Santa Clara with a 2025 jobs/housing ratio of 3.35. San José’s ratio is projected to be 1.61. (See http://www.abag.ca.gov/planning/interregional/pdf/projections/IRP_Projections-Santa_Clara_County.pdf, attached as Exhibit A).

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commensurate growth in housing units.³ The City's Housing Element acknowledges that "[l]ocal jurisdictions can help address this issue by attempting to strike a local balance between local jobs and housing." Consistent with this statement, the General Plan includes critical policies, set forth below, designed to improve the City's jobs/housing imbalance.

Jobs in Santa Clara are projected to increase by 29 percent between 2010 and 2040. (General Plan Housing Element, Table 8.12-3-8, p. 8.12-26.) "These employment projections suggest a need for housing to serve a growing and diverse workforce." (General Plan Housing Element, p. 8.12-26.) Contrary to the comprehensive planning process undertaken by the City to prepare the 2010-2035 General Plan, however, the unplanned Project proposes development that would create almost 25,000 jobs, but a maximum of only 1,360 housing units. This would negatively impact the City's jobs/housing balance, and would obstruct the attainment of General Plan goals and policies intended to improve it, in violation of the Government Code's General Plan consistency requirements. (See Gov. Code §§ 66473.5; 66474(a); 65867.5.)

The Project as proposed would conflict with the following fundamental General Plan goals and policies (emphases added):

- **Goal 5.3.1-G3:** Development that *minimizes vehicle miles traveled*, capitalizes on public investment in transit and infrastructure, and is compatible with surrounding uses.
- **Policy 5.3.1-P18:** Meter net new industrial and commercial development excluding "Approved/Not Constructed and Pending Project" identified on Figure 2.1-1 so as not to exceed 2.75 million square feet in Phase I, 5.5 million square feet in Phase II and 5.5 million square feet in Phase III in order to maintain the City's jobs/housing balance and ensure adequate infrastructure and public services.
- **Policy 5.3.1-P29:** Encourage design of new development to be compatible with, and sensitive to, nearby existing and planning development, consistent with other applicable General Plan policies.

INCONSISTENT: The Project would increase VMT by creating jobs without providing local housing for workers, an approach that leads to longer commutes, traffic

³ See, e.g., "Job growth, housing affordability, and commuting in the Bay Area," A report prepared for the Bay Area Regional Prosperity Plan Housing Working Group (May 29, 2015) available at: http://planbayarea.org/pdf/prosperity/research/Jobs-Housing_Report.pdf, attached as Exhibit B.

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congestion and increases in air quality pollution and GHG emissions. The Project would result in over nine million square feet of unplanned development, almost twice the development allowed in either General Plan Phase II or Phase III, which conflicts with the policy's fundamental purpose of imposing commercial caps to maintain the jobs/housing balance. The new and unplanned development contemplated by the Project would create traffic congestion and attendant air quality and GHG impacts on surrounding communities, incompatible with existing development and in conflict with applicable General Plan policies.

- **Goal 5.3.2-G4:** Respect for the *existing character and quality of adjacent neighborhoods from new residential development* and redevelopment.
- **Policy 5.3.3-G4:** New commercial uses that *respect surrounding neighborhoods and are sited to reduce potential land use conflicts*.

INCONSISTENT: The vehicle trips and congestion that would result from the unplanned Project development, in addition to criteria air pollutant emissions, TACs and GHG emissions, would negatively impact the existing character and quality of adjacent neighborhoods.

- **Goal 5.3.5-G3:** Higher-intensity employment centers located near major transit services and major transportation corridors *to reduce vehicle miles traveled*.
- **Goal 5.8.1-G3:** Transportation networks that promote a *reduction in the use of personal vehicles and vehicle miles traveled*.
- **Policy 5.8.1-P4:** Expand transportation options and improve alternate modes that *reduce greenhouse gas emissions*.
- **Policy 5.8.1-P5:** Work with local, regional, State and private agencies, as well as employers and residents, to encourage programs and services that *reduce vehicle miles traveled*.

INCONSISTENT: Because Project jobs far exceed Project housing, commute lengths to new Project jobs would increase use of personal vehicles and resulting VMT, resulting in traffic, air quality and GHG impacts. The Project would result in more than 140,000 daily vehicle trips, and only 8,320 daily transit riders. (Draft EIR at 3.3-62.)

- **Goal 5.8.3-G2:** A transit network that supports a *reduction in automobile dependence* for residents, employees and visitors.
- **Policy 5.8.3-P9:** Require new development to incorporate *reduced on-site parking* and provide enhanced amenities, such as pedestrian links, benches and lighting, in order to encourage transit use and increase access to transit services.

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INCONSISTENT: As discussed above, the Project would result in VMT increases. The Project proposes parking to meet the needs of all Project employees, residents and visitors, as well as providing opportunities for supplemental parking for stadium events, thereby promoting the use of single-occupancy vehicles.

- **Goal 5.8.5-G1**: Transportation demand management programs for all new development in order to *decrease vehicle miles traveled* and single occupant vehicle use.
- **Policy 5.8.5-P5**: Encourage transportation demand management programs that provide incentives for the use of alternative travel modes *to reduce the use of single-occupant vehicles*.

INCONSISTENT: Although the Project proposes to include a TDM program, many of the measures are not enforceable, and the program would not mitigate the Project's traffic impacts, including increases in VMT, resulting from the jobs/housing imbalance. The Project would increase the use of single-occupant vehicles.

- **Policy 5.10.1-P4**: *Protect all healthy cedars, redwoods, oaks, olives, bay laurel and pepper trees of any size, and all other trees over 36 inches in circumference measured from 48 inches above-grade on private and public property as well as in the public right-of-way.*

INCONSISTENT: The Project proposes to remove almost 2,000 trees, many of which are protected, in direct conflict with this policy. Measures requiring the developer to plant other trees do not rectify the inconsistency.

- **Goal 5.10.2-G1**: *Improved air quality* in Santa Clara and the region.
- **Goal 5.10.2-G2**: *Reduced greenhouse gas emissions* that meet the State and regional goals and requirements to combat climate change.
- **Policy 5.10.2-P2**: Encourage development patterns that *reduce vehicle miles traveled and air pollution*.

INCONSISTENT: The Project would significantly increase VMT due to the need to commute to new Project jobs and would result in significant unavoidable air quality and GHG impacts.

- **Policy 5.10.2-P5**: *Promote regional air pollution prevention plans* for local industry and businesses.

INCONSISTENT: The Project as proposed would significantly worsen local and regional air quality.

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2. The Project is Fundamentally Inconsistent with the City's Housing Element and Violates the Regional Welfare Doctrine

The Final EIR acknowledges the Project's inconsistency with Housing Element Policy B-5, which mandates that the City mitigate the jobs/housing ratio impacts created by new development. The Project falls woefully short of this policy mandate by proposing to create almost *20 times more jobs* than housing units. Notably, only 13.5 percent of the total housing demand generated by the Project could occur within the City under its current General Plan. (Draft EIR at 3.12-11.) The impacts of the Project's induced housing demand on San José would be untenable, particularly given San José's projected jobs/employed resident ratio of 0.8-0.9.⁴ Moreover, the City's approval of a project that shifts the burden of providing new housing onto other cities runs afoul of the regional welfare doctrine, which requires municipalities to evaluate more than their local self-interest in enacting land use regulations. (See, e.g., *Associated Home Builders of Greater Eastbay, Inc. v. City of Livermore* (1976) 18 Cal.3d 582, 607 ["if, as alleged here, the ordinance may strongly influence the supply and distribution of housing for an entire metropolitan region, judicial inquiry must consider the welfare of that region."]; *Arnel Development Co. v. City of Costa Mesa* (1981) 126 Cal. App. 330, 338-340.) As proposed, the Project provides great financial benefits to Santa Clara, to the environmental detriment of neighboring jurisdictions.

The growth is also not anticipated in the City's Regional Housing Needs Allocation ("RHNA") for the current eight-year period ending in 2022.⁵ Based on information provided by the City of Santa Clara, ABAG identified 4,093 units as the City's fair share of the regional housing need for the 2014 to 2022 period. (Draft EIR at 3.12-2; General Plan Housing Element, Table 8.12-6-2.) However, this allocation did not take into account the job growth associated with the Project, its negative impact on the jobs/housing balance, or the fact that Project job growth will take place in non-PDA locations.⁶

⁴ Envision San José 2040 General Plan, Chapter 1, at 61-62.

⁵ The RHNA was prepared by ABAG as part of Plan Bay Area, available at: http://files.mtc.ca.gov/pdf/Plan_Bay_Area_FINAL/Plan_Bay_Area.pdf.

⁶ The EIR claims that Project Parcel 5 and the southern edge of Parcel 4 are within a PDA (Draft EIR at 3.1-5), but that information conflicts with documentation from both ABAG and VTA, which list El Camino Real Focus Area and Santa Clara Station Focus Area as the only City of Santa Clara PDAs, neither of which includes a portion of the Project Site. See Priority Development Areas, available at: <http://abag.ca.gov/priority/index.html#pda> (via GIS) or <http://www.abag.ca.gov/abag/events/agendas/e091715a-Item%2008,%20Attachment%201%20List%20PDAs%202015.pdf>, attached as Exhibit

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C. The General Plan Amendment Proposed for the Project Does not Cure the Project's General Plan Inconsistencies and Results in Major Internal Inconsistencies

Santa Clara's proposal to approve an unplanned 9.16 million gross square foot project flies in the face of responsible local and regional planning. At minimum, the City must consider a comprehensive amendment to the General Plan that proposes additional residential development to offset the Project's job growth. The City's proposal to add a new mixed-use land use designation to accommodate the Project in an area currently planned for open space does not accomplish this goal, and falls far short of the City's legal mandate to ensure internal consistency. (Gov. Code § 65300.5; see also *Concerned Citizens of Calaveras County v. Board of Supervisors* (1985) 166 Cal.App.3d 90 [land use element containing proposals expected to result in increased population was inconsistent with circulation element that failed to provide remedies for predicted traffic congestion].)

D. The Project's General Plan Inconsistencies Would Lead to Significant Local and Regional Impacts

As discussed in detail in the remainder of this letter, the Project's General Plan inconsistencies, including the increase in the City's jobs/housing imbalance, would lead to many significant local and regional impacts, including huge increases in VMT and traffic congestion and associated increases in emissions of criteria pollutants and TACs, as well as GHG. The EIR identifies 28 significant unavoidable impacts, ten of which are cumulative. (Draft EIR at 5-2 - 5-4.) Additional feasible mitigation measures or alternatives must be implemented to reduce or avoid these significant effects.

E. The Final EIR Fails to Identify Feasible Mitigation Measures to Reduce the Project's Significant Land Use Impacts

In response to the numerous General Plan inconsistencies created by the Project (which lead to numerous significant secondary environmental effects), the Final EIR proposes Mitigation Measure LU-1.1. This measure requires the City to *explore* permitting higher residential densities in the City, as well as allowing residential land uses in non-residential areas, during the next General Plan Update cycle. (Draft EIR at

C; Priority Development Areas in Santa Clara County, available at: <http://www.vta.org/sfc/servlet.shepherd/version/download/068A0000001FbMu>, attached as Exhibit D. Similarly, San Jose's County PDA map includes only two Santa Clara PDAs. (Priority Development Areas in Santa Clara County, available at: <http://www.sanjoseca.gov/DocumentCenter/View/735>, attached as Exhibit E.)

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3.1-15, emphasis added.) It further requires the City to explore permitting up to 11,000 units. (Final EIR at 3-4.) This measure is impermissibly deferred. (CEQA Guidelines § 15126.4(a)(1)(B).) The Final EIR concedes as much, concluding that the impact would remain significant and unavoidable because “it cannot be stated with certainty whether and when the mitigation measure can be implemented.” (Draft EIR at 3.1-15.)

A fundamental purpose of an EIR is to identify ways in which a proposed project’s significant environmental impacts can be mitigated or avoided. (Pub. Resources Code §§ 21002.1(a), 21061.) To implement this statutory purpose, an EIR must describe feasible mitigation measures that can minimize the project’s significant environmental effects. (CEQA Guidelines §§ 15121(a), 15126.4(a).) Rather than impermissibly deferring consideration of the Project’s severe secondary impacts to the next General Plan update cycle in 2035, which is years away, the City should consider approving a General Plan amendment as part of the Project. This amendment should incorporate the recommendations set forth in MM LU-1.1 regarding increased residential uses in the City, and require consideration of such uses concurrently with the Project.

As a starting point for such a General Plan amendment, the Final EIR identifies several locations in the city that *could be* developed for residential uses in the future, and that *could* accommodate approximately 9,576 additional residential units that were not programmed in the General Plan or considered in the General Plan EIR.⁷ (Final EIR at 3-3, 5-21.) As noted above, only 13.5 percent of the total housing demand generated by the Project could occur within the City under its current General Plan, and these additional units would help to offset the Project’s induced demand of 15,408 units which would otherwise have to be distributed throughout the region.⁸ (Draft EIR at 3.12-11.) Inclusion of a General Plan amendment identifying additional residential uses Citywide would not only reduce the Project’s significant land use impacts, it would also reduce other significant unavoidable impacts resulting from the increased jobs/housing imbalance, including cumulative traffic, air quality, GHG, noise and population and housing impacts, as well as the Project’s effect on induced growth in the region and beyond. (Draft EIR at 4-6.) The City should amend its General Plan now to facilitate development of these (and other) residential units and mitigate the Project’s significant effects.

⁷ The Draft EIR identified 6,640 units that could be developed in the future to offset the Project’s housing impact. The Final EIR identifies 9,576 units, but many of the projects it relies upon for this figure are speculative, at best. (Master Response 1, Final EIR at 3-3.)

⁸ The Final EIR’s discussion of growth inducing impacts states that the Project would create a demand for roughly 17,873 units outside the City. (Draft EIR at 4-6.) The reason for this discrepancy is not readily apparent in the document.

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F. The Final EIR Does Not Remedy the Deficiencies of the Draft EIR's Land Use Analysis or Adequately Respond to Land Use-Related Comments

Mitigation Measure LU-1.1 does not meet CEQA's requirements for mitigation measures and the Final EIR does not remedy that deficiency, despite comment letters from San José and other Draft EIR commenters which informed the City that the mitigation measure, as drafted, was inadequate. (See, e.g., Comment Letter A17a, p. 2.) In response to these comments, the Final EIR restates the Draft EIR's conclusion that implementation of the measure is uncertain, and adds a requirement that the City "explore permitting up to 11,000 units." (Final EIR Master Response 1 at 3-4.) Contrary to the Final EIR's claims, this revision does nothing to remedy the legal inadequacy of Mitigation Measure LU-1.1. San José continues to urge the City to incorporate the requirements of LU-1.1 into a General Plan amendment to be considered as part of the Project.

II. THE FINAL EIR'S ANALYSIS OF TRAFFIC IMPACTS IS LEGALLY INADEQUATE

The Project would add more than 140,000 daily vehicle trips to already congested area roadways and intersections. The Final EIR inadequately addresses the Project's transportation impacts on the City of San José, which shares a border with the Project site, and fails to propose measures to avoid or minimize the Project's significant effects. To the extent that the Final EIR's air quality, noise and climate change impact analyses rely on the inadequate traffic analysis, they too, are inadequate.

A. The Final EIR's Evaluation of Project Area Intersections is Under-Inclusive and Results in the Failure to Evaluate Significant Traffic Impacts

Based on the Valley Transportation Authority ("VTA") Transportation Impact Analysis Guidelines (10 peak hour vehicles per lane) and the data included in the Final EIR appendices, the Final EIR should have evaluated impacts on 12 additional intersections. These intersections include:

- North First Street and Old Bayshore Highway
- East Brokaw Road and I-880 Southbound Ramps
- North First Street and Component Drive
- West Trimble Road and Orchard Parkway

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- North First Street and Plumeria Drive
- Zanker Road and Plumeria Drive
- North First Street and River Oaks Parkway
- Zanker Road and River Oaks Parkway
- North First Street and Rio Robles
- East Trimble Road and Junction Avenue
- Old Bayshore Highway and I-880 Southbound Ramps
- Airport Parkway and Old Bayshore Parkway

City of San José analyses indicate that impacts at the intersection of North First Street and Old Bayshore Parkway would be significant under existing conditions with the Project, and therefore require additional fair share mitigation.⁹ This is a new significant impact that was not analyzed in the Draft EIR and would require that the document be recirculated unless the impact is mitigated.

B. The Transportation Mitigation Measures Lack Sufficient Information to Demonstrate That They Would be Financially Feasible and Effective

Fee-based mitigation measures must be based on “an actual plan of mitigation” that will be implemented. (*Anderson First Coalition v. City of Anderson* (2005) 130 Cal.App. 4th 1173, 1187.) The Final EIR does not present an actual plan of mitigation showing the accurate cost of each transportation mitigation measure and the proposed “fair share” dollar amounts to be paid by the Project applicant for each mitigation measure. The roadway project cost information included in Final EIR Table D-1 is incomplete, and sources of the estimates are not provided. (Draft EIR Appendix 3.3D.)

By calculating the Project’s fair share as the Project’s percent contribution to *total* traffic at a given facility for many mitigation measures (see, e.g., Draft EIR Table 3.3-20), the Final EIR incorrectly assumes that both existing and future roadway users are financially responsible for Project mitigation measures. Only new roadway users contribute to the cost of mitigation measures. The Final EIR’s fair-share discussion and calculations should be based on the Project’s percent contribution to *added* traffic.

⁹ The impact is significant based on the Final EIR significance criteria for San José intersections. Unacceptable operations (LOS F) at this intersection would be exacerbated because critical delay would increase by more than 4 seconds and the V/C ratio would increase by more than 0.01.

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The Final EIR refers to the Valley Transportation Plan (“VTP”) 2040, published in October 2014, for cost estimates for large-scale mitigation measures that were also included on the VTP project lists. On October 1, 2015, the VTA Board of Directors approved the Envision Silicon Valley Preliminary Project Lists and updated the cost estimates to 2017.¹⁰ The Final EIR’s cost estimates for improvements included in these Project Lists should be updated to reflect 2017 estimates.

C. The Final EIR Does Not Present Accurate Estimates of Total Costs and Project Fair Share Costs for City of San José Transportation Mitigation Measures

The Final EIR fails to clearly present Project applicant responsibilities for City of San José transportation mitigation measures. In particular, it does not present accurate estimates of total costs and Project fair share costs for transportation mitigation measures within San José’s boundaries.

For mitigation measures included in the North San José area, an accurate fair share for the Project would be the ratio of Project trips to all new trips, which would include both the Project and other future developments. Although the Final EIR acknowledges that the fair share for North San José area mitigation measures would be based on the Project’s percent contribution to added traffic, this intent is not clearly demonstrated in the Final EIR’s mitigation measure tables or text. (Draft EIR at 3.3-92.) The Final EIR’s reliance on North San José traffic impact fees as mitigation for the Project’s North San José impacts is misplaced. The North José Traffic Impact Fee Plan did not include Project traffic because the Project was not included in the Santa Clara General Plan. It is not intended to provide mitigation measures for the Project.

The Final EIR should present accurate estimates of the Project’s financial obligations for mitigation measures within San José boundaries, along with commitments that these obligations will be met. Based on the updated 2017 cost estimates for VTP projects as well as the more accurate fair-share calculations discussed above, San José estimates that the Project would be responsible for \$45.3 million to either fully construct or pay its fair share for improvements on local streets and County expressways at approximately 14 locations.¹¹ This figure includes additional fair share mitigation for the

¹⁰ http://vtaorgcontent.s3-us-west-1.amazonaws.com/Site_Content/bod_100115_agendapacket.pdf, Agenda Item 6.10, attached as Exhibit F.

¹¹ The \$45.3 million is a preliminary figure that does not account for administrative costs or construction index changes. It also does not account for fair-share contribution toward the Project’s cumulatively considerable contributions to cumulative impacts, since the

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significant impact at North First Street and Old Bayshore Parkway that was omitted from the Final EIR.

The City of Santa Clara has conditioned past projects with San José transportation impacts so that fair share contributions could be used only for construction costs for San José roadway improvements within five years of project approval. To more effectively mitigate impacts, the Final EIR should specify that Project fair share contributions for San José improvements can also cover the costs of preliminary engineering and design, as well as construction extending beyond five years after Project approval.

D. The Phasing and Funding of Transportation Mitigation Measures Should be Described in Detail

The Final EIR includes separate traffic impact and mitigation analyses for the Project as a whole and for Phases 1, 2, and 3, but does not discuss how implementation of transportation mitigation measures would be integrated with Project phasing, i.e., which traffic mitigation measures would be required to be implemented at certain points during construction of the Project.

More broadly, the Final EIR's discussion of Project phasing lacks sufficient detail to determine what specific improvements would be required for each phase of Project construction. (See Draft EIR Table 2-11, at 2-31, acknowledging that the identified phasing is hypothetical.) Without accurate information about phasing, particularly given the magnitude of the Project, it is impossible to determine whether the impacts of the Project have been adequately analyzed and would be adequately mitigated. San Jose requests that the project description be revised to include a detailed phasing schedule, and that the EIR, including the traffic analysis, be revised to identify which improvements will occur coterminous with each phase of Project development.

E. The Transportation Impact Analysis Methodology is Flawed

The background conditions in the Final EIR assume a North San José roadway network that includes future improvements that are not included as North San José Phase I improvements. The background conditions, therefore, are not based on substantial

Final EIR does not provide sufficient information to make that determination. San José estimates that the Project's fair share contribution could increase total Project responsibility for traffic improvements by approximately \$10 million. San José can provide a detailed spreadsheet supporting this cost estimate upon request. (See Exhibit H to this comment letter for additional details on Project fair share.)

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evidence and likely underestimate intersection impacts, for example, at the Montague/Trimble Flyover and Montague/McCarthy-O'Toole Square Loop Interchange.

Cumulative transportation impacts and required mitigation measures are also underestimated because the Final EIR used ABAG growth projections rather than San José General Plan growth projections. For example, the ABAG projections for San José assume a jobs/housing mix which would result in lower traffic volumes than the jobs/housing mix planned for in the San José General Plan.¹² The Final EIR omits analysis of the following CEQA Guidelines significance criterion: “Would the project conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance of such facilities?” The regulatory setting discusses applicable VTA and City of Santa Clara plans, policies and programs. Applicable San José plans, policies, and programs (e.g., from the Envision San José 2040 General Plan) should be added to this discussion, and the impact analysis should determine whether conflicts with any of these plans, policies, or programs would cause significant impacts to public transit, bicycle, or pedestrian facilities.

F. The Final EIR Does Not Adequately Analyze the Project’s Transit-Related Impacts

The Final EIR lacks sufficient information with which to analyze the Project’s connections to transit, and fails to provide actual details or design plans to support its conclusions that the Project will support greater transit ridership.¹³ As currently configured, for example, the Great America/Santa Clara station, served by Capitol Corridor and Altamont Commuter Express (“ACE”) trains, is not designed in a manner to support the passenger rail transit service as described in the Final EIR. (Draft EIR starting at 3.3-168.) The Final EIR also fails to demonstrate whether and how active

¹² See Envision San José 2040 General Plan, which supports both job and housing growth capacity, available at: <http://www.sanjoseca.gov/DocumentCenter/Home/View/474>. Total plan growth capacity (growth above existing) is 470,000 jobs and 120,000 dwelling units. (San José General Plan, Appendix 5, p. 3.) See also Memorandum from Mayor Sam Liccardo to City Council re North San José Area Development Policy, discussing development of a framework for 1,500 additional units of housing in North San José, available at: http://sanjose.granicus.com/MetaViewer.php?view_id=&event_id=2131&meta_id=567696; City of San José City Council Agenda Synopsis, April 12, 2016, Item 4.1, attached as Exhibit G.)

¹³ See Comment Letter A13 from Jim R. Allison, Manager of Planning, Capitol Corridor Joint Powers Authority, dated November 23, 2015, and incorporated in full by this reference.

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transportation connections (bicycling and walking) to and from the Project site to the Great America station would be developed, and there are currently no such connections due to functional incompatibility with existing land uses. Given that the use of transit is highly affected by design and connectivity, the Final EIR, as drafted, does not sufficiently describe how the Project meets the EIR's objective to promote transit-oriented infill development.

The Final EIR also fails to demonstrate how the existing employer shuttle system will be affected by Project construction and modifications to street design. For example, the detail provided in the roadway modification figures is not sufficient to determine whether the Capitol Corridor and ACE shuttles, which are a key party of ridership viability, would be affected. (See, e.g., Figure 3.3-15.) Employer shuttles would also be negatively affected by degraded LOS caused by the Project. As mitigation for this impact, employer shuttles should be permitted to use a connector road from Stars and Stripes Drive to Marie P Bartolo Way. Signal preemption devices should also be investigated and documented to mitigate impacts on shuttle travel time.

Impact TRA-9 concludes that the Project would generate public transit ridership that could use available transit capacity and that no mitigation would be required. (Draft EIR at 3.3-168.) However, the Final EIR uses incorrect weekday peak hour load factors for ACE. Current peak-hour ACE load factors between Fremont and Pleasanton are typically upwards of 80 percent and will clearly be impacted by the Project.¹⁴ The Final EIR does not provide a good-faith reasoned response to this comment. (See Response to Comment A9.8, Final EIR at 4-45.)

G. The Final EIR Does Not Remedy the Deficiencies of the Draft EIR's Traffic Analysis or Adequately Respond to San José's Traffic-Related Comments

San José's comments on the Draft EIR recommended that the traffic analysis utilize updated transportation standards and land use assumptions. The comments also recommended that the Project pay a fair-share contribution toward roadway and intersection improvements in North San José, and detailed a number of specific improvements that would be needed to address Project traffic. The Final EIR's responses to these comments do not represent a good faith reasoned response as required by CEQA. (See Response to Comment A17b.) San José's additional technical comments are attached to this letter as Exhibit H.

¹⁴ Comment Letter A9 from Stacey Mortensen, Executive Director, San Joaquin Regional Rail Commission, dated November 20, 2015, and incorporated in full by this reference.

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III. THE FINAL EIR'S ANALYSIS OF AIR QUALITY IMPACTS FAILS TO MEET THE REQUIREMENTS OF CEQA

The Project would result in numerous significant air quality impacts, several of which the Final EIR determined to be unavoidable. These significant unavoidable impacts include impacts from reactive organic gases (ROG), oxides of nitrogen (NO_x) and particulate matter (PM_{2.5}) (Impacts AQ-1, AQ-3 and AQ-4.) The Final EIR also disclosed significant unavoidable cumulative air quality impacts related to criteria pollutants and health risk (Impacts C-AQ-1 and C-AQ-2.) The Final EIR concedes that long-term operational emissions generated by the Project would “far exceed” BAAQMD’s thresholds of significance, even with mitigation.

Project ROG and NO_x emissions, which are precursors to ozone, are estimated to be seven to nine times higher than BAAQMD significance thresholds, which “will make it more difficult for the region to attain and maintain National Ambient Air Quality Standards (“NAAQS”).”¹⁵ (EIR, Table 3.4-9.) PM emissions would also significantly exceed BAAQMD thresholds, PM₁₀ by a multiple of almost eight, and PM_{2.5} by double. The BAAQMD notes that as the NAAQS become more stringent over time, it will be even more important for large developments like the Project to implement all feasible mitigation measures to reduce the severity of air quality impacts.

A. The Air Quality Analysis Fails to Adequately Explain how the Air Pollutants Emitted by the Project would Impact Public Health

The Final EIR discloses, in its analysis of Impacts AQ-3 and AQ-4, that Project operational criteria pollutant emissions and regional criteria pollutant emissions during construction and operation would greatly exceed BAAQMD thresholds, but fails to correlate these adverse air quality impacts to resulting adverse health impacts. This omission precludes informed public participation and decision-making, making the Draft EIR inadequate as a matter of law. (*Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1220-1221.)

The Final EIR concedes that all criteria pollutants are associated with some form of health risk. (Draft EIR at 3.4-14.) It goes on to describe, in a general manner, the health effects associated with increased emissions of ozone precursors (ROG and NO_x). The Final EIR provides other, very general, information about health impacts associated with criteria pollutants in its discussion of the Project’s environmental setting. (See Draft EIR at 3.4-6 and -7.) Despite the inclusion of general information about the adverse

¹⁵ See Comment Letter A15 from Jean Roggenkamp, Deputy Executive Officer, BAAQMD, dated November 23, 2015, and incorporated in full by this reference.

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health impacts that could result from the Project's air quality impacts, the Final EIR does not correlate the Project's massive criteria pollutant emissions with the adverse human health impacts that would be expected to result from those emissions. A reader could certainly infer from the information provided that the Project will make air quality, and therefore human health, worse, but would need more information to truly understand the nature of the impact.

For example, the information provided in the Final EIR does not enable a reader to determine whether the daily emissions resulting from the Project might require individuals with respiratory difficulties to be concerned about health effects when they go outside in the Project area. The Final EIR also provides no information about whether the Project might affect the number of days on which the NAAQS or CAAQS might be exceeded, similar to the data provided in Table 3.4.2. Regardless of how the City chooses to provide information correlating the Project's emissions with human health impacts, it must provide additional analysis in order to meet CEQA's requirements for meaningful assessment of environmental effects.

B. The Final EIR's Air Quality Mitigation Measures are Legally Inadequate

1. The Final EIR Improperly Dismisses Mitigation Measure AQ-2.4

Mitigation Measure AQ-2.4 requires the Project developer to offset NO_x emissions generated during construction that are above BAAQMD NO_x average daily emissions thresholds. (Draft EIR at 3.4-28.) Pursuant to this measure, the Project developer is required to track construction activity, estimate emissions, and enter into a construction mitigation contract with BAAQMD to offset emissions that exceed the 54 pounds per day NO_x threshold. The City impermissibly limits MM AQ-2.4 to Project *construction* impacts only, even though the Final EIR concludes that operational ROG and NO_x emissions (as well as emissions from construction combined with operation) would greatly exceed applicable thresholds. The Final EIR states that requiring operational offsets such as those in Mitigation Measure AQ-2.4 is not considered feasible, because it would cost an estimated \$76 million in fees. In short, "[p]urchasing offsets in this magnitude and duration would place an undue financial burden on the Project that is not considered economically feasible." (Draft EIR at 3.4-32.) The Final EIR provides no evidence in support of this conclusion.

A mitigation measure may not be excluded from an EIR simply because the project proponent believes that it would not be economically viable or because it would be an undue financial burden. Rather, a determination of economic infeasibility must be

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supported by evidence showing that the additional costs or lost profits would make the project impractical. (*Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 737.) Other decisions on economic feasibility findings have applied a “prudent person” standard, holding that a determination of economic infeasibility must be supported by information demonstrating that the cost is so great that a reasonably prudent person would not proceed if the measure were imposed. (See, e.g., *Uphold Our Heritage v. Town of Woodside* (2007) 147 Cal.App.4th 587, 600.)

The Final EIR provides no analysis or evidence demonstrating that the Project applicant cannot purchase emissions offsets to fully mitigate the enormous and harmful air quality impacts of the Project it wishes to construct. At minimum, Santa Clara should require the developer to purchase offsets to mitigate some portion of the Project’s air quality impacts.

2. The Draft EIR Fails to Include Feasible Mitigation Measures to Reduce the Project’s Significant Air Quality Impacts

a) Measures to Reduce Criteria Pollutant Emissions

An EIR must propose and describe mitigation measures to minimize the significant environmental effects identified in the EIR. (Pub. Resources Code §§ 21002.1(a), 21100(b)(3); CEQA Guidelines § 15126.4.) The requirement that EIRs identify mitigation measures implements CEQA’s policy that agencies adopt feasible mitigation measures when approving a project to reduce or avoid its significant environmental effects. (Pub. Resources Code §§ 21002, 21081(a).)

The Final EIR fails to include feasible mitigation measures to reduce the Project’s significant air quality impacts, particularly measures designed to reduce the Project’s severe exceedances of BAAQMD criteria pollutant thresholds. The following mitigation measures were identified by the BAAQMD and recommended for inclusion in the EIR:¹⁶

- Increase the transportation demand management (TDM) plan requirement to reduce peak-hour and daily vehicle trips from 10% to at least 25%;
- Prepare a comprehensive parking plan for the entire project area that establishes parking pricing strategies, unbundling of parking costs, and shared parking for visitors and employees;

¹⁶ The mitigation measures identified by the BAAQMD apply to Impacts AQ-1, AQ-3, AQ-4, as well as GHG-1. San José’s comments regarding the Draft EIR’s GHG analysis will be addressed later in this letter.

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- Require electrical hook-ups for diesel trucks at loading docks;
- Prohibit all diesel powered trucks from idling for more than 2 minutes;
- Require truck fleets based within the Project site to meet CARB's highest engine tier standard in place at the time that building permits are issued;
- Require only electrical landscaping equipment;
- Require solar hot water heating systems;
- Require electric heat pumps for space heating;
- Require recycling and composting programs for offices and residences;
- Require energy efficiency reductions at least 25% beyond Title 24 on all new development at the time building permits are issued;
- Require on-site photovoltaic (PV) solar to meet at least 50% of the electricity demand, and;
- For electricity not generated on-site (e.g., via PV), require that buildings receive the maximum amount achievable from renewable energy.

While portions of some of these measures were incorporated into Mitigation Measure GHG-1.2, many were rejected. (Response to Comment A15.1.) San José continues to believe that inclusion of these mitigation measures in the Final EIR would reduce the Project's air quality and GHG impacts.

b) Measures to Reduce Diesel Particulate Matter Emissions from Project-Related Heavy Truck Traffic

The Project must include feasible mitigation measures to reduce DPM emissions from heavy trucks. Diesel engines emit large amounts of NO_x and PM, both of which contribute to serious health problems. The Final EIR proposes to implement Mitigation Measure AQ-2.2, which would require use of modern fleet (EPA 2007) for on-road material delivery and haul trucks with a gross vehicle weight rating of 19,500 pounds or greater during construction. However, more stringent standards should be imposed to further reduce Project-related emissions.

The United States Environmental Protection Agency ("U.S. EPA") has promulgated stringent diesel emission standards intended to dramatically decrease discharges of PM and NO_x, and virtually eliminate these emissions from on-road diesel

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engines.¹⁷ Consistent with these standards, many jurisdictions have imposed feasible mitigation measures designed to reduce DPM impacts associated with on-road heavy-duty trucks. San José requests that the City include a mitigation measure in the EIR requiring on-road, heavy-duty trucks with a gross vehicle weight rating (“GVWR”) of greater than 14,000 pounds and transporting materials to and from (and within) the Project site to meet EPA 2010 on-road, heavy-duty diesel engine emission standards.¹⁸ In addition, the City should require the Project applicant to verify that the companies supplying the on-road heavy-duty trucks are in compliance with the CARB Truck and Bus Regulation.¹⁹ The City should also include a requirement for truck operators to submit documentation showing the following:

- Truck company name; make, model of truck, and vehicle identification number;
- EPA/CARB truck engine certification indicating truck meets or exceeds 2010 EPA on-road heavy-duty diesel engine emission standards;
- Any emission control devices installed, including, but not limited to diesel oxidation catalysts and/or diesel particulate filters/traps;
- Proof of compliance that the truck fleet of the companies, including subcontractors, from which on-road trucks are hired or dispatched for the Project are in compliance with the CARB Truck and Bus Regulation by providing one of the following documents:
 - o Truck and Bus Regulation Reporting Certificate printed from CARB website (see <http://www.arb.ca.gov/msprog/truckstop/pdfs/printcert.pdf>).
 - o Written statement from the truck fleet owner that verifies that they are aware of the CARB Truck and Bus regulation (Title 3, California Code of Regulations, § 2025) and their fleet is in compliance with the engine model year schedule specified in the Truck and Bus Regulation.

Inclusion of such a mitigation measure in the Final EIR would reduce the Project’s DPM emissions and attendant air quality and health impacts.

¹⁷ See U.S. EPA Regulatory Announcement, Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements, available at <http://www.epa.gov/otaq/highway-diesel/regs/f00057.pdf>, attached as Exhibit I.

¹⁸ U.S. EPA, Control of Air Pollution from New Motor Vehicles: Heavy-Duty <https://www.gpo.gov/fdsys/pkg/FR-2001-01-18/pdf/01-2.pdf>, attached as Exhibit J.

¹⁹ California Air Resources Board, Truck and Bus Regulation, available at: <http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm>, attached as Exhibit K.

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3. Mitigation Measure AQ-2.3 is Impermissible as Drafted

Mitigation Measure AQ-2.3 sets forth a series of BAAQMD measures to reduce construction-related dust and exhaust emissions, and the Final EIR concludes that with implementation of mitigation, impacts would be less than significant. The measure allows the Project developer or contractor to identify alternate measures, “provided that they are as effective as the measures below” and states that [a]lternative measures shall be submitted to the City of Santa Clara for approval. (Draft EIR at 3.4-27.)

Mitigation measures adopted when a project is approved may be modified or deleted if the agency gives a legitimate reason for making the change and supports those reasons with substantial evidence. (*Napa Citizens for Honest Gov’t v. Napa County Bd. of Supervisors* (2001) 91 Cal.App.4th 342, 359; *Katzeff v. Department of Forestry & Fire Protection* (2010) 181 Cal.App.4th 601, 614.) However, when considering whether to modify a mitigation measure, the agency also must consider whether further CEQA review is required. If modification of the measure would change the prior approval in a way that would allow a new significant impact to occur or increase the severity of a previously identified significant impact, then supplemental environmental review would be required. (See Pub. Resources Code § 21166; CEQA Guidelines § 15162; see also *Sierra Club v. County of San Diego* (2014) 231 Cal.App.4th 1152, 1174.) This decision must be made by the agency decision-makers subject to CEQA compliance, not approved by staff.

C. The Final EIR Does Not Remedy the Deficiencies of the Draft EIR’s Air Quality Analysis or Adequately Respond to Air Quality-Related Comments

As noted above, the Final EIR fails to include feasible mitigation measures to reduce or avoid the Project’s severe significant impacts to air quality, despite recommendations from BAAQMD that it do so. (See Comment A15-1.) The Final EIR also fails to provide evidence supporting its conclusion that requiring emissions offsets for operational air quality impacts is infeasible, therefore failing to adequately respond to comments asserting that such offsets should be required to reduce the Project’s significant unavoidable air quality impacts. (See, e.g., Comment O3.5.)

Response to Comment A17a.6 does not represent a good faith, reasoned response to San José’s request that Mitigation Measures AQ-6.1 and AQ-7.1 be applied to construction along the eastern portion of the Project site due to the location of sensitive receptors along the Guadalupe River. According to the Final EIR, the only DPM-related risks due to exposure to construction-related emissions occur on-site after on-site residential or daycare facilities are occupied. (Response to Comment A17a.6, Final EIR

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at 4-153.) The Final EIR goes on to state that the first phase of construction (at the southwest corner of the Project site) is over 2,300 feet from the nearest San José receptor. However, as stated in the comment, construction activities on the *eastern* portion of the site will be less than 600 feet from the San José residences.

IV. THE FINAL EIR'S ANALYSIS OF GREENHOUSE GAS IMPACTS IS LEGALLY INADEQUATE

A. The Analysis of Impact GHG-1 Fails to Accurately Disclose Project Construction GHG Emissions

Impact GHG-1 amortizes construction GHG emissions over 30 years. (Draft EIR at 3.5-15.) No rationale is provided for this approach, which hides actual construction GHG emissions. The Project construction period is assumed to last only 17 years (not 30), and Table 3.5-4 shows that construction GHG emissions are clearly highest over the first four years of construction. Given the need to rapidly reduce GHG emissions in the near-term to avoid dangerous climate change, construction GHG emissions in the early years of the Project should be given more weight, not less. The calculations in Table 3.5-5 should be redone to properly account for construction GHG emissions and mitigation implemented as necessary. (Draft EIR at 3.5-17.)

B. The Final EIR's Analysis of Impact GHG-3 is Legally Inadequate

The Final EIR does not accurately describe or apply case law requiring analysis of the impact of existing conditions on the Project's future users and residents. (Impact GHG-3, see also Draft EIR at 3.5-12 and -13.) After the Draft EIR was published, the Supreme Court decided *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369, which held that an EIR must consider the effects of the environment on a proposed project to the extent the proposed project would risk *exacerbating* these effects. In those specific instances, the Court held, it is the project's impact on the environment – and not the environment's impact on the project – that compels an evaluation of how future residents or uses could be affected by the exacerbated conditions. (*Id.* at 392.) While the Final EIR acknowledges the Supreme Court's decision (see Final EIR at 5-65 et seq.), its application of the legal standard is incorrect. This holding extends to future climate change impacts on the Project, including sea level rise. Impact GHG-3's discussion of sea level rise impacts should be reanalyzed consistent with the holding of this case to determine whether the Project would exacerbate sea level rise impacts. If Impact GHG-3 is determined to be significant, recirculation of the EIR would be required unless the impact is mitigated.

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C. The Final EIR's Evaluation of the Cap-and-Trade Program as Mitigation for GHG Emissions is Inadequate

The Final EIR's discussion of GHG offsets as mitigation is misleading and inadequate. (Draft EIR at 3.5-20.) The Final EIR limits its discussion of offsets to the context of the AB 32 Cap-and-Trade program. However, land use projects are not a capped sector participating in the program, so this discussion is largely irrelevant. Furthermore, it is possible for the proposed Project to directly purchase emissions offset credits outside the context of the Cap-and-Trade program. The Final EIR should have evaluated the feasibility and effectiveness of offsets outside the context of the Cap-and-Trade program as a GHG mitigation measure.

The Final EIR further states that imposing GHG offsets as additional mitigation to meet the need for additional GHG reduction in the post-2020 period "risks duplication of the economy-wide cap and trade GHG reductions and also risks going beyond the project's "fair-share" mitigation." (Draft EIR at 3.5-22.) This statement is speculative and is not supported by evidence. There is no "economy wide cap" in the AB 32 Cap-and-Trade program; rather, the cap applies only to specific capped sectors, which do not include land use projects. The Final EIR also fails to provide any evidence in support of its assertion that GHG offsets risk going beyond fair-share mitigation.

V. THE FINAL EIR'S ANALYSIS OF BIOLOGICAL RESOURCES IMPACTS IS LEGALLY INADEQUATE

A. The Final EIR Fails to Adequately Consider the Project's Inconsistency with the Regional Conservation Plan

The Final EIR's consideration of Project inconsistency with the Santa Clara Valley Habitat Conservation Plan/Natural Community Conservation Plan ("HCP/NCCP" or "Plan"), and the environmental consequences of such inconsistency, is legally inadequate, regardless of whether the HCP/NCCP is an applicable regional plan under CEQA.

The Final EIR asserts that the HCP/NCCP is not an applicable plan because the City of Santa Clara is not a Plan participant, and the proposed Project site is located outside of the Plan area. (See, e.g., Draft EIR at 3.8-4.) However, the proposed Project is located within the HCP/NCCP's expanded study area for burrowing owl, and would require approval for a Project component from a Plan participant (the Santa Clara Valley

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Water District [“SCVWD”]²⁰). Even if the proposed Project is not within the Plan area, or does not include a covered activity, the HCP/NCCP is an applicable regional plan under CEQA for the purpose of evaluating the Project’s effects on the physical environment. (CEQA Guidelines § 15125(d).)

The Project’s conflicts with the HCP/NCCP’s plans to conserve burrowing owl and burrowing owl habitat clearly would result in significant impacts. Master Response 4 implicitly acknowledges this conflict, but asserts that impeding the species’ recovery is not an impact under CEQA. This is false. Moreover, the Final EIR mischaracterizes the Project’s impacts on burrowing owl, which include loss of nesting, forage and dispersal habitat, as compared to baseline conditions, discussed in detail below. These effects should have been considered as factors in extirpation of the local populations and restricting the range of the species.

The Project’s conflicts with the HCP/NCCP conservation goals and plans would also result in significant impacts to other species such as bay checkerspot butterfly.

B. The Final EIR Fails to Adequately Analyze the Effects of Nitrogen Deposition on Serpentine Grassland Habitat

The Final EIR acknowledges that nitrogen deposition in serpentine grassland habitat – attributable to the Project – would have adverse effects on special status species. (EIR at 3.8-23.) However, these impacts are discussed only in general terms in a cumulative impact discussion. Nitrogen deposition on serpentine grassland habitat alters conditions in a way that favors non-native plant species over native special status plant species. Effects on the individual plant species (which appear to be significant) should be examined in more detail, and mitigation to reduce significant effects should be identified, including impacts on bay checkerspot butterfly. Measures to be considered could include compensatory mitigation requiring preservation of replacement habitat in serpentine habitat that is less subject to nitrogen deposition including, as necessary, propagation of impacted species at the mitigation site.

The Final EIR does not remedy the deficiencies of the Draft EIR or adequately respond to comments regarding analysis of the effects of nitrogen deposition. (See Response to Comment A17a.9.) Vehicle trips associated with the Project, located immediately adjacent to San Jose, would have the same nitrogen deposition impacts as vehicle trips from projects located within San Jose. The fact that Santa Clara is not a participant in the HCP/NCCP does not reduce the Project’s obligation to mitigate its

²⁰ Comment Letter A11 from SCVWD to City of Santa Clara, dated November 23, 2015, and incorporated in full by this reference.

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significant impacts. Nitrogen deposition impacts throughout Santa Clara County are caused primarily by vehicular traffic, and Santa Clara sources within the study area are estimated to provide 63 percent of the current deposition. (See HCP/NCCP, Appendix E.) At minimum, Santa Clara must pay the Habitat Agency an amount commensurate with that paid by Plan Area applicants, with added costs of administration, and reach an agreement regarding mitigation of nitrogen deposition with the Agency or provide adequate mitigation in another manner.

The Project's reliance on a fair-share nitrogen deposition fee contribution to the SCVHA's nitrogen deposition fee program in Mitigation Measure BIO-C.1 is misplaced. Because the Project was not included in the Santa Clara General Plan, the growth it contemplates was not included in the JPA's development of the fee program. Payment of fees will therefore not adequately mitigate the Project's impacts. (See BIO-C.1, Draft EIR at 3.8-25.) In addition, there is no requirement that a voluntary contribution be used to address the Project's adverse nitrogen deposition effects, and therefore it may not be relied upon as mitigation.²¹ The measure's effectiveness is further diluted by its comparison of the Project's actual impacts to a hypothetical average for development in the HCP/NCCP plan area, which artificially dilutes the Project's nitrogen deposition impacts.

C. The Final EIR Understates Impacts to Burrowing Owl

The Final EIR fails to adequately present relevant baseline conditions for burrowing owl, and understates the Project's significant impacts to burrowing owl as well as its contribution to a significant cumulative impact to this species.²² The Final EIR fails to acknowledge that the proposed Project site should be considered "occupied" by burrowing owl. San Jose concurs with the California Department of Fish and Wildlife's ("CDFW's") conclusion that the Project site is active burrowing owl habitat, and must be treated as such in the EIR. As stated in CDFW's comment letter on the Project Notice of Preparation ("NOP"), burrowing owls were observed foraging and nesting on and near

²¹ In Master Response 4, the City of Santa Clara takes the position that its previous "voluntary" commitment to provide mitigation for burrowing owls was not actually a commitment.

²² The Final EIR does not include Project- or site-specific reports or surveys to support its conclusion that the Project site is not considered to be occupied burrowing owl habitat. The surveys discussed in the Draft EIR (starting at p. 3.8-11) are not included in an appendix, which would be particularly useful given that the EIR's conclusions are contradicted by CDFW's NOP comments.

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the Project site by burrowing owl biologists within a two-year period prior to the NOP.²³ These reported observations are sufficient to establish that the site should be considered “occupied” habitat as the baseline for existing conditions.

Even without those observations, other evidence supports the same conclusion. CDFW guidance on determining whether a site is “occupied” provides that occupancy may be indicated by conditions described in the Final EIR (i.e., pellets near a perch site) and that such signs of occupancy within the prior three years should be considered as indicators that the site is “occupied”. The Final EIR does not explain why it departs from this guidance.²⁴ Master Response 4’s discussion of burrowing owl habitat also conflicts with revisions made to the Draft EIR in response to other comments, e.g., deletion of a statement asserting that occupied burrowing owl habitat is not present at the site. (Draft EIR at 3.8-13; revised text shown in Final EIR at 5-44.) Nesting burrowing owls have been detected approximately 0.4, and 1.0 miles from the proposed Project site and the Project site is located within occupied nesting habitat as defined in the HCP/NCCP.²⁵ These occurrences are well within known adult and natal dispersal distances (generally 53 km and 150 km, respectively).²⁶ The longest recorded dispersal distance in the South Bay area is 12 km.²⁷

The Final EIR also fails to acknowledge or examine the significant effects that loss of burrowing owl habitat on the Project site would have on remaining offsite burrowing owl habitat. Habitat isolation and fragmentation are factors for effects on other small, localized offsite burrowing owl populations. Given the Project site’s proximity to the remaining burrowing owl populations along the Highway 237 corridor (as noted in CDFW’s NOP comment letter), this failure to fully characterize existing

²³ Letter from CDFW in response to EIR NOP, dated August 28, 2014, and incorporated in full by this reference.

²⁴ Master Response 4 asserts that the owl pellets located on the Project site were too old to be considered as evidence of occupation, but provides no evidentiary support for this assertion, and no reason for its determination that the pellets exceed 3 years in age. (Final EIR at 3-19.) The response also does not explain why this “determination” would outweigh reported occurrences in other surveys, as noted in CDFW’s letter.

²⁵ See Comment Letter A5 from Santa Clara Valley Habitat Agency, dated November 19, 2015.

²⁶ 2012 Staff Report on Burrowing Owl Mitigation at p. 20, available at: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0ahUKEwjokJXJy6_MAhUIwGMKHRMhDvgQFggfMAA&url=https%3A%2F%2Fnrm.dfg.ca.gov%2FFileHandler.ashx%3FDocumentID%3D83843&usg=AFQjCNGxKDV-Co8e68nibt4aen7Ml0qaxg&sig2=Ocr4oxlg9DFUds6zOf6RAg, attached as Exhibit L.

²⁷ Santa Clara Valley HCP/NCCP Appendix M, p. M-2.

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conditions for burrowing owl requires additional investigation. The HCP/NCCP recommends preservation of burrowing owl habitat to support owl populations that are primarily outside of the study area.²⁸ Given that Santa Clara is closer to existing burrowing owl habitat and populations than most members of the HCP/NCCP, it should participate in this effort, particularly because the Project would be destroying some of the last remaining potential burrowing owl habitat in the area.

Although the Final EIR acknowledges that the Project site provides forage habitat for burrowing owls, the impact analysis does not seriously address the loss of forage habitat, and fails to identify adequate mitigation. This is a serious omission given the documented declines in the local and regional populations of this species.²⁹ Mitigation Measure BIO-2.2 fails to guarantee that burrowing owl habitat will be replaced, because implementation is tied to identification of an active nest; this limitation on implementation is inconsistent with CDFW's guidance on determining whether a site is "occupied". Mitigation Measure BIO-2.1 further undermines this mitigation strategy by ensuring that development activities take priority over burrowing owl surveys. San José recommends that BIO-2.1 be revised as follows:

BIO-2.1: *Detection and Protection of Burrowing Owls.* The Project Developer shall submit a plan for surveying and monitoring for burrowing owls to the City and CDFW at least 60 days prior to the scheduled start of construction or other ground disturbing activities. The survey plan shall require qualified biologists approved by the City to conduct the surveys and monitoring. Survey timing and methods shall be consistent with CDFW guidance in the 2012 Staff Report on Burrowing Owl Mitigation, as updated. The plan shall include regular and timely reporting to the City and CDFW. City approval is required before project activities begin. ~~allow access to the Project site or offsite areas for b~~Biologists who participate in the annual burrowing owl nest survey coordinated by the Santa Clara Valley HCP/NCCP shall be allowed access to the project site and offsite areas. Burrowing owl surveys are conducted between March and August of each year. ~~Access to the site~~Appropriately timed surveys for burrowing owl

²⁸ Santa Clara Valley HCP/NCCP Appendix N, p. 4-5.

²⁹ See Comment Letter A5 from Santa Clara Valley Habitat Agency, dated November 19, 2015 and Comment Letter O4 from Santa Clara Valley Audubon Society, dated November 23, 2015; see also CDFW NOP Comment Letter, dated August 28, 2014, all incorporated in full by this reference.

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~~surveys shall be granted~~continue until the Project site ~~and/or~~ off-site area is completely built out. ~~The Project Developer shall not, however, be required to postpone planned development activities to provide such access, except to the extent such postponement is necessary to meet regulatory requirements.~~ Currently occupied burrows shall not be disturbed. If nesting burrowing owls are detected project activities, including construction shall be scheduled to occur outside of nesting season, to the extent possible. Disturbance buffers consistent with the guidance in the 2012 Staff Report on Burrowing Owl Mitigation, as updated, shall be established to avoid disturbing individual burrowing owls.

The Final EIR also asserts that no portion of the Project site has been set aside for burrowing owl mitigation. (Draft EIR at 3.8-6.) Commenters disagree with this assertion, and have provided details and records of the City's previous commitment to managing a portion of the site as mitigation for burrowing owl.³⁰ The Final EIR relies on a very different account of the City's approval and mitigation for the previous project. This discrepancy has generated considerable confusion for the public and decision makers as to the level of mitigation required for impacts to burrowing owl habitat, and Master Response 4 does not resolve the issue, asserting only that the City's commitment to providing mitigation habitat on the Project site was voluntary. If the City of Santa Clara previously committed some 24 acres of the Project site to be managed as mitigation for loss of burrowing owl habitat for a previous project, the loss of the mitigation site and any impacts to the mitigation site must be also be mitigated.

BIO-2.2: Mitigation for Loss of Burrowing Owl Habitat ~~during Construction.~~ Should burrowing owls begin nesting on developable portions of the Project site or off-site areas that remain undeveloped as phases of the Project are constructed, or suitable habitat within 600 meters of an active nest is removed from the Project site, then lost burrowing owl habitat Permanent impacts to suitable nesting, forage, and/or dispersal habitat for burrowing owl shall be replaced at a ratio of at least 1:1 prior to ground-disturbing activities in the area of the

³⁰ See Comment Letter 15 from Jan Hintermeister, dated November 20, 2015, including attachments relating to the Bayshore North project's burrowing owl mitigation and comment letter from Santa Clara Valley Audubon Society, dated November 23, 2015, both incorporated in full by this reference.

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Project site or off-site area ~~with an active nest~~. In addition to the area previously identified as either voluntary or required mitigation land on the project site, Affected habitat shall be defined-determined as suitable habitat (based on the habitat mapping completed for this EIR, and pre-construction surveys) ~~within a 600 meter radius of an active burrowing owl nest~~ consistent with the methods and definitions in the 2012 Burrowing Owl Staff Report, as updated, and Mitigation measure BIO-2.1.

Greater than 1:1 mitigation shall be required if high quality mitigation land is not acquired and protected prior to the start of project construction; and/or if mitigation land is outside the maximum known dispersal range of local burrowing owl individuals. Mitigation lands outside this range should be identified by qualified biologists, and located on or near other conserved lands. Suitable land cover types include annual grassland, ruderal, or barren areas. Mitigation sites shall have documented nesting occurrences from at least 1 year within the previous 3 years.

Mitigation land shall be permanently protected through a conservation easement, or deed to a non-profit conservation organization of a public agency with a conservation mission, for the purpose of conserving burrowing owl habitat and prohibiting activities incompatible with burrowing owl use.

If burrowing owls move onto undeveloped portions of the Project Site or off-site areas, including the Retention Basin, once the site is fully constructed, appropriate fencing and habitat management practices (including pest management) shall be required to protect burrowing owl individuals, remaining habitat areas, and prey species; there shall be no requirement to provide replacement habitat, unless that undeveloped habitat is developed in the future.

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D. The Final EIR's Analysis of Impacts to Wetland Habitat is Inadequate

The Final EIR limits compensatory mitigation for impacts to wetlands (Mitigation Measure BIO-5.2) to jurisdictional (State or federal) wetlands. However, compensatory mitigation should also be provided for loss of non-jurisdictional wetlands or other aquatic features. Non-jurisdictional wetlands include areas that meet one of the USFWS criteria³¹ and/or the definition of wetlands in the California Coastal Act.³² The USFWS definition of wetlands is also considered biologically appropriate by the California Fish and Game Commission.³³ The definition in the California Coastal Act is statutory. (Pub. Res. Code §30121.)

E. The Final EIR's Analysis of Impacts to Anadromous Fish is Inadequate

The Final EIR's analysis of impacts to central California coast steelhead (*Oncorhynchus mykiss*) and Central Valley fall-run Chinook salmon (*Oncorhynchus tshawytscha*) is inadequate. The discussion in the Final EIR focuses on construction impacts, but does not explain whether or why habitat for these species would not be impacted (or impaired) under post build-out conditions. (Draft EIR at 3.8-17, 18; 3.8-26.) Freshwater migration corridors free of obstruction and excessive predation, with water quality and quantity conditions and natural cover in and near the water or side channels and other features supporting juvenile and adult mobility and survival constitute a "primary constituent element" of critical habitat for these species, regardless of whether this particular reach of the Guadalupe River is excluded from critical habitat designation. Existing conditions for fish through the Project area should be described, including features that may be considered primary constituent elements, and the Project's significant effects post-buildout should be evaluated.

³¹ USFWS Wetlands Classification System, available at <http://www.fws.gov/policy/660fw2.html>, attached as Exhibit M .

³² Public Resource Code § 30121; Cal. Code of Regulations § 13577(b); discussed at Definition and Delineation of Wetlands in the Coastal Zone, available at: <http://documents.coastal.ca.gov/reports/2011/10/W4-10-2011.pdf>, attached as Exhibit N.

³³ California Department of Fish and Game Recommended Wetland Definition, available at <http://www.fgc.ca.gov/policy/p4misc.aspx>, attached as Exhibit O

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VI. THE FINAL EIR'S ANALYSIS OF HAZARDS AND HAZARDOUS MATERIALS IMPACTS IS INADEQUATE

A. Impact HAZ-4 Must Include Enforceable Mitigation for Long-Term Landfill Monitoring Requirements

San José shares the concerns expressed by the Regional Water Quality Control Board (“RWQCB”) and the County of Santa Clara Department of Environmental Health regarding the Project’s long-term monitoring and maintenance needs.³⁴ The mitigation measures in the Final EIR to address Impact HAZ-4 (MMs HAZ 4.1-4.6; Draft EIR at 3.11-31 - 3.11-33) identify plans, systems, maintenance requirements and restrictions intended to ensure the safety of future Project residents and users, but the document is short on detail regarding the manner in which these long-term requirements would be met.

The mitigation measures adopted for a project must be enforceable through conditions of approval, contracts or other means that are legally binding. (Pub. Resources Code § 21081.6(b); CEQA Guidelines § 15126.4(a)(2). This requirement is designed to ensure that mitigation measures will actually be implemented, not merely adopted and then ignored. As stated by the County Environmental Health Department, it is imperative that there is a viable party responsible for upkeep of the landfill control measures and post closure maintenance, as well as to deal with any imminent health or safety issues that may arise. To the extent that mechanisms to ensure that there is an entity with legal and financial responsibility to address future health and safety needs for the landfill would be in a Project development agreement, such an agreement must be made available for public review and comment. As discussed in greater detail below, if a development agreement is part of the Project, as is indicated in the project description, it should be included in the Final EIR for public review.

B. The Final EIR’s Analysis of Impact HAZ-8 is Inadequate

The Final EIR concludes that the Project would not impair implementation of adopted emergency access or evacuation plans. (Draft EIR at 3.11-36.) In reaching this conclusion, the Final EIR fails to acknowledge the large numbers of people that would be present on the Project site during an emergency, as well as the severity of the potential

³⁴ Comment Letter A13 from San Francisco Bay Regional Water Quality Control Board, dated November 23, 2015; Comment Letter A7 from County of Santa Clara Department of Environmental Health, dated November 19, 2015, both incorporated in full by this reference.

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hazards that could result from a disaster based on the Project's location on a former Landfill.

As proposed, the Project would create almost 25,000 new jobs and house more than 3,270 residents (under Scheme A). (Draft EIR Table 3.12-6). Proposed retail and entertainment uses would draw additional people to the site. As acknowledged in the Final EIR's traffic analysis, existing traffic conditions in the Project area are already severe, and made worse by events held at the recently constructed Levi's Stadium. (See, e.g., analysis of Impact TRA-19, Draft EIR at 3.3-220.)

Given the risks inherent in constructing development on a landfill, including the potential for releases of hazardous materials and subsurface fires, the Final EIR must provide additional analysis of the Project's potential to impact existing evacuation routes. Prior to considering approval of the Project, decision makers as well as members of the public must have a full understanding of how development of the Project could affect the safety of its future residents and users. The Final EIR also must propose mitigation measures to reduce significant effects and to ensure the safety of future Project users. For example, the Final EIR should include a requirement to develop a detailed evacuation plan, including measures to ensure the safety of children, the elderly, and the mobility impaired.

C. The Final EIR Does Not Remedy the Deficiencies of the Draft EIR's Analysis of Hazards or Adequately Respond to Hazards-Related Comments

In response to comments from the RWQCB (Comment A13) and the County Environmental Health Department (Comment A7) regarding long-term maintenance and monitoring for the Landfill to ensure public health and safety, the Final EIR references the Disposition and Development Agreement ("DDA") to be entered into by the City and the Project developer. (Response to Comment A7.1, Final EIR at 4-34.) The Final EIR states that the City Council would consider the DDA for approval in conjunction with its consideration of certification of the Final EIR. If the City intends to rely on the provisions of a DDA to implement Project requirements designed to protect public health and safety, the DDA (along with the DA, as discussed in greater detail below) must be made available for public review and comment.

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VII. THE FINAL EIR DOES NOT ADEQUATELY ANALYZE THE IMPACTS OF SUPPLYING WATER TO THE PROJECT

A. The Final EIR's Analysis of Project Water Supply is Legally Inadequate

The Final EIR's discussion of Impact UT-1 concludes that the Project would have sufficient water supplies, but does not provide evidentiary support for this conclusion. (Draft EIR at 3.14-19.) Table 3.14-9 shows inadequate City water supply in 2035 under every scenario save a "normal" year, and only then with the assumption that Hetch-Hetchy water is available from the SFPUC.³⁵ Despite this identified deficit, the Final EIR concludes that the Project would have a less than significant impact on water supplies in SCVWD's service area, and expansion of existing entitlements would not be necessary to accommodate the Project. (Draft EIR at 3.14-25.) The Final EIR bases this conclusion on the assertion that the calculated shortfall "would not likely occur" due the conservative assumptions used in the water supply analysis, the potential to expand use of recycled water, and the use of groundwater from the Santa Clara Valley Groundwater Basin.

B. The Final EIR Does Not Remedy the Deficiencies of the Draft EIR's Water Supply Analysis or Adequately Respond to Water Supply-Related Comments

The SCVWD calls the Draft EIR's assertions regarding conservative water use assumptions into question, stating that "[w]ater demand declined significantly during the economic decline late last decade, and is not by itself proof that previous demand were overestimated."³⁶ It further notes that water use has rebounded with improved economic conditions. It therefore cautions reliance on the 2010 UWMP as validation for these assumptions. The SCVWD also challenges the Draft EIR's statements regarding safe yield of the groundwater basin, noting that is not appropriate to make a conclusion regarding the safe and sustainable groundwater production volumes by the City based on these values. The SCVWD states that sustainable yields are subject to hydrology in a given year and the geographic distribution of pumping in a localized area. It also notes that some of the stated values are being reconsidered in the upcoming Sustainable Groundwater Management Plan. San José echoes these concerns. The Final EIR notes its disagreement with SCVWD's comments, but does not provide a good-faith reasoned

³⁵ The City's contract with SFPUC is up for renegotiation in 2018, so the Hetch-Hetchy water supply is not assured. (Draft EIR at 3.14-25.)

³⁶ Comment Letter A11 from SCVWD to City of Santa Clara, dated November 23, 2015, incorporated in full by this reference.

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response. (See Responses to Comments A11.11, A11.12, A11.13 and A11.15, Final EIR at 4-66, -67.)

When a full analysis of future water supplies for a project leaves some uncertainty regarding the availability of future supplies, the Final EIR must discuss possible replacement or alternative supply sources and the environmental effects of resorting to those alternative supply sources. (*Vineyard Area Citizens or Responsible Growth v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 431.) Given that the Final EIR's assumptions about water use may not be as conservative as claimed, it is more likely that the Project would result in the need to rely on groundwater. The Final EIR must provide analysis of the potential impacts of relying on groundwater.

VIII. THE FINAL EIR'S ANALYSIS OF HYDROLOGY AND WATER QUALITY IMPACTS IS INADEQUATE

A. The Analysis of Impact WQ-2 is Inadequate

The Final EIR concludes that the Project's groundwater impacts would be less than significant based on the assertion that (1) projected water supply is adequate to provide water until 2035 and (2) existing groundwater supplies are sufficient to absorb any future Project groundwater use. (Draft EIR at 3.10-31 and -32.) However, as discussed above, the Project water supply analysis shows that water supply would be inadequate in 2035 under most scenarios, and the SCVWD disagrees with the Draft EIR's discussion of groundwater availability in the Santa Clara Valley Basin. The analysis should be redrafted in light of this additional information. The same holds true for the analysis of cumulative groundwater recharge and supply, which reaches a similar conclusion. (Draft EIR at 3.14-26.)

B. The Analysis of Flood Impacts is Inadequate

FEMA Region 9 is in the process of remapping the coastal flood plain.³⁷ This information should be included in the Final EIR's discussion of baseline (on pp. 3.10-17 and -18), particularly because the 100-year floodplain would expand in the Project area if the new maps are adopted. Based on this new information, the analysis of Impacts WQ-6, WQ-7, WQ-8 and C-WQ-1 (pertaining to cumulative flood impacts) should be revised.

³⁷ See FEMA Region 9 National Flood Insurance Program, available at: <http://www.r9map.org/Pages/default.aspx>, attached as Exhibit P.

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C. The Final EIR Does Not Remedy the Deficiencies of the Draft EIR's Hydrology Analysis or Adequately Respond to Hydrology-Related Comments

In response to comments from the SCVWD regarding new baseline flood information, the Final EIR incorporates a footnote stating that FEMA is in the process of conducting a Flood Insurance Study in the Project area. (Response to Comment A11.7, Final EIR at 4-61.) However, the Final EIR does not acknowledge the impact that an expanded 100-year floodplain would have on the analysis and therefore does not represent a good faith reasoned response. Instead, the Final EIR claims that there is no requirement to analyze flooding impacts under the *CBIA v. BAAQMD* case. The Final EIR fails to acknowledge that under *CBIA* an EIR still must consider the effects of the environment on a proposed project to the extent the proposed project would risk exacerbating these effects. Impacts WQ-6, WQ-7, WQ-8 and C-WQ-1 should be reanalyzed consistent with the holding of this case to determine whether the Project would exacerbate flooding impacts. If these impacts are determined to be significant, recirculation of the EIR would be required unless the impacts are mitigated.

IX. THE FINAL EIR'S ANALYSIS OF IMPACTS TO PUBLIC SERVICES AND RECREATION IS INADEQUATE

The Final EIR acknowledges that the Project site has served as open space and a recreation facility for more than 25 years and is the largest contiguous park/open space in the City. (Draft EIR at 3.13-20.) The Project would eliminate this existing recreational use and replace it with 9.16 million square feet of primarily commercial use, with a small component of residential. Nevertheless, the Final EIR concludes that the Project's impact to park and recreational facilities would be less than significant, because the elimination of the current use would not result in the need to construct any new recreational facilities. (Draft EIR at 3.13-21.) In a seemingly contradictory argument, the Final EIR concludes that in lieu fees paid by the developer would reduce impacts, because they would be used by the City to acquire or develop new parkland or facilities. (Id.)

The parkland dedication requirements and in lieu fees referenced in the Final EIR are based on numbers of residents. (Draft EIR at 3.13-3.) Because the Project proposes a very small amount of residential use, the requirement to dedicate parkland (8.27 acres) is also small. (Draft EIR at 3.13-21.) To the extent that the Project developer is not able to fully satisfy the park requirement with land dedication, the Final EIR states that it would pay park in-lieu fees to satisfy requirements, and concludes that this payment would represent full and complete mitigation for parkland impacts due to new development. (Id.) A commitment to pay fees is not adequate mitigation, however, if there is no evidence that mitigation will actually result. (See, e.g., *California Clean Energy Comm.*

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v. City of Woodland (2014) 225 Cal.App.4th 173. 197.) The Final EIR provides no information about the types of facilities that might be constructed with the Project's in lieu fees, or their location. However, according to the City's General Plan, opportunities for additional open space are limited, due to the current build out condition of the City. (Draft EIR at 3.13-13.) Based on the information provided in the Final EIR, there is no evidence to suggest that park impacts will be adequately mitigated through additional facilities.³⁸

The Final EIR also provides no evidence in support of the assertion that a requirement to dedicate 8.27 acres of parkland would mitigate the loss of more than 162 acres of existing recreational uses on the Project site.³⁹ The Project site currently houses a public golf course, seven lighted tennis courts, and a BMX track. The Final EIR claims that existing parks and other similar amenities would be sufficient to absorb the loss of these facilities, but provides no actual evidence of use to support its conclusions.⁴⁰ (See *City of Hayward v Board of Trustees of Cal. State Univ.* (2015) 242 Cal.App.4th 833 [overturning EIR's discussion of recreation impacts based on lack of evidence regarding use of parks].) The Final EIR's discussion of existing conditions states that several school district facilities serve the community, but the district has commented that the open space and fields at the schools and parks within Santa Clara are already used to capacity.⁴¹

X. THE FINAL EIR'S ANALYSIS OF IMPACT AES-1 IS INADEQUATE

The Project would remove all 1,405 trees which currently exist at the Project site, 951 of which are protected trees.⁴² (Draft EIR at 3.2-19.) It would also remove up to 338

³⁸ The City's own policies have led to a shortfall in open space and parkland, as acknowledged in the City's General Plan. See, e.g., Policy 5.9.1-P20, which promotes the continuation of a parks per population ratio of 2.4 per 1,000 residents, well under Quimby Act standards (3-5 acres per 1,000 residents) and those set forth in the City's Municipal Code. (Gov. Code § 66477; City Code Section 17.35.010(f); see also Draft EIR at 3.13-10.)

³⁹ The golf course is located on 155 acres of the Project site, and the BMX track occupies 7 acres. (Final EIR at 3.13-6, -7.) In addition to the golf course itself, the Santa Clara Golf and Tennis Club has other recreational facilities, including tennis courts.

⁴⁰ The City's supply of parkland falls well short of its parkland dedication standard of 3 acres per 1,000 residents. (See City Code, Section 17.35.010(f).)

⁴¹ Comment Letter A4 from Santa Clara Unified School District, dated November 18, 2015, incorporated in full by this reference.

⁴² The General Plan defines protected trees as "healthy cedars, redwoods, oaks, olives, bay laurel and pepper trees of any size, and all other trees over 36 inches in

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off-site trees, 232 of which are protected. (Id.) Despite the removal of almost 2,000 trees that would result from the Project, the Final EIR asserts that Impact AES-1 would be less than significant, because removal of these trees would not degrade existing visual character or quality. However, in the same analysis, the Final EIR states that the Project developer would replace these trees at a ratio of 2 to 1 of 24-inch box specimen trees pursuant to General Plan Policy 5.3.1-P10. (Draft EIR at 3.2-19.)

An EIR should indicate whether the project's environmental impacts would be potentially significant if mitigation measures were not adopted and separately determine whether the mitigation measures described in the EIR would substantially reduce or avoid the identified significant impacts. (*Lotus v. Department of Transp.* (2014) 223 Cal.App.4th 645, 656.) The Final EIR should have identified Policy 5.3.1-P10 as a mitigation measure, and made clear whether the impact is significant or less than significant both before and after the imposition of mitigation. (*Id.* at 656.) The biological resources analysis suffers from the same flaw. (See Impact BIO-6, Draft EIR at 3.8-20.) The Final EIR does not remedy the deficiencies of the Draft EIR's analysis of impacts to trees or adequately respond to tree-related comments. (See, e.g., Response to Comment O4.7 [restating Draft EIR's rationale for failing to adequately mitigate impacts to tree and thereby failing to provide a good faith reasoned response].)

XI. THE EIR FAILS TO CONSIDER A REASONABLE RANGE OF ALTERNATIVES

An EIR must present a reasonable range of alternatives that could feasibly attain most of the project's objectives while avoiding or substantially lessening the proposed project's significant effects. (CEQA Guidelines § 15126.6(a).) The Final EIR fails to meet this requirement.

A. Increased Housing Alternatives

The Project proposes job-generating uses that greatly exceed its proposed residential uses. This results in a greater jobs/housing imbalance that currently exists in the City, along with resulting increases in VMT, air pollution and GHG emissions. The Final EIR rejects four increased housing alternatives as infeasible, primarily because they would fail to meet Project objectives or because they would cost more to construct than would the proposed Project. (Draft EIR at 5-13 - 5-14.) The increased housing alternative that the Final EIR does include, proposes only 320 additional residential units, resulting in a net increase of 23,610 employees (instead of the 24,760 employees

circumference measured from 48 inches above-grade on private and public property as well as in the right-of-way." (Project Tree Assessment at 4, Draft EIR Appendix 3.8.)

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proposed by the Project). (Draft EIR at 5-8.) This increase is insufficient to truly reduce the Project's significant effects, as required by CEQA.

The creation of additional housing would reduce many of the Project's significant effects resulting from the jobs/housing imbalance without affecting basic Project objectives regarding mixed-use development, landfill protection systems and facilitation of jobs. As discussed previously in this letter, an alternative may not be rejected on the ground that it is economically infeasible just because it would be more expensive to construct and operate. Rather, a determination of economic infeasibility must be supported by evidence showing that the additional costs or lost profits would make the project impractical, or that a reasonably prudent person would not construct such a project due to the added expense. The City cannot make the requisite infeasibility finding without this additional evidence.

1. Include More Housing as Part of the Project

At minimum, the Final EIR must include an alternative that includes enough housing to truly minimize the Project's significant effects. San Jose requests the addition of an alternative with a sufficient number of housing units (and a commensurate reduction in jobs) to reduce the Project's jobs/housing balance to 1.0.

2. Amend the General Plan to Increase Residential Density

The Final EIR must include an alternative with a General Plan amendment to increase residential density Citywide, consistent with the approach set forth in Mitigation Measure LU-1.1. Rather than deferring the City's mandate to explore increased residential density years into the future as proposed by MM LU-1.1 and after construction of the Project, amending the General Plan to shift development capacity now would offset the job-rich development proposed by the Project and correspondingly reduce the Project's significant effects on VMT, traffic congestion, air quality and GHG emissions.

B. Clean Closure Alternatives

When considering the ability of the alternatives to avoid or substantially lessen the Project's significant impacts, the Final EIR improperly ignores alternatives that could reduce significant impacts that it claims are capable of mitigation, in particular, hazardous materials impacts. However, an EIR must discuss alternatives that avoid or substantially lessen a significant impact even if that impact can be avoided or reduced by mitigation measures. (See *Laurel Heights Improvement Ass'n v. Regents of University of California* (1988) 47 Cal.3d 376, 403.) The Final EIR made a fundamental error by failing to present such alternatives.

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The Final EIR identifies significant hazards and hazardous materials impacts resulting from the Project's location on a landfill, but fails to propose Project alternatives to reduce these significant effects.

1. Clean Closure of Entire Site

The Final EIR considered and rejected an alternative involving removal of all waste in the former landfill prior to development of the site: the "clean closure" alternative. The clean closure alternative was rejected based on construction impacts and the assertion that costs of waste removal would be very high. The Final EIR's discussion of cost includes only the cost of waste removal, not the cost of closure and long-term monitoring. This approach does not provide evidence of economic infeasibility under CEQA because it provides no comparative data demonstrating the magnitude of the difference between the two approaches. (See, e.g., *Uphold Our Heritage v. Town of Woodside* (2007) 147 Cal.App.4th 587, 598-602 [City's rejection of four rehabilitation/relocation alternatives based on economic infeasibility was not based on substantial evidence; the fact that rehabilitation of the home may cost between \$4.9 and \$10 million was insufficient to support a finding of infeasibility without any comparable information about the cost of constructing a new residence on the property].)

2. Clean Closure of Parcel 4 Only

The Final EIR failed to consider other alternatives that would reduce Project safety impacts without extensive construction impacts, namely the clean closure of only a portion of the Project site. The great majority of the residential units in Scheme A (1,160) would be located on Parcel 4, so this alternative would address many of the significant safety-related impacts resulting from siting residential uses on the landfill. As an added plus, some of the waste underlying Parcel 4 has already been removed, which would further reduce construction impacts associated with this alternative. When the Santa Clara Golf and Tennis Club, clubhouse and restaurant were constructed in 1985, waste beneath the portion of Parcel 4 currently used for tennis courts was removed and replaced with clean fill. (Draft EIR at 3.11-9.) This alternative is feasible, and should be included in the EIR.

C. Additional Reduced Project Size Alternatives

The Final EIR considers a Reduced Intensity Alternative that would reduce total floor area by 30 percent compared to the Project, but fails to consider any other alternative that would decrease the Project footprint. Given the severity of the significant and unavoidable impacts associated with the Project, an alternative that reduces FAR by 50 percent or more must be considered. The Final EIR concludes that such an alternative

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“is highly unlikely to be financially feasible” but provides insufficient evidentiary support for this assertion.

The Final EIR should also consider an alternative that would reduce the retail, restaurant, entertainment and hotel uses proposed by the Project by at least 50 percent. These uses would result in 71,190 daily vehicles trips, which would cause increased congestion and significant traffic to area roadways and intersections. (Draft EIR Table 3.3-19 at 3.3-87.)

D. Transit Oriented Alternative

Given the numerous significant impacts created by the more than 140,000 daily vehicle trips associated with the Project, including impacts to traffic, air quality and GHG emissions, the Final EIR should include a transit oriented alternative. Such an alternative would improve connections to surrounding light and heavy rail stations, and include more aggressive TDM measures, such as reduced parking ratios. Specifically, a transit-oriented alternative should include significant improvements to the Great America station to effectively integrate the Project with adjacent transit, including improved bus and shuttle access, additional bus/shuttle bays, and improved pedestrian/bicycle access.⁴³

E. The Final EIR Does Not Remedy the Deficiencies of the Draft EIR’s Alternatives Analysis or Adequately Respond to Comments on Project Alternatives

Several commenters requested that the Draft EIR include additional alternatives to avoid or reduce the Project’s significant effects. The Final EIR failed to provide a good-faith reasoned response when it rejected such requests, particularly given the Project’s numerous significant effects. (See, e.g. Comment Letters A13, O2, O3, O4, O6.)

XII. OTHER DEFICIENCIES

A. The Project Description Does Not Describe the Whole of the Action

When examining an activity to determine whether it could affect the physical environment, an agency must consider the entire activity that is the subject of its approval. (*Bozung v. LAFCO* (1975) 13 Cal.3d 263, 283.) The project description includes the relocation of existing Santa Clara Fire Station 10, but does not include relocation of the Bicycle-Motocross (“BMX”) Track, even though the relocation process

⁴³ Comment Letter A12a from Nuria Fernandez, General Manager/CEO, Santa Clara Valley Transportation Authority, dated November 23, 2015 and incorporated in full by this reference.

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for the facility is being managed by the City of Santa Clara in cooperation with the Project developer.⁴⁴ The physical environmental impacts of relocating the BMX track are reasonably foreseeable, and must be addressed in the Final EIR. (Pub. Resources Code § 21065; CEQA Guidelines § 15378(a).) If there are plans to relocate the Santa Clara Golf and Tennis Club, or any other facilities or structures that would be demolished to make way for the Project, those activities must also be included in the EIR's project description, and any reasonably foreseeable impacts must be evaluated.

B. The Development Agreement and the Disposition and Development Agreement are Part of the Project and Must be Available for Public Review

The project description indicates that a Development Agreement ("DA") would be required prior to development at the Project site and would be informed by the EIR. As discussed above, the Final EIR states that long term monitoring and maintenance responsibilities for the Landfill would be set forth in a Disposition and Development Agreement ("DDA") which would be considered by the Council concurrently with Final EIR certification. However, neither document has been made available for public review. Without access to key documents that will dictate how the Project is constructed and implemented, it is impossible to determine whether the Final EIR's analysis is legally adequate. San José respectfully requests copies of the proposed DA and DDA so that we may evaluate the Final EIR's adequacy against these aspects of the Project.

C. The Exclusive Negotiating Rights Agreement

CEQA applies when a public agency proposes to "approve" a project. (Pub. Resources Code § 21080(a); CEQA Guidelines § 15004; see also *Save Tara v. City of W. Hollywood* (2008) 45 Cal.4th 116.) The term "approval" refers to a public agency decision that "commits the agency to a definite course of action in regard to a project." (CEQA Guidelines § 15352(a).) Under this standard, an agency cannot formally approve a project, or commit itself to approve it, without complying with CEQA before doing so.

In April 2013, the City entered into an Exclusive Negotiating Rights ("ENR") Agreement with the Project developer, Related Santa Clara, LLC. The ENR Agreement contains various provisions indicating that it is a preliminary step in the process, and is not intended to represent a commitment by either party to proceed with the Project. (See, e.g., Recital E, Paragraphs 14 and 19.) Paragraph 14 states that the City would prepare

⁴⁴ See Related Santa Clara Frequently Asked Questions, available at: <http://www.relatedsantaclara.com/frequently-asked-questions/> (What will happen to the BMX track?), attached as Exhibit Q.

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any environmental documentation required by CEQA but that nothing in the agreement “shall be construed to compel the City to approve or make any particular findings with respect to such environmental documentation.” However, this language does not comport with existing case law on predetermination, which emphasizes that in not committing to a project as a legal or practical matter, the city should be left with complete discretion to modify the transaction or the project, to select other alternatives, and to determine not to proceed with the project at all. (See e.g., *Save Tara, supra*; *Cedar Fair LP v. City of Santa Clara* (2011) 194 Cal.App.4th 1150.)

XIII. CONCLUSION

San José urges the City of Santa Clara to rectify the severe deficiencies in the Project and the Final EIR, to consider the mitigation measures and alternative proposed in this letter, and to recirculate the Final EIR for further review and comment. San José will continue to actively participate in the environmental review process for this Project, and looks forward to working with the City to ensure each of its concerns are sufficiently addressed in a revised document.

Very truly yours,



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Enclosure: Thumdrive with Exhibits

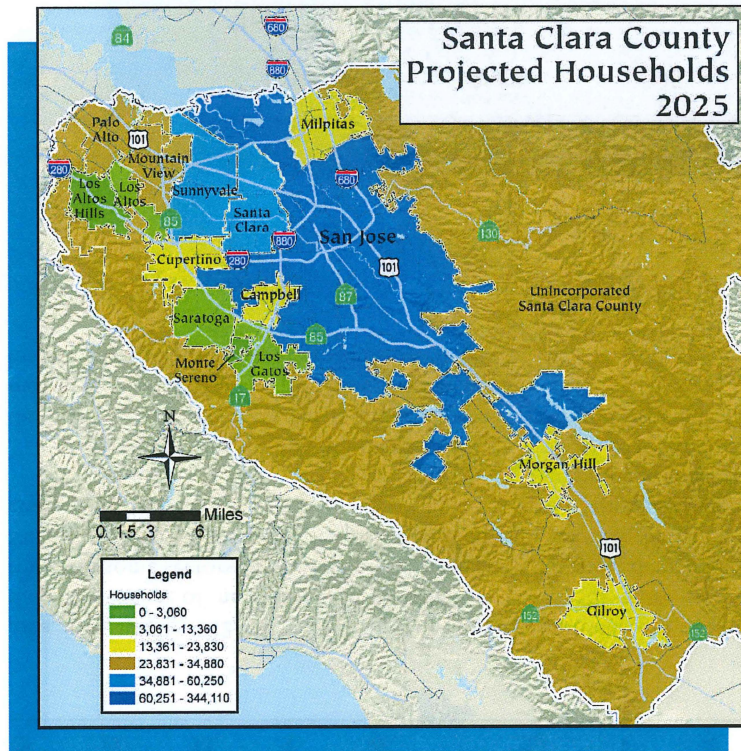
Santa Clara County

Population & Residential Growth

Santa Clara County is the most populous county in the IRP region. The county population was 1,682,585 in 2000, and by 2025, it is expected to reach over 2,064,000. Within the county and the IRP area, San Jose is by far the

most populous jurisdiction. In 2000, San Jose's population was 894,943 or 53 percent of the county's total. San Jose has about seven times the population of Sunnyvale, the county's second largest city (population 131,760). In 2025, San Jose's share of the county's population will remain at approximately 53 percent.

San Jose will also capture 58 percent of Santa Clara County's household growth between 2000 and 2010 (35,512 households) and 47 percent of the household growth between 2010 and 2025 (32,000 households). Gilroy and Santa Clara follow San Jose, with expected household increases of 3,661 and 4,824 respectively from 2000 to 2010. (Source: *Projections 2002*, Association of Bay Area Governments)



Between 1990 and 2000, Santa Clara County added about 45,683 households, reflecting a 9 percent increase. This numerical increase is the largest of the Bay Area IRP counties. During the 2000-2025 period, Santa Clara County can expect a population increase of about 381,615 persons and 129,307 households. Over half (52 percent) of the county's household growth will occur in San Jose. San Jose will outstrip all the IRP counties in terms of absolute growth, expanding by 201,257 people and 67,512 households.

Job Growth

In the 1980s, Santa Clara County added many new jobs. Electronics companies, defense contractors, and the increases in manufacturing facilities created extensive economic growth. However, the recession of the early 1990s was particularly evident in Santa Clara County. Slowing in the electronics industry, the end of the defense build up, and the conversion of military bases all affected the county's economy.

The end of the 1990s saw tremendous growth in Santa Clara County as Silicon Valley became the embodiment of the "New Economy" driven by the efficiencies from computers, communications and the use of the internet. During the 1990s, the county added 201,400 jobs. Traditionally a center for manufacturing, the county actually lost jobs in that sector. Service jobs, particularly business services

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jobs, increased by 152,750, accounting for more than 75 percent of new jobs. Job growth continued in some sectors throughout 2000, even as the news media reported the demise of dot-com companies.

In many ways, companies that provided the services and materials for internet companies eventually accounted for most of the job losses. Expectations for the expansion of the

internet and telecommunications caused a variety of more established companies to expand to meet demand and to insure that they had developed the latest technology. When those expectations changed, it was companies that made equipment and provided business services, not the pure internet companies, that really caused a shift in the county's economic fortunes.

Santa Clara County is projected to see limited job growth in the first ten years of the forecast period, with a little less than 124,000 new jobs. While the technology sector is expected to grow again and to remain a critical part of the economy, service jobs will account for about 38 percent of new jobs in the county during the next ten years. These 47,320 new service jobs will represent the sector with the largest numeri-

SANTA CLARA COUNTY PROJECTIONS

	2000	2005	2010	2015	2020	2025
Total Jobs	1,092,330	1,130,860	1,216,200	1,288,800	1,341,430	1,395,830
Population	1,682,585	1,788,300	1,879,700	1,949,500	2,007,500	2,064,200
Households	565,863	596,760	626,730	652,470	674,410	695,170
Jobs/Housing Ratio	1.93	1.89	1.94	1.98	1.99	2.01

Santa Clara County

cal increase, but it is not anticipated that there will be a return to a situation like the late 1990s, either in growth of high technology jobs or the growth in jobs in general.

Over the entire forecast period, Santa Clara County is expected to add 303,500 jobs, more than any other county in the IRP region. In percentage terms, Santa Clara County will see an 28 percent increase in total jobs. Service jobs will represent 37 percent of the county's new jobs growth, continuing the trend toward more balanced growth.

As the largest city in the county, San Jose will add 126,770 jobs, followed by Sunnyvale with 36,950 additional jobs and Santa Clara with 34,300 jobs. In percentage terms, Gilroy will see the largest growth at 87 percent, followed by Morgan Hill with 71 percent. Job growth is expected to move farther south in the county over time. For example, San Jose has been discussing the development of Coyote Valley. While immediate plans for development in that area have been scaled back, it is expected to eventually be developed. (Source: *Projections 2002*, Association of Bay Area Governments)

Jobs/Housing Balance

Jobs/housing balance issues are especially evident in Santa Clara County. Of the IRP counties, Santa Clara County is on average the least "balanced." Currently, Santa Clara County

HOUSING SURPLUSES AND SHORTFALLS

	2000 Housing Surplus/Shortfall	2025 Housing Surplus/Shortfall	2000-2025 Percent Change
Campbell	-1,747	-3,990	128 %
Cupertino	-11,983	-15,003	25 %
Gilroy	-1,138	-3,810	235 %
Los Altos	2,782	2,277	-18 %
Los Altos Hills	927	1,133	22 %
Los Gatos	-985	-3,120	217 %
Milpitas	-16,388	-22,530	37 %
Monte Sereno	684	963	41 %
Morgan Hill	1,646	1,157	-30 %
Mountain View	-19,005	-26,700	40 %
Palo Alto	-44,044	-50,553	15 %
San Jose	-8,515	-25,517	200 %
Santa Clara	-52,114	-62,707	20 %
Saratoga	5,490	5,633	3 %
Sunnyvale	-30,488	-47,410	56 %
Remainder	12,520	14,793	18 %
Santa Clara County	-162,357	-235,383	45 %

S a n t a C l a r a C o u n t y

JOBS/ HOUSING BALANCE			
	2000 Jobs/Housing Ratio	2025 Jobs/Housing Ratio	2000-2025 Percent Change
Campbell	1.66	1.85	11 %
Cupertino	2.49	2.47	-1 %
Gilroy	1.64	1.78	8 %
Los Altos	1.10	1.20	9 %
Los Altos Hills	.99	.94	-5 %
Los Gatos	1.62	1.85	14 %
Milpitas	2.93	2.92	-1 %
Monte Sereno	.65	.57	-13 %
Morgan Hill	1.27	1.40	10 %
Mountain View	2.41	2.65	10 %
Palo Alto	4.12	4.19	2 %
San Jose	1.55	1.61	4 %
Santa Clara	3.53	3.35	-5 %
Saratoga	.71	.79	11 %
Sunnyvale	2.37	2.68	13 %
Remainder	.89	.85	-5 %
Santa Clara County	1.93	2.01	4 %

has a jobs/housing balance of 1.93, meaning there are 1.93 jobs for every household. Over time, however, the county will see an increase in the number of jobs available, without the commensurate amount of housing units. By 2025, 2.01 jobs will be available per household. This represents a 4 percent increase in the number of jobs available per household in the county.

Most of Santa Clara County lies in the heart of the Silicon Valley. Over the last decade, Silicon Valley has experienced tremendous employment growth. In most Santa Clara County jurisdictions, housing production did not keep pace with the development of jobs. As a result, most communities in the county have jobs/housing imbalances. This imbalance translates into major existing and projected housing shortfalls. Essentially, not enough housing units will be built to house new workers filling the additional 303,500 jobs that will be created in Santa Clara County. Ideally, by 2025 the county should have 930,553 housing units to meet the demands of all their workers. However by 2025, only 129,307 new homes will be built in the county, amounting to a total shortfall of 235,383 units.

Housing shortfalls are projected to be most significant in the cities of Santa Clara, Palo Alto, and Sunnyvale. The City of Santa Clara is projected to see its current high housing short-

S a n t a C l a r a C o u n t y

fall of 52,114 units increase to 62,707 in the next 20 years. Based on the ideal jobs/housing balance of 1.5, Palo Alto should have a total of 78,693 housing units by 2025 to house its workers. It is projected that Palo Alto will fall short of this by over 50,550 units. The City of Sunnyvale will have over 47,000 units less than what is needed by 2025 to house workers and their families.

The cities of Mountain View, San Jose, and Milpitas are also experiencing housing development that has not kept pace with the development of new jobs. By 2025, Mountain View will see its housing shortfall increase from its current high of 19,005 to 26,700 units, bringing it to a jobs/housing ratio of 2.65.

Although San Jose has a relatively balanced jobs/housing ratio at 1.55, that figure is projected to increase to 1.61 by 2025. Because the number of jobs and housing units is so high

in San Jose, this seemingly small imbalance actually translates into a shortfall of 25,500 housing units.

In ratio terms, the city of Milpitas will see a slight improvement in its jobs/housing balance from 2000 to 2025. In absolute terms, Milpitas will see an increase in the number of housing units, however they will be short in achieving a jobs/housing balance. In 2000, Milpitas under-produced housing, in relationship to their job development, by 16,388 units. By 2025, that figure will reach 22,530 units.

Not all cities in Santa Clara are projected to produce less housing than their job figures would indicate are needed. Saratoga, Morgan Hill, Los Altos, Los Altos Hills, and Monte Sereno, and the unincorporated communities of the county each have housing “surpluses,” for they are providing more housing than jobs for residents. Paradoxically, these areas are also the highest income communities in Santa Clara County, therefore, most housing, however abundant, is unaffordable to the many Santa Clara County workers.

In most Santa Clara County jurisdictions, housing production did not keep pace with the development of jobs. As a result, most communities in the county have jobs/housing imbalances.

TOTAL POPULATION

	2000	2005	2010	2015	2020	2025
Campbell	38,138	39,100	40,000	40,700	41,200	41,700
Cupertino	50,546	54,900	58,100	60,800	62,700	64,500
Gilroy	41,464	47,900	54,900	60,400	65,900	71,300
Los Altos	27,693	28,300	28,600	28,900	29,300	29,700
Los Altos Hills	7,902	8,300	8,500	8,600	8,700	8,900
Los Gatos	28,592	29,700	30,700	31,600	32,000	32,500
Milpitas	62,698	68,300	72,400	77,500	82,000	86,200
Monte Sereno	3,483	3,800	4,000	4,100	4,200	4,400
Morgan Hill	33,556	38,500	42,100	45,900	49,500	52,400
Mountain View	70,708	73,100	75,200	77,900	79,700	80,700
Palo Alto	58,598	61,200	63,000	64,800	66,500	67,500
San Jose	894,943	956,800	1,010,700	1,044,300	1,069,200	1,096,200
Santa Clara	102,361	108,600	115,700	122,000	128,300	134,000
Saratoga	29,843	31,000	31,500	32,100	32,900	33,600
Sunnyvale	131,760	136,200	139,300	142,700	146,400	150,100
Remainder	100,300	102,600	105,000	107,200	109,000	110,500
Santa Clara County	1,682,585	1,788,300	1,879,700	1,949,500	2,007,500	2,064,200

TOTAL HOUSEHOLDS

	2000	2005	2010	2015	2020	2025
Campbell	15,920	16,220	16,480	16,820	17,080	17,330
Cupertino	18,204	19,700	20,650	21,740	22,490	23,190
Gilroy	11,869	13,590	15,530	17,170	18,830	20,510
Los Altos	10,462	10,580	10,680	10,860	11,030	11,210
Los Altos Hills	2,740	2,830	2,890	2,940	3,000	3,060
Los Gatos	11,988	12,230	12,520	12,820	13,090	13,360
Milpitas	17,132	18,690	19,840	21,220	22,610	23,830
Monte Sereno	1,211	1,300	1,350	1,400	1,470	1,550
Morgan Hill	10,846	12,130	13,410	14,690	15,910	16,890
Mountain View	31,242	32,060	32,810	33,610	34,340	34,880
Palo Alto	25,216	25,980	26,500	27,060	27,630	28,140
San Jose	276,598	294,450	312,110	325,140	334,700	344,110
Santa Clara	38,526	40,660	43,350	45,910	48,480	50,800
Saratoga	10,450	10,720	10,970	11,220	11,530	11,880
Sunnyvale	52,539	54,070	55,380	56,960	58,630	60,250
Remainder	30,920	31,550	32,260	32,910	33,590	34,180
Santa Clara County	565,863	596,760	626,730	652,470	674,410	695,170

TOTAL JOBS						
	2000	2005	2010	2015	2020	2025
Campbell	26,500	27,190	27,900	29,030	30,700	31,980
Cupertino	45,280	47,630	52,490	54,240	55,830	57,290
Gilroy	19,510	20,540	24,190	30,430	33,960	36,480
Los Altos	11,520	11,590	11,960	12,400	12,910	13,400
Los Altos Hills	2,720	2,730	2,760	2,810	2,850	2,890
Los Gatos	19,460	19,930	20,910	22,330	23,530	24,720
Milpitas	50,280	53,310	59,330	63,740	66,760	69,540
Monte Sereno	790	800	820	840	860	880
Morgan Hill	13,800	14,480	16,590	18,860	21,230	23,600
Mountain View	75,370	76,710	82,830	85,830	89,060	92,370
Palo Alto	103,890	104,920	106,510	107,560	108,190	118,040
San Jose	427,670	443,590	482,390	511,140	531,570	554,440
Santa Clara	135,960	140,820	151,190	159,280	165,070	170,260
Saratoga	7,440	7,710	7,840	8,400	8,890	9,370
Sunnyvale	124,540	129,220	139,200	147,920	154,030	161,490
Remainder	27,600	29,690	29,290	33,990	35,990	29,080
Santa Clara County	1,092,330	1,130,860	1,216,200	1,288,800	1,341,430	1,395,830

Job growth, housing affordability, and commuting in the Bay Area

**A report prepared for the
Bay Area Regional Prosperity Plan
Housing Working Group**

**By:
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Executive summary

The post-recession growth in employment in the Bay Area has been welcome, but has also created concerns related to rapidly increasing housing prices. Addressing these concerns requires a regional perspective, since growth in high-wage jobs can drive up housing prices across the many jurisdictions where workers live. It also requires attention to equity issues, since high-wage job growth is associated with growth in low-wage service sector jobs. Housing these low-wage workers can be particularly challenging. Planning for an appropriate *fit* between the types of jobs that exist and the types of housing available is one important strategy for achieving an equitable region.

This study sought to help the Metropolitan Transportation Commission answer the question “How does growth in high-wage jobs in one jurisdiction affect low-wage job growth and affordable housing demand in multiple jurisdictions?” Using several publicly available datasets produced by the US Census Bureau, we constructed comparable and reproducible temporal and geographic datasets to quantify changes over time and examine potential relationships between changes in job numbers, housing affordability, and commuting behavior. The analysis of data available to date revealed a number of key findings:

- Low-wage job growth is heavily focused in the largest three cities of San Francisco, San Jose, and Oakland whereas high-wage job growth is more geographically dispersed, including parts of Silicon Valley and the East Bay.
- In general, growth in high-wage jobs is clearly associated with growth in low-wage jobs in the largest Bay Area jurisdictions. In smaller jurisdictions the relationship is weaker.
- Measures of total housing indicate that most jurisdictions added housing in proportion to total jobs in the time period under study. Yet disaggregating these values by wage level and housing affordability reveals key imbalances.
- In the time period under study, San Francisco was responsible for the largest growth in low-wage jobs but experienced no net increase in the number of affordable housing units available. In the same time period, Oakland added both low-wage jobs and had an increase in affordable housing while San Jose lost low-wage jobs but had an increase in affordable housing.
- Throughout the Bay Area, new low-wage workers are commuting further than new workers making higher wages. In San Francisco, new workers in the lowest wage category have to travel 4.4 times further than new workers in the highest wage category.
- There is some evidence that these commute patterns are driven by workers in some jurisdictions seeking housing in more affordable locales, but additional research is needed to quantify this effect.

Overall, these findings provide evidence of the links between job growth and housing affordability across wage levels and housing affordability thresholds. They also support the argument that regional planning and coordination of economic development and affordable housing initiatives is important for addressing the jobs/housing imbalance at different wage levels. These findings also suggest that improving jobs-housing fit can contribute to reduced commute travel, improving overall regional environmental performance. Key results for the Bay Area’s three largest cities – San Francisco, San Jose, and Oakland – are summarized below.

Job growth and housing affordability in San Francisco, San Jose, and Oakland

There were approximately 3.2 million jobs in the nine-county Bay Area in 2011. Three cities accounted for just over a third of the total: San Francisco (590,000), San Jose (365,000), and Oakland (198,000). In addition to total jobs, these three cities also employ substantial numbers of low-wage workers. About 1.5 million jobs in the Bay Area pay less than \$40,000 per year and about 40% of those are located in these three largest cities.

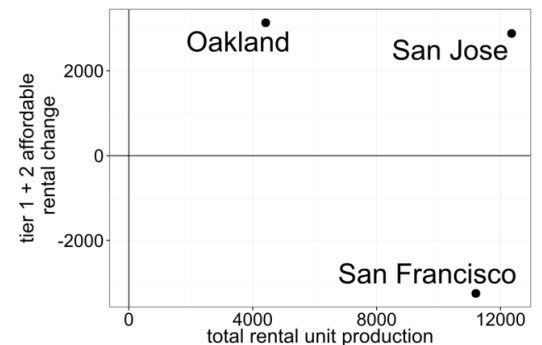
In addition to being vibrant employment centers, San Francisco, San Jose and Oakland are also important housing centers, and a substantial portion of people who work in these cities also live there. The proportion of jobs in each of the cities held by local residents is shown in the table below for three different tiers of monthly wage levels. For example, 49.2 percent of people employed in tier 1 jobs (earning less than \$1,250 per month) in San Francisco live in the city, while only 37.3% of people earning more than \$3,333 a month live in the city. In general, higher proportions of workers earning in the lowest two tiers of wages are located in each city as compared to the highest tier. Other cities in the Bay Area generally have much lower rates of internal capture than these three, indicating that the relative match of jobs and housing units in San Francisco, San Jose, and Oakland, at least for existing workers, is high.

Proportion of total jobs held by residents of each city by monthly wage category, 2011

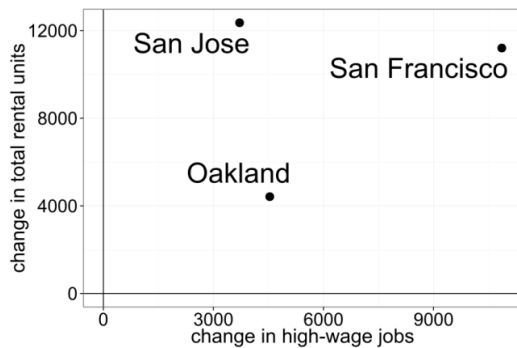
	Tier 1: < \$1,250	Tier 2: \$1,250 - \$3,333	Tier 3: > \$3,333/month
San Francisco	49.2	43.9	37.3
San Jose	50.8	47.6	39.8
Oakland	35.3	27.7	17.3

But the Bay Area is changing. To understand how growth in jobs and shifts in housing affordability across the Bay Area might be affecting the ability of those on the lower end of the income spectrum to afford local housing, we examined rental unit production and affordability shifts using the most recent data available. Rental units dominate total housing growth in the Bay Area and are particularly important for low-wage workers that are less likely to own their homes than higher earners.

The figure at right compares total rental unit production to the change in rental units that are affordable for the lowest two income tiers. The figure clearly shows that total rental unit production is high in each of the three cities, but San Francisco lost affordable units and the increase in the number of affordable units in Oakland and especially San Jose are small compared to overall housing unit production. This is potentially a problem, especially in San Francisco, because it was the top city for growth in these low-wage jobs, adding 6,600 when comparing 2011 to the prior three-year period. Oakland saw affordable units grow roughly in proportion to the number of low-wage jobs added, while San Jose actually saw a decline in low-wage jobs over the time period.



Change in total and affordable rental units: 2013-2011 compared to 2010-2008 three-year



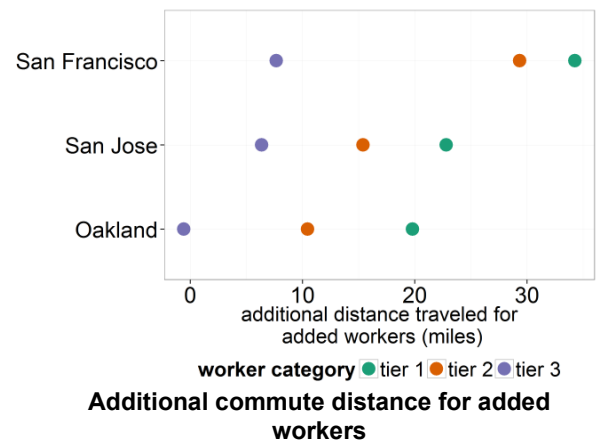
Change in total rental units and high wage jobs

The situation on the other end of the income spectrum offers an important point of comparison. We grouped employment categories from sectors with relatively high wages, including information technology, finance, management, and professional services, to create a “high-wage” category. In general, total rental unit growth either exceeded or closely tracked growth in these high wage categories, as shown in the figure at left. The contrast between the change in total units as compared to affordable units provides some

evidence that historical patterns of housing large numbers of low-wage workers in these three cities (as measured by internal capture) could be changing.

There is a strong equity argument to be made that cities experiencing growth in low-wage jobs should provide housing affordable to those workers. But there is also a very strong environmental argument to be made as well. To the extent that low-wage workers are unable to find housing in the cities where they are employed, they will have to look farther afield. We examined changes in the commute patterns of workers employed in the big three cities to determine both whether this shift was occurring and whether it differed for workers in each income tier. We looked at the commute patterns of new workers in 2011—that is the net increase in workers commuting to each of the three big cities from each residential jurisdiction—compared to existing workers (the average for the 2008-2010 period). The results are shown in the figure at right, which shows precisely how much further added workers are travelling to work in San Francisco, San Jose and Oakland than are existing workers.

The results demonstrate the very real challenges posed by ongoing shifts in housing affordability in the Bay Area. In general, added workers were commuting much further to work in the three major employment centers, but the burden of increasing commute distance was not equitably distributed. For each of the three big cities, tier 1 workers, those earning less than \$15,000 per year, had to travel much further than workers employed in jobs earning more than \$40,000 per year. This disparity was greatest in San Francisco and smallest in Oakland, but all three cities followed the same pattern.



Additional commute distance for added workers

As California continues to pursue its climate change goals through integrated transportation and land use policy and planning, these results demonstrate the vital importance of a regional equity lens. Low-wage workers are more likely to use public transit when available but are also more likely to drive older, more polluting automobiles when it is not. Ensuring that the housing stock exists in employment centers to house low-wage workers is not only social equitable but it may also provide important environmental (reduced emissions and congestion) benefits as well.

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1.0 Introduction

The post-recession growth in employment in the Bay Area has been welcome, but has also created concerns related to rapidly increasing housing prices. Indeed real estate markets in Silicon Valley, San Francisco, and elsewhere have become unaffordable for all but the area's wealthiest residents.¹ At the same time, growth in jobs – both high- and low-wage – in these locations creates increasing demand for housing, frequently resulting in low-wage workers being unable to locate close to where they work, and having to endure sometimes long and expensive commutes.

The authors of this study were retained by the Metropolitan Transportation Commission as part of the US Department of Housing and Urban Development-funded Regional Prosperity Plan to analyze patterns of jobs growth and decline and their relationship to housing affordability. The central research question was: how is the growth in high-wage jobs related to changes in low-wage jobs and housing affordability within and across jurisdictions in the Bay Area?

We have combined two publicly available data sources created and maintained by the US Census Bureau to provide insight into these housing and labor market changes. The two data sources are:

- 1) the [Longitudinal Employer-Household Dynamics Origin-Destination Employment Survey](#) (LODES) from which we extracted workplace area characteristics (jobs), residence area characteristics (resident workers), and commute flow data for 2008 - 2011 and
- 2) the three-year American Community Survey (ACS) estimates from which we extracted information on housing price and value for rental and owner-occupied units for 2008-2010 and 2011-2013.

These two sources have various limitations, but provide the best opportunity to shed light on the problem of growth and affordability using publicly available data. Additionally, the Census Bureau annually updates these data (though for various administrative reasons, post-2011 LODES data releases are behind schedule). In addition to these two main sources, we employed other publicly available data to derive estimates of commute distances. The methods developed here, along with the analysis and figures presented below, are all reproducible using the open source statistics and visualization software [R](#).² All scripts needed to conduct the analysis and generate the included figures are located on the project's [GitHub page](#). As new data are released, the analyses can be easily updated so that changes can be tracked over time.

A key finding of the work is that the Bay Area cities adding the greatest numbers of jobs in high wage categories are also the jurisdictions experiencing the greatest growth in lower wage

¹ Carlyle, Erin. "San Francisco Tops Forbes' 2015 List of Worst Cities for Renters." Forbes. April 16, 2015. <http://www.forbes.com/sites/erincarlyle/2015/04/16/san-francisco-tops-forbes-2015-list-of-worst-cities-for-renters/>; Carlton, Jim. "Bay Area Rally Sends Rents Soaring." The Wall Street Journal. July 16, 2013. <http://www.wsj.com/articles/SB10001424127887324694904578602013087282582>; Harrison, Laird. "Silicon Valley Has Nation's Highest Rents." KQED News. April 16, 2013. <http://www.kqed.org/news/2013/04/16/silicon-valley-has-nations-highest-rents>.

² Visualizations used the package ggplot2. Wickham, H. (2009). ggplot2: Elegant Graphics for Data Analysis. New York, Springer.

categories. At the same time, these jurisdictions are generally not experiencing increases in housing that is affordable to workers employed in low-wage jobs. Total housing numbers in these same cities has increased over the time period of the study, which means that the housing that is being added is appropriate only for those earning on the higher ends of the income distribution. In general, at the scale of individual jurisdictions, housing growth is more likely to track growth in high-wage jobs over the six year period under study. Low-wage workers employed in jobs created directly or indirectly as a result of this growth in high-wage jobs must seek housing in the Bay Area's more peripheral jurisdictions.

The analysis also underscores the challenges associated with using traditional, aggregate measures of jobs-housing balance to gauge the adequacy of the supply of housing in relation to jobs. In many cases, when the change in total housing units and total jobs is viewed at the jurisdiction level, growth in both categories appear to be moving in the same direction. When the total balance is disaggregated into measures of *jobs-housing fit*, however, discrepancies become apparent. These findings underscore the importance of matching the wage levels of locally-available jobs to the affordability of locally available housing to achieve equitable regions and also desirable environmental outcomes like reduced vehicle-miles traveled (VMT).

This report is structured as follows. We first provide a detailed overview of the data sources and methods employed in the analysis, followed by a geographic summary of changes in high/low wage jobs across the Bay Area. We determine where jobs at different wage levels have grown and how closely those changes are related. To examine patterns in housing affordability, the next section addresses how housing numbers in different affordability categories have changed when comparing 2008-2010 with 2011-2013 for the 19 jurisdictions with consistently available three-year ACS data. These are subsequently compared to job changes to identify whether housing and job growth and decline are related. The final section looks at the effect of the identified changes for places-of-work in the Bay Area to understand whether added workers have to travel further and seek out housing in more affordable locales. Some important implications for regionally equitable planning and environmental policy are also discussed in this section.

2.0 Data and methods

2.1 Jobs and housing

We employ a number of publicly available data sources to conduct the analysis of Bay Area job and housing changes. Two key sources embody important differences in methodology and coverage that partially constrain the analysis of the relationship between jobs and housing that can be conducted since we are limited by the variables included in each data source as well as the time periods for which data are collected. Importantly, LODES data are the best source of data on different types of jobs at a local level, with information available with complete geographic coverage annually because they are partly reported by employers and partly simulated by the census. This means that we have full information for all Bay Area jurisdictions for all LODES variables including workplace and residence location for job categories by wage level, industry classification, and age of worker. On the other hand, ACS data are the best data

source on housing, but it is based on a survey of people and housing units conducted by the Census Bureau each year. As such they do not offer complete coverage. This means that analyses that compare jobs and housing unit characteristics will be limited to those jurisdictions that have data available in the ACS.

Because the driving questions for our research involved assessing changes over time, we had to establish a basis for comparison that accounted for the limitations of both the LODES and the ACS datasets. The ACS data were the limiting factor, since they are available in one, three, and five year data-sets and do not offer complete geographic coverage. The correct interpretation of the ACS data that span multiple years is that they represent an average annual value over the time period. Ideally, we would match ACS one-year datasets with each year of LODES data, but the geographic coverage for the one year data are very poor; because the ACS survey is only conducted on a relatively low number of respondents each year, aggregating the data over multiple years is essential for increasing the coverage and reducing the margins of error (the confidence we have in each estimate). The five year data would offer the most extensive geographic coverage, but present additional challenges in terms of assessing changes over time. If partially overlapping five year periods are used, it becomes increasingly difficult to demonstrate that a difference is statistically different from zero. The most temporally distinct five year datasets available -- 2009-2013 and 2005-2009 -- overlap only one year, but the earlier data-set include much data from the depths of the recession. We elected to compare two three-year datasets that would allow us to attain acceptable geographic coverage including the Bay Area's largest employers and avoid including data from the recession. Specifically, we used the 2013 and 2010 ACS three year datasets. These datasets facilitate a comparison of average annual values from 2008-2010 with 2011-2013. To match the LODES data with the ACS, we constructed a three year average LODES dataset for 2008-2010. Because the most recent LODES year available as of this writing is 2011, we used 2011 as the basis of comparison with 2011-2013. When the next LODES release takes place, we can easily update the analysis to create completely consistent comparison groups.

The geographic scale of the analysis was another important analytical consideration. Under California law, the jurisdiction is a particularly important unit. It is cities and towns across the state that control land use and can provide incentives or disincentives for the construction of various types of housing. They can also pursue economic development policies to attract jobs or dissuade employers in order to maintain a residential character. Similarly, it is often at the local level that resistance to or support for particular housing projects, economic development efforts, or neighborhood changes are expressed. In our analysis, we focus on jurisdictions because of the inherent equitability and environmental benefits of living and working in the same city. Using jurisdictions also allows us to use ACS data that are more consistent and reliable. The 19 Bay Area jurisdictions for which there are data on housing unit costs across both three year periods are shown in Table 1. The 1.8 million jobs contained in these 19 jurisdictions accounted for 57% of the Bay Area's total 3.2 million jobs according to the LODES data in 2011. LODES data were aggregated to the jurisdiction level using appropriate geographic crosswalks.

Another important concern relates to the wage categories used within LODES. A goal of this analysis is to differentiate the effects of job growth in different income categories. LODES contains three income categories, but they are rather coarse, especially for the Bay Area. Here, we refer to these categories as “tiers” of wages. They are: tier 1 (< \$1,251/month or ~\$15,000/year), tier 2 (\$1,251 - \$3,333/month or ~\$15,000 - ~\$40,000/year), tier 3 (> \$3,333/month or \$40,000/year). LODES data also include two-digit North American Industry Classification (NAICS) categories, which allow for the analysis of a much wider range of income categories. These are summarized in Table 2 along with their average annual wages and we use these where possible. Also highlighted in Table 2 are two aggregated NAICS categories that we use to refer to low-wage and high-wage worker. The high-wage NAICS category is composed of information (NAICS 51), finance and insurance (NAICS 52), professional and technical services (NAICS 54), and management of companies and enterprises (NAICS 55). The low-wage NAICS category is composed of retail trade (NAICS 44-45), administrative/support/waste remediation (NAICS 56), arts, entertainment, and recreation (NAICS 71), accommodation and food services (NAICS 72), and other services (NAICS 81).

Table 1: Bay Area jurisdictions with housing data consistently available in the 2013 and 2010 three-year datasets.

Jurisdiction	Total LODES jobs (2011)
San Francisco	589,717
San Jose	364,772
Oakland	197,708
Fremont	87,368
Sunnyvale	82,030
Santa Rosa	67,502
Hayward	64,865
Mountain View	53,707
Redwood City	49,845
Concord	48,539
San Leandro	38,742
Fairfield	37,047
Vallejo	30,096
Napa	28,488
Richmond	28,470
Vacaville	28,320
Union City	20,210
Antioch	18,923
Pittsburg	13,163
TOTAL	1,849,512

Table 2: Employment categories used in the analysis.

Employment category	LODES variable	Notes
<i>Wage tier</i>		
Wage level: Tier 1 (lowest), Tier 2 (middle), Tier 3 (highest)	CE01, CE02, CE03	Limited by coarse categories
<i>Low-wage NAICS</i>		
NAICS 44-45: Retail trade	CNS07	Average annual wage: \$32,200 ^a
NAICS 56: Administrative and support and waste management and remediation services	CNS14	Average annual wage: \$39,800 ^a
NAICS 71: Arts, entertainment, and recreation	CNS17	Average annual wage: \$42,400 ^a
NAICS 72: Accommodation and food services	CNS18	Average annual wage: \$19,800 ^a
NAICS 81: Other services (except public administration)	CNS19	Average annual wage: \$34,200 ^a
<i>High-wage NAICS</i>		
NAICS 51: Information	CNS09	Average annual wage: \$147,000 ^a
NAICS 52: Finance and insurance	CNS10	Average annual wage: \$131,000 ^a
NAICS 54: Professional and technical services	CNS12	Average annual wage: \$104,000 ^a
NAICS 55: Management of companies and enterprises	CNS13	Average annual wage: \$141,000 ^a
<i>Other</i>		
NAICS 11: Agriculture, forestry, fishing, and hunting	CNS01	Average annual wage: \$25,740 ^a
NAICS 21: Mining, quarrying, oil and gas extraction	CNS02	Average annual wage: \$147,000 ^a
NAICS 22: Utilities	CNS03	Average annual wage: \$146,000 ^a
NAICS 23: Construction	CNS04	Average annual wage: \$56,600 ^a
NAICS 31-33: Manufacturing	CNS05	Average annual wage: \$84,300 ^a
NAICS 42: Wholesale trade	CNS06	Average annual wage: \$73,000 ^a
NAICS 48-49: Transportation and warehousing	CNS08	Average annual wage: \$50,000 ^a
NAICS 53: Real estate and rental and leasing	CNS11	Average annual wage: \$62,600 ^a
NAICS 61: Educational services	CNS15	Average annual wage: \$46,300 ^a
NAICS 62: Health care and social assistance	CNS16	Average annual wage: \$45,600 ^a
NAICS 92: Public administration	CNS20	Average annual wage: Unknown

^aSource: BLS Quarterly Census of Employment and Wages, First Quarter, 2014, California Average from: http://www.bls.gov/cew/apps/data_views/data_views.htm#tab=Tables.

2.2 Commute distance

In order to determine the effect of shifts in job and housing markets on commute distances, we analyzed the LODES data on commute flows, combined with origin-destination distance-traveled data available from the Metropolitan Transportation Commission (MTC) and Google Maps. The aim of this analysis is to understand how far commuters are traveling to reach each Bay Area jurisdiction in locations where there are a greater number of commuters in the most recent year as compared to the prior three-year period. LODES data provide annual estimates of origin and destination flows for all employed residents to jobs at the census block level by income tier (tier 1, tier 2, tier 3), age (< 29, 30-54, >55), and broad industry category. The broad industry categories are summarized in Table 3 and are generally far too aggregate to draw meaningful conclusions. We therefore do not consider this category in the main analyses. We aggregated these data up to the jurisdiction for all work and residence locations in the Bay Area. Flows for workers employed in the Bay Area but living outside were summarized at the county level. All jurisdictions and counties were identified by their population-weighted centroid using census block populations nested within the larger geographies,³ between which roadway distances were subsequently calculated. These distances assumed the actual roadway network, using calculated origin-destination values from travel model runs conducted for MTC's Plan Bay Area 2010 base year by associating particular transportation analysis zones (TAZs) with the population-weighted centroid for jurisdictions. For the county-based flows originating outside of the Bay Area, we used R combined with a Google Maps API query to generate roadway distances. Apparent net increases for origins located in Southern California counties (including San Luis Obispo, Kern, San Bernardino, Santa Barbara, Ventura, Los Angeles, Orange, Riverside, San Diego, and Imperial) were excluded from the analysis.

Table 3: Mapping of broad industry category in the LODES commute flow data to specific NAICS codes.

LODES group	NAICS codes
Goods producing	11 (Agriculture, forestry, etc.), 21 (Mining, quarrying, etc.), 23 (Construction), 31-33 (Manufacturing)
Trade, transportation, and utilities	22 (Utilities), 42 (Wholesale trade), 44-45 (Retail trade), 48-49 (Transportation and warehousing)
All other services	51 (Information), 52 (Finance and insurance), 53 (Real estate), 54 (Professional), 55 (Management), 56 (Administrative), 61 (Educational services), 62 (Health care), 71 (Arts, entertainment, recreation), 72 (Accommodation and food services), 81 (Other services [except public administration]), 92 (Public administration)

These calculated distances allowed us to estimate how far workers employed in each Bay Area jurisdiction travel to work and how that has changed over time. Specifically, we calculated a difference in the weighted average commute distance for each workplace jurisdiction, using the flows as weights as summarized in equation 1:

³ The population-weighted centroid is a spatial average location within a jurisdiction or county representing our best estimate of a single point where the population is concentrated.

$$\frac{\sum_i (t_{ij}^b - t_{ij}^a) \times d_{ij}}{\sum_i (t_{ij}^b - t_{ij}^a)} - \frac{\sum_i t_{ij}^a \times d_{ij}}{\sum_i t_{ij}^a} \forall t_{ij}^b - t_{ij}^a > 0 \quad (1)$$

where i indexes origin locations, j indexes workplace locations, a represents 2008-2010 values, b represents 2011, t_{ij} is the number of trips from i to j , and d_{ij} is the distance from origin location i to workplace destination j . The difference between 2011 and 2008-2010 flows can represent a number of situations, depending on whether the values are positive (i.e. greater in 2011) or negative (i.e. less in 2011). Specifically, increased flows may represent entirely new jobs created in the destination jurisdiction, the shift of a particular job to a different employee, or the move of an existing employee to a new location. Similarly, decreases may represent the elimination of particular jobs in the destination jurisdiction, the shift of a particular job to a different employee, or the move of an existing employee to a new location. Of course, the net result for a particular origin-destination pair can represent a combination of both positive and negative changes. Because we cannot differentiate between these different possibilities in the LODES data, we have chosen to focus only on the locations with net increases in jobs in 2011. This figure will capture shifts in commute patterns due to new employment and shifts in existing jobs, but in situations where jobs were actually lost in 2011 relative to the earlier period, the result might slightly overestimate or underestimate the commute distances of new workers because it will not adjust the 2008-2010 estimate to account for these changes. However, because most Bay Area jurisdictions generally saw growth or small (in percentage terms) declines in jobs by category (see discussion in section 3.1 below), the result of equation 1 is likely to accurately reflect the distance traveled by new or moved employees to each jurisdiction relative to the base year conditions.

2.3 Median rent and vacancy rates

Shifting jobs and housing affordability in the Bay Area might affect the residential preferences of workers. We examined this possibility by using median rental prices and rental vacancy rates as determined from the 2009-2013 five-year ACS estimates for each Bay Area jurisdiction. Similar to the commute distance analysis, here we calculated the difference between median contract rent, median asking rent, and vacancy rates in jurisdictions where there was a net increase of workers in 2011 relative to 2010. This calculation is summarized in equation 2:

$$\frac{\sum_i (t_{ij}^b - t_{ij}^a) \times h_i}{\sum_i (t_{ij}^b - t_{ij}^a)} - \frac{\sum_i t_{ij}^a \times h_i}{\sum_i t_{ij}^a} \forall t_{ij}^b - t_{ij}^a > 0 \quad (2)$$

where i indexes origin locations, j indexes workplace locations, a represents 2008-2010 values, b represents 2011, t_{ij} is the number of trips from i to j , and h_i is the housing market characteristic of interest (one of median contract rent or vacancy rate). Median contract rent for occupied units was taken from table B25056 and vacancy rates from table B25004. The calculated vacancy rate used only for-rent vacant units as the numerator and the sum of renter-occupied housing units, vacant-for-rent and rented, not occupied housing units as the denominator.

3.0 Within-jurisdiction job growth and decline (2008-2010 vs. 2011)

Below, we illustrate the rate of job growth and decline by wage level and NAICS category for all Bay Area jurisdictions using the LODES data to calculate a difference between 2011 compared to the three-year average period from 2008-2010. For each figure, percentage changes for jurisdictions are shown in the left pane and absolute changes are shown in the right pane. Positive values mean that total job numbers grew in 2011 relative to the prior three-year period and negative numbers mean that jobs declined over the same period. We summarize trends in high-wage jobs first followed by trends in low wage jobs, using aggregations of NAICS categories as one representation of each. We also examine wage levels, but for ongoing analysis these are less useful than the NAICS categories. Because the LODES data rely on static wage categories, the number of employees in each will change each year simply as a result of inflation. It is not possible to separate this inflation effect from actual changes in job numbers within a particular wage tier.

3.1 High-wage job growth and decline

Figure 1 shows the locations of those Bay Area jurisdictions that gained/lost high wage jobs in 2011 vs. the three year average period of 2008-2010. Although some smaller jurisdictions lost high wage jobs, proportionally, these were generally not in substantial absolute numbers. One exception is Mountain View, which lost about 7,000 high-wage NAICS jobs over the analysis period. In general, however, the largest numbers of high-wage jobs were created in the inner Bay Area - San Francisco, Silicon Valley, and parts of the East Bay including Oakland, San Ramon, and Pleasanton. Figure 2 shows the changes in jobs for the tier 3 wage category included in the LODES that counts all jobs earning greater than \$3,333/month. Tier 3 job growth is concentrated in San Francisco, San Jose, and Oakland with some modest growth in nearby cities in Silicon Valley and the East Bay.

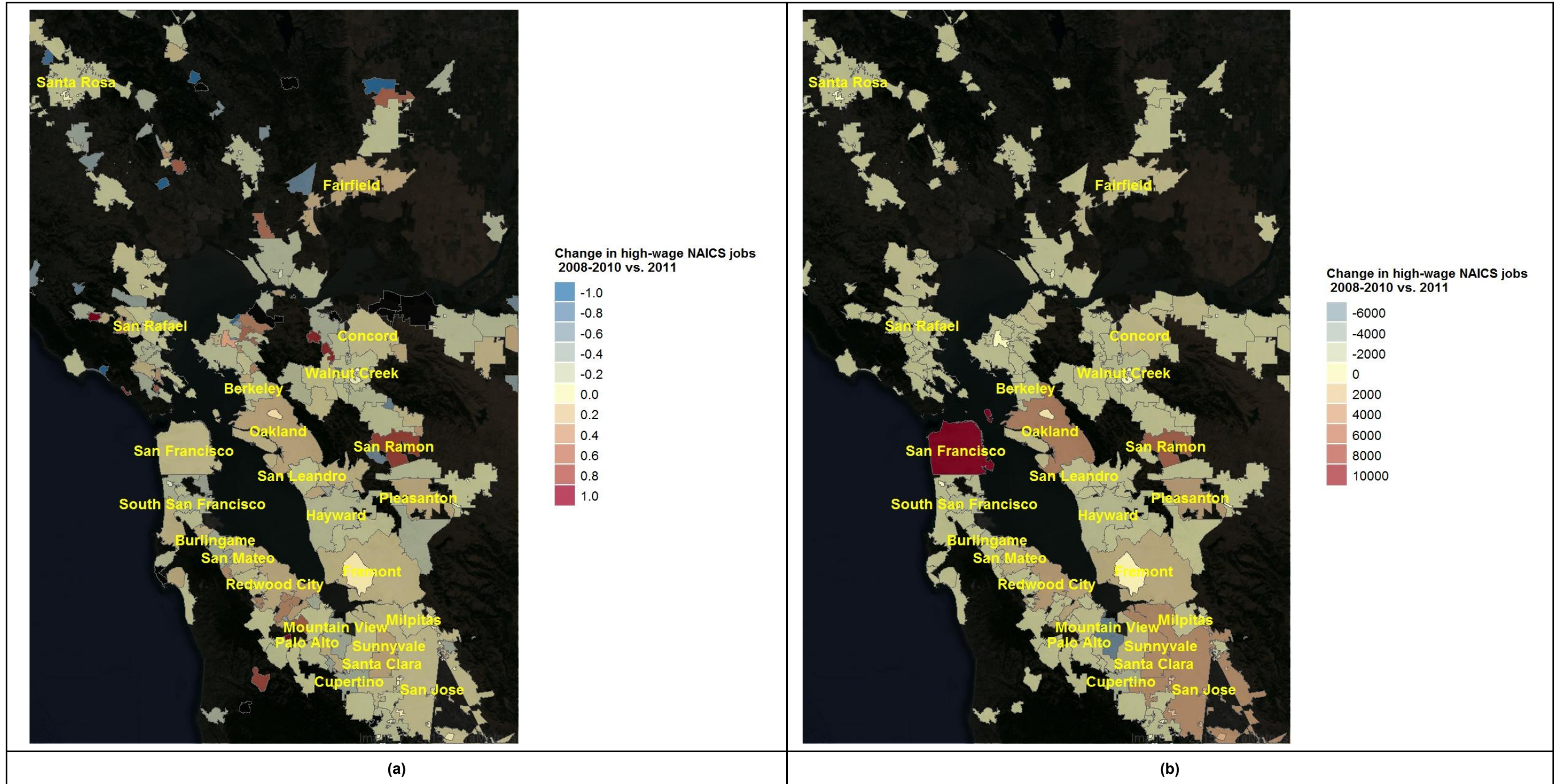


Figure 1: Percentage (a) and absolute (b) change in jobs for aggregate high-wage NAICS categories, 2008-2010 vs 2011. The high wage category includes information (NAICS 51), finance and Insurance (NAICS 52), professional and technical services (NAICS 54), and management of companies and enterprises (NAICS 55).

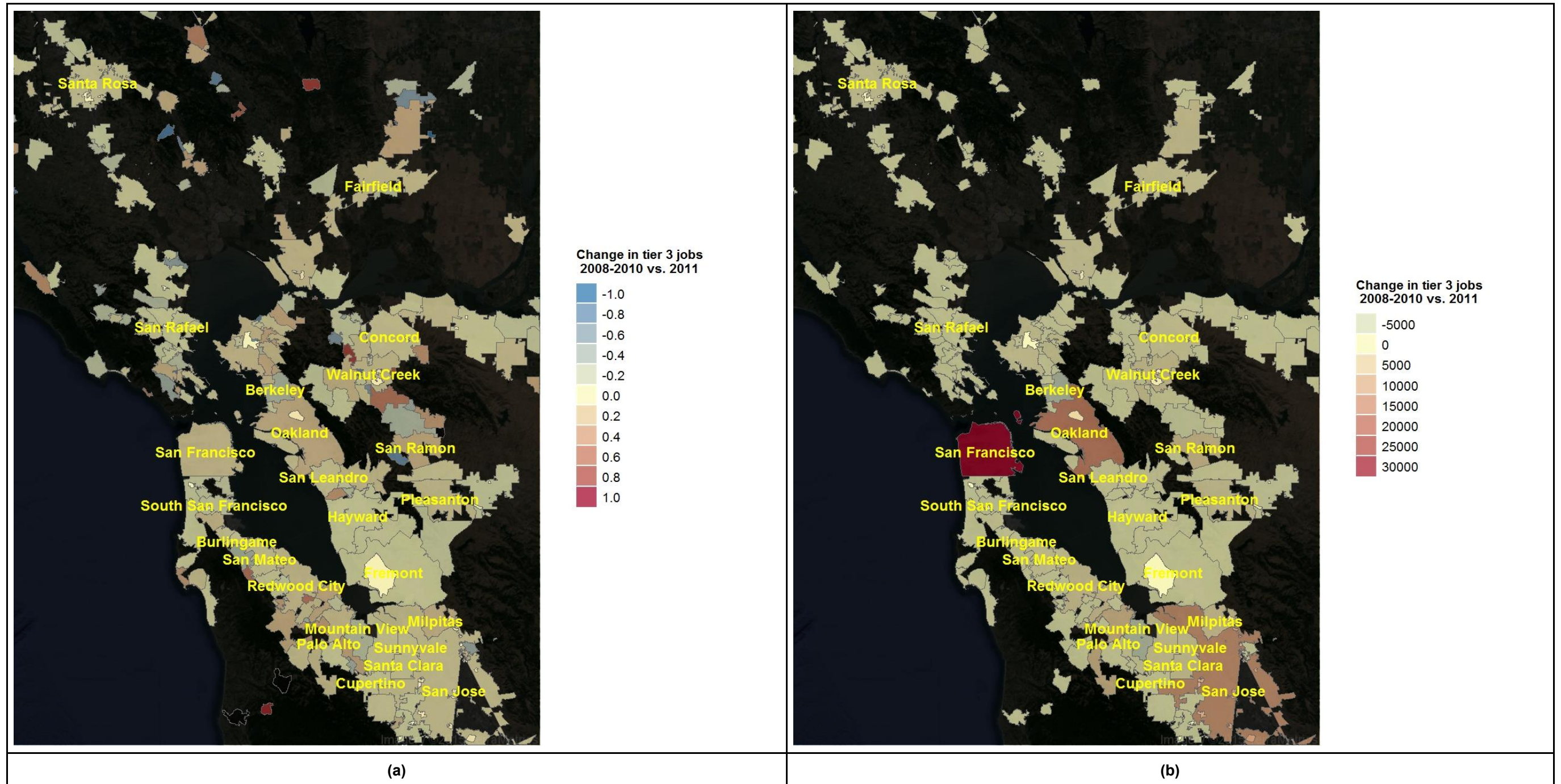


Figure 2: Percentage (a) and absolute (b) change in jobs for jobs in the Tier 3 (> \$3,333/month) wage category.

3.2 Low-wage job growth and decline

Growth in low-wage jobs, according to aggregate NAICS codes, has been concentrated in San Francisco, San Jose, and Oakland (Figure 3). Most of the other jurisdictions show slight increases or decreases. Figures 4 and 5 illustrate the changes for tier 1 and tier 2 jobs, respectively. Figure 4 shows that, in general, the trend for the very low-wage tier 1 jobs has been to decrease in absolute terms across the Bay Area except in the three largest cities.

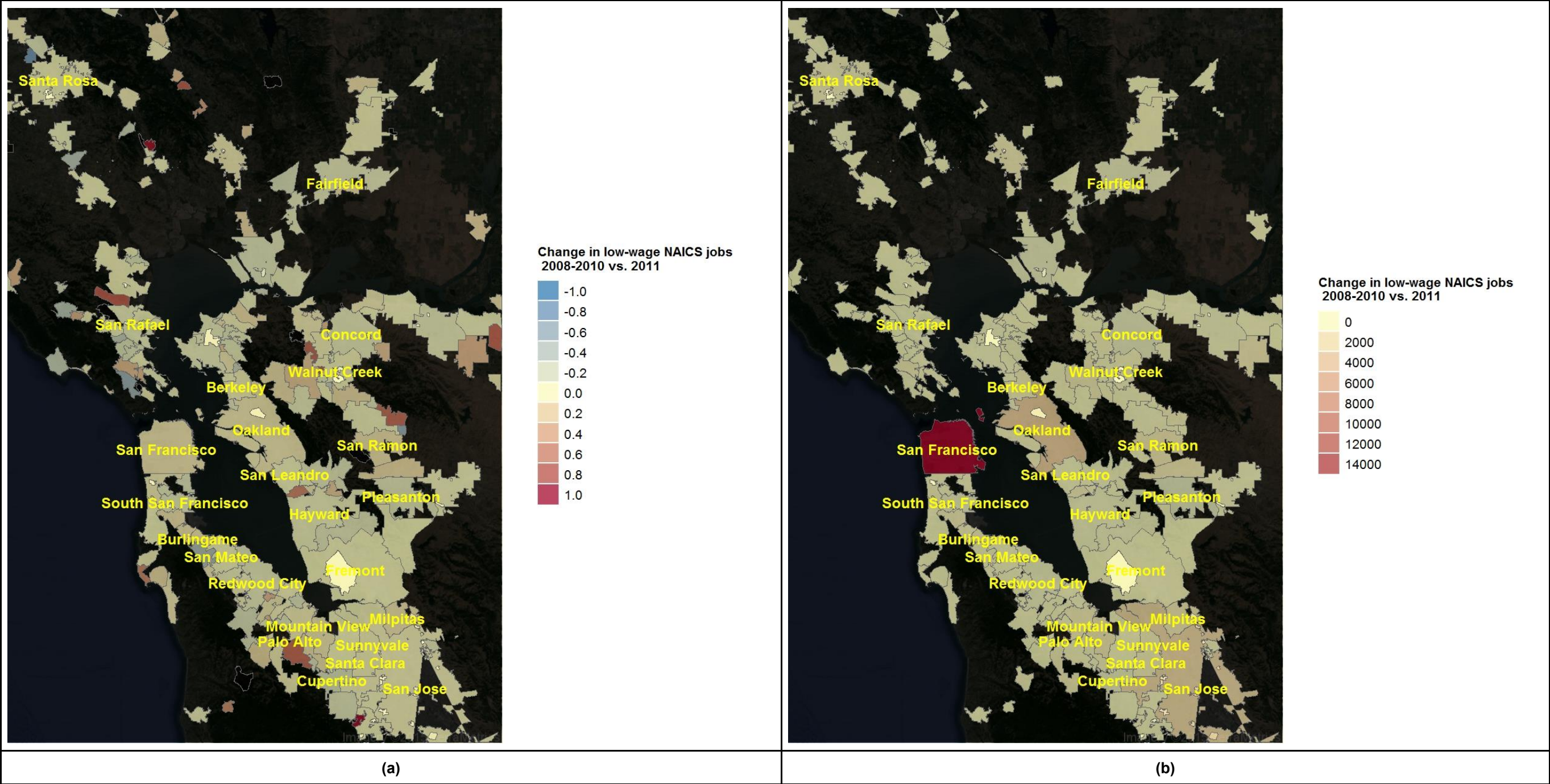


Figure 3: Percentage (a) and absolute (b) change in jobs by low-wage NAICS categories, 2008-2010 vs 2011. The low-wage category includes retail trade (NAICS 44-45), administrative/support/waste remediation (NAICS 56), arts, entertainment, and recreation (NAICS 71), accommodation and food services (NAICS 72), and other services (NAICS 81).

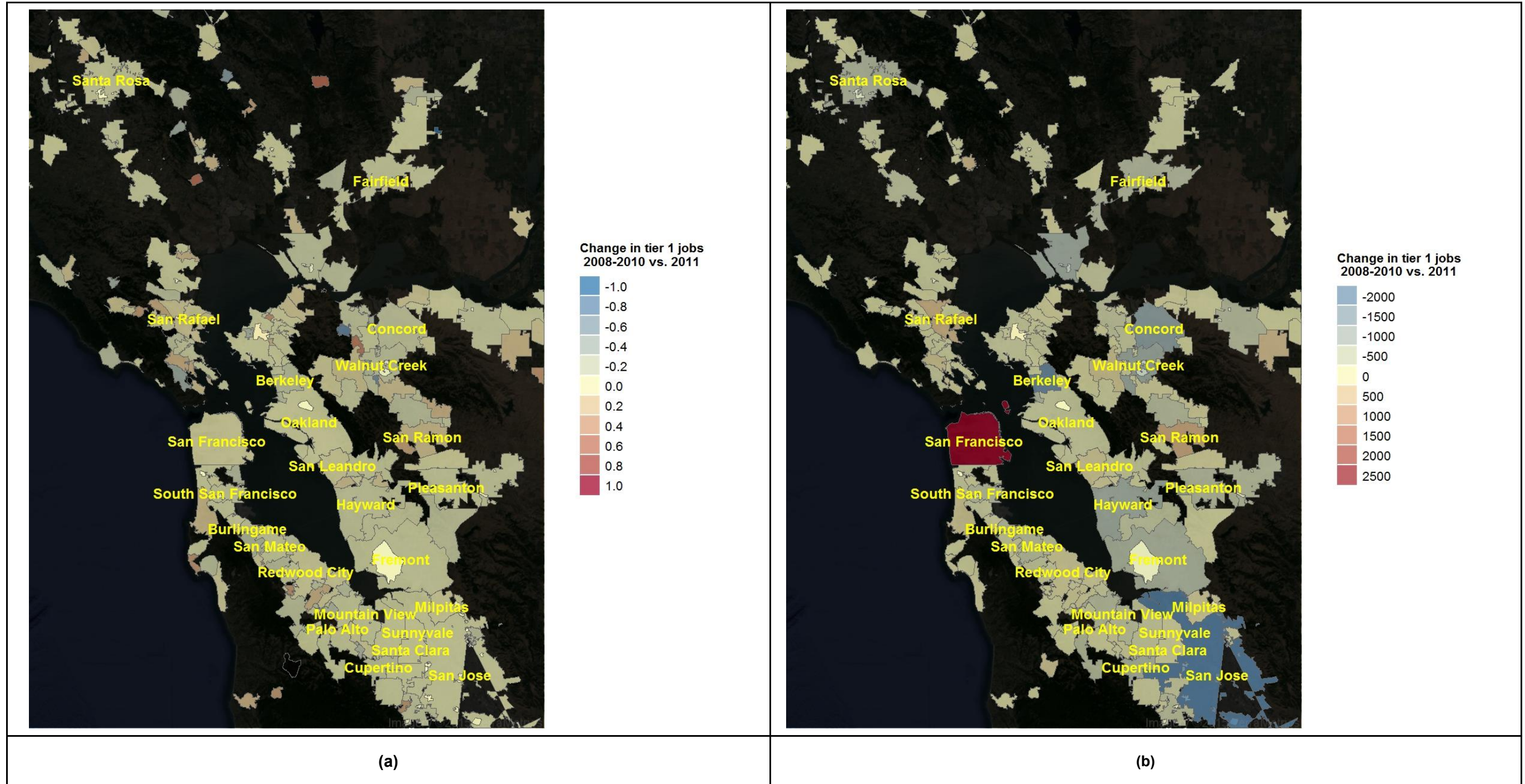


Figure 4: Percentage (a) and absolute (b) change in tier 1 (wage < \$1,251/month) jobs, 2008-2010 vs 2011.

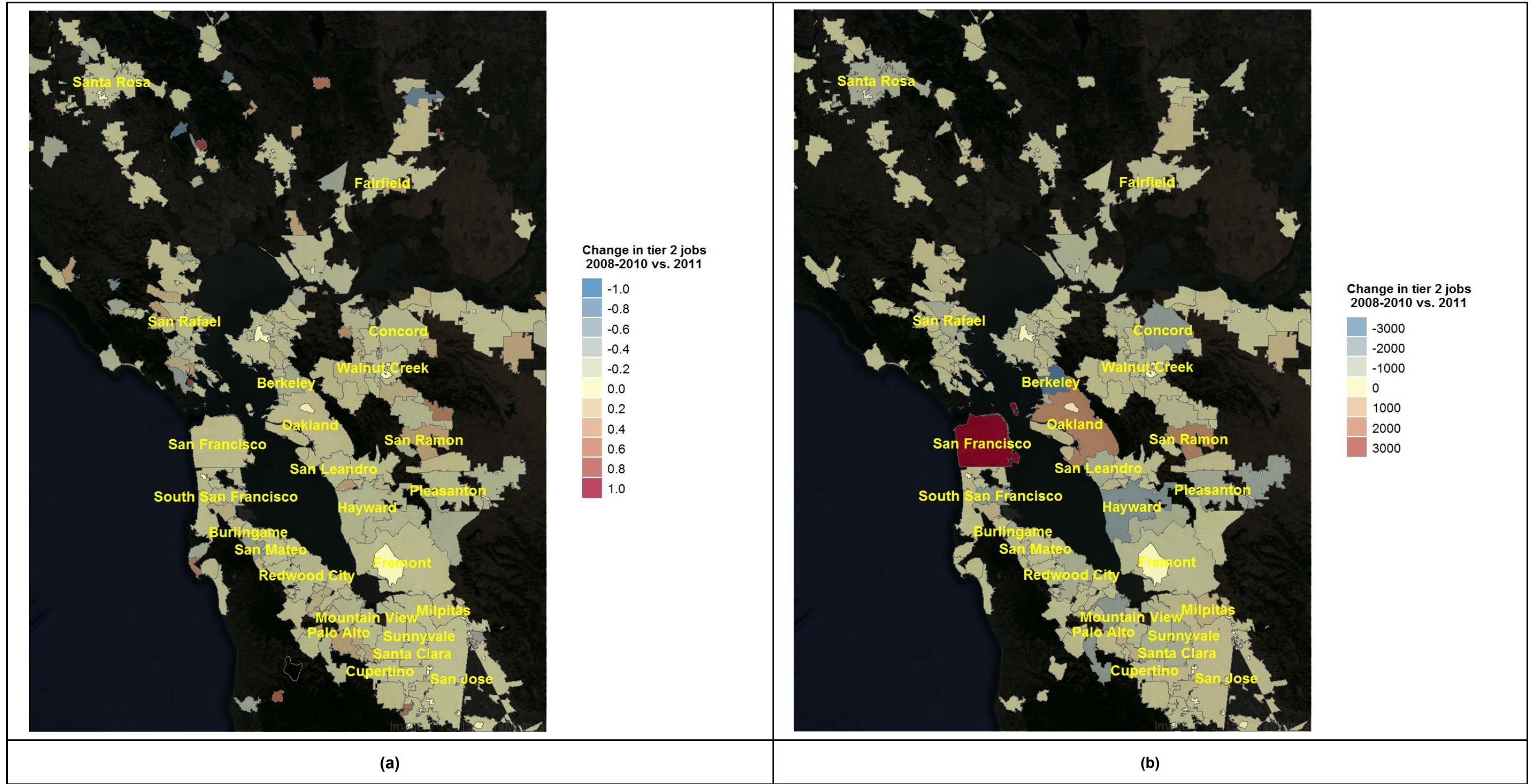


Figure 5: Percentage (a) and absolute (b) change in tier 2 (wage \$1,251 - \$3,333/month) jobs, 2008-2010 vs 2011.

3.3 Relationship between low- and high-wage job growth and decline

To investigate the relationship between low- and high-wage job growth and decline, we produced pairwise scatterplots of each job category to identify outliers and subsequently calculated correlation coefficients. Correlation coefficients range between -1 and 1 and indicate the strength of the positive or negative correlation between two variables. They indicate precisely how strongly and in which direction one variable can be used to predict the other. Figure 6a shows the changes in job numbers for high- and low-wage NAICS categories for all 227 Bay Area jurisdictions and census designated places (CDPs). The vast majority of CDPs cluster close to zero, accounting for little of the overall change in jobs over this time period. Obvious outliers include San Francisco, which saw large gains in both types of jobs, and Mountain View, which saw a decline in high-wage jobs and very little change in low-wage jobs. With San Francisco and Mountain View removed from the data, the correlation between high-wage and low-wage job growth is still positive and statistically significant for the 23 jurisdictions accounting for the greatest numbers of total jobs ($r^2 = 0.46$, $p < 0.05$).

When all jurisdictions are considered, there is no statistically significant correlation. Figure 6b illustrates the ratio of low-wage to high-wage job change for jurisdictions that gained both low- and high-wage workers. For Milpitas, about five low-wage jobs accompanied each high-wage job gained over the time period under study. On the other hand, Sunnyvale and Santa Clara added low-wage jobs at a much lower rate than they did high-wage jobs. Clearly, the number of low-wage jobs gained or lost with each high-wage job can vary widely by jurisdiction.

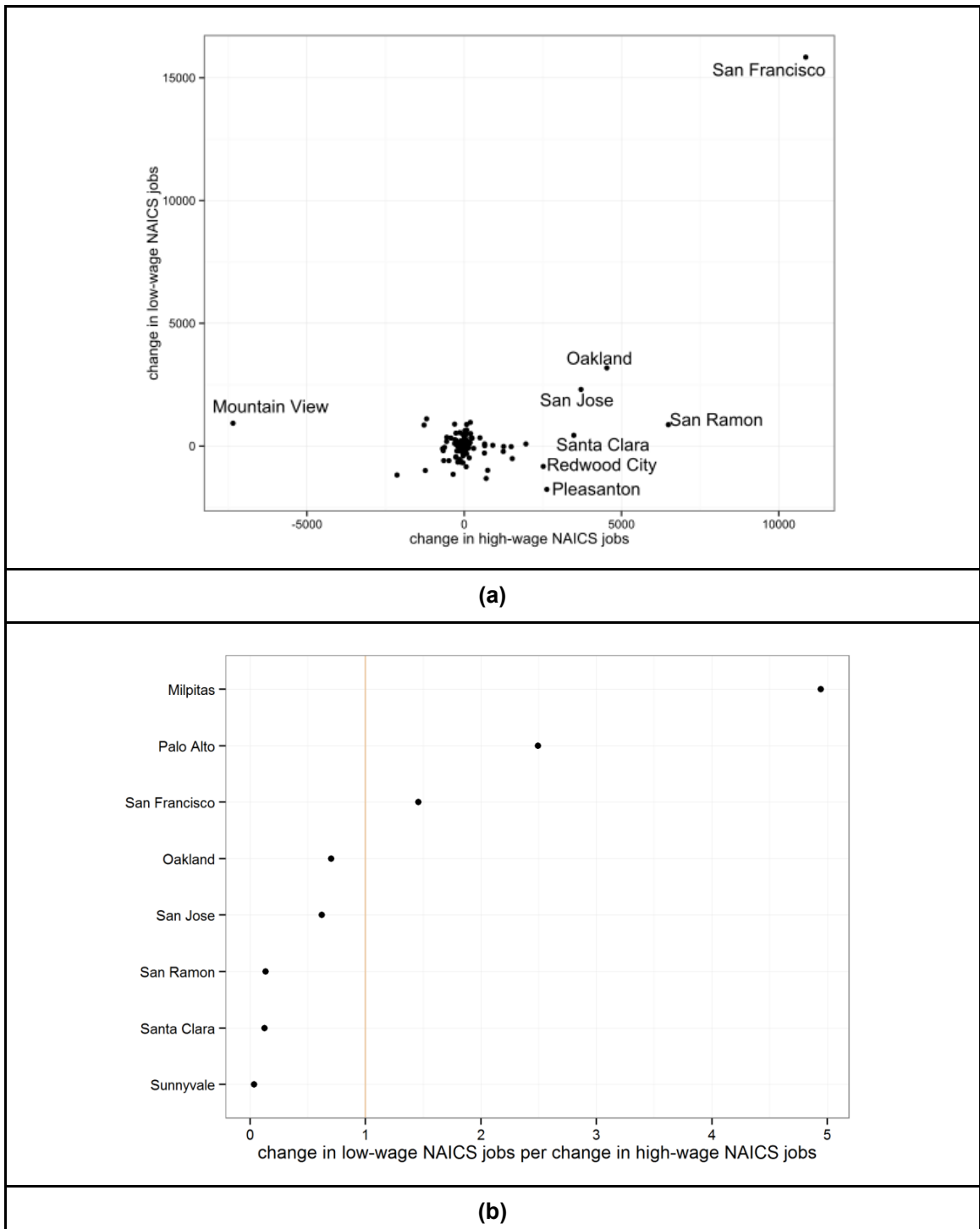


Figure 6: Relationships between changes in high- and low-wage NAICS jobs in the Bay Area, 2008-2010 vs. 2011, by jurisdiction for (a) absolute changes for all jurisdictions and (b) the ratio of low-wage NAICS job change to high-wage NAICS job change in jurisdictions that gained both high- and low-wage jobs.

4.0 Within-jurisdiction housing affordability changes

A key question of interest is the relationship between observed changes in jobs in each category and housing affordability. Determining precisely which housing products are both affordable and desirable for particular workers is a challenging task. The study authors have previously defined such limits based on a review of the literature and keeping in mind the limitations of each data set.⁴ Based on that work, we set empirical limits for housing affordability for both rental and owner-occupied units for workers employed in both tier 1 and tier 2 jobs. The limits were based on 30% of income devoted to housing, assuming two people earning the upper wage limit from the LODES data. It is convenient to use the precise wage categories from the LODES, rather than the NAICS aggregations, because these remain consistent over time and map directly to census rent and value categories. The calculation for rental affordability is simply based on this 30% of total income threshold. To calculate affordability of owner-occupied units, we assume a mortgage of 80% of the house's value, with a 30-year fixed rate mortgage at 3.5% interest. Table 4 summarizes the affordability assumptions used in this analysis. One analysis assumes that the tier 1 and tier 2 affordability categories are mutually exclusive. In other words, the tier 1 affordable units are not considered desirable for tier 2 workers. To consider a more complete picture of the low-wage housing market, we also analyze changes for a combined tier 1 and tier 2 category. For comparison purposes, we also look at changes in the total housing stock. The total stock includes all products, including those that are in the upper tiers of contract rent and value.

Table 4: Housing affordability assumptions.

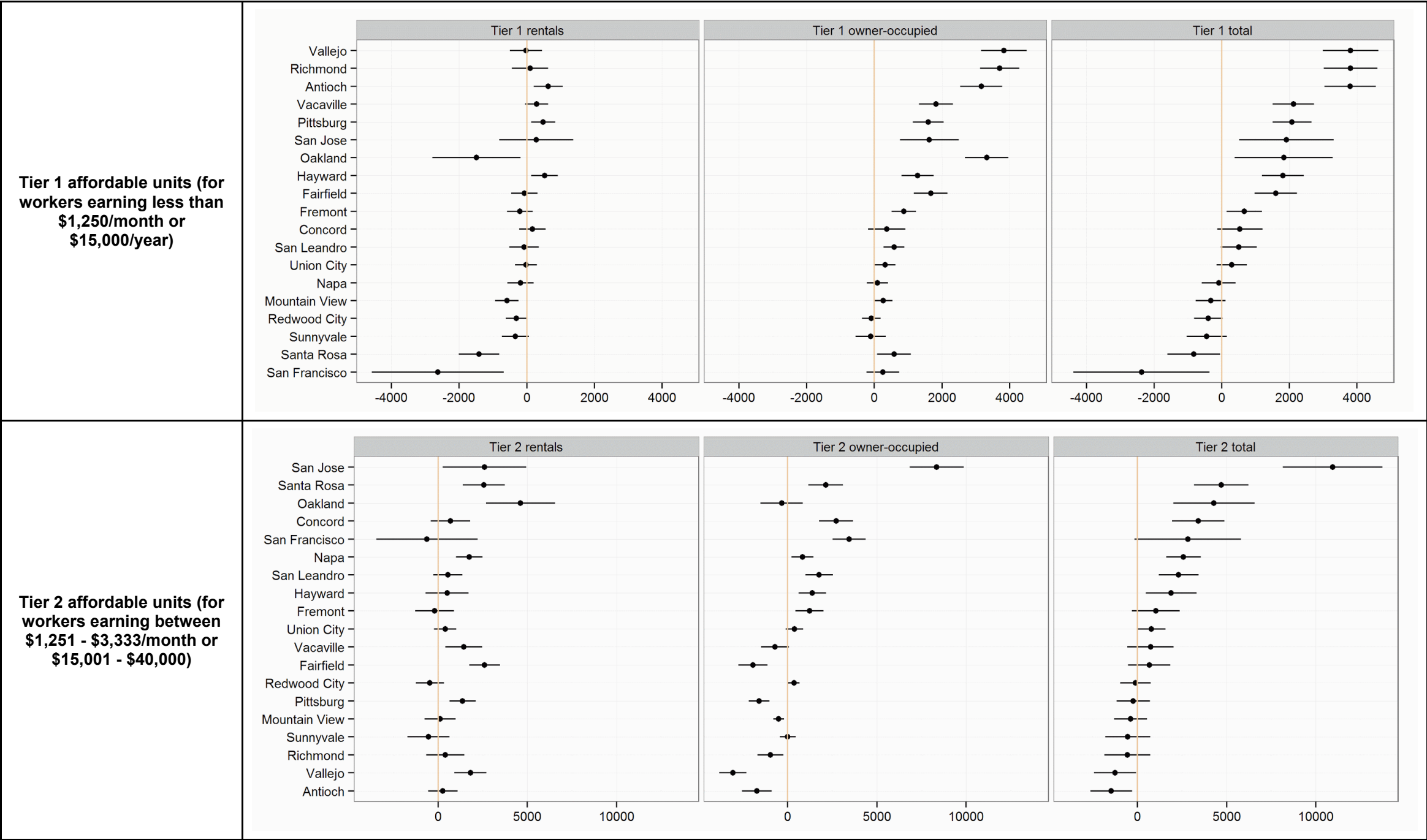
Wage category	Affordability limit	
	Rental units	Owner-occupied units
Tier 1	$\$1,250 * 2 * 0.3 = \750	$(750 / (0.035/12 * (1 + 0.035/12)^{360}) * ((1 + 0.035/12)^{360} - 1)) / 0.8 = \$208,777$
Tier 2	$\$3,333 * 2 * 0.3 = \$2,000$	$(2000 / (0.035/12 * (1 + 0.035/12)^{360}) * ((1 + 0.035/12)^{360} - 1)) / 0.8 = 556,738$

Figure 7 compares values from the ACS three-year estimates for 2008-2010 to 2011-2013. The three-year estimates (compared to the ACS five-year estimates) trade off a focus on more recent data with reduced geographic coverage, meaning that not all places have data within these estimates. It contains change data for the 19 census places that have complete housing variables in both of the three year census products, providing the most complete data available to examine recent changes in housing conditions in the Bay Area. To develop these figures, we summed housing totals using the census categories of contract rent (for rental units) and value (for owner-occupied units). Two other categories would have ideally been included - asking price and rent asked - but these were not available in the three-year census products for these jurisdictions. These latter categories represent prices for housing units that are vacant and/or on the market, and represent a small share of total units.

⁴ Benner, C. and A. Karner (under review). "Measuring Jobs Housing Fit: Low-Wage Jobs and Proximity to Affordable Housing in the San Francisco Bay Area. Urban Geography.

The changes depicted in the housing unit figures below should be interpreted as the change in annual average housing numbers between two three-year periods: 2008-2010 and 2011-2013. Positive values indicate that more housing was available in the more recent estimates than in the earlier ones in each affordability category.

When assessing changes in the tier 1 and tier 2 affordability categories, note that changes must be interpreted as arising both from new construction/demolition as well as shifts in the value of the existing housing stock. Additionally, because the ACS data are estimates with associated errors, any calculated differences must be assessed with this in mind. In the figures, 90% margins of error are depicted for the differences using horizontal lines that extend symmetrically from the best estimate of housing unit change. If the margins of error overlap zero, this means that we cannot say with certainty whether an increase or a decrease occurred for that jurisdiction. Generally, as jurisdictions increase in size, margins of error increase, meaning that larger differences are needed to demonstrate difference from zero. Note also that the scale of the x-axis is different in each plot shown in Figure 7. The maximum change in tier 1 affordable units is 4,000 while the maximum change in total units is 30,000 - an order of magnitude difference. Finally, each plot separates rental, owner-occupied, and total units in each affordability category. The points are sorted by total housing units in each category so that the viewer can easily discern the locations of the greatest changes and compare across jurisdictions.



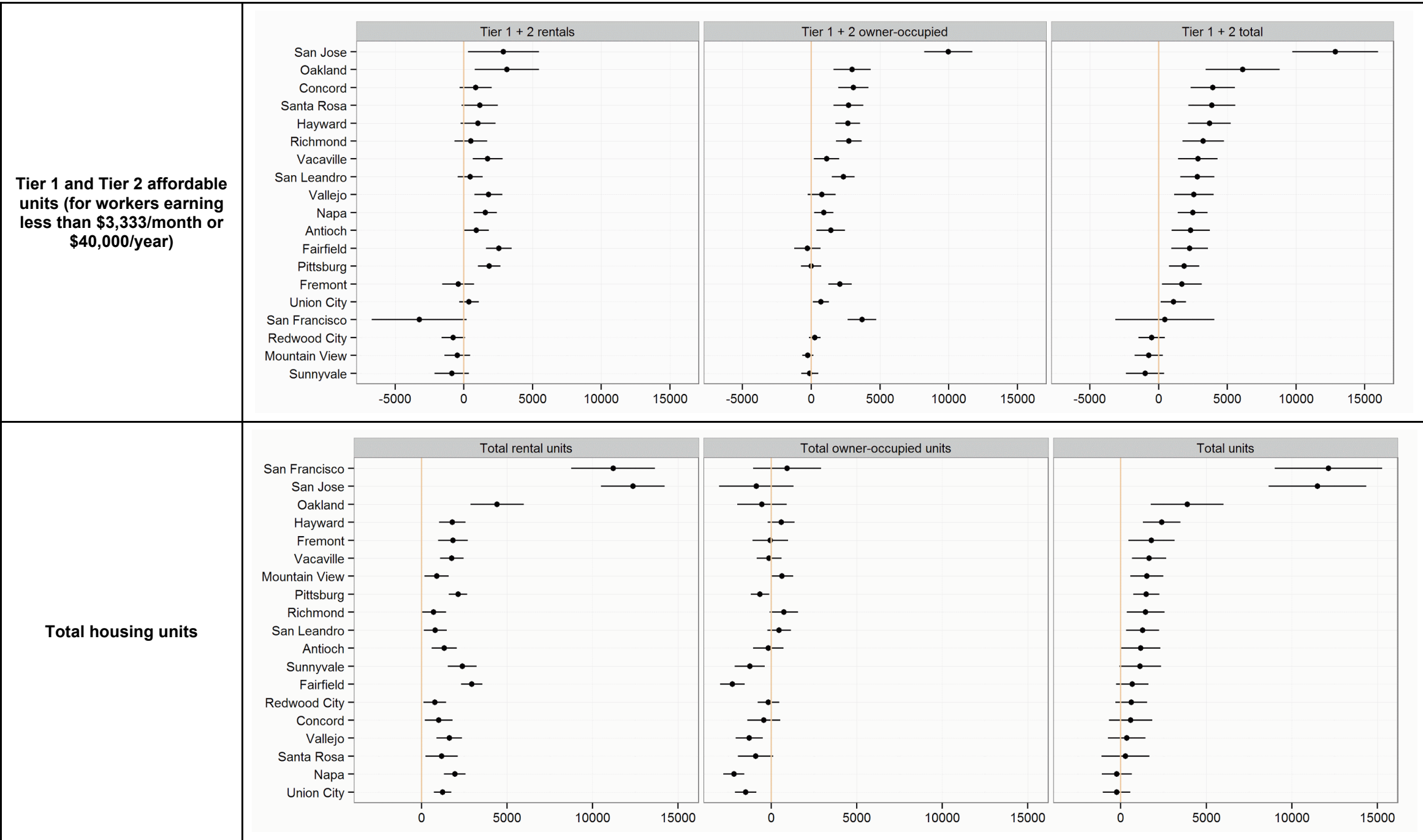


Figure 7: Change in housing units by affordability and rental/owner-occupied status for the 19 census places with complete data available in the ACS 2008-2010 and 2011-2013 three-year data products. Data from the ACS tables B25056 - Contract Rent and B25075 - Value. Data were generally not available for asking price and rent asked, but the number of units in these categories was relatively small. Error bars for each point indicate the 90% margins of error.

Figure 7 provides some evidence that the jurisdictions providing tier 1 and tier 2 affordable units are not the same as those providing total housing unit growth. Especially for tier 1 workers, jurisdictions with the greatest increases in affordable housing are Vallejo, Richmond, and Antioch. In terms of total housing unit production, these areas rank far behind many of their larger (in terms of population and housing) peers. To investigate this possibility further, we compared jurisdictions in terms of their total housing unit growth/decline and their growth/decline in tier 1 + 2 affordable units over the two three-year periods under study. Figure 8 compares the total housing production to changes in the total number of affordable units, by jurisdiction. There is clearly a cluster of places that are providing tier 1 + 2 affordable units in proportion to total housing production. On the other hand, San Francisco is a clear outlier. Its total housing production is the highest of all 19 jurisdictions, but it has had virtually no change in the number of affordable units. San Jose and Oakland are in almost the opposite situation. Both jurisdictions have added substantial total units, and have experienced a substantial increase in affordable units as well. Figure 9 shows the same two overall categories, but for rental units. From this figure, a different picture emerges. It is clear that there is a cluster of jurisdictions that grew affordable units in proportion to total rental unit production, but San Francisco, San Jose, Fremont, Sunnyvale, Mountain View, and Redwood City all added total housing capacity and either lost or did not add affordable rental capacity proportionately. Note that, because of the unavailability of LODS data beyond 2011, these figures will be subject to change once additional years of data are released.

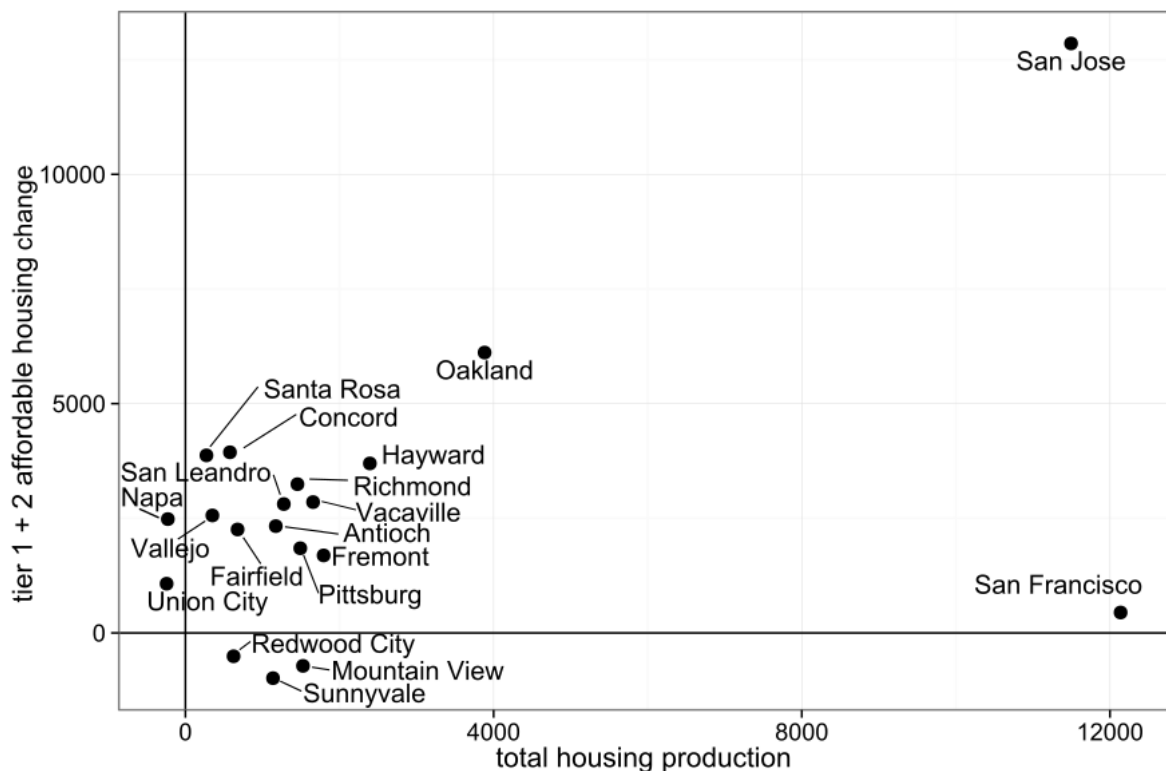


Figure 8: Comparison of total housing unit production to changes in tier 1 + 2 affordable units. The 19 jurisdictions shown have complete housing data available in the ACS three-year data products used for the comparison (2008-2010, 2011-2013).

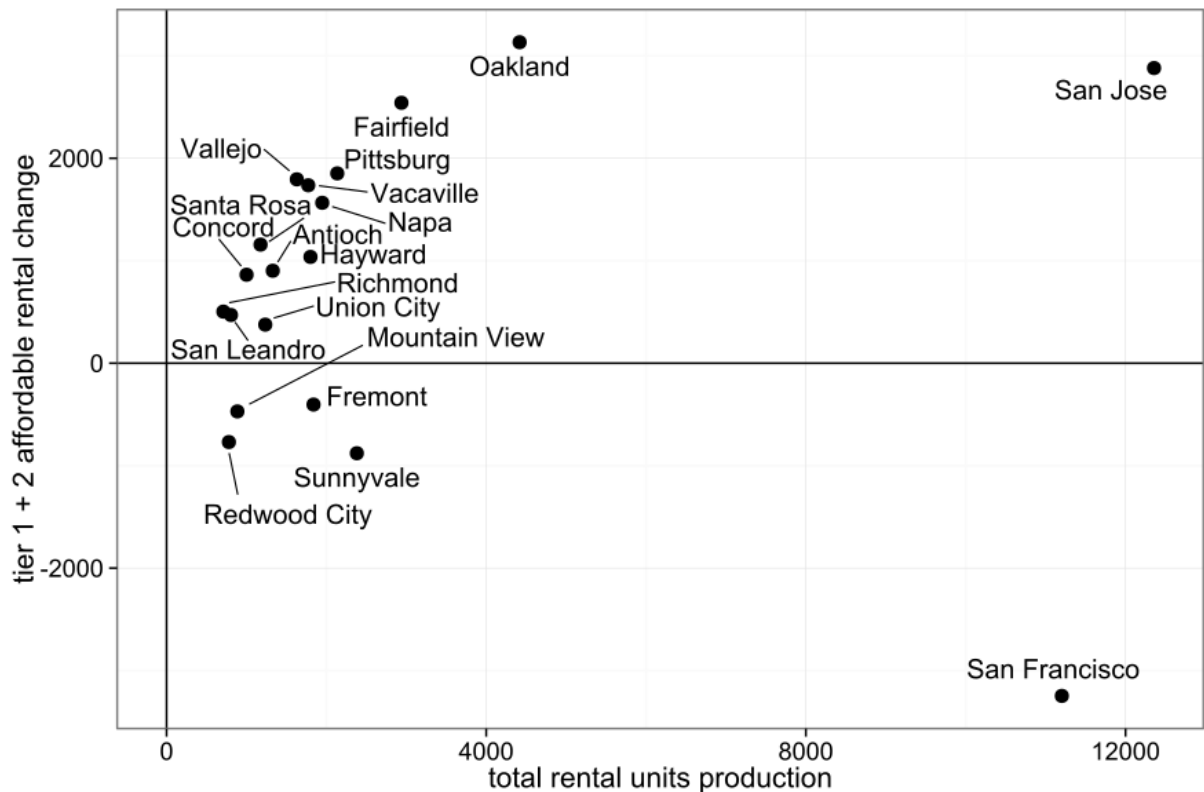


Figure 9: Comparison of total rental unit production to changes in tier 1 + 2 affordable rental units. The 19 jurisdictions shown have complete housing data available in the ACS three-year data products used for the comparison (2008-2010, 2011-2013).

5.0 Within-jurisdiction relationship between job growth/decline and housing affordability

The analysis has so far focused on changes in jobs and housing units in isolation from one another. But from a normative regional equity perspective, there would be a relationship between changes in job numbers at different wage levels and changes in available and affordable housing units. While it is often more desirable for jurisdictions to pursue economic development activities and eschew housing, under California Housing Element law, cities and counties must anticipate future housing needs for all income segments and plan accordingly. Although we would not expect housing supply to perfectly follow changes in locally employed workers, analyzing job and housing unit changes together can provide an important barometer of housing market health. Specifically, we can determine which jurisdictions are relatively “on course” and which are potentially off track.

The first set of figures below (Figures 10 - 13) charts the relationship between changes in jobs by wage tier and affordable units for tier 1, tier 2, and tier 1 + 2 combined. Jurisdictions were labeled in Figures 10 - 12 if they experienced a change greater than 500 for either jobs or housing units. For Figure 13 (total jobs), the threshold was increased to 2000. Because these figures combined LODS and ACS data, they again include 90% margins of error and show the confidence we have in the estimates of

changes in housing units. Jurisdictions whose error bars overlap with zero indicate that we have little certainty about whether the actual value of that change is positive or negative. The figures summarize results for rental units, owner-occupied units, and total units and also include a snapshot of the jobs-housing fit in each jurisdiction in 2010 and 2013. Jobs-housing fit captures that ratio of jobs in a certain wage category to the housing units that are affordable for that wage category and allows us to look at the starting and ending numbers for jobs and housing units in addition to the change over time. Additional metrics of jobs-housing balance and fit were calculated in the included Appendix A. Changes in affordable housing unit numbers should be interpreted carefully. Importantly, they do not necessarily indicate that new units in a particular affordability category were constructed, demolished, or taken off the market. They can simply reflect changes in the value of particular units. On the other hand, changes in the total number of units will reflect genuine growth or decline in housing unit numbers.

Figure 10 illustrates the particularly challenging situation for tier 1 employees who earn very low incomes. Very few affordable rental units were added in the Bay Area over our comparison time period and there is a statistically significant negative correlation between tier 1 jobs and affordable tier 1 rental units ($r^2 = -0.66$, $p < 0.01$). In San Francisco, where the strongest gains were made in tier 1 jobs, there was most likely a decline in housing units affordable to those tier 1 workers. Although Figure 10 shows some increases in affordable owner-occupied units in some jurisdictions, tier 1 workers are not likely to be in the market to purchase homes (this correlation was not significant). Total tier 1 affordable housing unit change was also negatively associated with tier 1 job growth ($r^2 = -0.49$, $p < 0.05$), indicating that the jurisdictions adding affordable capacity generally lost tier 1 jobs. The figure also illustrates one of the challenges associated with using the LODES wage data. Because the wage categories are static, the number of jobs in the tier 1 category (and in the combined tier 1 + tier 2 values) is reduced each year simply due to inflation. Any analysis of changes over time then will reflect both genuine changes in the number of jobs, but also differences based on wage changes within particular categories. The jobs-housing fit panel indicates that a number of jurisdictions had worse fit (i.e. a higher value) for tier 1 affordable rental units in 2013 as compared to 2010 - Redwood City, Fremont, Mountain View, Santa Rosa, and Sunnyvale - while others improved slightly including Concord, Hayward, Vacaville, and Antioch.

Tier 2 workers fared somewhat better than their tier 1 counterparts in terms of affordability changes in the rental market (Figure 11). For similar reasons to tier 1, the rental market is still likely to be quite important for tier 2 workers. San Jose and Oakland definitely saw tier 2 affordable rental units increase while San Francisco again saw no change, even though it is the jurisdiction in which tier 2 jobs grew the most. Changes in tier 2 fit for the rental market, as indicated by the jobs-housing fit panel, were modest for most jurisdictions. None of these correlations were statistically significant. Figure 12 shows the results for the combined tier 1 + 2 categories, to provide a picture of the most financially constrained workers on the housing market in the Bay Area. Those results show that San Jose and Oakland definitely saw an increase in housing units in this affordability category. Overall, San Francisco saw no change despite seeing the Bay Area's largest increase in jobs in this low-wage category. There was a negative correlation between change in tier 1 + 2 jobs and tier 1 + 2 affordable rental units ($r^2 = -0.51$, $p < 0.05$). The importance of considering change as well as the starting jobs-housing fit is evident from Figure 11 as well. Sunnyvale, Redwood City, and Mountain View cluster together, providing no increase in affordable units but also losing combined tier 1 + 2 jobs. Their starting indicators of fit,

however, indicate that they generally have higher numbers of jobs than affordable owner-occupied units meaning that adding affordable tier 1 + 2 units would mitigate existing disparities.

The figure for total jobs, total housing units, and overall jobs-housing balance (Figure 13) provides a useful comparison to the values disaggregated by wage levels. Numbers for total housing units include the highest categories of rent and value available in the ACS data, meaning that Figure 12 is capturing changes in very high value units. The figure indicates that major growth in the Bay Area housing market is driven by rentals, not owner-occupied units. The change in total owner-occupied units is far lower in magnitude than the change in any of the disaggregate changes in owner-occupied units by affordability tier. This means that a large portion of the increases in affordable owner-occupied units were due to shifts in value over the time period under study. Total rental units and total units overall definitely increased in San Francisco, San Jose, and Oakland, as well in some of the smaller jurisdictions. These changes tracked overall increases in total jobs to a much greater extent than was the case in the tier 1 and tier 2 affordability categories. Total job growth was positively correlated with both total rental unit change ($r^2 = 0.78$, $p < 0.001$) and with total housing unit change ($r^2 = 0.81$, $p < 0.001$). Despite this growth, overall jobs-housing balance indicators actually worsened (got slightly larger) in San Francisco and Oakland.

The extent to which the observed changes are associated with increases in high-wage jobs was a key question of interest to MTC and the research team. The scatterplots in Figure 14 address the relationship between changes in high-wage jobs (operationalized as jobs in the professional NAICS category) and housing affordability. Because of the apparent importance of the rental market in the Bay Area, the figures focus on changes in rental units by affordability category and in total. The results are illustrative. Jurisdictions that added jobs in the high-wage NAICS categories generally saw increases in total rental units ($r^2 = 0.72$, $p < 0.001$), decreases or no change in tier 1 affordable units ($r^2 = -0.55$, $p < 0.05$), and relatively modest growth in tier 2 affordable units ($r^2 = 0.05$, not significant). In sum, growth in high-wage NAICS jobs is associated most strongly with growth in total rental units (which includes those units in the highest rent categories). Mountain View was an outlier, as it saw decreases in high-wage jobs.

Overall, these results illustrate the importance of considering the fit between workers in particular wage categories and appropriate housing affordability categories. When viewed simply from the perspective of aggregate jobs-housing balance, the changes observed in the Bay Area appear to be quite favorable, with increases in housing generally following increases in jobs. But when fit is considered, and slices of job and disaggregate components of the housing and job markets are viewed together, it is clear that housing growth (operationalized as growth in rental units) is closely tracking growth in high-wage jobs while the opposite relationship is evident for low-wage jobs.

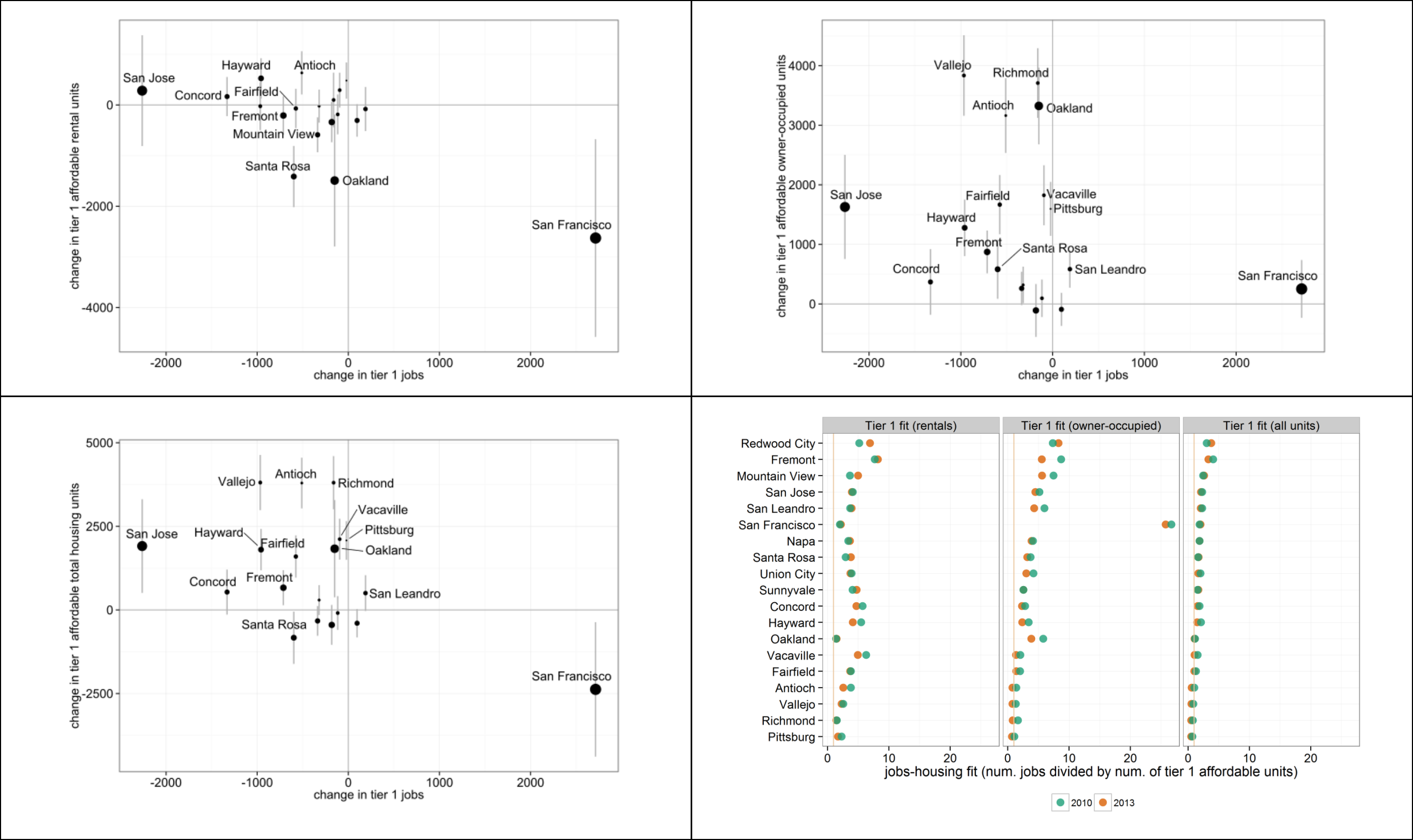


Figure 10: Relationships between changes in tier 1 jobs and tier 1 affordable units and jobs-housing fit by jurisdiction in the Bay Area.

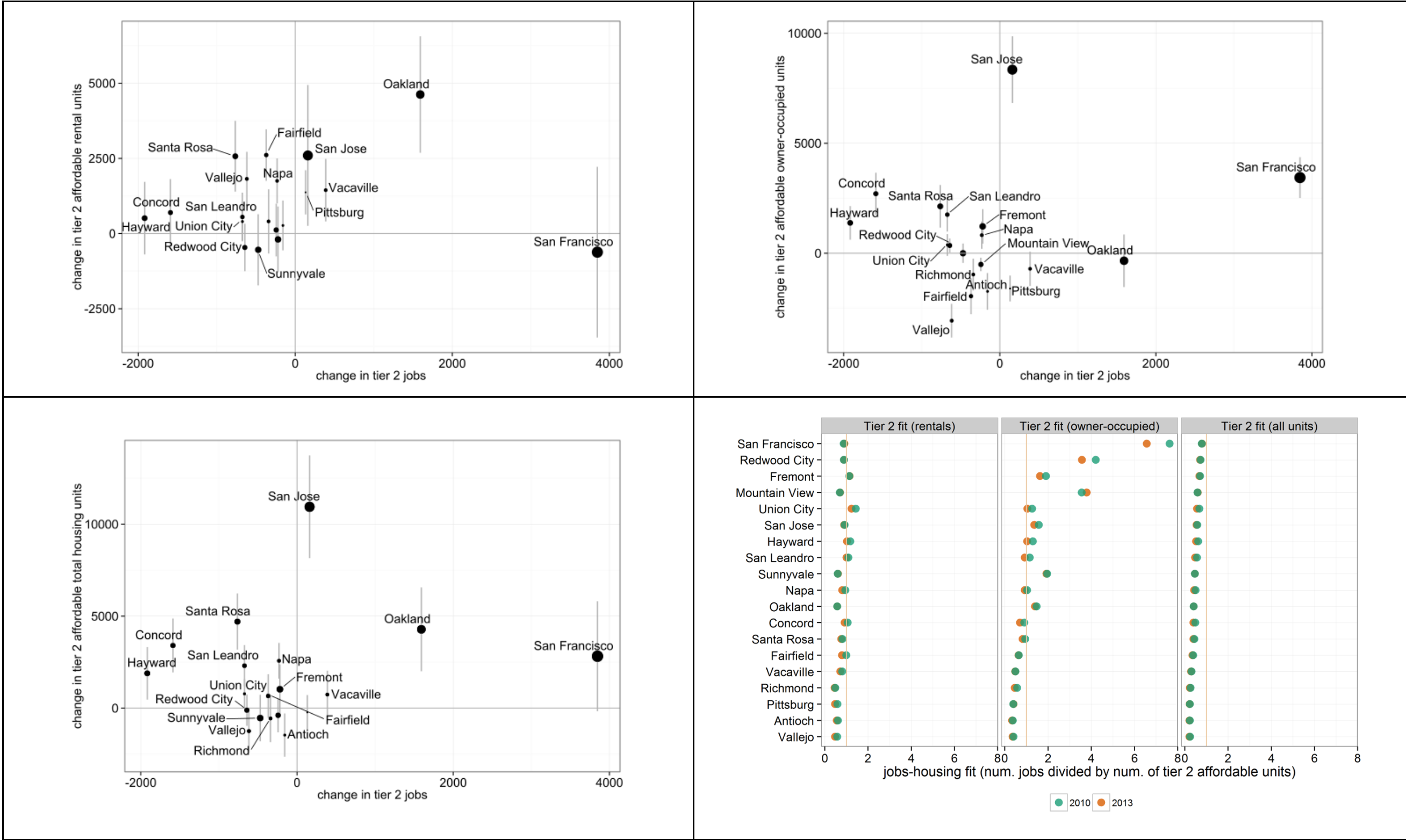


Figure 11: Relationships between changes in tier 2 jobs and tier 2 affordable units and jobs-housing fit by jurisdiction in the Bay Area.

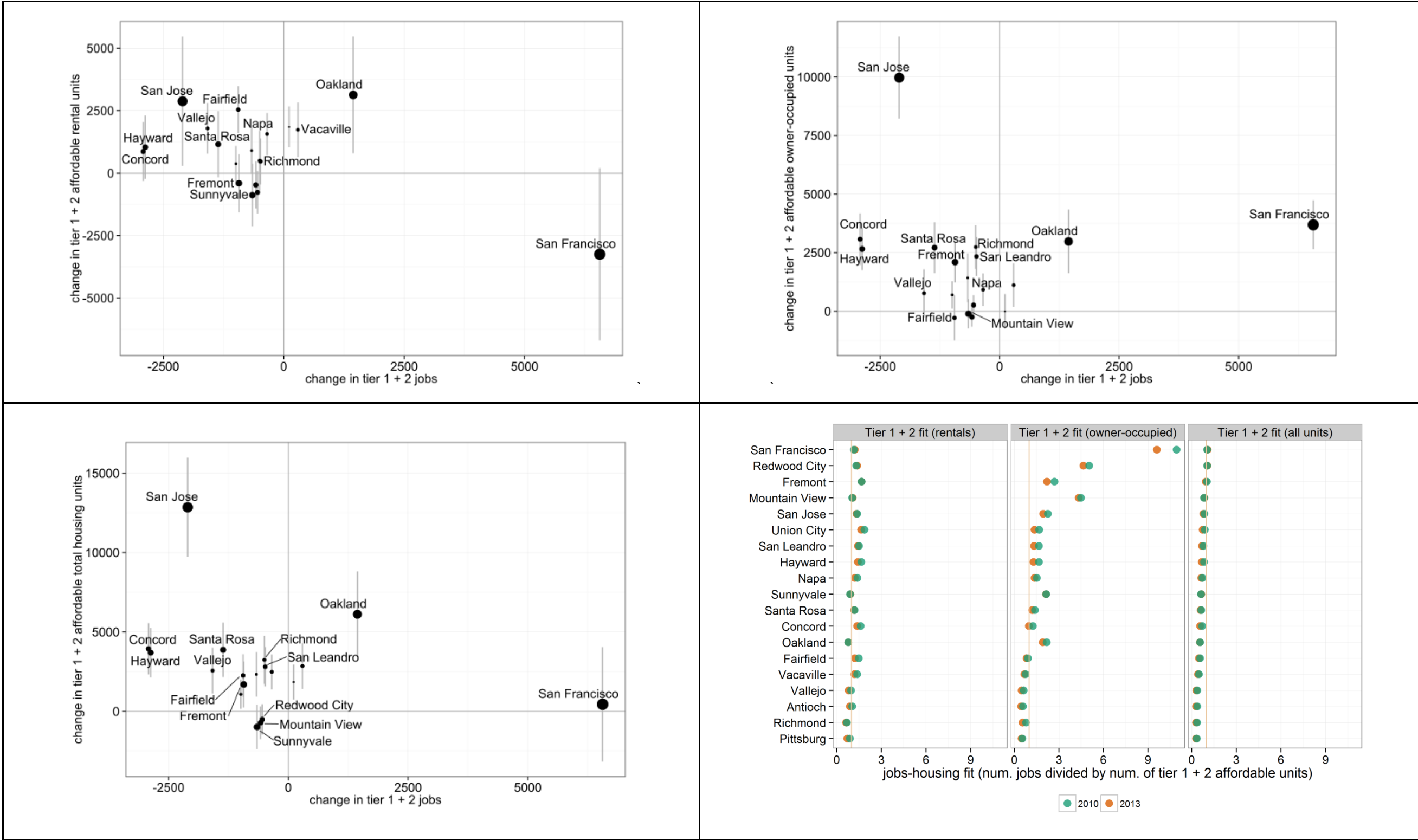


Figure 12: Relationships between changes in tier 1 + 2 jobs and tier 1 + 2 affordable units and jobs-housing fit by jurisdiction in the Bay Area.

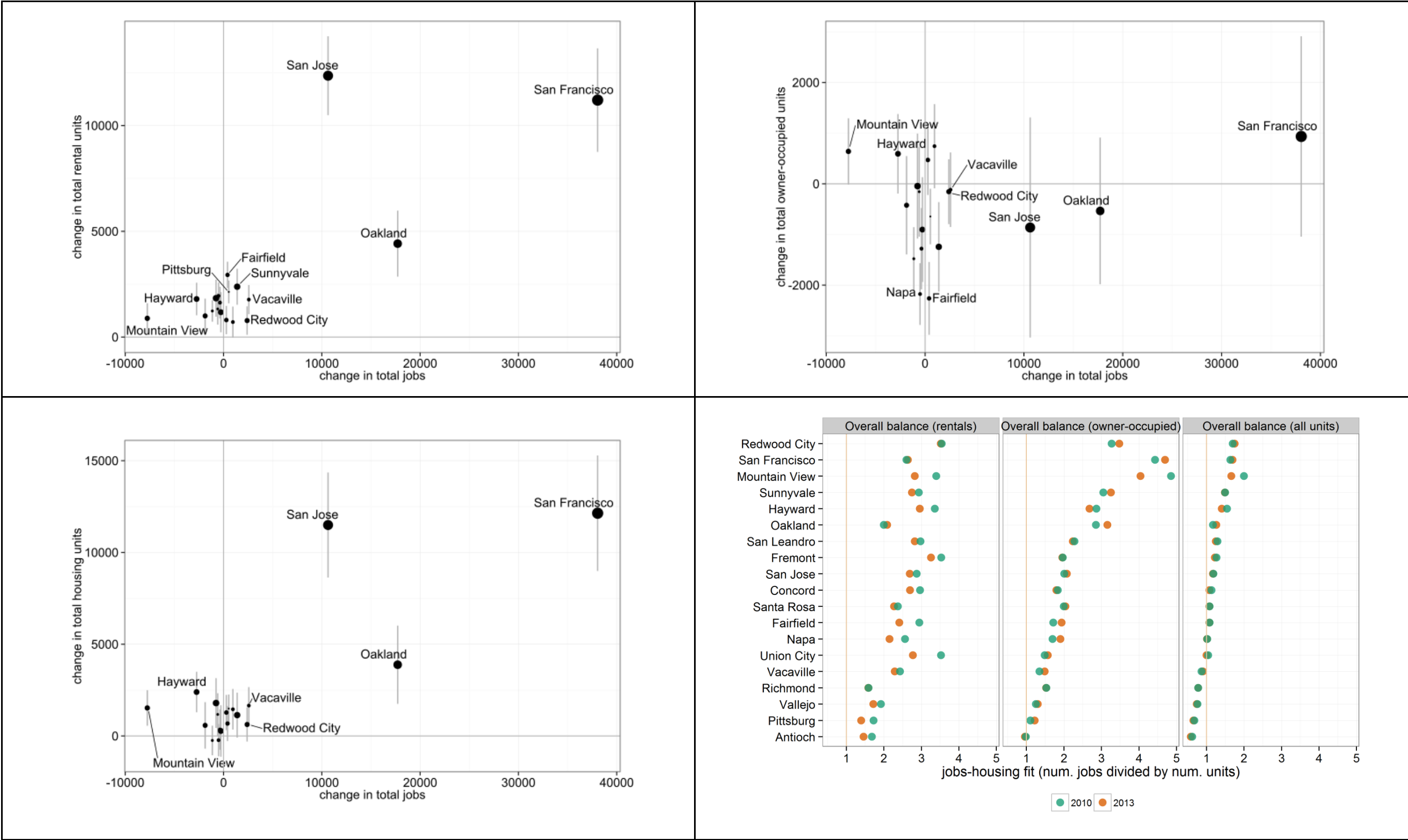


Figure 13: Relationships between changes in TOTAL jobs and TOTAL units and jobs-housing balance by jurisdiction in the Bay Area.

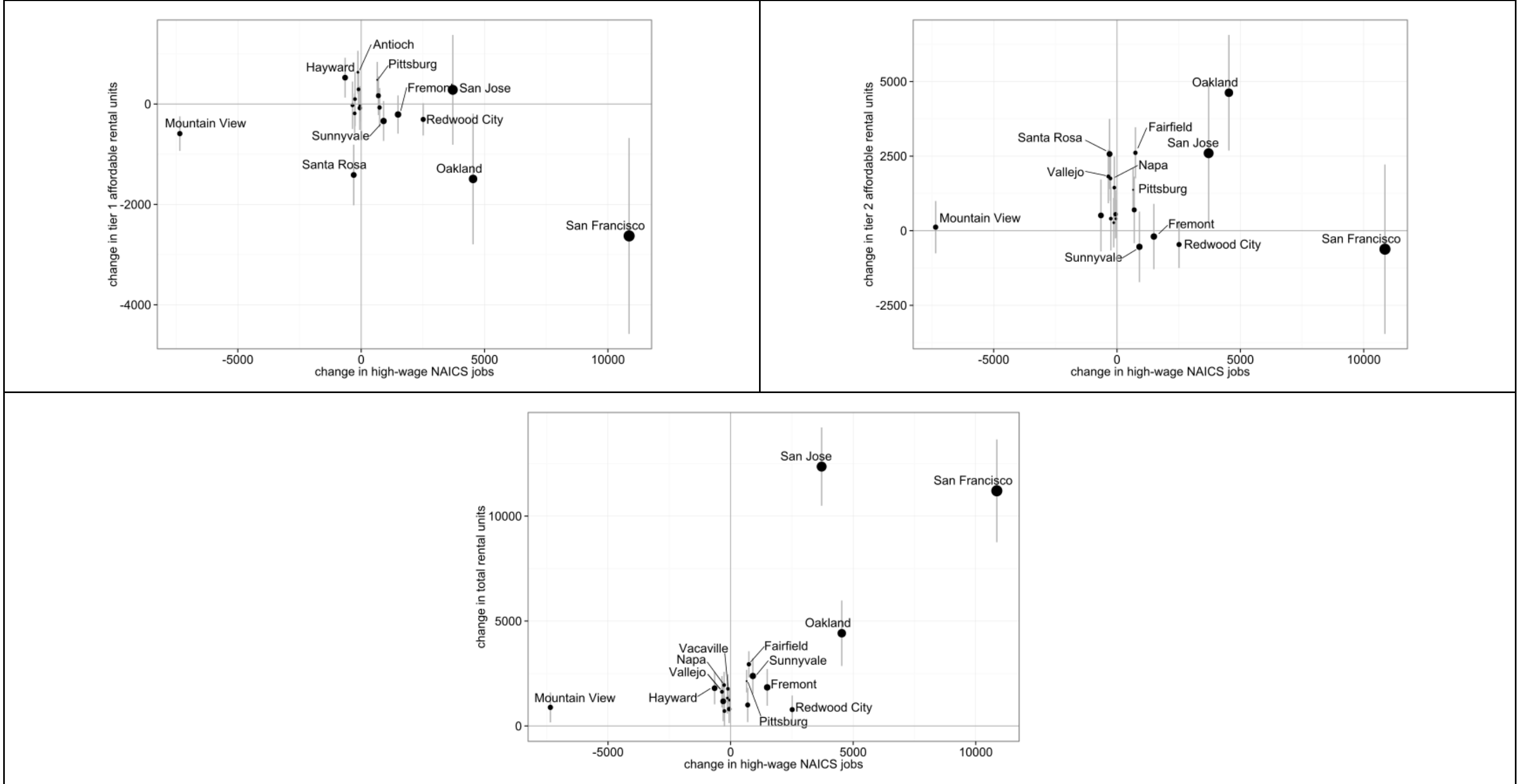


Figure 14: Relationships between changes in high-wage NAICS categories and rental units by affordability tier and total by jurisdiction in the Bay Area.

6.0 Between-jurisdiction job growth and housing demand

The within-jurisdiction analysis is helpful for highlighting those jurisdictions that are performing well or poorly in terms of providing housing supply well-matched to the wages of locally available jobs. However, when jurisdictions fail to provide adequate workforce housing, there may be material consequences that affect other locations. These consequences may be especially severe for low-wage workers who are likely to be more sensitive to housing price changes and to seek out opportunities to locate closer to where they work, when possible, to minimize combined housing and transportation costs.

The analyses presented below highlight how commute distances and housing affordability characteristics for workers located in jurisdictions that added jobs in 2011 differ from those that were employed in 2008-2010. We highlight the “commute penalty” that new workers face for certain place-of-work jurisdictions. We also show that these added workers are locating in jurisdictions with somewhat higher rental vacancy rates than the existing distribution of workers. These combined results build a strong case for the integration of affordable housing and environmental sustainability policies.

6.1 Added worker commute analysis

We developed several indicators of commute patterns for each jurisdiction including *internal capture* - the number of workers that live and work in the same census place as a proportion of total jobs - and *average commute distance* by age, income, and industry categories. Figures summarizing these two metrics are included in Appendix B. One issue with these measures is that they simply do not show much change over time; because so much residential and employment location choice is “locked in,” the signal resulting from added employment or shifts in jobs and housing patterns for existing jobs and workers can get lost, meaning that it is difficult to track change over time when looking at aggregate totals. For this reason, we chose to focus on the net new work trips. To calculate this net increase, we looked at every unique place-of-work and place-of-residence pair, and summed together the incremental increase for all these job-home trips that saw an increase across our years of comparison. The figures below summarize the weighted average commute distance traveled for these new workers compared to all existing workers. The results indicate precisely how much further these net new workers were traveling to reach their jobs in 2011 as compared to the 2008-2010 average values.

Figure 15 shows the distance traveled per net added worker in 2011 for each of the 19 workplace destinations listed in Table 1 relative to the distance traveled per average worker in 2008-2010. For cities with positive values, the figure can be interpreted as the additional distance that a new worker has to travel, on average, relative to existing workers for that particular workplace jurisdiction. The results show that, for each city except Pittsburg, new workers are traveling substantially further than existing ones. This “gap” between new workers and existing workers ranges from about 3.1 miles in Oakland to about 56 miles in Santa Rosa. Closer investigation of the changes for Santa Rosa indicate relatively large numbers of workers added in neighboring Mendocino and Lake counties which entail substantial commutes. In general, the more centrally located cities have smaller average incremental distances likely because there are simply more opportunities to find housing in the inner Bay Area than at the periphery.

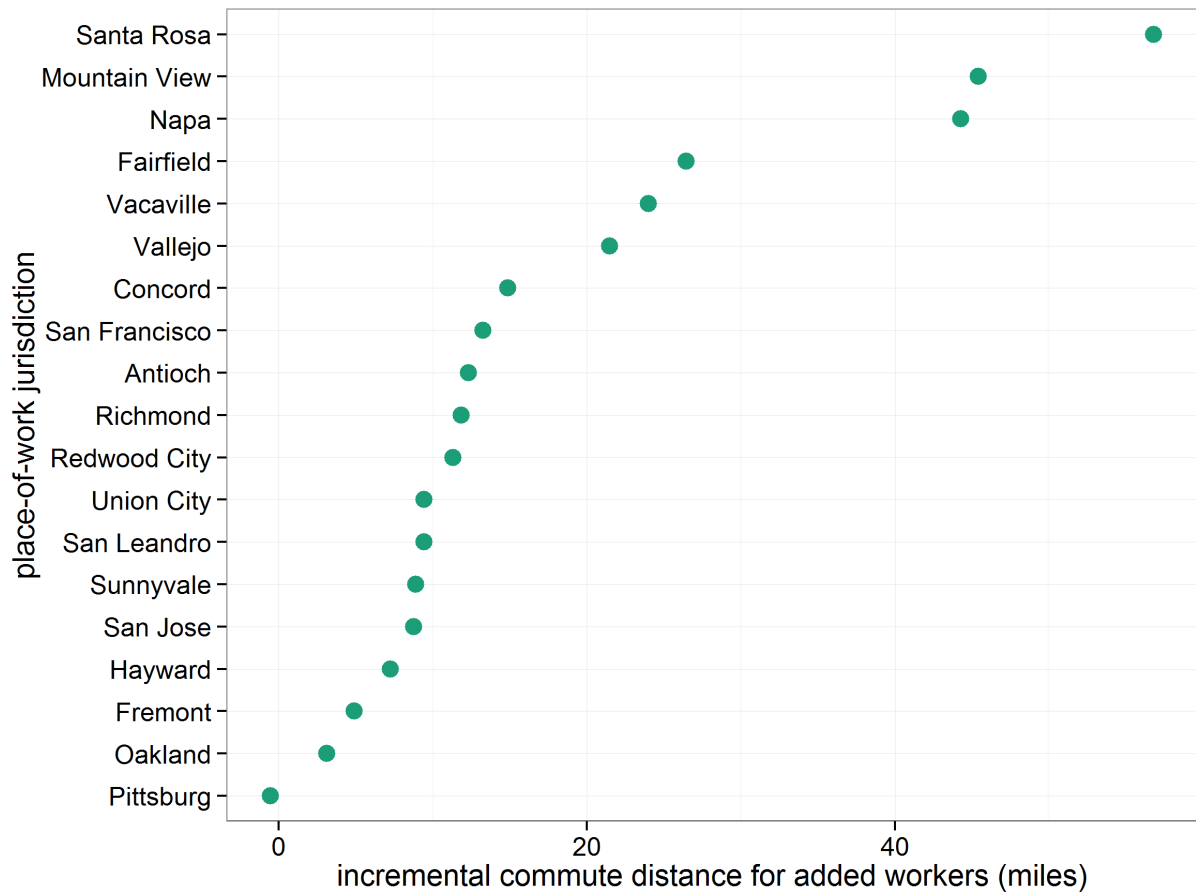


Figure 15: Incremental weighted commute distance impacts for added workers in 19 large Bay Area place-of-work jurisdictions, 2011 vs. 2008-2010 three-year average.

Although the LODES commute flow data do not contain the disaggregate NAICS categories required to conduct an analysis of the high- and low-wage industry categories previously defined, they do include flow data for each of the three wage tiers which can facilitate an analysis of the incremental commute distance by wage. The results are shown in Figure 16 and indicate that the incremental distance varies widely by wage level, but is generally highest for tier 1 and tier 2 workers. In all cities except for Mountain View and Antioch, added tier 1 or tier 2 workers traveled further than added tier 3 workers to reach their jobs. In Oakland, new tier 3 workers can actually locate closer to their jobs than existing workers can. The pattern across the three largest Bay Area cities is the same, although there are differences in magnitude. Added tier 1 workers are commuting much further than added tier 3 workers - in San Francisco, added tier 1 workers travel 4.4 times further than a new tier 3 worker. In San Jose, the figure drops to 3.6. These strong differences are likely due at least in part to the general lack of growth in tier 1 affordable rental units over this time period (Figure 10). These results are worrying and provide initial evidence of a strong link between housing affordability and vehicle miles traveled.

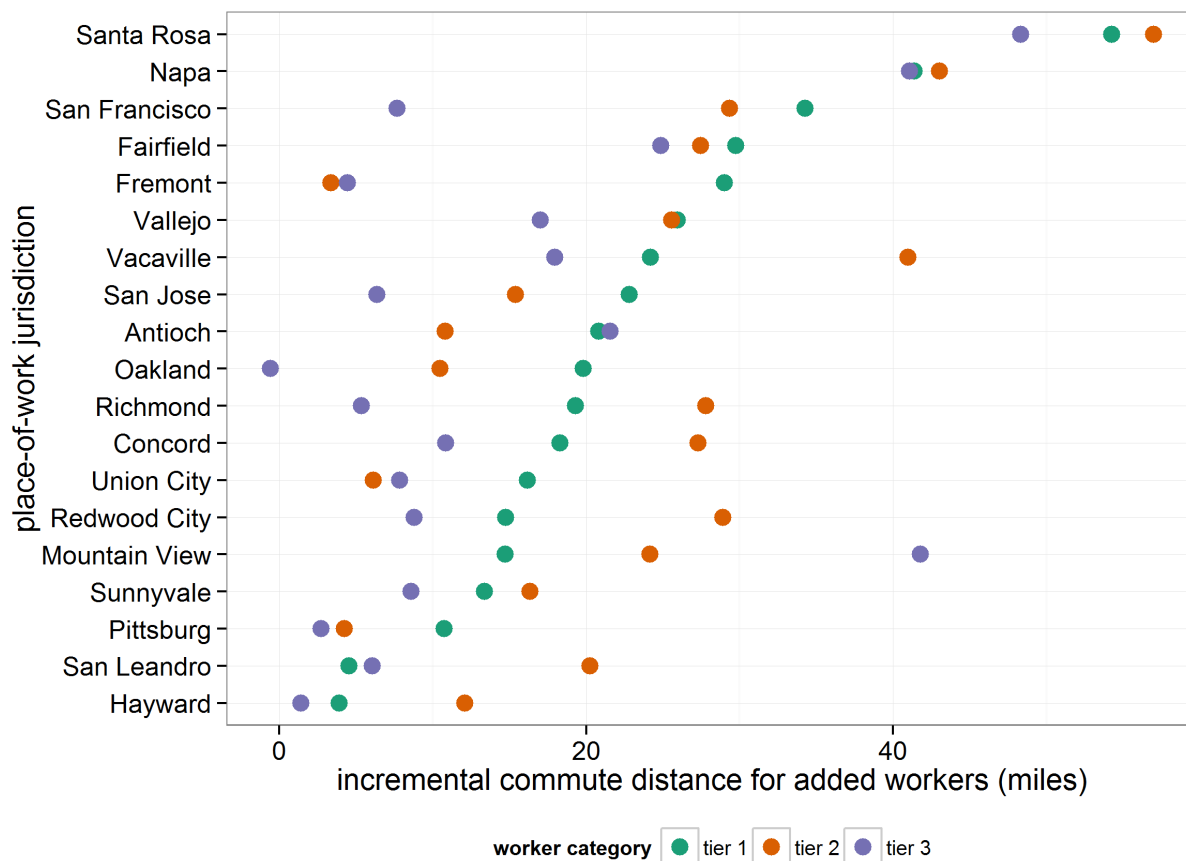


Figure 16: Incremental weighted commute distance impacts for added workers by wage tier in 19 large Bay Area place-of-work jurisdictions, 2011 vs. 2008-2010 three-year average.

6.2 Net new worker housing market analysis

To understand how housing affordability might be related to the observed changes in commute distance, we conducted an analysis of housing markets in jurisdictions where net new workers are located. We were specifically interested in rent prices and vacancy rates, and sought to determine whether workers were locating in more affordable locales. Available census data are limited for this purpose in a number of respects. Typical indicators of housing affordability, including median contract rent are aggregate figures and may miss key dimensions of affordability if jurisdictions contain a mix of different housing types. Some of these issues are apparent in Figure 17, which shows the difference in median contract rent for net new workers compared to existing workers in the Bay Area. Aside from Mountain View and Sunnyvale, it shows that added workers are located in areas that have *higher* median rents than the existing distribution of workers. This result raises a number of possibilities. Either jurisdictions with lower-priced rental units do not have sufficient vacancy to house added workers, median contract rent is a poor indicator of affordability, the differences are not substantively large enough to be meaningful, or there are differences by income category that are masked when looking at aggregate values.

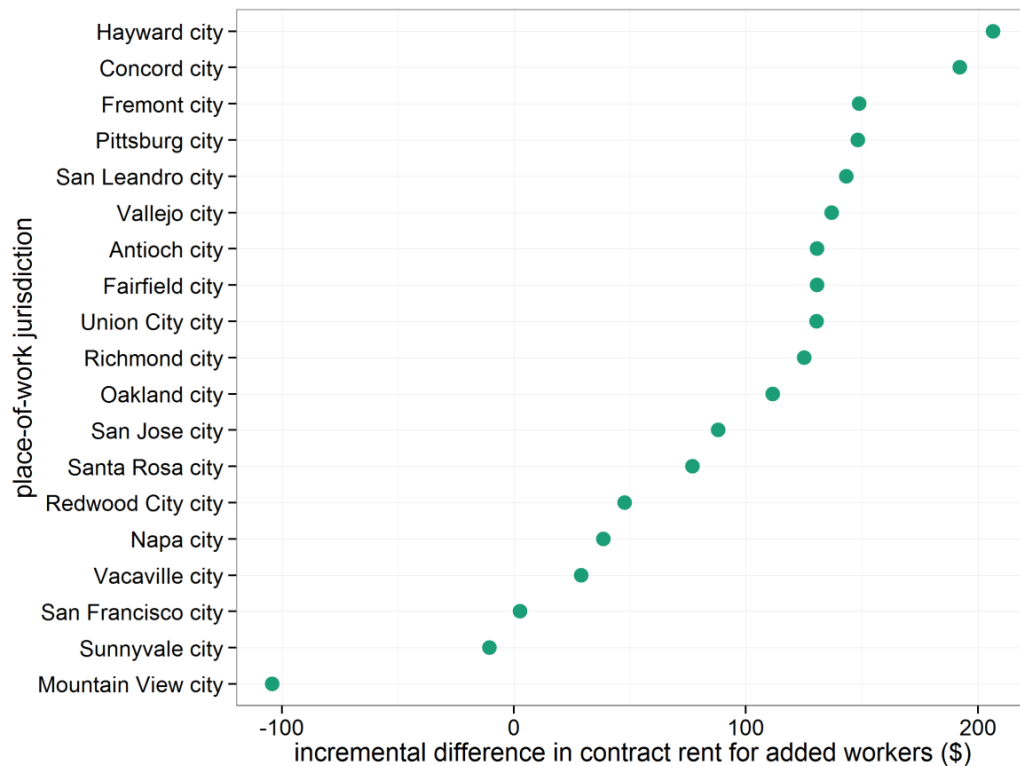


Figure 17: Incremental weighted contract rent impacts for added workers in 19 large Bay Area place-of-work jurisdictions, 2011 vs. 2008-2010 three-year average.

To determine the extent to which aggregation is playing a role in these results, we produced Figure 18 which shows the results by wage tier. Broadly, the results are similar to those shown in Figure 17, with some important differences. Figure 18 also shows that added workers are residing in areas that have higher median contract rents than the existing distribution of workers. This is true for workers in each wage category in each of the jurisdictions shown except for Napa, Mountain View, Sunnyvale, Redwood City, and San Francisco. A clear result is that new tier 1 workers employed in San Francisco live in jurisdictions that have somewhat lower contract rents than the existing distribution of these workers employed in the city. Although San Francisco is the city responsible for the largest growth in tier 1 and tier 2 employment and is thus disproportionately important to low-wage workers, the patterns in the other cities do not follow expectations. We would expect that as commute distances increases, added workers locate more peripherally to take advantage of lower rents. Determining which of the explanations offered above for this pattern are true will require further work and follow up study.

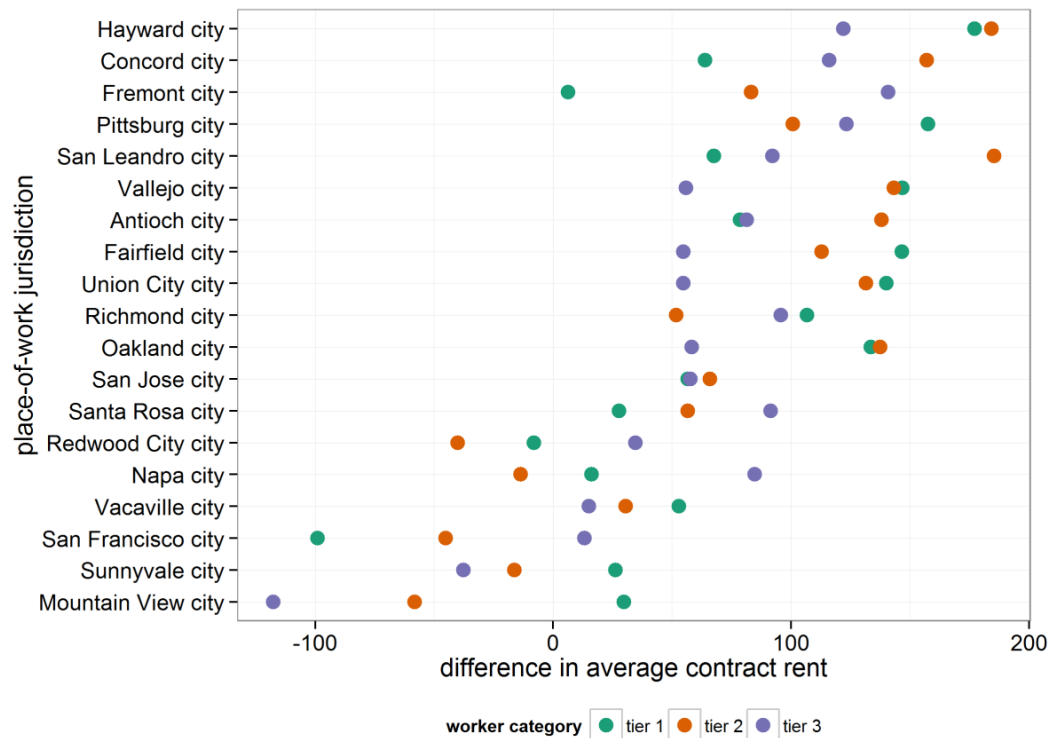


Figure 18: Incremental weighted contract rent impacts for added workers by wage tier in 19 large Bay Area place-of-work jurisdictions, 2011 vs. 2008-2010 three-year average.

An alternative explanation is offered by an examination of vacancy rates for rental units. The Bay Area has quite low rental vacancy rates relative to the national average. Across the approximately 220 Bay Area jurisdictions, the median vacancy rate for rental units according to the 2013-2009 five-year ACS estimates is 2.7%. Figure 19 shows the incremental weighted difference between vacancy rates for added workers in each of the listed place-of-work jurisdictions. The figure again shows somewhat mixed results. While there are some place-of-work jurisdictions for which added workers locate in places that have generally higher vacancy rates, the opposite is also true. The vacancy rate results disaggregated by wage tier are shown in Figure 20 and show no clear patterns by wage category. These combined results on housing affordability and vacancy rates indicate that further study is needed to understand how housing markets in the locations where workers are being added in the Bay Area differ from those of existing workers. As a final note, the time period selected for study may also be affecting the results. When further iterations of the LODS data are released by the US Census Bureau, the analysis can be updated and further study undertaken.

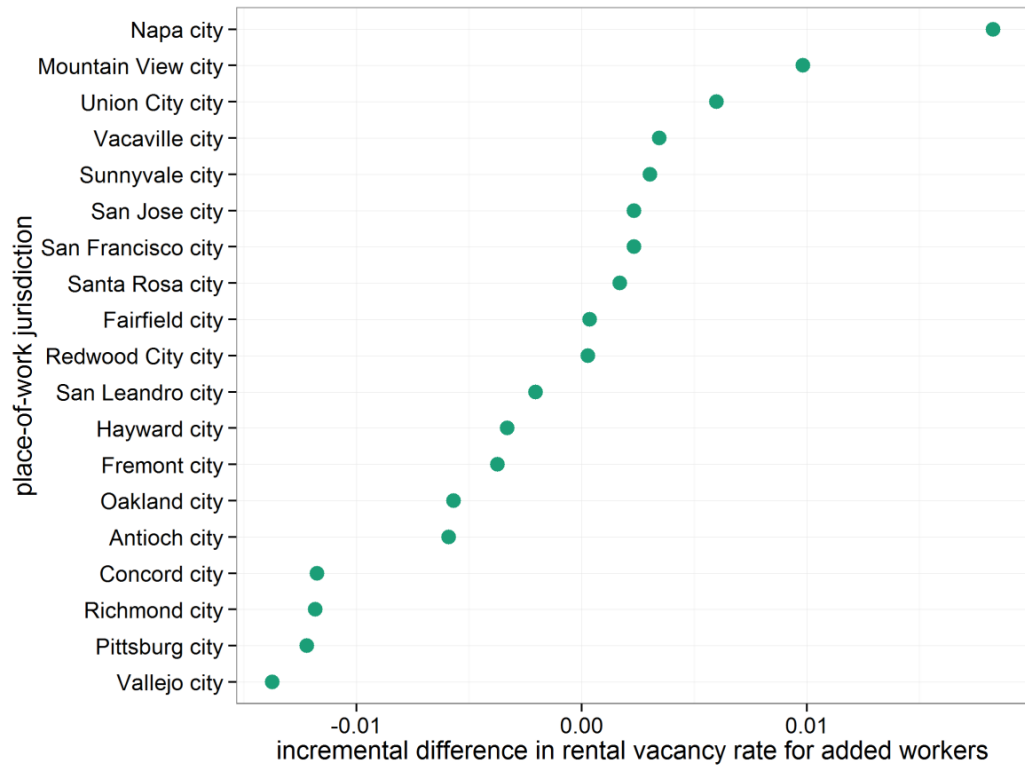


Figure 19: Incremental weighted vacancy rate impacts (percentage point difference) for added workers in 19 large Bay Area place-of-work jurisdictions, 2011 vs. 2008-2010 three-year average.

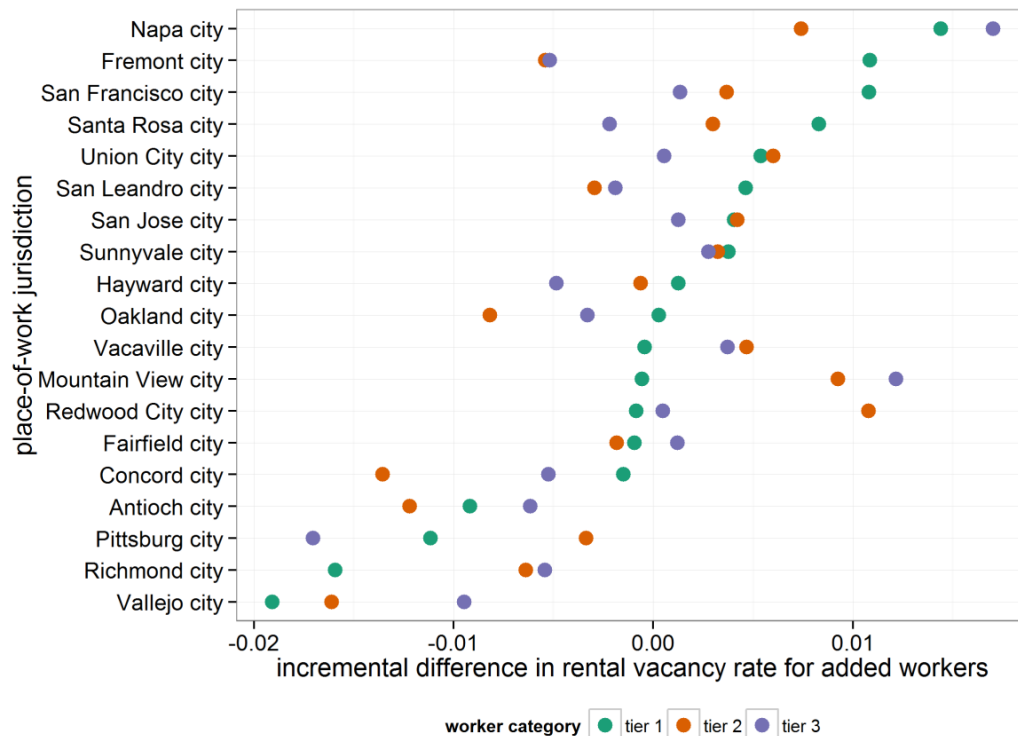


Figure 20: Incremental weighted vacancy rate impacts (percentage point difference) for added workers by wage tier in 19 large Bay Area place-of-work jurisdictions, 2011 vs. 2008-2010 three-year average.

7.0 Conclusion

This research effort was driven by a concern that current changes in job growth and housing affordability in the Bay Area are exacerbating the lack of affordable housing for low and middle-wage earners overall, and that the inter-jurisdictional connections in job and housing markets must be better understood in order to address those concerns. We set out to answer the question of how growth in high-wage jobs in one jurisdiction affects job growth and affordable housing in multiple jurisdictions. Overall, our analysis provides evidence that the concerns about changing patterns of affordability are well-founded, and provides some new analysis and methodologies for understanding these imbalances. Key patterns that emerged from our analysis include the following:

High-wage and low-wage jobs are not growing equally everywhere: High wage job growth in our time period of analysis has been geographically dispersed through substantial parts of Silicon Valley and the East Bay, along with the three major job centers of San Francisco, San Jose and Oakland. Low-wage job growth has been more heavily focused in these three core cities.

Relationship between high-wage and low-wage jobs varies substantially, though they are closely related in the largest job centers: Related to this difference in the geography of low-wage and high-wage job growth, there did not appear to be a consistent relationship between high-wage job growth and low-wage job growth across all jurisdictions. In the three major job centers of San Francisco, San

Jose, and Oakland, there was a close association between high-wage and low-wage job growth, but in smaller jurisdictions, this relationship is much weaker and when all jurisdictions are included, there is no statistically significant relationship between change in low and high wage jobs.

Overall jobs-housing balance has not changed dramatically, but disaggregating by affordability levels shows significant worsening of jobs-housing fit metrics: Measures of total housing indicates that most jurisdictions have added housing roughly in proportion to the increase in total jobs in the time period under study. However, disaggregating these values by wage levels and housing affordability reveals a significantly different picture with sometimes substantial imbalances and inequities. San Francisco was responsible for the largest growth in low-wage jobs, and added total numbers of housing units in rough proportion to the total number of new jobs, but saw no net increase in the number of affordable housing unit. Oakland added both low-wage jobs and had an increase in affordable housing while San Jose lost low-wage jobs but had an increase in affordable housing.

Commute patterns clearly show that new workers are travelling farther distances than existing workers. This is particularly true for low-wage workers: Throughout the Bay Area, in nearly every jurisdiction, new workers are travelling further distances than workers in existing jobs. The patterns are generally worse for low-wage workers, with people in low-wage jobs commuting further than new workers making higher wages. In San Francisco, for example, new workers in the lowest wage category have to travel 4.4 times further than new worker in the high wage category. In San Jose, the figure is 3.6. There is some evidence that these commute patterns are driven by workers in some jurisdictions seeking housing in more affordable locales, but additional research is needed to quantify this effect.

They also support the argument that regional planning and coordination of economic development and affordable housing initiatives is important for addressing the jobs/housing imbalance at different wage levels. These findings also suggest that improving jobs-housing fit can contribute to reduced commute travel, improving overall regional environmental performance.

Appendix A: Jobs-employed resident ratios

We calculated two measures of job-resident worker balance specific to individual categories of employment for the 25 jurisdictions with the greatest total job numbers according to the 2011 LODES data. These measures can be calculated directly from LODES and do not require assumptions about which types of housing are affordable to particular categories of workers. Specifically, we calculated one measure of balance that ranges between 0 and 1, where 1 is perfect balance between jobs and resident workers and zero is complete imbalance (i.e. all of one and none of the other). This measure was based on recent work by Stoker and Ewing.⁵ It is calculated using the following equation:

$$1 - \frac{\text{abs}(\text{jobs} - \text{resident workers})}{\text{jobs} + \text{resident workers}}$$

Because the measure ranges between 0 and 1, all jurisdictions can be compared on the same scale. A specific example is helpful for interpretation. Assume a particular jurisdiction has 100 jobs and 25 resident workers or 100 resident workers and 25 jobs. Its balance measure would be $1 - \text{abs}(100 - 25)/(100 + 25) = 0.40$. We calculated this measure for each year of currently available data (2009 - 2011) for a number of different job-resident worker categories.

The second metric is the overall ratio of jobs to resident workers. The interpretation of this metric is straightforward, and can be helpful for thinking about the types of housing units that a jurisdiction needs to provide. Higher values of this metric indicate increasing imbalance.

The figures below show each measure (the balance measure is on the left and the ratio measure is on the right in each figure), for different job-resident workers categories: wage level (Figure A1), education level (Figure A2), two NAICS codes (professional and food service) (Figure A3), and two groups of NAICS codes meant to represent low- and high-wage employment (Figure A4).

⁵ Stoker, P. and R. Ewing (2014). "Job–Worker Balance and Income Match in the United States." Housing Policy Debate 24(2): 485-497.

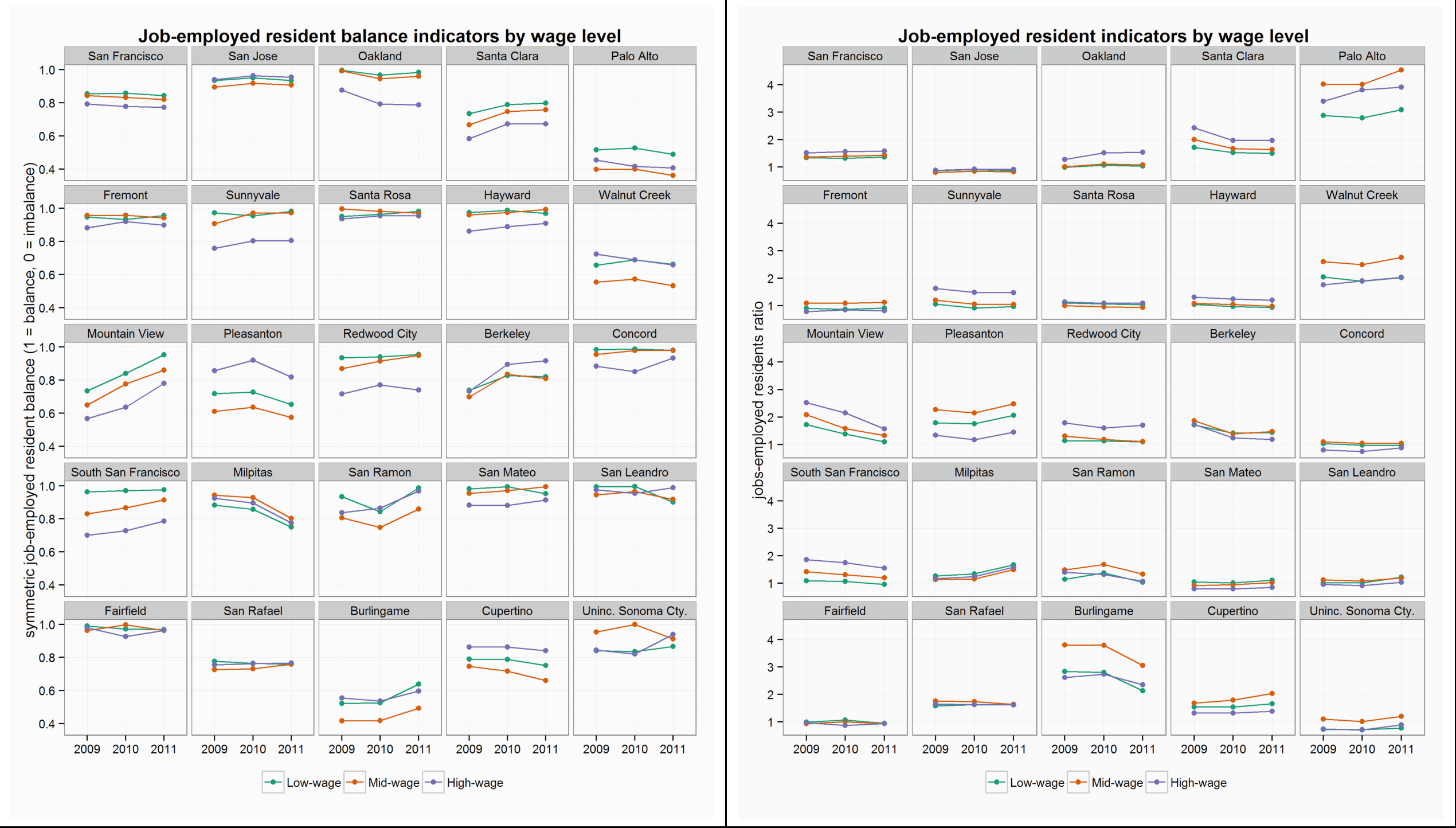


Figure A1: Jobs-employed resident measures: Wage level.

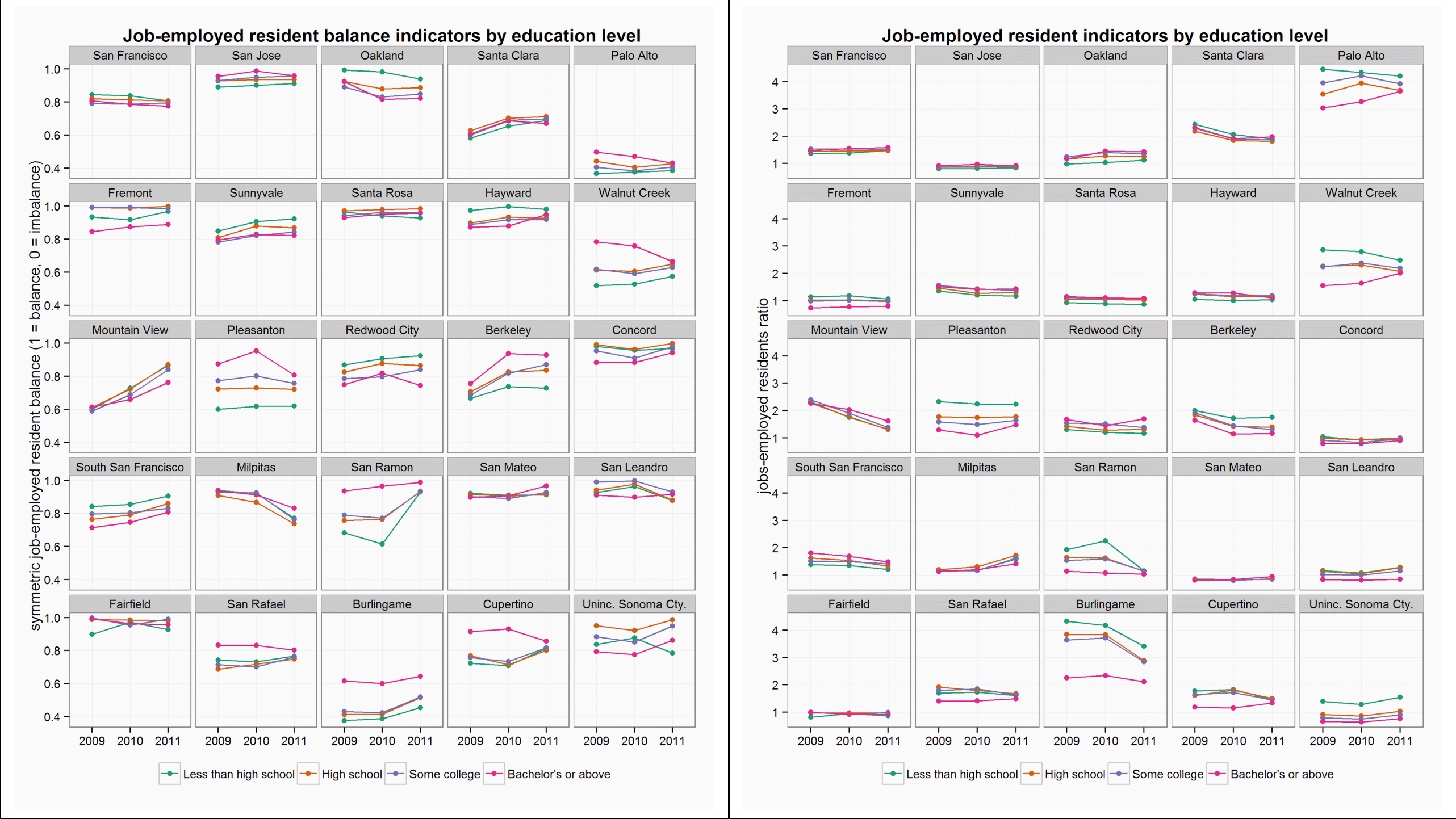


Figure A2: Jobs-employed resident measures: Education level.

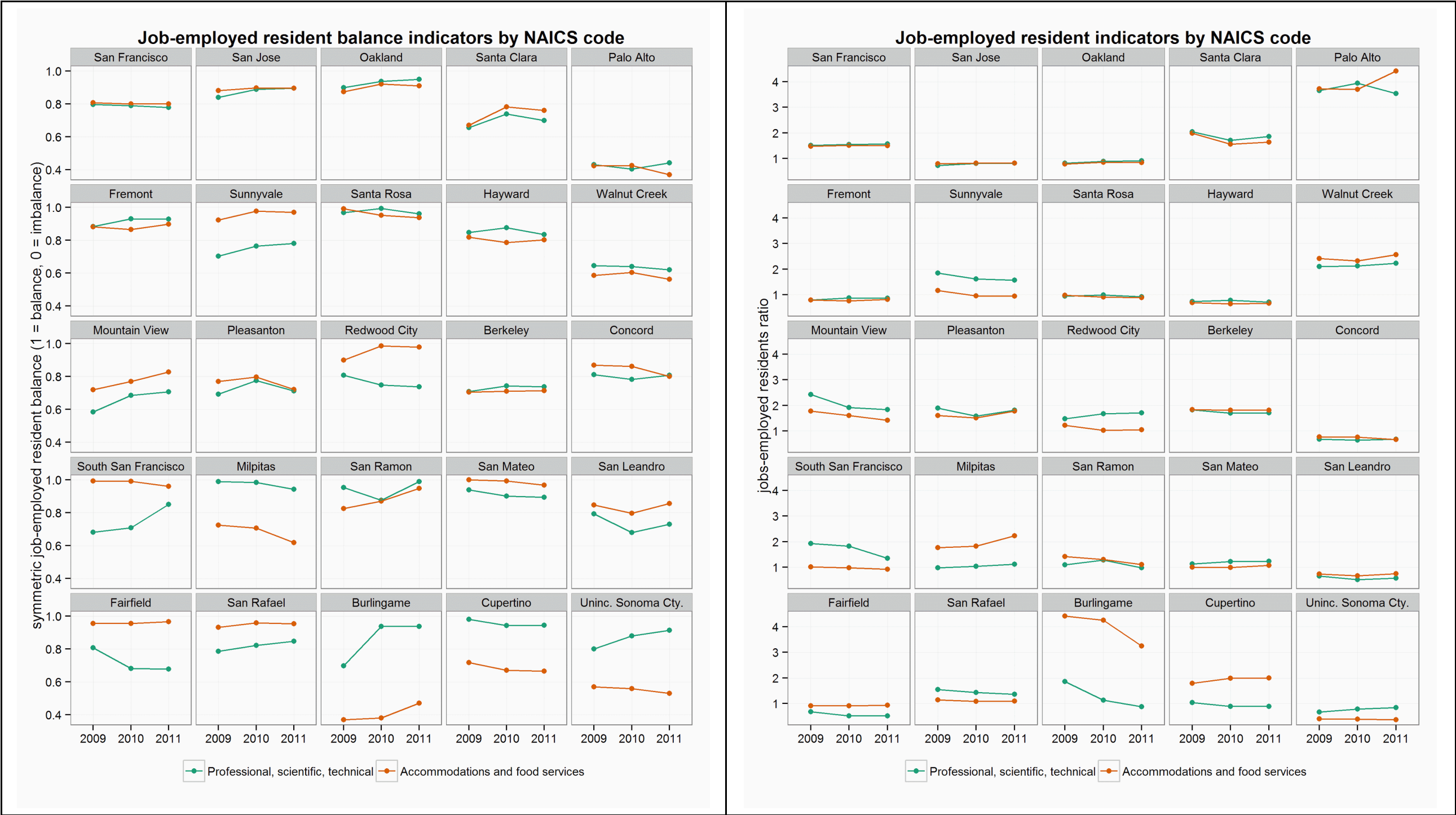


Figure A3: Jobs-employed resident measures: Two NAICS categories with very low annual income (accommodations) and very high annual income (professional).

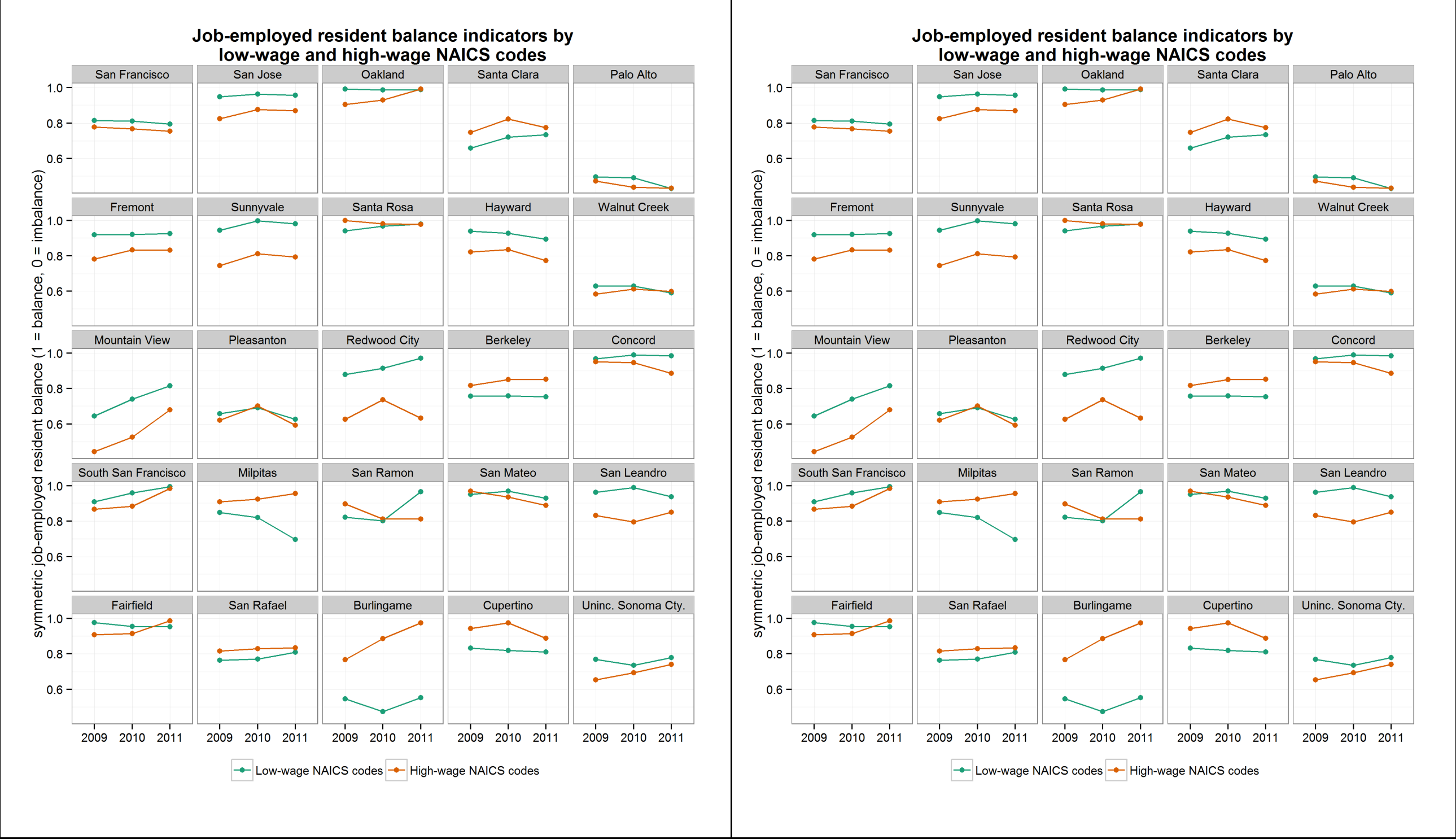
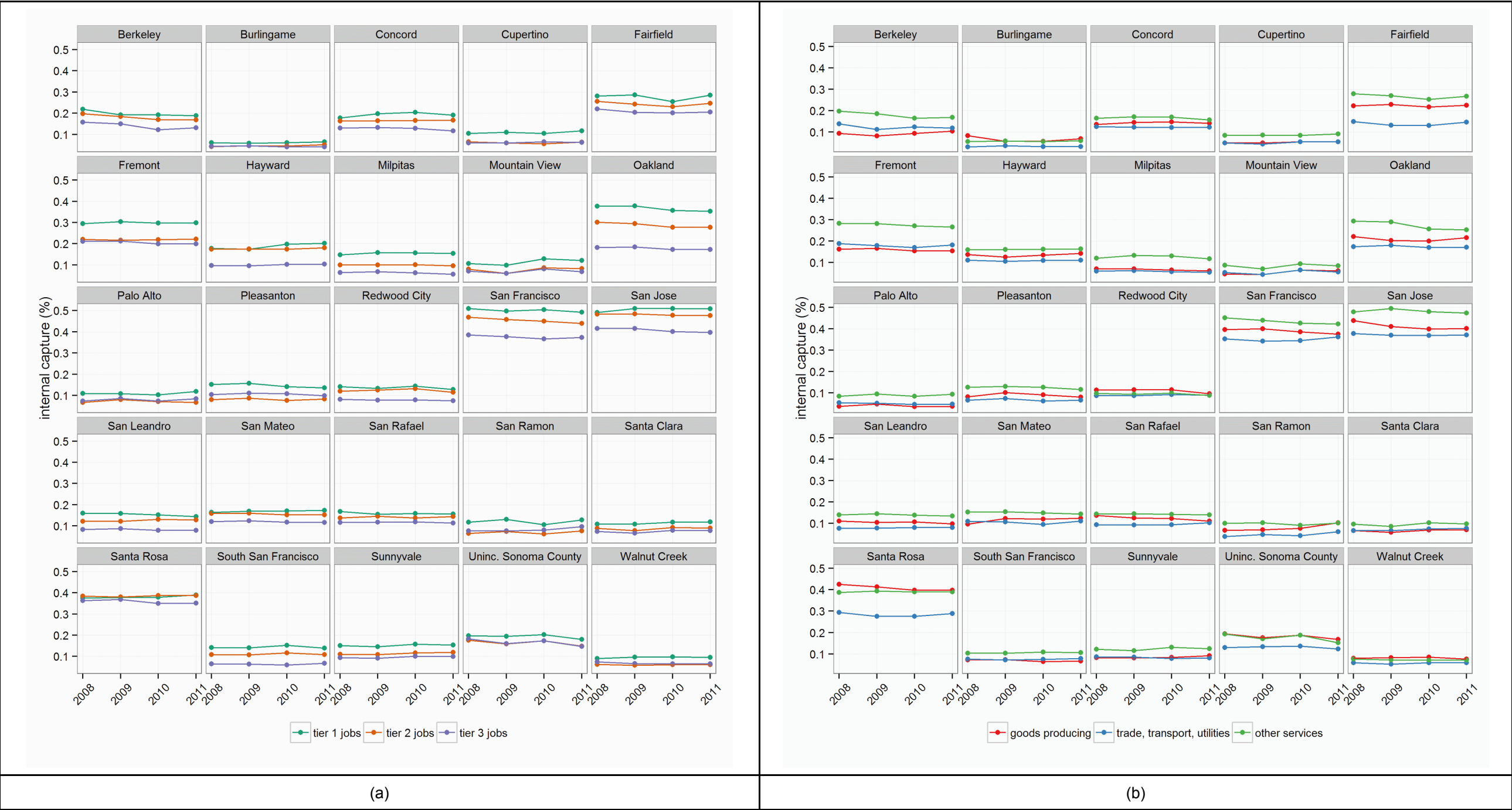
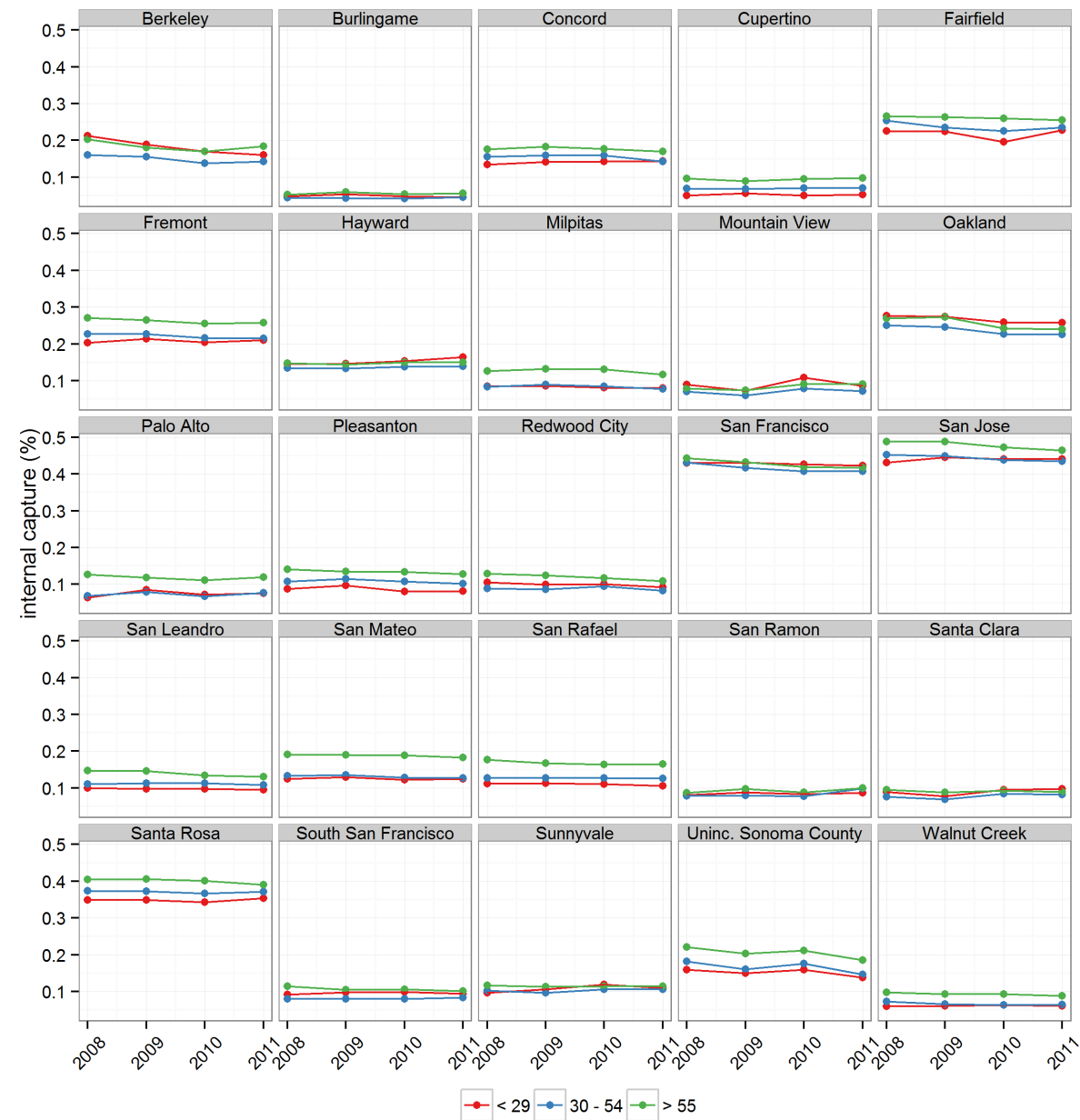


Figure A4: Jobs-employed resident measures: Low-wage NAICS codes (Retail trade + Arts, Entertainment, and Recreation + Accommodation and food services + Administrative and support and waste management and remediation + Other services [except public administration]) and High-wage NAICS codes (Information + Finance and Insurance + Professional + Management).

Appendix B: Internal capture and average commute distance

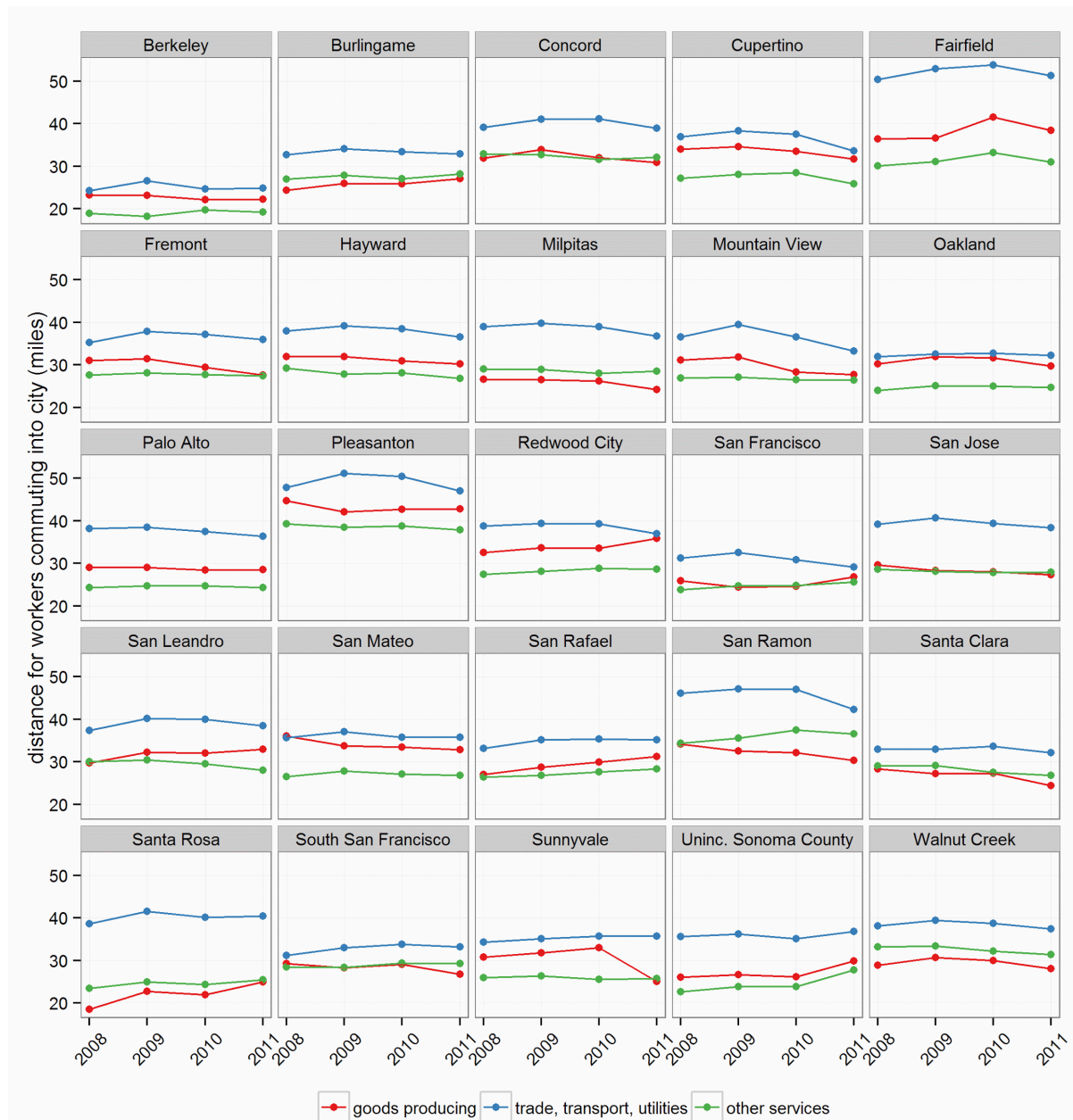
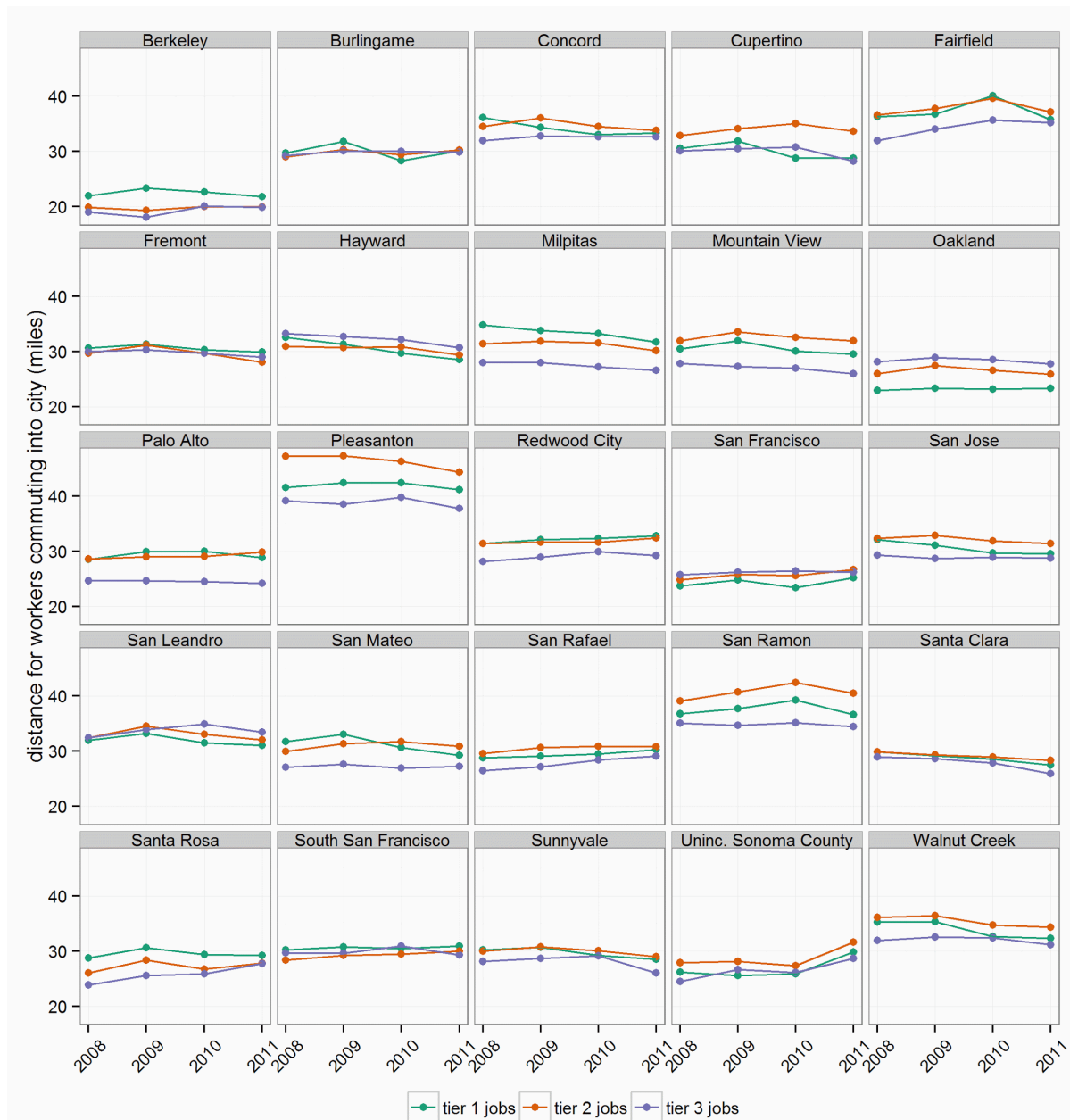
Figure B1 below illustrates the rates of “internal capture” - the proportion of total jobs held by people that live in the same jurisdiction - for the Bay Area’s 25 largest job centers from 2008 to 2011. Figure B2 summarizes the weighted average commute distance for each place-of-work jurisdiction for the same time period.





(c)

Figure B1: Internal capture for the 25 Bay Area places with the highest number of total jobs by (a) wage category, (b) industry category, and (c) age. Internal capture is calculated as the proportion of total jobs in a jurisdiction held by workers that live in that same jurisdiction.



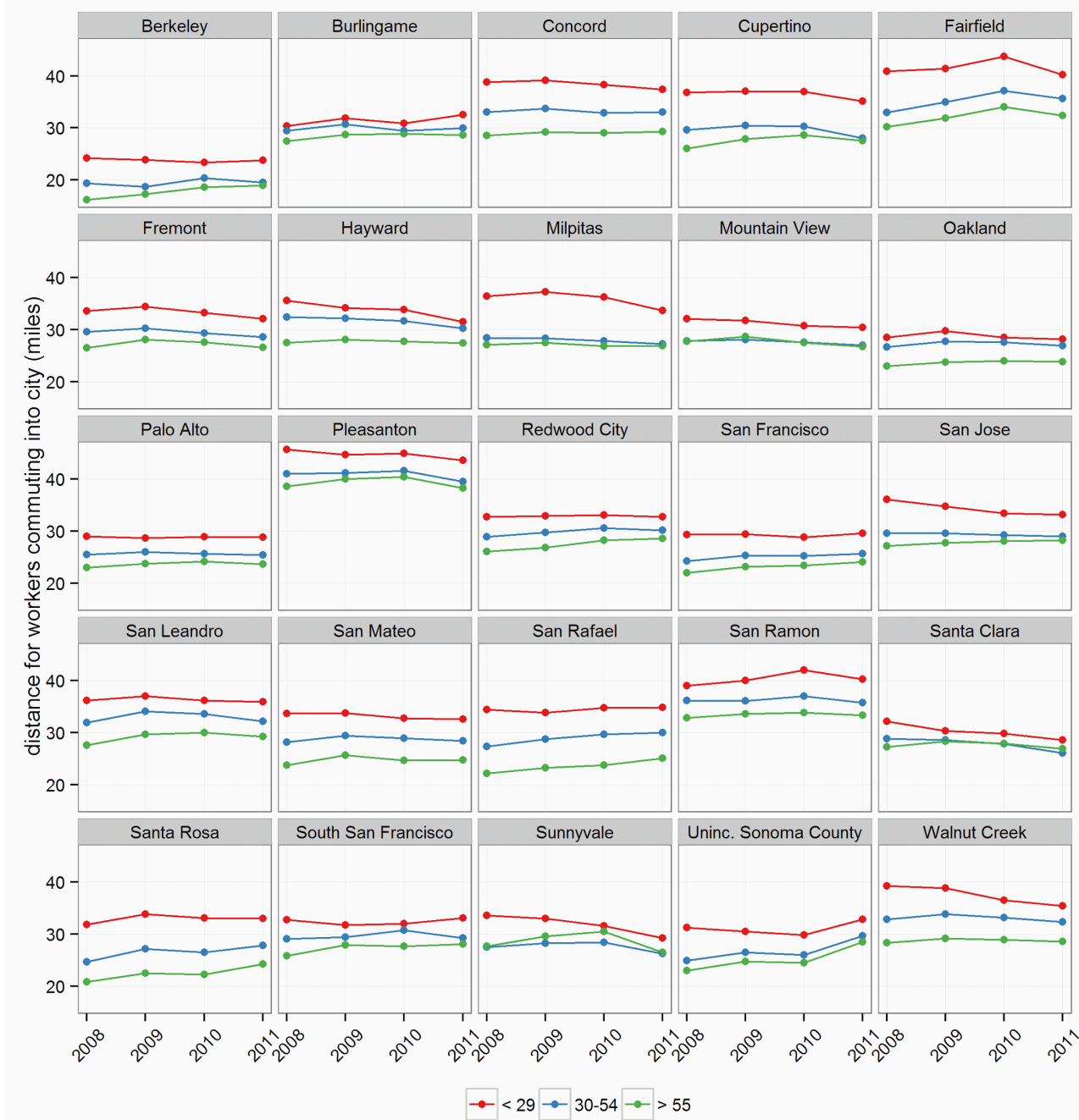


Figure B2: Average commute distance for the 25 Bay Area places with the highest number of total jobs by (a) wage category, (b) industry category, and (c) age.

ABAG: PDAs and PCAs



Priority Development Areas • Priority Conservation Areas

Cities and towns are places for people to live, but they are much more than that. They are places for people to also go to school, shop, work, and play. The neighborhoods that make up the cities and towns vary in character, size, and mix of activities that are offered. This idea is called complete communities and ABAG assists the 101 cities and towns and nine counties with regional planning services supporting local visions in the development of complete communities.

These are two programs that work together to support local communities: [Priority Development Areas \(PDAs\)](#), locally identified infill development areas near transit; and [Priority Conservation Areas \(PCAs\)](#), open spaces in need of protection that support the vitality of the region's natural systems, rural economy and human health. PDAs and PCAs are an integral part of the regional [Plan Bay Area](#), an integrated land use and transportation plan, tackling pressing issues such as accommodating population growth while keeping the region affordable for all our residents, preserving open spaces, protecting our environment, accommodating transportation needs, and reducing greenhouse gas emissions.

Priority Development Areas

Priority Development Areas (PDAs) are areas that communities identified as possible areas to grow, nominated by the city or town council via resolution. They are generally areas of at least 100 acres where there is local commitment to developing more housing along with amenities and services to meet the day-to-day needs of residents in a pedestrian-friendly environment served by transit. To be eligible to become a PDA, an area had to be within an existing community, near existing or planned fixed transit or served by comparable bus service, and planned for more housing.

To share information about the Priority Development Areas (PDA) throughout the San Francisco Bay Area, ABAG Planning and Research staff, with input from cities and towns, has launched an updated PDA Showcase.

PDA Showcase:



- Highlights local planning efforts to create complete communities
- Provides information about each area, including maps, key facts, implementation needs, and a description of the goals and vision for the area.

The growth envisioned through these PDAs is based in large part on local aspirations and community context. The PDAs reflect the diversity of the communities in the Bay Area. To explore each PDA, click [here](#).

Priority Conservation Areas

Priority Conservation Areas (PCAs) are open spaces that provide agricultural, natural resource, scenic, recreational, and/or ecological values and ecosystem functions. These areas are identified through consensus by local jurisdictions and park/open space districts as lands in need of protection due to pressure from urban development or other factors. PCAs are categorized by four designations: Natural Landscapes, Agricultural Lands, Urban Greening, and Regional Recreation.

As of 2015, 165 PCAs representing a variety of landscapes in all nine Bay Area counties have been adopted by the ABAG Executive Board. Projects located within these areas are eligible for funding through the One Bay Area Grants (OBAG) program.

For more information about PCAs, visit <http://abag.ca.gov/priority/conservation/>.

Plan Bay Area

Plan Bay Area is an integrated land use and transportation plan that tackles pressing issues such as accommodating population growth while keeping the region affordable for all our residents, preserving open spaces, protecting our environment, accommodating transportation needs, and reducing greenhouse gas emissions. *Plan Bay Area* was released in July 2013 in coordination with the Regional Transportation Plan and Regional Housing Need Allocation for local jurisdictions. More information about *Plan Bay Area* is available [here](#).

By engaging local governments, communities and regionwide stakeholders in ways to build a better Bay

Area over the next 30 years, *Plan Bay Area* is currently being implemented by ABAG and regional partners (the Metropolitan Transportation Commission-MTC, the Bay Area Air Quality Management District-BAAQMD, and the Bay Conservation and Development Commission-BCDC).

Plan in the Bay Area relied upon a long-term series of key planning programs which were administered by ABAG in cooperation in cooperation with MTC, BAAQMD, and BCDC. These programs encouraged focused growth through a voluntary, incentive-based development and conservation strategy. They were important opportunities for local governments and the regional agencies to work together to create complete, livable communities that are more efficient, equitable, and environmentally sustainable.

Additional information is available [here](#).

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- 101 Eighth St. Oakland CA 94607
- (510) 464-7900

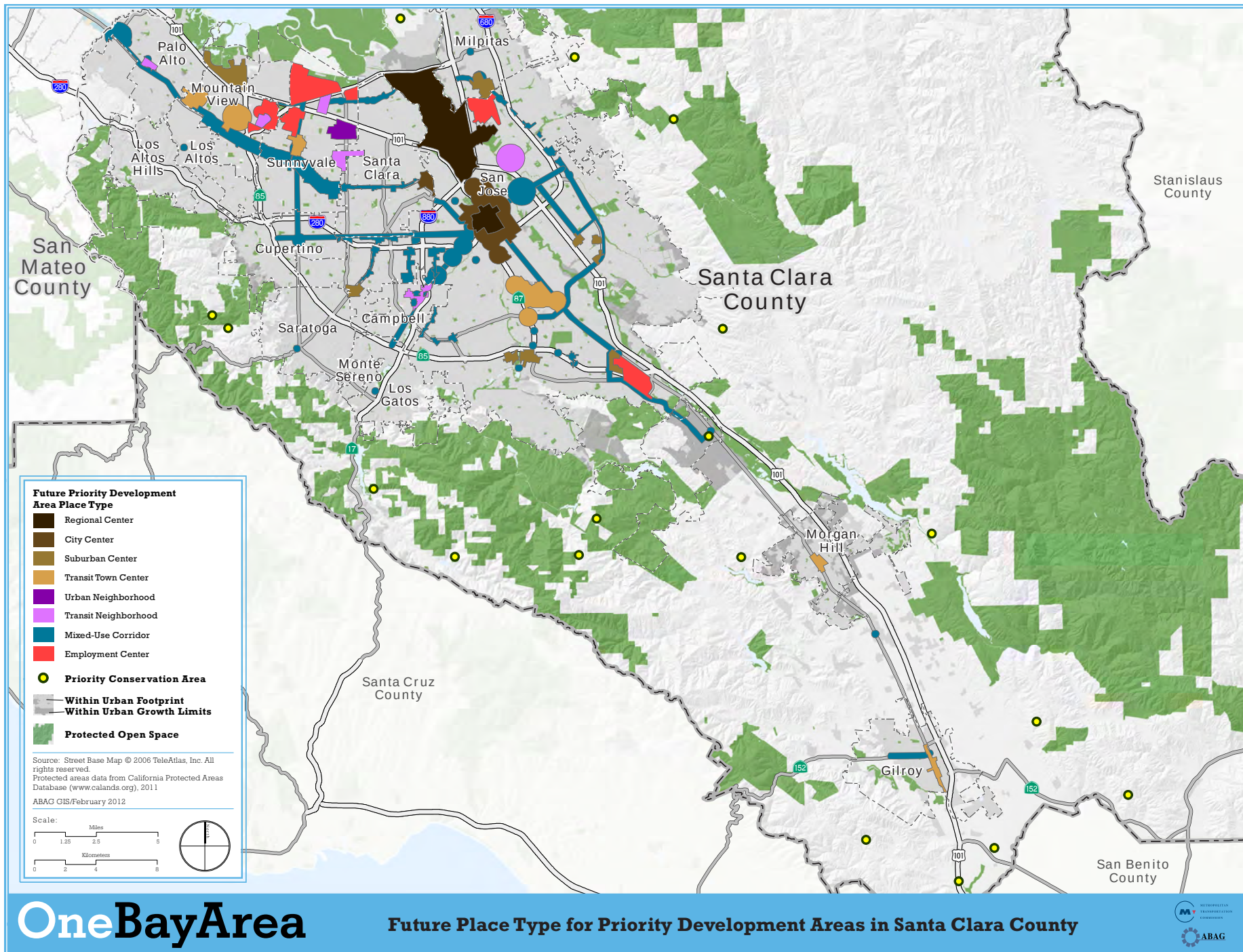
Priority Development Areas in Santa Clara County

Name of PDA	Jurisdiction	PDA Status ¹	Place Type	Gross Size (acres)	Net Size (acres)	Current Population	Pop. Density ²	2010 Housing Units	2010 Jobs	Transit Service ³
1 Central Redevelopment Area	City of Campbell	Planned	Transit Neighborhood	257	195	3508	18	1340	7880	LRT
2 Downtown	City of Gilroy	Planned	Transit Town Center	254	207	3607	17	980	2370	Caltrain
3 Transit Area	City of Milpitas	Planned	Suburban Center	409	371	3305	9	790	5240	LRT, BART (future)
4 Downtown	City of Morgan Hill	Planned	Transit Town Center	181	150	3154	21	570	1660	Caltrain
5 Downtown	City of Mountain View	Planned	Transit Town Center	692	522	14014	27	5240	9410	BRT, Caltrain, LRT
6 El Camino Real	City of Mountain View	Potential	Mixed-Use Corridor	915	726	28169	39	9190	5770	BRT
7 North Bayshore	City of Mountain View	Potential	Suburban Center	804	683	815	1	360	7390	
8 San Antonio	City of Mountain View	Potential	Transit Town Center	431	365	12062	33	3590	3150	BRT, Caltrain
9 Whisman Station	City of Mountain View	Potential	Transit Neighborhood	151	132	1903	14	670	650	LRT
10 California Avenue	City of Palo Alto	Planned	Transit Neighborhood	120	95	1956	21	800	3370	BRT, Caltrain
11 Bascom TOD Corridor	City of San Jose	Potential	Mixed-Use Corridor	215	182	6167	34	680	11520	LRT
12 Bascom Urban Village	City of San Jose	Potential	Mixed-Use Corridor	118	84	5865	69	1780	1700	
13 Berryessa Station	City of San Jose	Planned	Transit Neighborhood	664	543	9200	17	1880	6140	BART (future)
14 Blossom Hill/Snell Urban Village	City of San Jose	Potential	Mixed-Use Corridor	64	51	2550	50	640	880	LRT
15 Camden Urban Village	City of San Jose	Potential	Mixed-Use Corridor	108	97	2065	21	490	5600	
16 Capitol Corridor Urban Villages	City of San Jose	Potential	Mixed-Use Corridor	199	179	4971	28	860	2340	LRT
17 Capitol/Tully/King Urban Villages	City of San Jose	Potential	Suburban Center	254	237	4477	19	1090	4070	
18 Communications Hill	City of San Jose	Planned	Transit Town Center	1561	1298	26817	21	6810	3940	Caltrain, LRT
19 Cottle Transit Village (Hitachi)	City of San Jose	Planned	Suburban Center	196	160	1552	10	0	2550	Caltrain, LRT
20 Downtown "Frame"	City of San Jose	Planned	City Center	2445	1874	60233	32	18120	26760	BRT, Caltrain, LRT, BART (future), ACE
21 East Santa Clara/Alum Rock Corridor	City of San Jose	Planned	Mixed-Use Corridor	860	651	30601	47	7180	9950	BRT, LRT, BART (future)
22 Greater Downtown	City of San Jose	Planned	Regional Center	684	454	11252	25	4590	27950	BRT, Caltrain, LRT, BART (future), ACE
23 North San Jose	City of San Jose	Planned	Regional Center	5028	3966	30379	8	10880	84290	LRT
24 Oakridge/Almaden Plaza Urban Village	City of San Jose	Potential	Suburban Center	380	310	6040	19	1910	5430	LRT
25 Saratoga TOD Corridor	City of San Jose	Potential	Mixed-Use Corridor	159	120	9552	80	2430	3520	
26 Stevens Creek TOD Corridor	City of San Jose	Potential	Mixed-Use Corridor	259	209	11075	53	2620	5680	BRT
27 West San Carlos and Southwest Expressway Corridors	City of San Jose	Planned	Mixed-Use Corridor	1296	1023	32517	32	11150	8940	BRT, Caltrain, LRT
28 Westgate/El Paseo Urban Village	City of San Jose	Potential	Suburban Center	177	148	3360	23	850	3440	
29 Winchester Boulevard TOD Corridor	City of San Jose	Potential	Mixed-Use Corridor	299	250	14987	60	4850	4040	
30 El Camino Real Focus Area	City of Santa Clara	Planned	Mixed-Use Corridor	317	236	5486	23	1840	4390	BRT
31 Santa Clara Station Focus Area	City of Santa Clara	Planned	City Center	256	217	1705	8	480	1020	BRT, Caltrain, BART (future), ACE
32 Downtown & Caltrain Station	City of Sunnyvale	Planned	Transit Town Center	274	227	4232	19	1840	3750	BRT, Caltrain
33 East Sunnyvale	City of Sunnyvale	Potential	Urban Neighborhood	460	413	2495	6	1020	8050	
34 El Camino Real Corridor	City of Sunnyvale	Planned	Mixed-Use Corridor	411	320	14017	44	10990	13190	BRT
35 Lawrence Station Transit Village	City of Sunnyvale	Potential	Transit Neighborhood	356	319	4925	15	1660	4160	Caltrain
36 Tasman Crossing	City of Sunnyvale	Potential	Transit Neighborhood	197	150	4198	28	1440	1540	LRT
37 City Cores, Corridors & Station Areas	VTA [Cupertino]	Potential	Mixed-Use Corridor	552	435	153811	40	48380	90770	BRT
38 City Cores, Corridors & Station Areas	VTA [Gilroy]	Potential	Mixed-Use Corridor	273	215					Caltrain
39 City Cores, Corridors & Station Areas	VTA [Los Altos]	Potential	Mixed-Use Corridor	43	27					
40 City Cores, Corridors & Station Areas	VTA [Milpitas]	Potential	Mixed-Use Corridor	121	92					LRT, BART (future)
41 City Cores, Corridors & Station Areas	VTA [San Jose]	Potential	Mixed-Use Corridor	3618	2648					BRT, Caltrain, LRT, BART (future), ACE
42 City Cores, Corridors & Station Areas	VTA [Santa Clara]	Potential	Mixed-Use Corridor	480	385					BRT, Caltrain, LRT, ACE

1) **PDA Status:** Potential and planned PDAs are treated equally under OBAG.

2) **Population:** Population and Population Density (population per net acre), based on 2010 Census block data and should not be used for analysis.

3) **Transit Service:** Only some of the City Cores, Corridors & Station Area PDAs are served by these transit services.





BOARD OF DIRECTORS MEETING

Thursday, October 1, 2015

Board of Supervisors' Chambers
County Government Center
70 West Hedding Street
San Jose, California

ADDENDA TO AGENDA

7.5.X ACTION ITEM - Authorize the General Manager to exercise the option to purchase 90 standard forty foot hybrid buses and 10 express hybrid buses from Gillig LLC at a cost not to exceed \$71,559,512.

9.1.A.X Conference with Legal Counsel – Anticipated Litigation

Significant exposure to litigation pursuant to paragraph 2 of subdivision (d) of Section 54956.9.

Number of Cases: 1



BOARD OF DIRECTORS MEETING

Thursday, October 1, 2015

5:30 PM

Board of Supervisors' Chambers
County Government Center
70 West Hedding Street
San Jose, CA 95110

AGENDA

To help you better understand, follow, and participate in the meeting, the following information is provided:

- Persons wishing to address the Board of Directors on any item on the agenda or not on the agenda should complete a blue card located at the public information table and hand it to the Board Secretary staff prior to the meeting or **before the item is heard**.
- Speakers will be called to address the Board when their agenda item(s) arise during the meeting and are asked to limit their comments to 2 minutes. The amount of time allocated to speakers may vary at the Chairperson's discretion depending on the number of speakers and length of the agenda. **If presenting handout materials, please provide 25 copies to the Board Secretary for distribution to the Board of Directors.**
- The Consent Agenda items may be voted on in one motion at the beginning of the meeting under Orders of the Day. If you wish to discuss any of these items, please request the item be removed from the Consent Agenda by completing a blue card at the public information table and handing it to the Board Secretary staff prior to Orders of the Day, Agenda Item #1.2.

- Disclosure of Campaign Contributions to Board Members (Government Code Section 84308)

In accordance with Government Code Section 84308, no VTA Board Member shall accept, solicit, or direct a contribution of more than \$250 from any party, or his or her agent, or from any participant, or his or her agent, while a proceeding involving a license, permit, or other entitlement for use is pending before the agency. Any Board Member who has received a contribution within the preceding 12 months in an amount of more than \$250 from a party or from any agent or participant shall disclose that fact on the record of the proceeding and shall not make, participate in making, or in any way attempt to use his or her official position to influence the decision.

A party to a proceeding before VTA shall disclose on the record of the proceeding any contribution in an amount of more than \$250 made within the preceding 12 months by the party, or his or her agent, to any Board Member. No party, or his or her agent, shall make a contribution of more than \$250 to any Board Member during the proceeding and for three months following the date a final decision is rendered by the agency in the proceeding. The foregoing statements are limited in their entirety by the provisions of Section 84308 and parties are urged to consult with their own legal counsel regarding the requirements of the law.

- All reports for items on the open meeting agenda are available for review in the Board Secretary's Office, 3331 North First Street, San Jose, California, (408) 321-5680, the Monday, Tuesday, and Wednesday prior to the meeting. This information is available on our website, www.vta.org, and also at the meeting. Any document distributed less than 72-hours prior to the meeting will also be made available to the public at the time of distribution. Copies of items provided by members of the public at the meeting will be made available following the meeting upon request.

In accordance with the Americans with Disabilities Act (ADA) and Title VI of the Civil Rights Act of 1964, VTA will make reasonable arrangements to ensure meaningful access to its meetings for persons who have disabilities and for persons with limited English proficiency who need translation and interpretation services. Individuals requiring ADA accommodations should notify the Board Secretary's Office at least 48-hours prior to the meeting. Individuals requiring language assistance should notify the Board Secretary's Office at least 72-hours prior to the meeting. The Board Secretary may be contacted at ☎(408) 321-5680 or ✉e-mail: board.secretary@vta.org or ☎ (408) 321-2330 (TTY only). VTA's home page is on the web at: www.vta.org or visit us on  Facebook at: www.facebook.com/scvta. ☎(408) 321-2300: 中文 / Español / 日本語 / 한국어 / tiếng Việt / Tagalog.

**NOTE: THE BOARD OF DIRECTORS MAY ACCEPT, REJECT OR MODIFY
ANY ACTION RECOMMENDED ON THIS AGENDA.**

[70 West Hedding](#) St., San Jose, California is served by bus lines *61, 62, 66, 181, and Light Rail. (*61 Southbound last trip is at 8:55 pm for this location.)

For trip planning information, contact our Customer Service Department at (408) 321-2300 between the hours of 6:00 a.m. to 7:00 p.m. Monday through Friday and 7:30 a.m. to 4:00 p.m. on Saturday. Schedule information is also available on our website, www.vta.org.

1. CALL TO ORDER AND ROLL CALL

1.1. ROLL CALL

1.2. Orders of the Day - approve Consent Agenda (Item #6)

2. AWARDS AND COMMENDATION

- 2.1. INFORMATION ITEM -Recognize Barbara McVay, Office Specialist II, River Oaks; Gerzain Hernandez, Coach Operator, Chaboya Operations; James Buckley, Transit Mechanic, Chaboya Maintenance, as Employees of the Quarter for the Fourth (4th) quarter of 2015; and Elena Valdez, Office Support Supervisor, Guadalupe Division, for Supervisor of the Quarter for the Fourth (4th) quarter of 2015.**

3. PUBLIC COMMENT

This portion of the meeting is reserved for persons desiring to address the Board of Directors on any item within the Board's jurisdiction. Speakers are **limited to 2 minutes**. The law does not permit Board action or extended discussion of any item not on the agenda except under special circumstances. If Board action is requested, the matter can be placed on a subsequent agenda. All statements that require a response will be referred to staff for reply in writing.

4. PUBLIC HEARINGS

There are no public hearings.

5. REPORTS

- 5.1. Citizens Advisory Committee (CAC) Chairperson's Report. (Verbal Report) (Hadaya)**
- 5.2. Policy Advisory Committee (PAC) Chairperson's Report. (Verbal Report) (Carr)**
- 5.3. General Manager Report. (Verbal Report)**
- 5.3.A. INFORMATION ITEM -Receive Silicon Valley Rapid Transit (SVRT) Program Update.**
- 5.3.B. Receive an update on iTeam and Caltrans District 4 Activities in Santa Clara County. (Verbal Report) (Sartipi/Ristow)**
- 5.3.C. Receive Government Affairs Update.**
- 5.4. Chairperson's Report. (Verbal Report)**

6. CONSENT AGENDA

- 6.1.** ACTION ITEM -Approve the Board of Directors Regular Meeting Minutes of September 3, 2015.
- 6.2** ACTION ITEM -Ratify the appointment of Greg Unangst to the Bicycle & Pedestrian Advisory Committee, representing the City of Mountain View, for the remainder of the two-year term ending June 30, 2016.
- 6.3.** ACTION ITEM -Authorize the General Manager to execute the Amended and Restated Clipper® Memorandum of Understanding with the Metropolitan Transportation Commission and other transit operators, clarify their respective roles and responsibilities, define roles and responsibilities for a newly defined Contracting Agency, establish a Clipper® Executive Board, establish a Clipper® Executive Director, and revise the cost allocation formula to ensure the successful operation and maintenance of Clipper®.
- 6.4.** ACTION ITEM -Authorize the General Manager to execute a contract amendment with Peninsula Corridor Joint Powers Board in the amount of \$1,600,000 for a new contract value of \$3,082,000 to provide Construction Support for the Mountain View Double Track Project.
- 6.5.** ACTION ITEM -Authorize the General Manager to amend Contract C13134F Rail Rehabilitation - Signal and Track Improvements contract with Shimmick Construction Company in an amount of \$850,000 for a total contract amount of \$6,951,358 for additional work to install a track crossover near Lick Mill Station.
- 6.6.** ACTION ITEM -Authorize the General Manager to execute a contract amendment with CH2M Hill Inc. for an additional \$1,200,000 for a new contract total amount of \$21,668,963 and extend the contract term to March 31, 2017 to perform additional final design services and provide design support during construction for the Santa Clara Alum Rock Bus Rapid Transit Project.
- 6.7.** ACTION ITEM -Authorize the General Manager to amend the C831 Property Restoration and Completion Contract with George Bianchi Construction, Inc., by an amount of \$4,000,000 for a total contract amount of \$6,041,505 for additional completion work for the Santa Clara Alum Rock Bus Rapid Transit Project.
- 6.8.** ACTION ITEM -Approve project priorities for State Transportation Improvement Program (STIP) funds.
- 6.9.** ACTION ITEM -Authorize General Manager to execute a Memorandum of Understanding with the Council of San Benito County Governments to formalize a partnership to provide direction on the development of the SR 152 Trade Corridor project and request Santa Clara Valley Transportation Authority Board of Directors to appoint two members from Santa Clara County to serve on the partnership.

- 6.10. ACTION ITEM -Approve the List of Projects received from VTA's Call for Projects and direct staff to submit the complete list to the Metropolitan Transportation Commission for consideration of inclusion in the Regional Transportation Plan.
- 6.11. ACTION ITEM -Approve the appointments to the State Route 85 Corridor Policy Advisory Board.
- 6.12. ACTION ITEM -Authorize the General Manager to negotiate and execute a Cooperative Agreement (Agreement) with the Peninsula Corridor Joint Powers Board (Caltrain) regarding the parties' responsibilities for real property acquisitions in Santa Clara County that are required for the Peninsula Corridor Electrification Project (PCEP). This authorization would also permit staff to agendize hearings for its Board to consider the adoption of resolutions of necessity if negotiated acquisition activities were unsuccessful.
- 6.13. INFORMATION ITEM -Receive information on the Fiscal Year 2015-2016 Insurance Program.
- 6.14. INFORMATION ITEM -Review the Legislative Update Matrix.
- 6.15. INFORMATION ITEM -Receive the Monthly Investment Report for July 2015.
- 6.16. INFORMATION ITEM -Receive update on iTEAM Activities and Initiatives for Fiscal Year 2016 and Fiscal Year 2017.
- 6.17. INFORMATION ITEM -Receive the Programmed Projects Quarterly Monitoring Report for April-June 2015.
- 6.18. INFORMATION ITEM -Receive an update on State Route 237 Express Lanes Fiscal Year 2015 Annual Report.
- 6.19. INFORMATION ITEM -Receive information on the Dynamic Transit Service Pilot Program Implementation.
- 6.20. INFORMATION ITEM -Receive a report on the October 2015 Transit Service Changes.

7. REGULAR AGENDA

- 7.1. ACTION ITEM - Authorize the General Manager to approve and formally adopt a successor labor agreement negotiated between the Santa Clara Valley Transportation Authority (VTA) and Amalgamated Transit Union (ATU), Local 265 and amend the FY 2016 and FY 2017 VTA Transit Fund Operating Budgets by \$1,400,000 and \$4,000,000, respectively.

Note: Motion must be approved by at least 2/3 of the Board (8 members).

- 7.2.** ACTION ITEM -Adopt the following Resolutions approving CalPERS Medical for employees and retirees represented by ATU, Local 265, effective January 1, 2016.
1. ATU Resolution - New Non-PERS Group PEMHCA Minimum Equal Contribution.
 2. ATU Survivor Resolution - for Survivors of ATU retiree.
- 7.3.** ACTION ITEM -Adopt the following Resolutions approving CalPERS Medical for employees and retirees represented by AFSCME, Local 101, effective January 1, 2016.
1. AFSCME (CalPERS) Resolution.
 2. AFSCME (non-CalPERS) Resolution - for AFSCME employees who do not have five years of CalPERS service time but qualify for retiree medical based on VTA/ATU pension retirement service and total VTA years of service.
- 7.4.** ACTION ITEM -Adopt the following Resolutions approving CalPERS Medical for employees and retirees represented by TAEA, Local 21, effective January 1, 2016.
1. TAEA (CalPERS) Resolution.
 2. TAEA Survivor Resolution (CalPERS) - for Survivors of TAEA retirees.
 3. TAEA (non-CalPERS) Resolution - for TAEA employees who do not have five years of CalPERS service time but qualify for retiree medical based on VTA/ATU pension retirement service and total VTA years of service.
 4. TAEA Survivor resolution (non-CalPERS) - for Survivors of TAEA employees who did not have five years of CalPERS service time but qualify for retiree medical based on VTA/ATU pension retirement and total VTA years of service.
- 7.5.** ACTION ITEM -Rescind the ICMA Retirement Health Savings (RHS) Plan Number 803315 for employees represented by TAEA, Local 21, who are converting to CalPERS Medical plans, effective January 1, 2016. (Resolution No. 2012.01.12)

Administration and Finance Committee

- 7.6.** INFORMATION ITEM -Receive a presentation on Santa Clara-Alum Rock Bus Rapid Transit (BRT) Project Status. (Verbal Report)

Transit Planning and Operations Committee

- 7.7.** INFORMATION ITEM -Receive an update on Compressed Natural Gas (CNG) analysis.

8. OTHER ITEMS

8.1. ITEMS OF CONCERN AND REFERRAL TO ADMINISTRATION

8.2. Reports from VTA Committees, Joint Powers Boards (JPB), and Regional Commissions

8.2.A. VTA Standing Committees

8.2.B. VTA Advisory Committees

8.2.C. VTA Policy Advisory Boards (PAB)

8.2.D. Joint Powers Boards and Regional Commissions

8.3. Announcements

9. CLOSED SESSION

9.1. Recess to Closed Session

A. Existing Litigation - Conference with Legal Counsel [Government Code Section 54956.9(d)(1)]

Name of Case: Santa Clara Valley Transportation Authority v. Montague Parkway Assoc., *et al.*

(Santa Clara County Superior Court Case No.: 1-12-CV-220334)

Name of Case: Montague Parkway Assoc., *et al.* v. Santa Clara Valley Transportation Authority

(Santa Clara County Superior Court Case No.: 1-15-CV-281544)

B. Conference with Labor Negotiators (Government Code Section 54957.6)

VTA Designated Representatives

Rudy Medina, Employee Relations Manager

Alberto Lara, Director of Business Services

Raj Srinath, Chief Financial Officer

Employee Organization

Transportation Authority Engineers and Architects Association (TAEA),
IFPTE, Local 21

9.2. Reconvene to Open Session

9.3. Closed Session Report

10. ADJOURN



Date: September 24, 2015
 Current Meeting: October 1, 2015
 Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
 Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Director of Business Services, Alberto Lara

SUBJECT: Employees and Supervisor of the Quarter for the Fourth (4th) Quarter of 2015.

FOR INFORMATION ONLY

BACKGROUND:

Employees and Supervisor of the 4th Quarter:

Barbara (Barb) McVay, Office Specialist II, at River Oaks, is the Administration Award Winner for the 4th Quarter. Barb is a very conscientious employee who works well under minimal supervision. She has served VTA for over 14 years and is successful in the performance of her job because of her genuine care for people and her meticulous attention to detail. Barb's success is due to her organizational skills and her ability to apply a can-do attitude to everything she does. With her upbeat attitude and generous nature, as demonstrated by her exceptional baked goods Barb helps make VTA a better place to work. Congratulations to Barb McVay, Administrative Employee of the 4th Quarter!

Gerzain Hernandez, Coach Operator, at Chaboya Operations, is the Operations Award Winner for the 4th Quarter. With nine (9) years of service at VTA, Gerzain is a compassionate driver and a devoted line instructor. Gerzain holds customer service as a high priority and proves his dedication to excellence on a daily basis as indicated by his positive work habits. Recognized by his supervisors for his dedication to VTA, as well as his careful attention to safety, Gerzain is clearly a role model to his Division as well as to VTA. Congratulations to Gerzain Hernandez, Operations Employee of the 4th Quarter!

James (Matt) Buckley, Transit Mechanic, at Chaboya Maintenance, is the Maintenance Award winner for the 4th Quarter. James has been with VTA since 2011, and consistently meets the high performance standards of his job. He takes his job seriously by diagnosing problems and performs repairs to ensure that VTA buses operate in a safe and efficient manner. James takes responsibility for constantly learning new information to make his job more efficient, and then applying that knowledge in the workplace. He also enjoys supporting his team and is always

willing to share new skills and techniques with them. James serves as a first-rate role model to his fellow co-workers and is very deserving of this award. Congratulations to James Buckley, Maintenance Employee of the 4th Quarter!

Elena Valdez, Office Support Supervisor, is the Supervisor of the Quarter for the 4th quarter. Elena has been with VTA for over 18 years and provides guidance to support the smooth operations for the Guadalupe division. Elena has made it her personal habit to assist her customers by finding ways to meet their needs. Even during the most stressful situations, Elena maintains a positive attitude, genuine enthusiasm and pleasant demeanor. She demonstrates leadership skills by meeting numerous daily challenges with a positive attitude. Elena's direct reports and peers describe her as fair, a team player, and always ready to listen and help. Congratulations to Elena Valdez, Supervisor of the^{the} 4th Quarter!

Prepared By: Employee Relations
Memo No. 4953



Date: September 18, 2015
 Current Meeting: October 1, 2015
 Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
 Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Director of Engr. & Trans. Infrastructure Dev., Carolyn M. Gonot

SUBJECT: SVRT Program Update

FOR INFORMATION ONLY

Silicon Valley Berryessa Extension Project

Significant activities and progress on VTA's BART Silicon Valley Berryessa Extension Project continued during September 2015. Key activities that occurred throughout the 10-mile extension construction include the following:

Construction Updates

- *Fremont and central Milpitas.* Skanska, Shimmick, Herzog (SSH), the major contractor for the Berryessa Extension line, track, stations and systems work, continued to work on key elements of systems facilities in the Fremont/central Milpitas area. Installation of the electrical duct bank and electrical cable, which will power the trains, continued throughout the month. Foundation concrete placement was completed and wall construction was initiated on the flood wall/retaining wall being built near Berryessa Creek on behalf of the Santa Clara Valley Water District. Installation of ballast, concrete ties, rail, floating slab tubs, cable trough and track crossover work continued along the guideway.
- *Dixon Landing Road.* North of the roadway, placement of the trench structure's invert concrete and wall rebar was completed, and placement of wall concrete is now currently underway. South of the roadway, work continued throughout the month on features such as the emergency/maintenance walkway within the trench.
- *Montague Expressway.* North of the roadway, crews completed the installation of a fire protection pipe at the trench structure and continued the placement of AT&T's conduit for utilities entering the Milpitas Station.

- *Milpitas Station.* Crews finished welding structural and the roof decking steel structure. Placement of roof gutters, flashing and steel rails for elevators has commenced. Onsite fabrication of steel bridge sections for the future pedestrian bridge to VTA's Montague Light Rail Station is ongoing. Work also continues on the station's ancillary buildings, and station platform features, including the concrete stairs, electrical duct banks and lighting duct bank. Placement of concrete foundations for the transit center bus bay canopy shelters has commenced.
- *Montague Light Rail Station.* The station reopened for passenger service on August 31, 2015. Work is underway to install sections of the pedestrian overcrossing bridge between the Montague Light Rail Station and the Milpitas BART Station during the month of October.
- *Capitol Avenue.* Installation of new PG&E service and relocation of existing utility lines continued. The contractor also continued to place traffic signal foundations and concrete curb for the new intersection of Capitol Avenue and South Milpitas Boulevard.
- *Trade Zone Boulevard.* Placement of drainage materials, rebar and concrete for the trench between Capitol Avenue and Trade Zone Boulevard continued. Traffic is now driving on the northern half of the Trade Zone Boulevard bridge deck and shoring and excavation are complete. South of Trade Zone Boulevard, the contractor has finished placing the trench wall concrete segments and began removing support of excavation materials.
- *Sierra/Lundy intersection.* The contractor continued placing rebar and concrete for the exterior and center trench walls and deck for the trench and tunnel structure. Installation of electrical and mechanical duct banks for the center wall at the trench structure continued.
- *Berryessa Station Area.* Installation of plumbing, electrical and mechanical duct banks, utility and concrete slab work continued in the station area, and crews continued placing and welding steel for the canopy structure.
- *Station Parking Structures.* McCarthy Building Companies, Inc., the project's design-build contractor for parking structures, has initiated construction at the Berryessa Station. In September, work included completion of the first level foundation and formwork for the second level deck. At the Milpitas Station, the contractor continued to install drill displacement columns for ground condition improvements. Excavation for elevator foundations is set to commence.

Communications and Outreach

In the City of Milpitas, staff conducted extensive outreach to local businesses, residents, and commuters regarding the reopening of the Montague Light Rail Station. The Outreach team also began outreach efforts to commercial and residential stakeholders regarding early morning concrete pours and truck hauling routes along Montague Expressway and Gladding Court.

Outreach to businesses near East Capitol Avenue and Montague Expressway continued in order to accommodate ongoing utility and trench work in the area.

In the City of San Jose, staff continued its outreach to businesses and residents regarding the removal of support of excavation materials near Trade Zone Boulevard. Staff collaborated with the San Jose Fire Department to provide advance notice to residents regarding the Urban Shield operation, a full-scale emergency preparedness exercise which took place at the future Berryessa Station Campus. Staff also continued supporting and accommodating the needs of residents located near the Sierra Road/Lundy Avenue intersection, while planning future outreach activities for the extended work schedule in the construction zone. A project update presentation was also provided for the Berryessa Citizens Advisory Council.

Tours of the Berryessa Extension project were arranged for the Spanish Trade Commission, San Jose City Councilmember Manh Nguyen, and SPUR San Jose. A series of van tours for internal project staff is also underway. Staff also produced a time-lapse YouTube video which highlights construction progress at the Milpitas and Berryessa stations over the last two years.

SVBX Schedule

	FFGA Date	Forecast Date
Revenue Service	June 2018	August 2017

SVBX Budget

	Estimate	Forecast at Completion	Incurred to Date (Through 8/31/15)
SVBX New Starts Project	\$2,330.0	\$2,330.0	\$1,148.8
Concurrent Non-Project Activities)	\$ 91.3	\$ 91.3	\$ 40.7
SVBX Total	\$2,421.3	\$2,421.3	\$1,189.5

\$Millions - Year of Expenditure

Phase II Activities

Technical analysis continued for the combined *Supplemental Environmental Impact Statement/3rd Supplemental Environmental Impact Report*. Circulation of the draft document is anticipated for the second quarter of 2016.

The next series of meetings for the BART Silicon Valley Phase II Community Working Groups will occur on October 13, 14, and 15. The October meetings will include a recap of the Ernst & Young Financial Analysis results that were shared with the Board of Directors at their September Workshop, and presentations regarding BART system operations and BART Silicon Valley Phase II station features.

Prepared By: Kevin Kurimoto
Memo No. 4904

iTEAM Update & Initiatives

Board of Directors
October 1, 2015



iTEAM History

- Enhanced Caltrans Service to Santa Clara County
- Innovation test lab for transportation best practices
- Master Agreement executed September 2013
- Three Caltrans iTEAM staff at VTA:
 - Regional Project Manager
 - Traffic Operations Engineer
 - Local Assistance Engineer



iTEAM Accomplishments FY14/15

- Increased access to Caltrans staff
- Improved communications
- Training for Member Agency staff in Santa Clara County
- Assist in process of complex permits
- Facilitate and coordinate maintenance activities
- Coordinate regional issues



iTEAM Collaboration



Labor Day weekend 2015



iTEAM Initiatives FY 15/16-FY16/17

- Streamline processes
 - Project Initiation Document
 - Project Approval/Environmental Document
 - Design
 - Right-of-Way Closeout
- Increased access to Caltrans staff
- Incorporate more technology
- Continue training for Member Agency staff





BOARD OF DIRECTORS MEETING

Thursday, September 3, 2015

MINUTES

1. CALL TO ORDER AND ROLL CALL

The Regular Meeting of the Santa Clara Valley Transportation Authority's (VTA) Board of Directors was called to order by Chairperson Woodward at 5:33 p.m. in the Board of Supervisors' Chambers, County Government Center, 70 West Hedding Street, San José, California.

1.1. ROLL CALL

Attendee Name	Title	Status
Jason Baker	Board Member	Present
Jeannie Bruins	Board Member	Present
Larry Carr	Alternate Board Member	Absent
Magdalena Carrasco	Board Member	Present
Cindy Chavez	Vice Chairperson	Present
Dave Cortese	Alternate Board Member	Absent
Jose Esteves	Board Member	Present
Rose Herrera	Board Member	Present
Ash Kalra	Board Member	Present
Johnny Khamis	Board Member	Present
Sam Liccardo	Board Member	Present
Jamie Matthews	Alternate Board Member	Absent
Howard Miller	Alternate Board Member	Present
Raul Peralez	Alternate Board Member	Absent
David Whittum	Board Member	Present
Perry Woodward	Chairperson	Present
Ken Yeager	Board Member	Present

* Alternates do not serve unless participating as a Member.

A quorum was present.

1.2. Orders of the Day

Chairperson Woodward noted the following Agenda Item would be removed from the Agenda: **Agenda Item 5.4.A.**, Receive a Report from the Silicon Valley Leadership Group (SVLG).

Chairperson Woodward noted staff's request to remove the following item from the Agenda: **Agenda Item 6.3.**, Purchase 90 standard forty foot hybrid buses and 10 express hybrid buses.

Chairperson Woodward noted staff's request to hear the following Agenda Items together: 1) **Agenda Item 7.1.**, CalPERS Medical Resolutions for SEIU, Local 521; 2) **Agenda Item 7.2.**, ICMA Retirement Health Savings (RHS) Plan Agreements for SEIU Employees; and 3) **Agenda Item 7.3.**, CalPERS Medical Resolutions for Non-Represented Groups.

Chairperson Woodward indicated the Governance and Audit Committee approved the following Agenda Items at their September 3, 2015, Committee meeting and requested they be removed from the Regular Agenda and placed on the Consent Agenda: 1) **Agenda Item 7.5.**, Board Standing Committee and Board Ad Hoc Committee Appointments; 2) **Agenda Item 7.6.**, State Route 85 Corridor Policy Advisory Board Appointments; and 3) **Agenda Item 7.7.**, El Camino Real Rapid Transit Policy Advisory Board Appointments.

Chairperson Woodward noted the meeting would be adjourned in memory of VTA employees Charlotte Beebe and Rodil Tampol.

Board Member Khamis expressed his objection to one of the appointments on the State Route 85 Corridor PAB and requested the item remain on the Regular Agenda.

Board Member Liccardo recused himself from Agenda Items **6.3** and **6.8 - 6.13**.

Member Chavez requested **Agenda Item 6.12.**, South Bay Transit Associates Amendment Contract for Program and Construction Management Services, and similar items for this type of work be heard by the Administration and Finance Committee to better understand the difference between consultants being added versus staff being added.

Public Comment

Roland Lebrun, Interested Citizen, expressed concern with contract employees from Hatch Mott MacDonald working on VTA premises for extended periods of time not being made regular employees.

M/S/C (Chavez/Herrera) to accept the Orders of the Day, and approve the Consent Agenda, as amended. Board Member Liccardo recused himself from Consent **Agenda Items 6.3** and **6.8 – 6.13**.

RESULT:	APPROVED [UNANIMOUS] <u>(Orders of the Day, Consent Agenda Items #: 6.1-6.7; 6.14-6.23)</u>
MOVER:	Cindy Chavez, Board Member
SECONDER:	Rose Herrera, Board Member
AYES:	Baker, Chavez, Esteves, Herrera, Kalra, Khamis, Liccardo, Whittum, Woodward, Yeager
NOES:	None
ABSENT:	Bruins, Carrasco

NOTE: M/S/C MEANS MOTION SECONDED AND CARRIED AND, UNLESS OTHERWISE INDICATED, THE MOTION PASSED UNANIMOUSLY.

RESULT:	APPROVED <u>(Consent Agenda Items #: 6.8-6.13)</u>
MOVER:	Cindy Chavez, Board Member
SECONDER:	Rose Herrera, Board Member
AYES:	Baker, Chavez, Esteves, Herrera, Kalra, Khamis, Whittum, Woodward, Yeager
NOES:	None
ABSENT:	Bruins, Carrasco
RECUSED:	Liccardo

The Agenda was taken out of order.

7. REGULAR AGENDA

Governance and Audit Committee

7.6. State Route 85 Corridor Policy Advisory Board Appointments

Board Member Khamis expressed concern with one of the appointees noting he was not confident with putting this appointee in a position to be a spokesperson for VTA.

Board Member Baker noted the City of Campbell appointed Paul Resnikoff as the Regular Member and Elizabeth Gibbons as the Alternate Member and requested their names be added.

M/S/C (Baker/Liccardo) on a vote of 9 ayes, 1 No, 0 abstentions to approve the appointments to the State Route 85 Corridor Policy Advisory Board with the addition of Paul Resnikoff as the regular member representing the City of Campbell and Elizabeth Gibbons as his alternate. Board Member Khamis opposed.

RESULT:	APPROVED <u>(Agenda Item #7.6)</u>
MOVER:	Jason Baker, Board Member
SECONDER:	Sam Liccardo, Board Member
AYES:	Baker, Chavez, Esteves, Herrera, Kalra, Whittum, Woodward, Yeager
NOES:	Khamis
ABSENT:	Bruins, Carrasco

2. AWARDS AND COMMENDATION

There were no Awards and Commendations.

3. PUBLIC COMMENT

Omar Chatty, Interested Citizen, expressed concern with traffic incidents and freeway shutdowns and expressed support for BART around the Bay.

Board Member Bruins arrived at the meeting and took her seat at 5:41 p.m.

Mr. Lebrun expressed concern with parking at the Tamien Station and suggested opening the blocked off area to allow more parking capacity.

4. PUBLIC HEARINGS

4.1. HEARING - NOTICE OF INTENTION TO ADOPT RESOLUTION OF NECESSITY

Bijal Patel, Deputy Director of Real Estate, provided a brief background and a presentation of the Resolution of Necessity, highlighting project needs.

Board Member Carrasco arrived at the meeting and took her seat at 5:46 p.m.

Public Comment

There was no public comment.

M/S/C (Chavez/Herrera) to close the public hearing.

RESULT:	APPROVED [UNANIMOUS]
MOVER:	Chavez, Board Member
SECONDER:	Herrera, Board Member
AYES:	Baker, Bruins, Carrasco, Chavez, Esteves, Herrera, Kalra, Khamis, Liccardo, Whittum, Woodward, Yeager
NOES:	None
ABSENT:	None

M/S/C (Herrera/Baker) to adopt **Resolution of Necessity No. 2015.09.24 and Resolution of Necessity No. 2015.09.25** determining that the public interest and necessity require the acquisition of property interests in two properties owned by: (1) Jatinder M. Mahajan, located in Milpitas, California; and (2) James Chung and Moon Chung, located in Milpitas, California, for the BART Silicon Valley Berryessa Extension (SVBX) Project.

Property ID/Assessor's Parcel Number/Owner

B2255 (APN 092-08-092) owned by Jatinder M. Mahajan

Property ID/Assessor's Parcel Number/Owner

B2256 (APN 092-08-057) owned by James Chung and Moon Chung

RESULT:	ADOPTED [UNANIMOUS]
MOVER:	Herrera, Board Member
SECONDER:	Baker, Board Member
AYES:	Baker, Bruins, Carrasco, Chavez, Esteves, Herrera, Kalra, Khamis, Liccardo, Whittum, Woodward, Yeager
NOES:	None
ABSENT:	None

5. REPORTS

5.1. Citizens Advisory Committee (CAC)/2000 Measure A Citizens Watchdog Committee (CWC) Chairperson's Report

There was no Citizens Advisory Committee (CAC) Chairperson's report.

5.2. Policy Advisory Committee (PAC) Chairperson's Report

Chairperson Woodward noted the Policy Advisory Committee (PAC) report was contained on the dais and the public table.

5.3. General Manager's Report

Nuria I. Fernandez, General Manager, provided a report, highlighting:

- VTA was selected by American Public Transportation Association (APTA) to receive two First Place Adwheel Awards for the 2014 Annual Report and for the fully wrapped and lit holiday train. VTA will be recognized at an award ceremony on October 5, 2015, during APTA's 2015 Annual Meeting and is in the running for the grand prize.
- VTA was awarded the Ladders of Opportunities grant and is putting together an outreach and training program for underserved, underemployed, minority or female students to prepare them for careers in transportation.
- Congratulated Michael Hursh, Chief Operating Officer, for being selected to serve as the new General Manager for AC Transit beginning September 21, 2015.
- Announced Jim Unites, Deputy Director, Operations will serve as the Project Manager for Super Bowl 50.
- September 15 - October 15, 2015, VTA will be celebrating Latino Heritage Month and will host a luncheon on September 23, 2015.
- Reopening of the Montague Light Rail Station.
- VTA hosted public scoping meeting in the City of Sunnyvale for the Mathilda Avenue Improvements at SR 237 and US 101 project.

Board Member Whittum thanked staff for attending the Mathilda Avenue meeting and for their work on the project.

5.3.A Government Affairs Update

Kurt Evans, Government Affairs Manager, provided an update on Government Affairs, highlighting the state's transportation special session and the emerging transportation funding package that is being proposed.

Members of the Board discussed the following: 1) allocation for local streets and roads for Santa Clara County; 2) Republican support; and 3) electric vehicle fee.

5.3.B. Transit Ridership Improvement Plan

Chris Augenstein, Deputy Director, provided a brief report and overview of the Transit Ridership Improvement Plan (TRIP). He introduced Adam Burger, Senior Transportation Planner, who provided a presentation, highlighting: 1) Changing our approach; 2) Transit network design guidance; 3) Jarrett Walker and Associates; and 4) Project timeline.

Members of the Board discussed the following: 1) how this is different from the Comprehensive Operations Analysis; 2) expectations of the Board; 3) what staff will be providing; and 4) getting the Board involved with planning.

Ms. Fernandez assured the Board that staff will gather input from the Board and the public throughout this process.

5.3.C. Silicon Valley Rapid Transit (SVRT) Program Update

Ms. Fernandez indicated the SVRT Program Update was located in the Agenda packet.

Ms. Fernandez concluded her report and shared news of VTA BART project's selection by the readers of the Milpitas Post as being one of the best projects in Milpitas, and is an example of good government spending.

Public Comment

Mr. Chatty expressed support for TRIP, mixed flow lanes, and BART around the Bay. He questioned if SR 87 corridor is appropriate for light rail.

5.4. Chairperson's Report

Chairperson Woodward announced the Board Workshop on September 25, 2015, at the VTA River Oaks campus in the Auditorium.

5.4.A. (Removed from the Agenda)

Receive an update from the Silicon Valley Leadership Group (SVLG)

6. CONSENT AGENDA

6.1. Board of Directors Meeting Minutes of August 6, 2015

M/S/C (Chavez/Herrera) to approve the Board of Directors Meeting Minutes of August 6, 2015.

6.2. VTA Transit Fund Operating Reserve

M/S/C (Chavez/Herrera) to approve the allocation of \$3.11 million to the VTA Transit Fund Operating Reserve in order to maintain a reserve equal to 15% of the annual operating budget.

6.3. (Removed from the Agenda)

Authorize the General Manager to exercise the option to purchase 90 standard forty foot hybrid buses and 10 express hybrid buses from Gillig LLC at a cost not to exceed \$71,009,100. Board Member Liccardo recused himself.

6.4. Competitive Negotiation for 40' Low Floor Bus Procurement

M/S/C (Chavez/Herrera) to adopt **Resolution No. 2015.09.26** upon a two-thirds vote of the Board of Directors finding that a competitive sealed bid process does not constitute a method of procurement adequate for VTA's needs and directing the use of competitive negotiation for the purchase of up to 25 low-floor hybrid diesel-electric buses up to 43 foot in length with an option for additional hybrid diesel-electric buses for VTA's service, as required by Public Contract Code Sections 20216 and 20217. **Motion approved by 9 Board Members.**

6.5. Competitive Negotiation for 60' Articulated Bus Procurement

M/S/C (Chavez/Herrera) to adopt **Resolution No. 2015.09.27** upon a two-thirds vote of the Board of Directors finding that a competitive sealed bid process does not constitute a method of procurement adequate for VTA's needs and directing the use of competitive negotiation for the purchase of up to 55 sixty foot low-floor articulated buses for VTA's service, as required by Public Contract Code Sections 20216 and 20217. **Motion approved by 9 Board Members.**

6.6. Altamont Corridor Express (ACE) Shuttle Service Contract

M/S/C (Chavez/Herrera) to authorize the General Manager to execute a five-year agreement with El Paseo Limousine (El Paseo) to provide Altamont Corridor Express (ACE) shuttle bus services in an amount not to exceed \$8,676,272 with options for two additional one-year renewal periods with escalation rates not to exceed the increase in the San Francisco Bay Area Consumer Price Index.

6.7. Express Eco Pass Reimbursement Increase for the Dumbarton Express

M/S/C (Chavez/Herrera) to authorize the General Manager to amend the Memorandum of Understanding (MOU) with Alameda-Contra Costa Transit District (AC Transit) to increase Santa Clara Valley Transportation Authority's (VTA) Express Eco Pass contribution from \$1.50 to \$2.10 for each passenger who uses an Express Eco Pass on the Dumbarton (DB) Express service.

6.8. Replace Heating Ventilation Air Conditioning (HVAC) units and upgrade Energy Management Systems (EMS) at River Oaks

M/S/C (Chavez/Herrera) on a vote of 9 ayes, 0 Noes, 0 abstentions, 1 refusal to authorize the General Manager to execute a contract with Air Systems Incorporated in the amount of \$1,250,265 for the replacement of twenty-eight (28) Heating Ventilation Air Conditioning (HVAC) units, the associated Energy Management Systems (EMS), and the needed natural gas piping at the River Oaks Administrative Division. Board Member Liccardo refused.

6.9. Procurement for Light Rail Vehicle Gear Box Overhaul Project

M/S/C (Chavez/Herrera) on a vote of 9 ayes, 0 Noes, 0 abstentions, 1 refusal to authorize the General Manager to execute a sole source contract with Voith, Inc., in the amount up to \$838,191 to procure the light rail vehicle gear box and gear box suspension system components. Board Member Liccardo refused.

6.10. Procurement for Light Rail Vehicle Brake Component Project

M/S/C (Chavez/Herrera) on a vote of 9 ayes, 0 Noes, 0 abstentions, 1 refusal to authorize the General Manager to execute a sole source contract with Knorr, Inc., in the amount up to \$1,407,770 to procure the light rail vehicle brake components as part of a three-year mid-life light rail vehicle overhaul program. Board Member Liccardo refused.

6.11. Light Rail Vehicle Gate Driver Firing Board Procurement

M/S/C (Chavez/Herrera) on a vote of 9 ayes, 0 Noes, 0 abstentions, 1 refusal to authorize the General Manager to execute a sole source contract with PSI Repair Services, Inc. in the amount up to \$1,909,040 to supply firing control boards required to refurbish VTA's Onix Propulsion System in use on VTA's existing light rail vehicles. Board Member Liccardo refused.

6.12. South Bay Transit Associates Amendment Contract for Program and Construction Management Services

M/S/C (Chavez/Herrera) on a vote of 9 ayes, 0 Noes, 0 abstentions, 1 refusal to authorize the General Manager to execute a contract amendment with South Bay Transportation Associates for program and construction management services, extending the contract term through December 31, 2016 and increasing the approved contract amount by \$9.0 million for a new contract amount not to exceed \$80.7 million. Board Member Liccardo refused.

6.13. LRT Efficiency Project – Mountain View Double Track Phase I Construction Contract Amendment with Shimmick Construction

M/S/C (Chavez/Herrera) on a vote of 9 ayes, 0 Noes, 0 abstentions, 1 refusal to authorize the General Manager to amend the contract with Shimmick Construction, in the amount of \$2,740,000 for construction of the LRT Efficiency Project - Mountain View Double Track Phase I. Board Member Liccardo refused.

6.14. Vehicle Registration Fee Countywide Fund Programming

M/S/C (Chavez/Herrera) to approve the programming of an additional \$15,000 of Countywide Program Intelligent Transportation System (ITS) funds to the City of Campbell's Hamilton & Bascom Avenue project and the transfer of \$10,984 between two of the County of Santa Clara's ITS projects.

6.15. Bill Positions: Transportation Special Session Legislation

M/S/C (Chavez/Herrera) to adopt a support position for SBX1-1 (Beall), which proposes to generate between \$4 billion-\$5 billion a year in new transportation revenues through a combination of funding sources to begin addressing the significant backlog of maintenance and rehabilitation projects on the state highway and local roadway systems. Adopt support positions for ABX1-7 (Nazarian) and SBX1-8 (Hill), which increase the percentage of cap-and-trade auction proceeds that would be continuously appropriated for public transit, and direct staff to seek amendments to these two bills related to the Transit and Intercity Rail Capital Program. Finally, adopt support positions for ABX1-8 (Chiu) and SBX1-7 (Allen), which increase the sales tax rate for diesel fuel to provide more funding for the State Transit Assistance Program (STA).

6.16. Legislative Update Matrix

M/S/C (Chavez/Herrera) to review the Legislative Update Matrix.

6.17. Dynamic Transit Service Pilot

M/S/C (Chavez/Herrera) to receive an update on the Dynamic Transit Service Pilot.

6.18. Monthly Investment Report for June 2015

M/S/C (Chavez/Herrera) to receive the Monthly Investment Report for June 2015.

6.19. Development Review Quarterly Report for April to June 2015

M/S/C (Chavez/Herrera) to receive the Development Review Quarterly Report for April to June 2015.

6.20. Proposed Design Guidelines for Bike Lanes at Bus Stops

M/S/C (Chavez/Herrera) to receive a report on the Proposed Design Guidelines for Bike Lanes at Bus Stops.

6.21. Transit Passenger Environment Plan

M/S/C (Chavez/Herrera) to receive the Transit Passenger Environment Plan.

6.22. VTP Highway Program Semi-Annual Report Ending April 30, 2015

M/S/C (Chavez/Herrera) to receive the VTP Highway Program Semi-Annual Report Ending April 30, 2015.

6.23. Transit Capital Projects Semi-Annual Report Ending March 31, 2015

M/S/C (Chavez/Herrera) to receive the Transit Capital Projects Semi-Annual Report Ending March 31, 2015.

7.5. Board Standing Committee and Board Ad Hoc Committee Appointments

M/S/C (Chavez/Herrera) to approve changes to 2015 Board Standing Committee and Board Ad Hoc Committee appointments.

7.7. El Camino Real Rapid Transit Policy Advisory Board Appointments

M/S/C (Chavez/Herrera) to approve the appointments to the El Camino Real Rapid Transit Policy Advisory Board.

7. REGULAR AGENDA (continued)

Administration and Finance Committee

Board Member Baker introduced the items that were heard at the Administration and Finance August 20, 2015, Committee meeting and noted that Agenda Items #7.1 through #7.3 will be heard together.

Board Members Chavez and Kalra left their seat at 6:16 p.m.

Agenda Items #7.1 to #7.3

7.1. CalPERS Medical Resolutions for SEIU, Local 521

7.2. ICMA Retirement Health Savings (RHS) Plan Agreements for SEIU Employees

7.3. CalPers Medical Resolutions for Non-Represented Groups

Sylvester Fadal, Deputy Director, Human Resources and Diversity Programs, provided a brief overview of the staff report and a brief presentation highlighting: 1) Background; 2) VTA health care cost savings; 3) Rescind ICMA Health Savings Account for SEIU; and 4) Non-Represented employees and retirees.

M/S/C (Herrera/Baker) to adopt the following Resolutions adopting CalPERS Medical for employees and retirees represented by Service Employees International Union (SEIU), Local 521, effective January 1, 2016.

1. SEIU (CalPERS) **Resolution No. 2015.09.28.**
2. SEIU Survivor **Resolution No. 2015.09.29** (CalPERS) - for Survivors of SEIU retirees.
3. SEIU (non-CalPERS) **Resolution No. 2015.09.30** - for SEIU employees who do not have five years of CalPERS service time but qualify for retiree medical based on VTA/ATU pension retirement service and total VTA years of service.
4. SEIU Survivor **Resolution No. 2015.09.31** (non-CalPERS) - for Survivors of SEIU employees who did not have five years of CalPERS service time

but qualify for retiree medical based on VTA/ATU pension retirement and total VTA years of service.

RESULT:	APPROVED [UNANIMOUS]
MOVER:	Herrera, Board Member
SECONDER:	Baker, Board Member
AYES:	Baker, Bruins, Carrasco, Esteves, Herrera, Khamis, Liccardo, Whittum, Woodward, Yeager
NOES:	None
ABSENT:	Chavez, Kalra

M/S/C (Herrera/Baker) to rescind the ICMA Retirement Health Savings (RHS) Plan Number 803314 for employees represented by SEIU, Local 521 who are converting to CalPERS Medical plans effective January 1, 2016. (Resolution No. 2012.01.11)

RESULT:	APPROVED [UNANIMOUS]
MOVER:	Herrera, Board Member
SECONDER:	Baker, Board Member
AYES:	Baker, Bruins, Carrasco, Esteves, Herrera, Khamis, Liccardo, Whittum, Woodward, Yeager
NOES:	None
ABSENT:	Chavez, Kalra

M/S/C (Herrera/Baker) to adopt the following Resolutions for CalPERS Medical for Non-Represented employees and retirees, effective January 1, 2016.

1. Non-Represented (CalPERS) **Resolution No. 2015.09.32**
2. Non-Represented (non-CalPERS) **Resolution No. 2015.09.33** - for Non-Represented employees who do not have five years of CalPERS service time but qualify for retiree medical based on VTA/ATU pension retirement service and total VTA years of service.

RESULT:	APPROVED [UNANIMOUS]
MOVER:	Herrera, Board Member
SECONDER:	Baker, Board Member
AYES:	Baker, Bruins, Carrasco, Esteves, Herrera, Khamis, Liccardo, Whittum, Woodward, Yeager
NOES:	None
ABSENT:	Chavez, Kalra

Board Member Kalra took his seat at 6:22 p.m.

Ad Hoc Committee – Envision Silicon Valley

Board Member Woodward introduced the item which was heard at the August 27, 2015, Ad Hoc Committee - Envision Silicon Valley (ESV) meeting.

7.4. Envision Silicon Valley Evaluation Criteria

John Ristow, Director of Planning and Program Development, provided a brief overview of the staff report and a presentation highlighting: 1) Process; 2) Participants; 3) Summary of recent input; 4) Goals; 5) Evaluation criteria; 6) Individual project evaluation process; and 7) Next steps.

Public Comment

The following speakers expressed support for the ESV evaluation criteria and provided the following feedback and suggestions:

Kelly Snider, SPUR, suggested focusing on an integrated highly usable transit network, looking at ways to lessen wait times, and ensuring the plans benefit most people.

Bena Chang, Silicon Valley Leadership Group (SVLG), noted the need for strong voter support and reiterated the importance of including farebox recovery ratio as a metric.

Chris Lepe, TRANSFORM, suggested improvements in increasing frequency of bus network. He also suggested several metrics including, reducing transit travel delay and wait times, focusing on greenhouse gas emissions reduction and providing more emphasis in certain areas.

Chairperson Woodward indicated the SPUR and SVLG letters were in the reading folders and on the public table.

Charisse Ma Lebron, Working Partnerships, suggested adding a metric to reduce transit travel delay and waiting times, increase the percentage of low-income households with accessibility to high frequency transit stops and increase ridership per dollar spent on service delivery.

Upon inquiry of Board Member Bruins, Ms. Ma Lebron indicated the needs of low-income, people of color and transit dependent populations should be addressed.

Andrew Boone, Interested Citizen, expressed concern about highway system expansion and suggested the following: 1) improving the bus network, 2) service frequency and 3) having a transit only tax measure.

Adina Levin, Friends of Caltrain, reiterated support for improving the rider experience by minimizing rider wait time, addressing first and last mile connection, increasing service frequency, and transfer synchronization. She suggested adding a metric to increase the number of people who have access to high frequency transit routes.

Mr. Lebrun noted additional feedback from the survey needs to be received to hear what the public thinks, and suggested the top priorities be light rail, improving service and travel times, and relieving roadway bottlenecks.

Mr. Chatty suggested expanding roadways as well as transit.

Members of the Board discussed the following: 1) decreasing transit wait times; 2) experience while passengers wait; 3) reduced emissions; 4) improved farebox recovery and pricing; 5) clarification of items for public; 6) balance of different project types; 7) balancing spending geographically; 8) possibility of waiting to move forward with the criteria; 9) analysis of projects under all criteria; 10) simplifying and reducing the number of criteria; 11) meeting demand; 12) congestion relief; 13) first and last mile gaps; 14) addressing roadways as well as transit; 15) timeline for ballot measure; 16) listening to voters; 17) magnitude of the projects; 18) ways to measure the projects; 18) ballot measure funds versus amount for projects submitted; and 19) distance to transit.

Board Member Whittum suggested referring the item back to the Congestion Management Program and Planning (CMPP) Committee for discussion and bringing it back to the Board for approval.

Board Member Kalra expressed appreciation of the work by staff and Committee and made a motion to adopt the criteria with the following additions: 1) Reduce transit travel delays as a quantitative criteria for this goal: provide congestion relief and improve transportation efficiency; 2) Update the criteria to read, "Enhance pedestrian/bike/transit realm including connectivity and access"; and 3) Increase ridership per every dollar spent as a quantitative criteria for this goal: continue to support Silicon Valley's Economic Vitality. Board Member Yeager seconded the motion.

Board Member Bruins expressed support of the three amendments and proposed testing the criteria versus debating it.

Mr. Ristow noted staff received about 400 projects and will use quantitative tools such as the travel demand model. He further explained not all projects will apply to each criterion and the Board will have the ultimate decision.

Board Member Liccardo expressed concern with the amount of criteria and redundancy and suggested staff simplify to reduce the burden and improve the decision making.

Board Member Baker noted support of amendments made by Board Member Kalra and the suggestion made by Board Member Bruins for staff to review several projects and provide a sample of the outcome to the Ad Hoc Committee - ESV.

Board Member Herrera noted the importance of the process and recommended the item go to the CMPP.

Board Member Whittum noted his support of the motion with the inclusion of distance of travel within a half mile of service and going back to CMPP.

Board Member Kalra supported staff going through the criteria with several projects and reporting back, but suggested moving it forward and giving a representative sample to the Ad Hoc Committee at its September 24, 2015 meeting.

Upon inquiry of Board Member Bruins, Board Member Kalra provided clarification and restated the motion.

Chairperson Woodward noted the motion includes amendments made by Board Member Kalra with a report back to the Ad Hoc Committee - ESV and the Board.

M/S/C (Kalra/Yeager) on a vote of 9 ayes, 2 noes, 0 abstentions to adopt the Evaluation Criteria for Envision Silicon Valley with the following amendments: 1) Add “Reduce transit travel delays” as a quantitative criteria for this goal: provide congestion relief and improve transportation efficiency; 2) Update the criteria to read, “Enhance pedestrian/bike/transit realm including connectivity and access;” and 3) Add “Increase ridership per every dollar spent” as a quantitative criteria for this goal: continue to support Silicon Valley’s Economic Vitality. Staff will test the criteria and report back to the Ad Hoc ESV and the Board. Board Members Esteves and Whittum opposed.

RESULT:	APPROVED
MOVER:	Kalra, Board Member
SECONDER:	Yeager, Board Member
AYES:	Baker, Bruins, Carrasco, Herrera, Kalra, Khamis, Liccardo, Woodward, Yeager
NOES:	Esteves, Whittum
ABSENT:	Chavez

Governance and Audit Committee

7.5. (Removed from the Regular Agenda and placed on the Consent Agenda.)

Approve changes to 2015 Board Standing Committee and Board Ad Hoc Committee appointments.

7.7. (Removed from the Regular Agenda and placed on the Consent Agenda.)

Approve the appointments to the El Camino Real Rapid Transit Policy Advisory Board.

8. OTHER ITEMS

8.1. ITEMS OF CONCERN AND REFERRAL TO ADMINISTRATION

There were no Items of Concern and Referral to Administration.

8.2. Reports from VTA Committees, Joint Powers Boards (JPB), and Regional Commissions.

Public Comment

Mr. Lebrun expressed concern with Caltrain using farebox recovery to pay for capital projects and suggested VTA reach out to help them.

8.2.A. VTA Standing Committees

- Silicon Valley Rapid Transit Program Working Committee (SVRT PWC) – The August 3, 2015, Minutes were accepted as contained in the Agenda packet.
- Governance and Audit Committee – The August 6, 2015, Notice of Cancellation was accepted as contained in the Agenda Packet.
- Transit Planning & Operations (TP&O) Committee – The August 19, 2015 Minutes were accepted as contained on the dais.
- Congestion Management Program & Planning (CMPP) Committee – There was no report.
- Administration & Finance (A&F) Committee – The August 20, 2015, Minutes were accepted as contained in the Agenda packet.

8.2.B. VTA Advisory Committees

- Committee for Transit Accessibility (CTA) – There was no report.
- Citizens Advisory Committee (CAC) and 2000 Measure A Citizens Watchdog Committee (CWC) – The August 12, 2015, Minutes were accepted as contained on the dais.
- Bicycle & Pedestrian Advisory Committee (BPAC) – The August 12, 2015, Minutes were accepted as contained in the Agenda Packet.
- Technical Advisory Committee (TAC) – The August 13, 2015, Minutes were accepted as contained in the Agenda Packet.
- Policy Advisory Committee (PAC) – The August 13, 2015, Minutes were accepted as contained on the dais.

8.2.C. VTA Policy Advisory Boards (PAB)

- Downtown East Valley PAB – There was no report.
- Diridon Station Joint Policy Advisory Board – There was no report.
- El Camino Real Rapid Transit PAB – There was no report.

8.2.D. Joint Powers Boards and Regional Commissions

- Peninsula Corridor JPB – The September 3, 2015 Summary Notes were accepted as contained on the dais.
- Capitol Corridor JPB – There was no report.
- Dumbarton Rail Corridor Policy Committee – There was no report.
- Metropolitan Transportation Commission (MTC) – There was no report.
- Sunol Smart Carpool Lane Joint Powers Authority – There was no report.
- SR 152 Mobility Partnership – There was no report.

8.3. ANNOUNCEMENTS

There were no Announcements.

9. CLOSED SESSION

Public Comment

Satnam Gill, Amalgamated Transit Union (ATU), expressed concern with wages and the gap between the rich and poor in Silicon Valley and requested VTA give ATU its fair share.

Robert Fabela, General Counsel, announced pursuant to Government Code Section 5.956.9e the two items to be discussed under Item 9.1.D relate to: 1) Blossom Hill Pedestrian Overcrossing Project; and 2) Alum Rock business owners affected by the Bus Rapid Transit (BRT) project.

9.1. Recessed to Closed Session at 7:40 p.m.

**A. Conference with Real Property Negotiators
[Government Code Section 54956.8]**

Property: North Division located at Shoreline Boulevard and La Avenida Street in Mountain View, CA
(APN: 116-16-053)

Agency Negotiator: Bijal Patel, Deputy Director, Property Development & Management

Negotiating Parties: John Igoe, Real Estate & Workplace Services Director, Google Inc.

Under Negotiation: Price and terms of exclusive negotiating agreement for North Yard Development Opportunity

B. Existing Litigation - Conference with Legal Counsel
[Government Code Section 54956.9(d)(1)]

Name of Case: Santa Clara Valley Transportation Authority v. Martina, et al. (Defs.: Peter Pham and Angelita Luciano)

(Santa Clara County Superior Court Case No.: 1-12-CV-234287)

C. Anticipated Litigation- Conference with Legal Counsel

Initiation of litigation pursuant to paragraph (4) of subdivision (d) of Section 54956.9 and/or significant exposure to litigation pursuant to paragraph (2) of subdivision (d) of Section 54956.9.

Number of Cases: 1

D. Anticipated Litigation – Conference with Legal Counsel

Significant exposure to litigation pursuant to paragraph 2 of subdivision (d) of Section 54956.9.

Number of Cases: 2

E. Anticipated Litigation- Conference with Legal Counsel

Initiation of litigation pursuant to paragraph (4) of subdivision (d) of Section 54956.9 and/or significant exposure to litigation pursuant to paragraph (2) of subdivision (d) of Section 54956.9.

Number of Cases: 1

F. Conference with Labor Negotiators
(Government Code Section 54957.6)

VTA Designated Representatives
Rudy Medina, Employee Relations Manager
Raj Srinath, Chief Financial Officer

Employee Organization
Amalgamated Transit Union, Local 265

Board Member Kalra left the meeting at 9:09 p.m.

9.2. Reconvened to Open Session at 9:33 p.m.

9.3. Closed Session Report

A. Conference with Real Property Negotiators
[Government Code Section 54956.8]

Property: North Division located at Shoreline Boulevard and La Avenida Street in Mountain View, CA
(APN: 116-16-053)

Agency Negotiator: Bijal Patel, Deputy Director, Property Development & Management

Negotiating Parties: John Igoe, Real Estate & Workplace Services Director, Google Inc.

Under Negotiation: Price and terms of exclusive negotiating agreement for North Yard Development Opportunity

Mr. Fabela reported that no reportable action was taken during Closed Session.

B. Existing Litigation - Conference with Legal Counsel
[Government Code Section 54956.9(d)(1)]

Name of Case: Santa Clara Valley Transportation Authority v. Martina, et al. (Defs.: Peter Pham and Angelita Luciano)

(Santa Clara County Superior Court Case No.: 1-12-CV-234287)

Mr. Fabela reported there was no report from Closed Session.

C. Anticipated Litigation- Conference with Legal Counsel

Initiation of litigation pursuant to paragraph (4) of subdivision (d) of Section 54956.9 and/or significant exposure to litigation pursuant to paragraph (2) of subdivision (d) of Section 54956.9.

Number of Cases: 1

Mr. Fabela reported that no reportable action was taken during Closed Session.

D. Anticipated Litigation – Conference with Legal Counsel

Significant exposure to litigation pursuant to paragraph 2 of subdivision (d) of Section 54956.9.

Number of Cases: 2

Mr. Fabela reported that no reportable action was taken during Closed Session.

E. Anticipated Litigation- Conference with Legal Counsel

Initiation of litigation pursuant to paragraph (4) of subdivision (d) of Section 54956.9 and/or significant exposure to litigation pursuant to paragraph (2) of subdivision (d) of Section 54956.9.

Number of Cases: 1

Mr. Fabela reported that no reportable action was taken during Closed Session.

**F. Conference with Labor Negotiators
(Government Code Section 54957.6)**

VTA Designated Representatives
Rudy Medina, Employee Relations Manager
Raj Srinath, Chief Financial Officer

Employee Organization
Amalgamated Transit Union, Local 265

Mr. Fabela reported that no reportable action was taken during Closed Session.

10. ADJOURNMENT

On order of Chairperson Woodward and there being no objection, the meeting was adjourned in memory of Charlotte Beebe and Rodil Tampol at 9:34 p.m.

Respectfully submitted,

Menominee McCarter, Board Assistant
VTA Office of the Board Secretary



Date: September 17, 2015

Current Meeting: October 1, 2015

Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Board Secretary, Elaine Baltao

SUBJECT: Bicycle & Pedestrian Advisory Committee Appointment: Mountain View

Policy-Related Action: No

Government Code Section 84308 Applies: No

ACTION ITEM

RECOMMENDATION:

Ratify the appointment of Greg Unangst to the Bicycle & Pedestrian Advisory Committee, representing the City of Mountain View, for the remainder of the two-year term ending June 30, 2016.

BACKGROUND:

The Bicycle & Pedestrian Advisory Committee (BPAC) advises the VTA Board of Directors on planning and funding for bicycle and pedestrian projects and issues. The BPAC consists of 16 voting members, one appointed by each of VTA's Member Agencies (the 15 cities in the county and the County of Santa Clara), and one non-voting member with alternate appointed by the Silicon Valley Bicycle Coalition (SVBC). The BPAC also serves as the countywide bicycle and pedestrian advisory committee for the County of Santa Clara.

The BPAC bylaws specify that the appointment term is two years and that members may be appointed to successive terms. Committee members must live, work or both in Santa Clara County during their term. Voting members of the Committee must also be a representative of the Member Agency's local bicycle advisory committee or, for Member Agencies without a local bicycle advisory committee, their representative must be an individual who lives or works in the local jurisdiction and is interested in bicycle or pedestrian issues. BPAC members are precluded from representing a Member Agency that is their employer.

The process to fill BPAC vacancies is that staff notifies the appointing authority of the vacancy or approaching term expiration and provides the current membership requirements. The appointing authority then appoints one member for the designated membership position. For vacancies occurring mid-term, the bylaws specify that they be filled for the remainder of the term by the appointing authority. In both cases, the VTA Board must ratify the appointment.

DISCUSSION:

The City of Mountain View has appointed Greg Unangst as its BPAC representative for the remainder of the current two-year term, replacing the city's previous representative, Simon Purdon, who resigned for personal reasons.

Mr. Unangst, who has lived in Mountain View for 16 years, is retired. Following serving 10 years on active duty in the U.S. Army, he worked in the automotive and aerospace industries for 33 years, retiring from Lockheed Martin Corporation. He earned a Bachelor's Degree in General Engineering from the U.S. Military Academy, Master's Degrees in both Systems/Electrical Engineering and in Management & Entrepreneurship from the University of Pennsylvania, and a Master's Degree in Public Policy from New York University.

His community service activities include serving on the Restoration Advisory Board for Moffett Federal Field, on the Board of Directors for the Friends of Stevens Creek Trail, and on the Citizens Working Group for the Four Cities Trail Feasibility Study.

Mr. Unangst has long been interested in urban trails, running, bicycling, hiking, and environmental conservation. This led to his current appointment to the Mountain View Bicycle/Pedestrian Advisory Committee.

Staff recommends that the Board ratify the appointment of this individual due to their qualifications, experience, community involvement, and knowledge of bicycle, pedestrian, trails and safety issues.

ALTERNATIVES:

The Board could choose to not ratify this appointment.

FISCAL IMPACT:

There is no fiscal impact as a result of this action.

STANDING COMMITTEE DISCUSSION/RECOMMENDATION:

The Administration & Finance Committee considered this item at its September 17, 2015 meeting as part of its Consent Agenda and without comment unanimously recommended its approval and placement on the Board's Consent Agenda.

Prepared by: Stephen Flynn, Advisory Committee Coordinator
Memo No. 5056



Date: September 24, 2015

Current Meeting: October 1, 2015

Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Chief Financial Officer, Raj Srinath

SUBJECT: Clipper Fare Collection System Memorandum of Understanding (MOU)

Policy-Related Action: Yes

Government Code Section 84308 Applies: No

ACTION ITEM

RECOMMENDATION:

Authorize the General Manager to execute the Amended and Restated Clipper® Memorandum of Understanding with the Metropolitan Transportation Commission and other transit operators, clarify their respective roles and responsibilities, define roles and responsibilities for a newly defined Contracting Agency, establish a Clipper® Executive Board, establish a Clipper® Executive Director, and revise the cost allocation formula to ensure the successful operation and maintenance of Clipper®.

BACKGROUND:

In August, 2010, the Board authorized VTA to enter into the Clipper® Memorandum of Understanding (MOU) with the Metropolitan Transportation Commission and seven transit agencies¹ with respect to operation of the Clipper® fare collection system. In particular, the MOU delineated MTC's responsibilities, transit operators' responsibilities, a consultation process for amending the Clipper® Operating Rules, allocation of operating expenses, and a dispute resolution process. Subsequently an additional fifteen transit agencies² have signed or will sign on to the MOU and the MOU has been amended twice.

¹Alameda-Contra Costa Transit District, San Francisco Bay Area Rapid Transit, Peninsula Corridor Joint Powers Board, Golden Gate Bridge Highway and Transportation District, San Mateo County Transit District, City and County of San Francisco Municipal Transportation Agency, and the Santa Clara Valley Transportation Authority

²Central Contra Costa Transit Authority, City of Fairfield, as the operator of Fairfield and Suisun Transit, City of Petaluma, Eastern Contra Costa Transit Authority, Livermore/Amador Valley Transit Authority, Marin County Transit District, Napa County Transportation and Planning Agency, Solano County Transit, Sonoma County Transit, Sonoma-Marin Area Rail Transit, Vacaville City Coach, Western Contra Costa Transit Authority, and San Francisco Bay Area Water Emergency Transportation Authority, [City of Santa Rosa, and Union City Transit are expected to sign on in the near future]

DISCUSSION:

In May 2013, MTC received a correspondence from transit agency general managers which outlined the transit agencies' desire to have more input and control with respect to the current Clipper® system and planning for the next generation Clipper® system. Over several months, the transit agency general managers and the MTC executive director met regularly to discuss how best to implement this greater degree of input and control for transit agencies. Ultimately, it was mutually agreed to amend and restate the existing Clipper® MOU to reflect the following changes:

- **Clipper® Executive Board:** A Clipper® Executive Board comprised of nine members (one each from SFMTA, BART, Caltrain/SamTrans, AC Transit, VTA, GGBHTD and MTC, and two representatives who are selected by the remaining MOU parties to represent all other MOU parties) would have responsibility to meet regularly, establish goals and a budget and work plan for the Clipper® program, and approve significant business matters (as defined in the amended and restated MOU and subject to revision by unanimous vote of the Clipper® Executive Board).
- **Clipper® Program Goals and Objectives:** An initial set of goals and objectives for the Clipper® program are attached as Exhibit Appendix C to the amended and restated MOU and could be amended by unanimous vote of the Executive Board.
- **Contracting Agency:** A role for a Contracting Agency would be defined, with MTC serving as the initial Clipper® Contracting Agency. The Contracting Agency would serve as the agency counterparty to any contracts related to the Clipper® system, provide staffing for the Clipper® program and fulfill related duties. The Executive Board would have authority to review the designation of the Contracting Agency from time to time (but not more often than once every 3 years) and could designate a new Contracting Agency, subject to approval by the then-current Contracting Agency and its proposed successor.
- **Clipper® Executive Director:** A Clipper® Executive Director engaged by the Contracting Agency would coordinate the Clipper® program among the agencies and contractors, carry out the program goals and work plan in accordance with the budget, develop goals and objectives for the position jointly with the Executive Board, and be subject to annual performance evaluations by the Clipper® Executive Board. Carol Kuester, MTC Director of Electronic Payments, will serve as the initial Clipper® Executive Director. The Contracting Agency is to consult with the Clipper® Executive Board before selecting and appointing the Clipper® Executive Director.
- **Cost and Revenue Allocation Formula:** The transit agencies have determined that the current cost and revenue allocation formula is not equitable and have developed a revised formula, outlined in Appendix B of the MOU, that aligns actual cost drivers and usage of the system with the allocation amounts. The revised allocation will include credit card fees for Clipper® transactions at ticket vending machines which are currently being absorbed by operators, including VTA, that route credit card transactions through their own merchant card gateway. Changes to the allocation formulas will be phased in, with

the addition of agency credit card fees effective in July 2016, and full implementation of the new model in January 2017.

- Term of the MOU: The MOU is effective on the date when all parties have signed the MOU and will terminate on June 30, 2025, unless otherwise terminated by the parties. The current MOU terminates on November 2, 2019, but will be superseded by this MOU.

ALTERNATIVES:

There are no practical alternatives to the MOU. A variety of governance models including a Joint Powers Authority and consortium models were considered. The proposed MOU is the result of extensive consultations between MTC and the transit agencies and is the best model acceptable to all parties.

FISCAL IMPACT:

Changes to the cost allocation formula are expected to result in estimated annual savings to VTA on the order of \$50,000 per year beginning in Fiscal Year 2017.

STANDING COMMITTEE DISCUSSION/RECOMMENDATION:

The Administration & Finance Committee considered this item as part of its September 17, 2015 Regular Agenda and unanimously recommended its approval and placement on the Board's Consent Agenda for October 1, 2015.

Prepared by: Ali Hudda
Memo No. 5190



Date: September 24, 2015

Current Meeting: October 1, 2015

Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Director of Engr. & Trans. Infrastructure Dev., Carolyn M. Gonot

SUBJECT: Mountain View Double Track Project - Peninsula Corridor Joint Powers Board
Contract Agreement for Construction Support

Policy-Related Action: No

Government Code Section 84308 Applies: No

ACTION ITEM

RECOMMENDATION:

Authorize the General Manager to execute a contract amendment with Peninsula Corridor Joint Powers Board in the amount of \$1,600,000 for a new contract value of \$3,082,000 to provide Construction Support for the Mountain View Double Track Project.

BACKGROUND:

In May 2010, the VTA Board of Directors approved the Light Rail Improvement Plan to enhance the capacity, market-responsiveness, and operational efficiency of VTA's light rail system. Stemming from the plan, the Mountain View Double Track Project will add a second track from Downtown Mountain View Station to Whisman Station.

The Mountain View Double Track Project is a high priority investment to add a 4,400-foot section of second track from the existing tail track at the end of the line in Mountain View to Whisman Station Drive. The project would improve operational efficiency and schedule adherence on the light rail system. The Mountain View Double Track Project includes three components:

- Caltrain Re-Alignment that shifts about 2700 feet of existing Caltrain tracks;
- Double Track Phase I adds about 1,400 feet of new light rail track, and;
- Double Track Phase II adds another 3,000 feet of new light rail track.

The construction of the project is underway with major coordination with Caltrain due to proximity of the Caltrain tracks. A service agreement with Peninsula Corridor Joint Powers Board (PCJPB) was executed on December 18, 2013, for an amount of \$20,000 to initiate PCJPB staff Design Review of the Mountain View Double Track Project. On June 12, 2014, the contract value was increased to \$250,000 for Design Review.

While completing the Phase I design, VTA identified various constraints building next to the Caltrain track and the necessity for major construction coordination. The VTA Board on August 7, 2014, increased the contract value by \$810,000 for a total value of \$1,059,000 to address the need for Caltrain coordination. At that time, PCJPB staff had indicated additional funding may be needed to ensure sufficient construction support for the Mountain View Phase II once the design is finalized and full construction support costs are identified.

With the construction of Phase II starting, additional funding of \$422,000 was authorized by the VTA Board in June 2015 for construction support.

DISCUSSION:

The Phase II construction involves working very close to Caltrain tracks and requires continuous support of flagman and watchman while working near the tracks. The support from Caltrain also includes single tracking while working adjacent to the tracks. In order to provide efficient transit by the Super Bowl date in February 2016, the Mountain View Double Track construction is being accelerated so as to have the second track in place and running before the event. This requires additional Caltrain support that was not previously anticipated. The Caltrain support is provided through the project management and their contracted operator, Transit American Services, Inc. (TASI). The estimated support for this effort is projected to cost up to \$2,722,000. VTA will have the right to audit the Caltrain Invoices and review available Caltrain audits of TASI.

In addition, this amendment would reimburse the costs incurred by PCJPB for changes to Caltrain's Positive Train Control (PTC) project to accommodate the Mountain View Double Track Project. As part of this project, Caltrain tracks were shifted to allow for the second track for VTA's light rail. This shift required an analysis, verification, and testing of the Caltrain's PTC design. The cost of the change order to Caltrain's PTC design is estimated around \$350,000.

Attachment A provides a table of the various costs incurred or projected to be incurred by PCJPB. The attachment also shows the current Board authorization and the additional requested amount of \$1,600,000 for a total of \$3,082,000.

ALTERNATIVES:

The VTA Board could elect not to authorize amending this contract. However, that action would delay implementation of the Mountain View Double Track Project and result in failure to meet milestone delivery dates.

FISCAL IMPACT:

This action will authorize \$1,600,000 for Construction Support for the Mountain View Double Track Project Phase II project. Appropriation for this expenditure is included in the FY16 Adopted 2000 Measure A Transit Improvement Program Fund Capital Budget.

SMALL BUSINESS ENTERPRISE (SBE) PARTICIPATION:

This service agreement is with PCJPB, a public agency, and there are no requirements for SBE participation.

STANDING COMMITTEE DISCUSSION/RECOMMENDATION:

The Administrative & Finance Committee considered this item as part of its September 17, 2015 Regular Agenda and unanimously recommended Board approval. The Committee further recommended the item be placed on the Consent Agenda for approval at the October 1, 2015 Board of Directors meeting.

Prepared by: Ven Prasad, Engineering Group Manager
Memo No. 5084

ATTACHMENTS:

- 5084 - Attachment A - Caltrain Support Costs for Mtn View Double Track (PDF)

Attachment A

Caltrain Support Costs for Mountain View Double Track Project (estimated)

Description	Incurred	Estimate to Complete	Total Forecast
PCJPB Project Management	\$634,903	\$626,315	\$1,261,218
TASI Support	\$580,782	\$880,000	\$1,460,782
PTC Coordination Cost	\$0	\$360,000	\$360,000
Total	\$1,215,685	\$1,866,315	\$3,082,000

Current Board Authorization:	\$1,482,000
Total Forecast:	\$3,082,000
Additional Authorization Required:	\$1,600,000



Date: September 24, 2015
 Current Meeting: October 1, 2015
 Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
 Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Director of Engr. & Trans. Infrastructure Dev., Carolyn M. Gonot

SUBJECT: Rail Rehabilitation - Signal and Track Improvements Contract Amendment with Shimmick Construction Company for Additional Work to Install a Track Crossover near Lick Mill Station

Policy-Related Action: No

Government Code Section 84308 Applies: Yes

ACTION ITEM

RECOMMENDATION:

Authorize the General Manager to amend Contract C13134F Rail Rehabilitation - Signal and Track Improvements contract with Shimmick Construction Company in an amount of \$850,000 for a total contract amount of \$6,951,358 for additional work to install a track crossover near Lick Mill Station.

BACKGROUND:

The Rail Rehabilitation - Signal and Track Improvements is part of a multi-phase Rail Replacement Program to restore and maintain existing light rail track in a state of good repair. Resulting from over 20 years of regular use, the running rail for the existing light rail system along the Guadalupe Corridor is beginning to experience significant rail wear. Grade crossings, both embedded and panelized, are also experiencing wear either due to rail wear, high vehicular cross traffic or soil conditions.

This contract includes trackwork scope at several locations along the system including:

- Replacement of embedded crossings at First Street/Taylor Street and First Street/Hedding Street
- Replacement of an embedded track crossover near Japantown Station
- Rehabilitation of concrete paneled street crossings
- Resurfacing and realigning track turnouts on the Guadalupe Southline
- Replacement of manual switches at Woz Way

- Repair of broken rails near Younger Avenue.

A listing of the contractor's team is included in Attachment A.

The work is significantly complete with the contractor performing punchlist work at some of the locations.

Staff and the contractor are negotiating and processing final change orders to address extra work items such as cost for additional watchmen required during construction, traffic control at Lawrence and Tasman, installation of compromise welds, and upgrade of the Santa Teresa Station pedestrian crossing. The forecasted value of these change orders is \$450,000.

DISCUSSION:

Currently, there are no track crossovers along Tasman Drive between Levi's Stadium and the "T" intersection at North First Street and Tasman Drive. With the ever increasing amount of special events scheduled at Levi's Stadium, installing a track crossover near the Lick Mill Station (See Attachment B) would provide the following benefits:

- Improve service recovery and on time performance;
- Improve customer service to the passengers;
- Allow trains to crossover from one track to the other;
- Allow a mid-point to turn trains around during incidents, service interruptions, special events and peak time service delays; and
- When trains are staged and lined up at the Patrick Henry and Baypointe tail tracks, this crossover will provide flexibility to cross trains over to either track to meet both service demand and passenger expectations.

The rail rehabilitation contract already includes similar scope for the installation of a crossover. The contractor is mobilized and has specialized track and overhead crews required for the crossover work. Amending this contract will allow for the immediate installation of the crossover near Lick Mill Station.

Contract Summary:

Vendor Name:	Shimmick Construction Company	Original Contract Amount:	\$5,865,000
Contract Number:	C13134F	Prior Modifications:	\$236,358
Original Contract Term(s):	540 Days	Current Contract Amount:	\$6,101,358
Revised Contract Term:	750 Days	Amount Requested:	\$850,000
Solicitation Type:	Bid	Total Amount Including Request:	\$6,951,358
Procurement Type:	Competitive	% of Request to Current Amount:	13.9%
UDBE Goal:	13.8%	% Modifications including request to original contract:	18.5%
SBE Goal:	N/A	Funding Source(s):	Local (VTA Transit Fund P-0925)

The requested amount includes cost for change orders that are being processed or negotiated.

ALTERNATIVES:

There are no practical alternatives to the recommended action. Delaying this amendment will delay the delivery of the project and result in VTA not being able to provide the planned services for special events and peak periods.

FISCAL IMPACT:

This action will authorize up to \$6,951,358 for Rail Rehabilitation - Signal and Track Improvements Contract for additional track construction work. Appropriation for this expenditure is included in the FY16 Adopted VTA Transit Fund Capital Budget.

DISADVANTAGED BUSINESS ENTERPRISE (DBE) PARTICIPATION:

Based on identifiable subcontracting opportunities, a Disadvantaged Business Enterprise (DBE) goal of 13.8% has been established for this contract. Contractor has met the established goal and has committed to 13.8% participation on this contract.

STANDING COMMITTEE DISCUSSION/RECOMMENDATION:

The Administrative & Finance Committee considered this item as part of its September 17, 2015 Consent Agenda and unanimously recommended Board approval. The Committee further recommended the item be placed on the Consent Agenda for the October 1, 2015 Board of Directors meeting.

Prepared by: Mohamed Basma, Program Manager
Memo No. 5192

ATTACHMENTS:

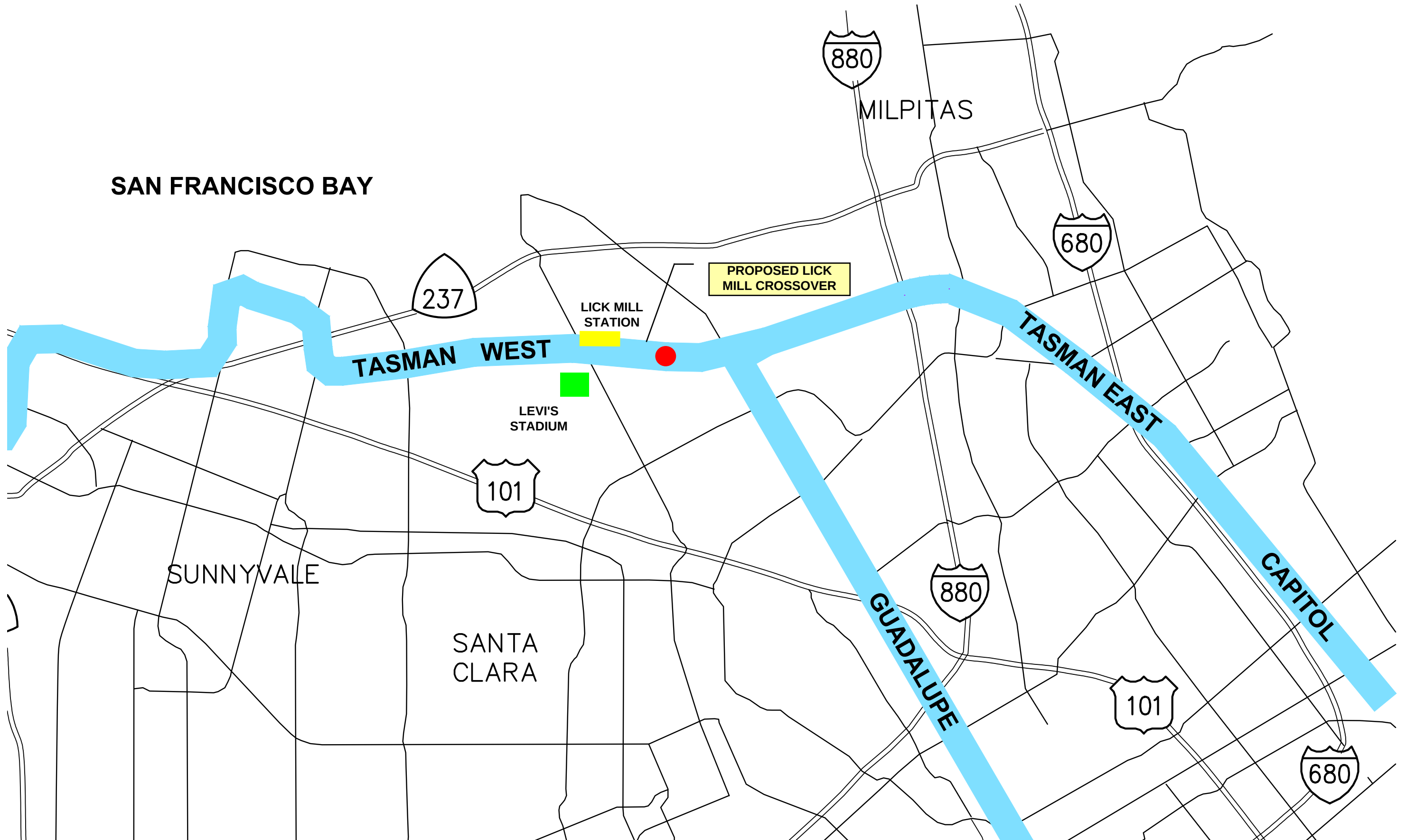
- 5192 - Attachment A_List of Contractors (PDF)
- 5192 - Attachment B - Shimmick - Crossover (Lick Mill) (PDF)

Attachment A – List of Contractors

Contractor Firm	Contractor Role	Location
Shimmick Construction Company, Inc.	Prime	Oakland, CA
Sub-Contractors:		
F. Fernando and Company	Flatwork (Partial)	San Francisco, CA
San Jose Transport	Trucking (Partial)	Gilroy, CA
ABSL Construction	AC Grinding (Partial)	Oakland, a CA
Hernandez Engineering	Traffic Control (Partial)	San Francisco, CA
CIATCO Services	Electrical Equipment Supply (Partial)	Oakland, CA

ATTACHMENT B - RAIL REHABILITATION - SIGNAL AND TRACK
LICK MILL

6.5.b





Date: September 24, 2015

Current Meeting: October 1, 2015

Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Director of Engr. & Trans. Infrastructure Dev., Carolyn M. Gonot

SUBJECT: Contract Amendment with CH2MHill for Final Design Services and Design Support During Construction for the Santa Clara-Alum Rock Bus Rapid Transit Project

Policy-Related Action: No

Government Code Section 84308 Applies: Yes

ACTION ITEM

RECOMMENDATION:

Authorize the General Manager to execute a contract amendment with CH2M Hill Inc. for an additional \$1,200,000 for a new contract total amount of \$21,668,963 and extend the contract term to March 31, 2017 to perform additional final design services and provide design support during construction for the Santa Clara Alum Rock Bus Rapid Transit Project.

BACKGROUND:

In December 2008, the VTA Board of Directors approved the Santa Clara Alum Rock Bus Rapid Transit (BRT) Project Environmental Impact Report. The Project extends 7.2 miles from the western terminus at the San Jose Arena on Santa Clara Street to the Alum Rock Transit Center on Capitol Avenue and continues to the Eastridge Transit Center. Ten new BRT stations are included along the alignment (Attachment A).

Subsequent to the conceptual engineering and environmental phase of the project, preparation of construction documents was initiated. To support this effort, the Board approved two contract actions for preliminary and final engineering. In March 2010, the VTA Board of Directors authorized a three year contract in an amount of \$4,886,000 to CH2M Hill Inc., to perform preliminary engineering on the Santa Clara Alum Rock BRT Project. In January 2012 and August 2013, the Board approved contract amendments in an amount of \$7,000,000 to perform final design services and for \$6,000,000 for additional design services and Design Services During Construction (DSDC).

Amounts of \$729,700 and \$895,440 of Board approved contingency were used for preliminary engineering and extended final engineering and DSDC services respectively.

DISCUSSION:

In July 2015, VTA issued a safety shutdown for all field construction activities followed by a Notice of Default to the main civil/stations construction contract (C830). The contractor has denied that it is in default of the Contract. On September 10, 2015, VTA and GTGC entered into a Closeout Agreement for the resolution of the dispute and the prompt and orderly closeout and demobilization of GTGC from the Project.

Since the safety shutdown, key locations along the project corridor have been under temporary traffic control with incomplete construction improvements. Using a combination of assigned subcontractors from the C830 contract and the current Restoration and Completion contractor, unfinished work along the corridor will be performed so traffic can be restored to its final configuration and all areas reopened to vehicles and pedestrians.

The remaining work in the original C830 contract will be repackaged and advertised for competitive bidding under a future contract. This scope will include median busway construction and the roadway reconstruction on the south side of Alum Rock Avenue. As the original project designer, CH2MHill, Inc. is most qualified to repackage the contract bid documents.

The final completion date for the project is now projected for early 2017. This amendment will also provide contract authority for the designers of record from the CH2MHill Inc. team to continue providing design support during construction (DSDC) and to provide technical support staff as needed to supplement the construction management team for the extended construction duration. A list of consultant team members is provided in Attachment B.

ALTERNATIVES:

If the Board decided to delay or not authorize the amendment, this could ultimately delay the proposed rebid and completion of the remaining C830 scope, and there will be no ability for the designers of record to provide design support during construction.

FISCAL IMPACT:

This action will authorize up to \$1,200,000 for final design services and DSDC for the Santa Clara Alum Rock BRT Project. Appropriation for this expenditure is included in the FY 2016 Adopted 2000 Measure A Transit Improvement Program Fund Capital Budget. This contract amendment will be funded with a combination of 2000 Measure A and State Transportation Improvement Program funds.

SMALL BUSINESS ENTERPRISE (SBE) PARTICIPATION:

Based on identifiable subcontracting opportunities, a Small Business Enterprise (SBE) goal of 13.3% was established for this contract amendment. Contractor has met the goal and has committed to 13.3% SBE participation for this contract amendment.

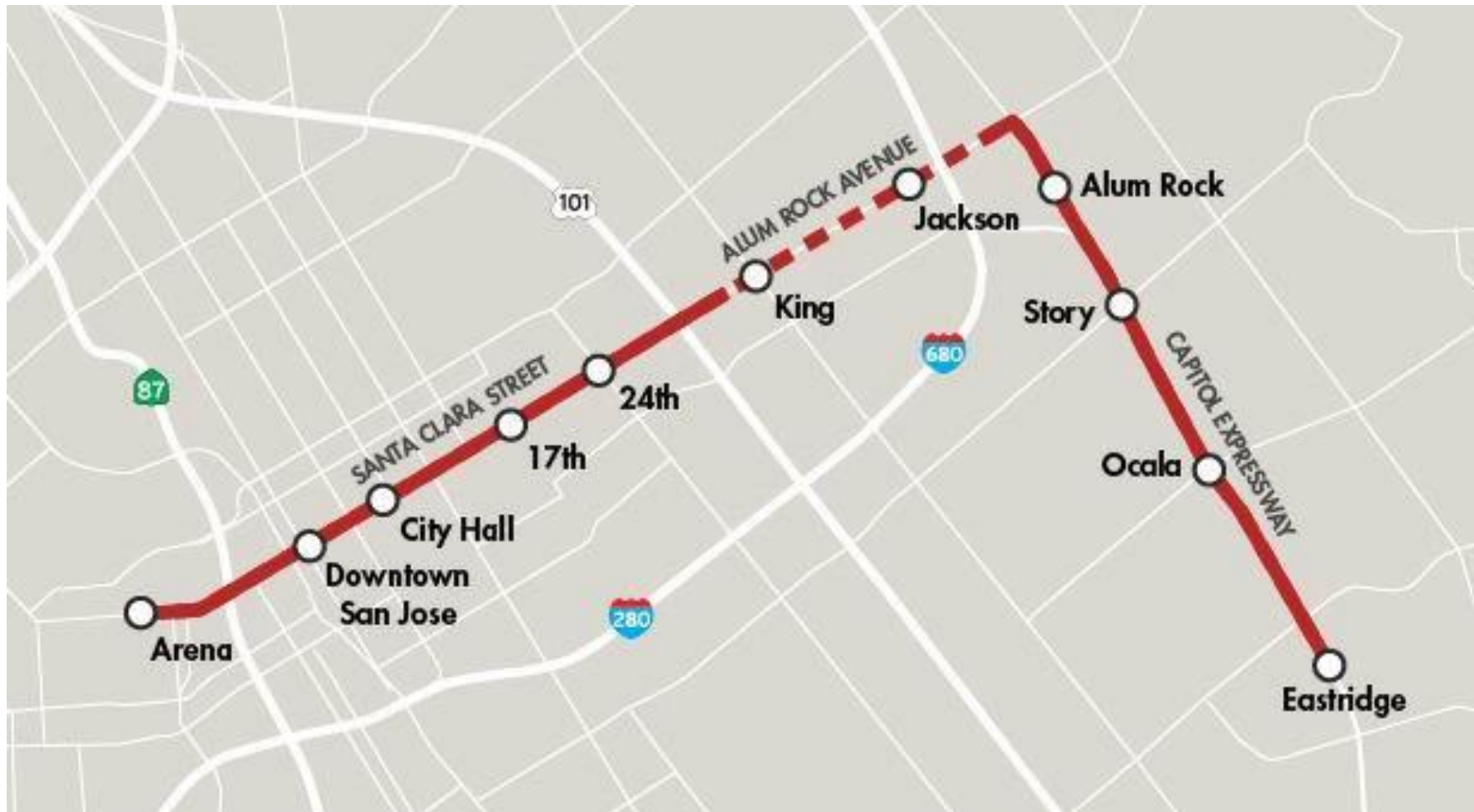
STANDING COMMITTEE DISCUSSION/RECOMMENDATION:

The Administrative & Finance Committee considered this item as part of its September 17, 2015 Consent Agenda and unanimously recommended Board approval. The Committee further recommended the item be placed on the Consent Agenda for the October 1, 2015 Board of Directors meeting.

Prepared by: Mohamed Basma, Program Manager
Memo No. 5189

ATTACHMENTS:

- 5189 - Attachment A - CH2M Hill - Project Alignment (PDF)
- 5189 - Attachment B - List of Consultants (PDF)

ATTACHMENT A - PROJECT ALIGNMENT

ATTACHMENT B
Listing of Recommended Prime and Sub-Consultants

	Consultant Firm	Contact Person	Location
Prime Sub-Consultant	CH2MHill	Deborah Gagang	San Jose
	IBI Group	P. Klinkon	Seattle, WA
	Pang Engineers	G. Pang	Mountain View
	Alliance Engineers	K. Ngai	Santa Clara, CA
	Callander Associates	D. Ruben	San Jose, CA



Date: September 24, 2015

Current Meeting: October 1, 2015

Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Director of Engr. & Trans. Infrastructure Dev., Carolyn M. Gonot

SUBJECT: Amend the C831 Property Restoration and Completion Contract for Santa Clara-Alum Rock Bus Rapid Transit Project with George Bianchi Construction, Inc.

Policy-Related Action: No

Government Code Section 84308 Applies: Yes

ACTION ITEM

RECOMMENDATION:

Authorize the General Manager to amend the C831 Property Restoration and Completion Contract with George Bianchi Construction, Inc., by an amount of \$4,000,000 for a total contract amount of \$6,041,505 for additional completion work for the Santa Clara Alum Rock Bus Rapid Transit Project.

BACKGROUND:

In December 2008, the VTA Board of Directors approved the Santa Clara Alum Rock Bus Rapid Transit (BRT) Project Environmental Impact Report, defining the 7.2 mile project in the City of San Jose. The Project extends from the western terminus at the San Jose Arena on Santa Clara Street to the Alum Rock Transit Center on Capitol Avenue and continues to the Eastridge Transit Center. Ten new BRT stations are included along the alignment (Exhibit A).

VTA awarded the main civil/stations construction contract (C830) for the Santa Clara-Alum Rock Bus Rapid Transit Project (BRT) to Goodfellow Top Grade Construction (GTGC) in 2013. In addition, on September 5, 2013, the VTA Board authorized the General Manager to enter into a construction contract (C831) with George Bianchi Construction, Inc. in the amount of \$2,099,061 to construct property restorations and completion items along the BRT corridor. A listing of the contractor's team is included in Exhibit B.

The C831 contract is responsible for restoring impacted private properties and for addressing unforeseen work required for completion of the project in support of the main civil and stations

improvement contract (C830). A separate contract for this work was created to provide a focused, dedicated contractor to be responsive to property owner items and important completion items.

DISCUSSION:

On July 13, 2015, VTA issued a safety shutdown for all field activities on the main civil/stations contract (C830) after the contractor, GTGC, struck a marked gas line. This was followed by a Notice of Default sent to GTGC on July 29, 2015. GTGC has denied that it is in default of the Contract. On September 10, 2015, VTA and GTGC entered into a Closeout Agreement for the resolution of the dispute and the prompt and orderly closeout and demobilization of GTGC from the Project.

Since the safety shutdown in July 2015, key locations along the project corridor have been under temporary traffic control with incomplete construction improvements. To mitigate community impacts and enhance safety, critical and unfinished work along the corridor should be performed so traffic can be restored to its final configuration and all areas reopened to vehicles and pedestrians.

As part of the closeout agreement with GTGC, certain subcontractors are now assigned to VTA to participate in the completion of some of the unfinished items of work. The remaining unfinished items of work that were originally planned for completion by GTGC include clean-up of existing construction debris, street widening, civil improvements at stations, and some underground utilities. The C831 Contract already includes similar scope, and the contractor (Bianchi) is already mobilized, has adequate crew, and is very familiar with conditions along the project corridor.

The remaining scope from the C830 contract for which construction has not commenced will be repackaged and rebid under a separate future contract.

Contract Summary:

Vendor Name:	George Bianchi Construction, Inc.	Original Contract Amount:	\$2,099,062
Contract Number:	C831 (13103)	Prior Modifications:	None
Original Contract Term(s):	727 Days	Current Contract Amount:	\$2,041,505
Revised Contract Term:	907 Days	Amount Requested:	\$4,000,000
Solicitation Type:	Bid	Total Amount Including Request:	\$6,041,505
Procurement Type:	Competitive	% of Request to Current Amount:	196%
UDBE Goal:	N/A	% Modifications including request to original contract:	190%
SBE Goal:	27.43%	Funding Source(s):	Measure A

Due to delays on the main civil/stations project, the duration of the C831 Contract will be extended to June 30, 2016.

ALTERNATIVES:

Not amending this contract would leave the temporary traffic control and incomplete project conditions in their current condition for a longer period of time until a new contract is repackaged and rebid.

FISCAL IMPACT:

This action will authorize \$4,000,000 in additional contract commitments for the Property Restoration and Completion contract for a new forecasted contract amount of \$6,041,505. Appropriation for this expenditure is available in the FY16 Adopted 2000 Measure A Transit Improvement Program Capital Budget. This contract is funded with 2010 State Transportation Improvement Program and 2000 Measure A funds.

SMALL BUSINESS ENTERPRISE (SBE) PARTICIPATION:

Based on identifiable subcontracting opportunities, a Small Business Enterprise (SBE) goal of 30% was established for this contract. Contractor has exceeded the established goal to date.

STANDING COMMITTEE DISCUSSION/RECOMMENDATION:

The Administrative & Finance Committee considered this item as part of its September 17, 2015 Consent Agenda and unanimously recommended Board approval. The Committee further recommended the item be placed on the Consent Agenda for the October 1, 2015 Board of Directors meeting.

Prepared by: Mohamed Basma, Program Manager
Memo No. 5188

ATTACHMENTS:

- 5188 - Exhibit A - SCAR Property Restoration (PDF)
- 5188 -Exhibit B - SCAR_Bianchi Contractors list (PDF)

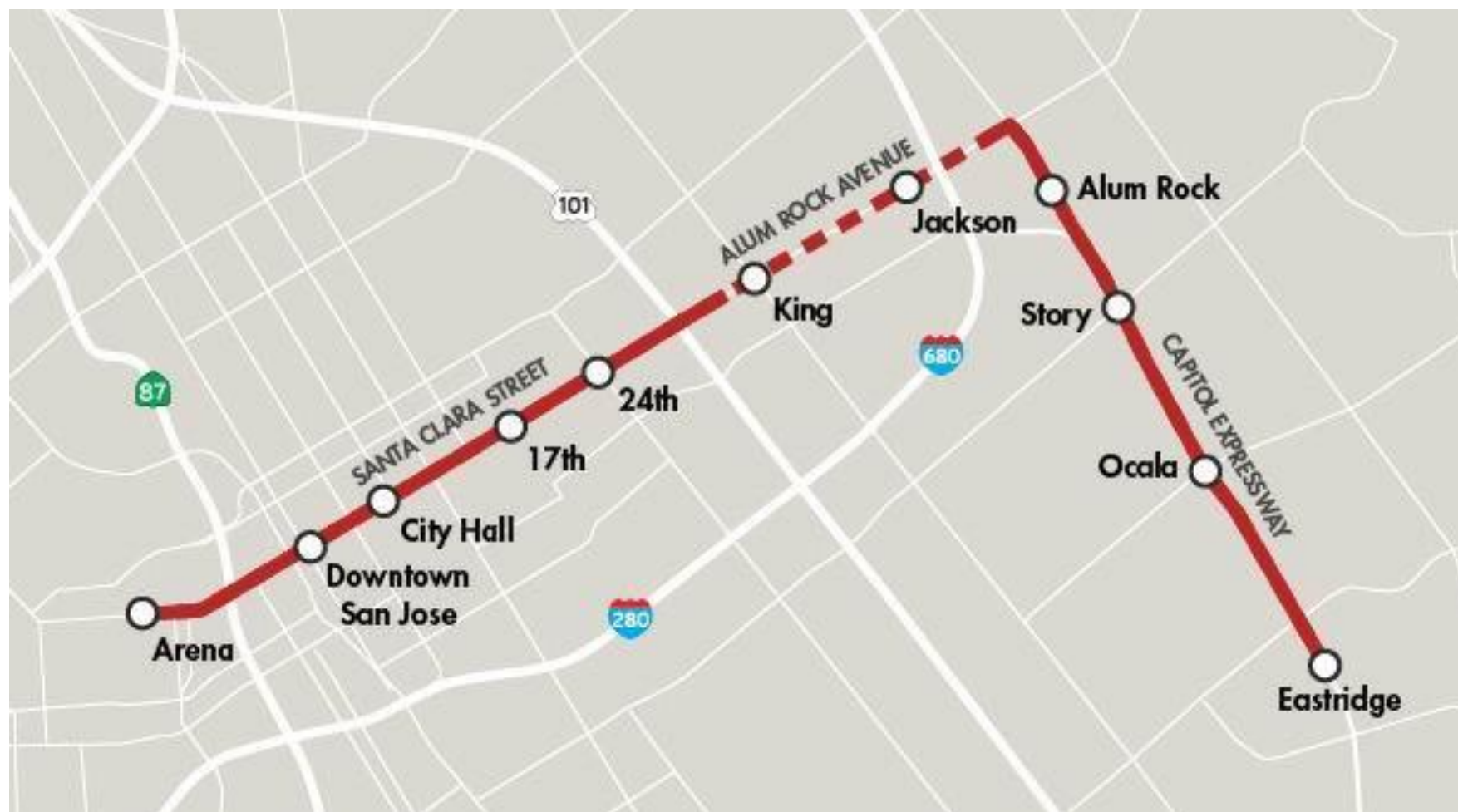
EXHIBIT A - PROJECT ALIGNMENT

Exhibit B
List of Contractors

Contractor Firm	Contractor Role	Location
George Bianchi Construction, Inc.	Prime	San Jose, CA
Sub-Contractors:		
Quality Striping	Grinding, Striping, Markings Sub-Consultant	San Jose, CA
Duran and Venables	Grading and Paving Sub-Consultant	Milpitas, CA
Oliveira Fence	Fencing Sub-Consultant	Santa Clara, CA
West Valley Construction	Underground Sub-Consultant	Campbell, CA
Rosendin Electric	Electrical Sub-Consultant	San Jose, CA
JJ Nguyen, Inc.	Landscaping Sub-Consultant	San Jose, CA



Date: September 24, 2015

Current Meeting: October 1, 2015

Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Director of Planning and Program Development, John Ristow

SUBJECT: 2016 State Transportation Improvement Program

Policy-Related Action: No

Government Code Section 84308 Applies: No

ACTION ITEM

RECOMMENDATION:

Approve project priorities for State Transportation Improvement Program (STIP) funds as described in the memo.

BACKGROUND:

The State Transportation Improvement Program (STIP) is a 5-year rolling projection of the revenues that the State of California expects to be available to the State for transportation. The STIP is updated every two years, in even numbered years, and is subsequently adopted by the California Transportation Commission (CTC). We are currently beginning the 2016 cycle. Caltrans is responsible for developing the Fund Estimate, which sets the target of available programming capacity for each county.

By State statute, the CTC first determines how much of the funding will be directed to the State Highway Operations and Protection Program (SHOPP) and the balance goes to the STIP. The STIP has two components: (1) Regional; and (2) Interregional Programs. State statute directs that 75% of the funds are prioritized by the Regional Transportation Planning Agencies (RTPAs). Each county receives a "County Share" based on a formula composed of population and lane mileage. This is called the Regional Improvement Program (RIP). RIP funds may be used for roadway and transit capacity expansion projects. Caltrans sets the priorities for the remaining 25%, which is called the Interregional Improvement Program (IIP).

MTC is the nine-county Bay Area's RTPA. MTC has delegated RIP programming priorities to each county's respective Congestion Management Agency (CMA). Santa Clara's CMA is VTA, and the VTA Board of Directors is therefore responsible for prioritizing RIP investments with

Santa Clara County's share.

The 2016 STIP covers state fiscal years 2016 through 2021. The CTC adopted the 2016 STIP Fund Estimate in August 2015. There is approximately \$46 million in new program capacity available statewide, which CTC staff expect to be more than absorbed by cost increases in ongoing construction projects. **As a result, CTC's new programming target for all counties, including Santa Clara, is \$0.** The main reason why the STIP has almost no capacity, despite the State prospering, is the decrease in the price-based excise tax. The estimate incorporates the 2015-16 Budget Act and other 2015 legislation enacted prior to the fund estimate adoption.

As a result of the funding constraints, the CTC will not accept new projects into the 2016 STIP except where the county (or region) deletes equivalent programming. This applies to counties with unprogrammed share balances as well. The STIP is also under funded/over programmed in the early years (2016 - 2018), and CTC will be requiring the regions to reschedule many existing programmed projects to the end of the new STIP period (2019-2021).

DISCUSSION:

On September 5, 2013, the VTA Board adopted the following priorities for the 2014 STIP:

- Fund ongoing CMA Planning Programming and Monitoring Activities
- Fund the VTA Board's prior soundwall commitments
- Fund implementation of the SR 237 Express Lane
- Fund the County Expressways Program as specified in Valley Transportation Plan
- Fund unfinished landscaping commitments from previous STIP-supported freeway projects

Prior Program Lapse

In prior cycles, the VTA Board of Directors programmed \$13 million in STIP funds to the Capitol Expressway Light Rail Extension as part of a fund exchange. The STIP funds had an expiration date of June 30, 2013, and VTA was able to obtain an extension to February 2015. Unfortunately, obtaining Federal Environmental clearance for the final segment took more than three years, and those funds lapsed, unused, back to the county share. In order to preserve the fund exchange, the \$13 million must be reprogrammed to a 2000 Measure A program project. Given the State's severe capacity constraints, the CTC will not accept a reprogramming request from VTA at this time. VTA staff does, however, recommend that the VTA Board prioritize this programming for when STIP capacity next becomes available.

SR-152 New Alignment Programming

On November 6, 2014, the VTA Board pre-programmed \$10 million in future STIP funds to complete environmental clearance of a new SR-152 Alignment. This programming is conditional on Caltrans providing \$10 million in matching funds. Unfortunately, there is not enough capacity in the 2016 STIP for either VTA or Caltrans to program their shares at this time.

CMA Planning, Programming and Monitoring Activities

STIP funds may be programmed for Regional Transportation Planning Agency and Congestion Management Agency planning, programming and project monitoring activities (PPM). These funds are a vital, ongoing source of operating funds for the VTA CMA program. VTA Board programmed them through 2019 in the 2014 STIP. There is no capacity to program funding for 2020 and 2021 at this time. VTA staff recommends prioritizing new PPM programming when funds become available.

Prior Soundwall Commitments

On March 1, 2012, the VTA Board of Directors deprogrammed soundwalls on I-680 between Capitol and Mueller and on I-280 at Bird Avenue to complete the funding package for the U.S. Highway 101/Capitol Interchange Project. That action included a commitment to re-program the projects in the 2014 STIP. On November 7, 2013, the VTA Board partially fulfilled it by programming the I-680 soundwalls in the 2014 STIP. The I-280 at Bird Avenue soundwall was deferred until the 2016 STIP. There is no capacity to program this soundwall at this time. VTA staff recommends prioritizing the programming when funds become available.

Express Lanes Implementation

Phase II (SR-237 Express Lane, Zanker to US-101/Mathilda) and Phase III (Conversion of U.S. 101 HOV lanes from SR-85 to San Mateo County line and SR-85/US101 HOV connector ramps in Mountain View) are in final design and will be ready to go to construction in 2016. The funding need is estimated to be approximately \$55 million. VTA staff recommends prioritizing programming for these phases when funds become available.

County Expressway Program Implementation

VTA staff recommends deferring programming to the County Expressway program until the 2018 STIP.

Prior Freeway Landscaping Commitments

VTA staff recommends deferring programming to the prior freeway landscaping commitments until the 2018 STIP.

ALTERNATIVES:

The VTA Board may establish other priorities.

FISCAL IMPACT:

There is no financial impact to VTA at this time.

ADVISORY COMMITTEE DISCUSSION/RECOMMENDATIONS:

The Citizens Advisory Committee (CAC), Technical Advisory Committee (TAC) and Policy Advisory Committee considered this item at their respective September 9 and 10, 2015 meetings. All three Committees unanimously recommended the VTA staff proposal to the VTA Board for Approval.

CAC: Committee members requested and received assurance from VTA staff that the delayed STIP payback to the Measure A program is not delaying project delivery.

TAC Discussion: Committee members highlighted the length of time that the County Expressway system has been in the priority queue for STIP funding. Members of the public requested that VTA staff consider combining the SR-152 New Alignment environmental clearance with California High Speed Rail Authority (CHSRA) efforts to clear, design and construct High Speed Rail through the Pacheco Pass area for potential savings and alternative funding sources.

PAC Discussion: Related to the SR-152 New Alignment project, Committee members requested information on the useful life of completed environmental documents. VTA staff will provide that information to the Committee at a later date. Members of the public requested that VTA staff consider combining the SR-152 New Alignment environmental clearance with California High Speed Rail Authority (CHSRA) efforts to clear, design and construct High Speed Rail through the Pacheco Pass area for potential savings and alternative funding sources. Committee Members directed VTA staff to return to the Committee at a later date with a report on VTA communications with CHSRA staff on that topic.

STANDING COMMITTEE DISCUSSION/RECOMMENDATIONS:

The Congestion Management Program and Planning Committee (CMPP) considered this item at its September 17, 2015 meeting, and unanimously recommended the VTA staff proposal to the VTA Board for approval. The Committee also recommended that staff engage VTA Board members more frequently on STIP related items and request that the California Transportation Commission provide an early warning about the STIP fund estimate. Additionally, the Committee asked staff to provide an update about the STIP program's vision, criteria and decision making process.

Prepared by: Bill Hough
Memo No. 5133



Date: September 18, 2015

Current Meeting: October 1, 2015

Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Director of Planning and Program Development, John Ristow

SUBJECT: Memorandum of Understanding between Council of San Benito County Governments and Santa Clara Valley

Policy-Related Action: No

Government Code Section 84308 Applies: No

ACTION ITEM

RECOMMENDATION:

Authorize General Manager to execute a Memorandum of Understanding with the Council of San Benito County Governments to formalize a partnership to provide direction on the development of the SR 152 Trade Corridor project and request Santa Clara Valley Transportation Authority Board of Directors to appoint two members from Santa Clara County to serve on the partnership.

BACKGROUND:

In 2006, Santa Clara Valley Transportation Authority (VTA) in coordination with the Council of San Benito County Governments (SBCOG) began the study of a new alignment of SR 152 between US 101 and SR 156. This led to the formation of a policy body, called the SR 152 Mobility Partnership, to provide direction on the development of this new alignment.

The partnership later expanded to include the counties of Merced and Madera (and extending from US 101 in Santa Clara County to SR 99 in Madera County, a distance of about 80 miles); however, due to the lack of support for the development of SR 152 improvements in Merced County, the partnership was dissolved in 2012. Although the four-county partnership was dissolved, efforts continued between Santa Clara and San Benito counties to find a path forward on a smaller project with the new alignment of SR 152 between US 101 and SR 156 as the focus. This effort also came to a standstill when the full funding needed to complete the environmental clearance work for this project could not be secured.

DISCUSSION:

Fast forwarding to 2015, there is renewed interest in the formation of a new partnership between Santa Clara and San Benito counties to restart efforts to find a solution for improved transportation between US 101 and Pacheco Pass. This is partly due to the efforts in the two counties to potentially take before the voters sales tax measures in 2016 that could fund local roadway improvements. A reconstituted partnership could between the two counties could provide a forum for elected officials in the two counties to provide direction on improvements in the area that could be part of the sales tax measures and help advance the development of an improved SR 152 connection, with enhanced safety and improved traffic operations, between US 101 and Pacheco Pass.

Staff requests granting of authority to the General Manager to enter into a Memorandum of Understanding (MOU) as attached to formalize this partnership with SBCOG and also requests the VTA Board of Directors' appointment of two members from Santa Clara County to serve on the Policy Advisory Board (PAB) for this partnership. SBCOG is taking a similar action to their Board for execution of a partnership agreement and the appointment of members to the PAB. If these actions are approved, it is expected that the first meeting of the PAB could take place by November 2015.

ALTERNATIVES:

VTA Board of Directors could choose to not approve the MOU to formalize the relationship between the two counties to address matters related to a new improved alignment for SR 152. In this case, the efforts would continue primarily as a staff directed effort providing formal reporting to appropriate committees and Boards in both counties as needed.

FISCAL IMPACT:

The execution of this MOU would have no financial impact to VTA.

STANDING COMMITTEE DISCUSSION/RECOMMENDATION:

The Congestion Management Program and Planning Committee reviewed this item at their September 17, 2015 meeting. The Committee suggested including the subject memorandum of understanding in the Board of Directors' packet. The Committee recommended Board approval of this item and placed it on the Board of Directors' consent agenda for October 1, 2015.

Prepared by: Casey Emoto
Memo No. 5161

ATTACHMENTS:

- MobilityPartnershipMOU_2015-0922 (PDF)

Memorandum of Understanding
between the
Council of San Benito County Governments
and the
Santa Clara Valley Transportation Authority
to create the
Mobility Partnership
and complete
Preliminary Engineering and Environmental Documentation
for Improvements between US 101 and I-5

The Council of San Benito County Governments (SBCOG) and the Santa Clara Valley Transportation Authority (VTA) jointly propose to conduct preliminary engineering studies and complete state and federal environmental reviews on improvements between State Route 101 (US 101) and Interstate 5, including the establishment of a new alignment for the portion of SR 152 between US 101 and the interchange of SR 152 and State Route 156 (SR 156). The SBCOG, the San Benito County Board of Supervisors, the City Councils of Hollister and San Juan Bautista, through adopted resolutions, all support the realignment of SR 152

The SBCOG and VTA understand that technical work for improvements will comply with state and federal guidelines and focus on accommodating traffic demands forecasted for a 20-year period into the future and evaluate options including one lane in each direction designated as the preferred regional truck route.

The SBCOG and VTA understand and acknowledge that the California Transportation Commission (CTC) previously programmed \$5 million in Interregional Transportation Improvement Program (ITIP) funds to match a \$5 million contribution made available by the VTA. The agencies further understand and acknowledge that this initial funding was used to perform initial engineering and environmental review of the corridor; to evaluate alternatives relative to realignment of the corridor between SR 156 and US 101; to identify and evaluate options for financing completion of the overall project, including consideration of a public private partnership and to initiate state and federal environmental studies for improvements in accordance with California Department of Transportation (Caltrans) and Federal Highway Administration (FHWA) standards. The parties understand that there are funds remaining from the above amounts that may or may not be used for development efforts depending on the results of any future discussions between VTA and Caltrans.

It is mutually understood that neither party is obligated to provide any funding for the studies or improvements. The parties agree to jointly and collectively seek additional funding to complete the required state and federal environmental documents on the project and to cooperate in evaluating options to fund completion of the project.

The studies will receive policy oversight/direction by the four-member Mobility Partnership (PARTNERSHIP). Two members shall be from San Benito County, one member shall be

appointed by the SBCOG, one member shall be appointed by the San Benito County Board of Supervisors, and two members shall be appointed by VTA.

VTA shall provide the appropriate professional staff and consultant services, as reasonably determined by VTA, to conduct and manage the studies in consultation with SBCOG staff. It is understood that Caltrans may appoint one non-voting (ex-officio) member to the Mobility Partnership and provide appropriate staff representatives from Districts 4, 5 and/or 10 to assist with the studies.

The PARTNERSHIP will continue to explore creating a Joint Powers Authority (JPA) or other appropriate governance/oversight entity to progress into future development phases.

The parties agree that the goal is to complete the studies within the term of this Memorandum of Understanding (MOU).

The parties agree that efforts to complete the studies will include meetings of Mobility Partnership members at a frequency to be determined by the group. Other efforts may include but are not limited to meetings with state and federal representatives. The parties agree that in these meetings the members' responsibility shall be to carry out the goals set forth in this MOU as they relate to studies and improvements.

Any member party may terminate this MOU, with or without cause, at any time. In order to terminate this MOU, the terminating party shall give advance written notice to the other party. The termination shall be effective no earlier than 30 days from the date of the written termination notice. This MOU shall commence in October 2015, and end on December 31, 2020 unless sooner terminated as specified herein.

NOW, THEREFORE, the parties have executed this MOU as follows:

COUNCIL OF SAN BENITO COUNTY
GOVERNMENTS

By: _____
Jerry Muenzer, Chair

APPROVED AS TO LEGAL FORM
San Benito County Counsel's Office

By: _____
Shirley L. Murphy, Deputy County Counsel

SANTA CLARA VALLEY
TRANSPORTATION AUTHORITY

By: _____
Nuria I. Fernandez, General Manager/Chief
Executive Officer

APPROVED AS TO LEGAL FORM
VTA General Counsel

By: _____
Robert Fabela, General Counsel



Date: September 24, 2015
 Current Meeting: October 1, 2015
 Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
 Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Director of Planning and Program Development, John Ristow

SUBJECT: Envision Silicon Valley Preliminary Project List

Policy-Related Action: No

Government Code Section 84308 Applies: No

ACTION ITEM

RECOMMENDATION:

Approve the List of Projects received from VTA's Call for Projects and direct staff to submit the complete list to the Metropolitan Transportation Commission for consideration of inclusion in the Regional Transportation Plan.

BACKGROUND:

As the Congestion Management Agency (CMA) for Santa Clara County, VTA is in the process of developing the countywide, long-range transportation plan: Envision Silicon Valley. This will be an update to the Valley Transportation Plan (VTP) 2040 adopted by the VTA Board of Directors in October 2014. Envision Silicon Valley provides a framework for transportation investment decisions and a process to develop our vision for transportation in Santa Clara County - including identifying potential federal, state and regional funding for projects as well as a potential sales tax in November 2016. The projects contained within Envision Silicon Valley will also serve as VTA's input to the Regional Transportation Plan (RTP). The next RTP is scheduled for adoption by the Metropolitan Transportation Commission (MTC) in summer 2017.

DISCUSSION:

In May 2015, VTA issued a Call-for-Projects to identify new transportation projects and provide updated information for projects currently in VTP 2040. The Call-for-Projects was set to coincide with MTC's schedule for the RTP and was issued to city, town and county governments in Santa Clara County, as well as other relevant agencies such as Caltrans. Members of the public were also encouraged to submit applications as part of the call-for-projects.

This memorandum presents the complete list of projects and programs that were submitted to VTA (Attachment A). Per MTC's requirements, VTA is required to submit this initial list of projects by October 2015. The preliminary list of projects will also be presented to VTA Committees in September and four public meetings will be held throughout Santa Clara County.

Over the next several months, VTA will be working through the Envision Silicon Valley process to evaluate the projects using Board-adopted Goals and Criteria. Through this process we will determine which of these projects and programs would be best suited for a potential sales tax measure and which projects would be strong candidates for state, local and regional funding sources. Throughout this process, staff will be working with our stakeholders, advisory committees and the public.

Below is a timeline of events for the development of Envision Silicon Valley (subject to change).

August 31, 2015	Call for Projects Due
September 2015	VTA holds Open Houses for Preliminary Project List
October 2015	VTA Board adopts Preliminary Project List
Fall 2015	VTA Evaluates Preliminary Envision Project List
Early 2016	VTA Refines Envision Project List
Summer 2016	VTA Prepares Ballot Measure

ALTERNATIVES:

The Board may choose an alternative list of projects for submittal to MTC.

FISCAL IMPACT:

There is no direct financial impact to the approval and submittal of the list of projects to MTC. However, projects must be included in the RTP in order to receive federal, state, regional and local discretionary fund programming.

ADVISORY COMMITTEE DISCUSSION/RECOMMENDATION:

Citizens Advisory Committee (CAC)

The CAC received the item and approved it to move forward to the Board.

Bicycle Pedestrian Advisory Committee (BPAC)

Committee members were concerned that the list of projects has duplicate projects on it, overall and within the categories. Committee members expressed concern that projects which appear to be bicycle and pedestrian related are in different categories. Multiple members were uneasy with forwarding the list to the Board as it was presented to BPAC because of missing items and duplicate items.

Dawn Cameron, from County Roads and Airports, mentioned that two County projects are not on the list but should be added to it.

Member Simons is worried that the projects are not supported by the public and voters.

A member of the public inquired if the preliminary project list will be available on the Envision Silicon Valley website because he was unable to find it when he looked.

Technical Advisory Committee (TAC)

Member Batra stated that the deadline for project submittal was before their council meeting. They received comments from public and their council to add more projects. The additional proposed project is pedestrian overcrossing connecting Santana Row to Valley Fair Mall. John Ristow replied that staff will add the project to our list, but we have time till the September 25th Board of Directors workshop to clean the list.

Member Chiu requested to add Los Atos Hills missing projects; the ones that are already in VTP list. Ex-Officio Nick Saleh, from Caltrans, mentioned the list is a good size of project list. Caltrans has some more projects that they would like to add.

Member Batra asked if for pavement projects cities should submit it or should Caltrans. He was referring to re-pavement of El Camino Real. John Ristow replied that BRT is in the list and has all components of ECR improvements including re-pavement. But state highway maintenance is not added to VTP and Caltrans addresses those improvements in the SHOPP fund.

Member Lightbody mentioned the process was unclear and inconsistent about road maintenance. John Ristow replied that staff added the estimated pavement & non pavement need to the project list/ the entire amount as a program, which totals approximately \$7 billion.

Policy Advisory Committee (PAC)

Committee member discussed the process for Envision and stated there was some confusion to the process. Staff responded that the ballot measure will be part of the countywide long range transportation planning effort. The project list is a submittal to the MTC and is preliminary in nature.

Member Miller asked how the project list be narrowed down from an estimated \$50 Billion. Staff responded the criteria adopted by the Board will be used as well as input from our stakeholder groups and advisory committees.

Member Wasserman requested that project descriptions be included to give a better sense of the scale and scope of the projects on the list. He also noted that the proportion of transit improvements on the list is more than half of the requested projects.

Member Chang questioned the projects related to Express Lanes stating his opposition to those projects, especially on SR 85. Member Jensen opined that there is a Los Gatos Interchange project on SR 17 that the City Council did not want to pursue and questioned why that is on the list. Staff responded that projects came from all sponsors, including Caltrans.

The list moved forward to the Board with two no votes that stated that the project list is accepted as complete based on revisions from staff, that no one member of the committee endorses a particular project at this stage, and the committee reserves the right to make additional edits as the process moves forward.

STANDING COMMITTEE DISCUSSION/RECOMMENDATION:

The Congestion Management Program & Planning Committee heard this item at their September 17, 2015 meeting.

Members noted that VTA staff needs to be clear in their communications on Envision and voiced concern that there may be some confusion between the preliminary project list, the regional transportation plan and a potential sales tax measure. Members also noted that it is important that VTA keeps promises with the public from previous measures.

Members also directed staff to ensure that they are working with elected officials on Envision as they hear regularly from their constituents about transportation issues. It was also recommended that staff look into “conjoint analysis” and other innovative processes to help with trade-off discussions.

Members unanimously recommended that the Board approve the list of projects and to submit the complete list to the Metropolitan Transportation Commission for consideration of inclusion in the Regional Transportation Plan. The committee also directed staff to; (a) distinguish the process for the regional transportation plan update and the potential sales tax measure; (b) be innovative in analyzing priorities and consider implementing processes such as “conjoint analysis” for future trade-off discussions; (c) engage public officials in the determination of priorities; and (d) bring future Envision Silicon Valley updates to the committee for discussion.

Prepared by: John Sighamony
Memo No. 5156

ATTACHMENTS:

- Attachment A for Committees (PDF)

ENVISION SILICON VALLEY PROJECT LIST REVISIONS**City of Campbell additions to the Transit List**

- Include “Future Mass Transit Needs Project” - **\$750.0 Million**
- Include “Vasona Light Rail Transit Project” - **\$176.0 Million**

City of Sunnyvale additions to the Bicycle and Pedestrian List

- Include “Installation of Pedestrian Countdown Signals in Sunnyvale” - **\$0.2Million**
- Include “Intersections and Improve sidewalks throughout the City of Sunnyvale” - **\$18.0Million**

ATTACHMENT A
ENVISION SILICON VALLEY PROJECT LIST

6.10.a

ENVISION SILICON VALLEY PRELIMINARY PROJECT LISTS

PROGRAM AREAS (IN \$ MILLIONS)

HIGHWAY	\$11,085.0 M
TRANSIT	\$21,593.6 M
EXPRESSWAYS*	\$1,362.2 M
LOCAL STREETS AND ROADS	\$10,908.6 M
LOCAL OPERATION SYSTEMS	\$608.1 M
<u>PEDESTRIAN AND BICYCLE</u>	<u>\$2,208.6 M</u>
<u>TOTAL</u>	<u>\$47,766.1 M</u>

***Some Expressway Projects are captured in the Highway Project List.**

ATTACHMENT A
HIGHWAY PROJECT LIST

#	NEW VTP ID	Route	Project Title	Cost (\$M) in 2017
1	E017-01	SR 17	SR 17 Express Lanes: I-280 to SR 85	\$ 32
2	E085-01	SR 85	SR 85 Express Lanes: US 101 (South San Jose) to Mountain View	\$ 181
3	E087-01	SR 87	SR 87 Express Lanes: SR 85 to US 101	\$ 38
4	E101-01	US 101	US 101 Express Lanes: Whipple Ave. in San Mateo County to Cochrane Rd. in Morgan Hill.	\$ 465
5	E101-02	US 101	US 101 Express Lanes: Cochrane Rd. to Masten Ave.	\$ 116
6	E101-03	US 101	US 101 Express Lanes: Masten Ave. to 10th St.	\$ 73
7	E101-04	US 101	US 101 Express Lanes: 10th St. to SR 25	\$ 54
8	E237-01	SR 237	SR 237 Express Lanes: North First St. to Mathilda Ave.	\$ 26
9	E237-02	SR 237	SR 237 Express Lanes: Mathilda Ave. to SR 85	\$ 87
10	E280-01	I-280	I-280 Express Lanes: US 101 to Leland Ave.	\$ 27
11	E280-02	I-280	I-280 Express Lanes: Leland Ave. to Magdalena Ave.	\$ 63
12	E280-03	I-280	I-280 Express Lanes: Magdalena Ave. to San Mateo County Line	\$ 95
13	E680-01	I-680	I-680 Northbound Express Lane: Calaveras Blvd. to Alameda County Line	\$ 39
14	E680-02	I-680	I-680 Express Lanes: Calaveras Blvd. to US 101	\$ 40
15	E880-01	I-880	I-880 Express Lanes: Alameda County line to US 101	\$ 25
16	E880-02	I-880	I-880 Express Lanes: US 101 to I-280	\$ 201
17	H000-01	All	Noise Abatement Program (Countywide)	\$ 50
18	H000-02	All	Hwy. Transportation Operations System/Freeway Performance Initiative Phase 1 & 2	\$ 54
19	H017-01	SR17	SR 17/SR 9 Interchange Improvements	\$ 15
20	H017-02	SR 17	SR 17 Widening (Lark Ave. to South of SR 9)	\$ 35
21	H017-03	SR 17	SR 17 Southbound/Hamilton Ave. Off-Ramp Widening	\$ 2
22	H017-04	SR 17	SR 17/San Tomas Expressway Interim Improvements (Tier 1 Exp Plan 2040)	\$ 2
23	H085-01	SR 85	SR 85 Northbound to Eastbound SR 237 Connector Ramp and Northbound SR 85 Auxiliary Lane	\$ 35
24	H085-02	SR 85	SR 85/EI Camino Real Interchange Improvements	\$ 25
25	H085-03	SR 85	SR 85 Noise Abatement Pilot Projects	\$ 8
26	H085-04	SR 85	SR 85 Noise Abatement Project (from SR 87 to I-280)	\$ 17
27	H085-05	SR 85	SR 85/Saratoga Ave. On/Off-ramps Landscaping	\$ 1
28	H085-06	SR 85	SR 85/I-280 Interchange HOV Connectors (from south SR 85 to/from north I-280)	\$ 30
29	H085-07	SR 85	SR 85/I-280/Homestead Rd. Interchange Improvements	\$ 30
30	H085-08	SR 85	SR 85/Winchester Blvd. Interchange Study	\$ 1
31	H087-01	SR 87	SR 87/Capitol Expressway/Narvaez Ave. Interchange Improvements	\$ 13
32	H087-02	SR 87	SR 87 Technology-based Corridor Improvements	\$ 40
33	H101-01	US 101	US 101/Oregon Expressway/Embarcadero Rd. Improvements	\$ 59
34	H101-02	US 101	US 101 Interchanges Improvements: San Antonio Rd. to Charleston Rd./Rengstorff Ave.	\$ 35
35	H101-03	US 101	US 101/Shoreline Blvd. Interchange Improvements	\$ 15
36	H101-04	US 101	US 101/Moffett Blvd. Interchange Improvements	\$ 75
37	H101-05	US 101	US 101 Southbound Auxiliary Lane Improvement Between Ellis St. and SR 237	\$ 4
38	H101-06	US 101	US 101 Southbound Auxiliary Lane: Great America Pkwy. to Lawrence Expressway	\$ 3
39	H101-07	US 101	US 101/Montague Expwy. Interchange Improvements	\$ 28
40	H101-08	US 101	US 101 Southbound/Trimble Rd./De La Cruz Blvd./Central Expwy. Interchange Improvements	\$ 50
41	H101-09	US 101	Double Lane Southbound US 101 off-ramp to Southbound SR 87	\$ 2
42	H101-10	US 101	US 101/Zanker Rd./Skyport Dr./Fourth St. Interchange Improvements	\$ 138
43	H101-11	US 101	US 101/I-880 Interchange Improvements	\$ 1,000
44	H101-12	US 101	US 101/Old Oakland Rd. Interchange Improvements	\$ 25
45	H101-13	US 101	US 101/Mabury Rd./Taylor St. Interchange Construction	\$ 70
46	H101-14	US 101	US 101/Hellyer Ave. Interchange Improvements	\$ 17
47	H101-15	US 101	US 101/Blossom Hill Rd. Interchange Improvements	\$ 25
48	H101-16	US 101	US 101/Buena Vista Ave. Interchange Improvements	\$ 35
49	H101-17	US 101	US 101/SR 152/10th St. Ramp and Intersection Improvements	\$ 11
50	H101-18	US101	South County US 101 Ramp Metering	\$ 72
51	H101-19	US101	US 101 NB/SB Auxiliary Lanes - 10th St. to Leavesley Rd.	\$ 45
52	H101-20	US 101	US 101/N. Fair Oaks Ave. Interchange Reconstruction	\$ 32
53	H101-21	US 101	US 101/Great America Pkwy SB off-ramp Improvements	\$ 10
54	H152-01	SR 152	New SR 152 Re-Alignment (US 101 to I-5)	\$ 1,120
55	H237-01	SR 237	SR 237/EI Camino Real/Grant Rd. Intersection Improvements	\$ 5
56	H237-02	SR 237	SR 237 Westbound to Southbound SR 85 Connector Ramp Improvements (Including SR 85 Auxiliary Lanes between EI Camino Real and SR 237)	\$ 43
57	H237-03	SR 237	SR 237 Westbound On-Ramp at Middlefield Rd.	\$ 14
58	H237-04	SR 237	SR 237/Mathilda Ave. and US 101/Mathilda Ave. Interchange Improvement	\$ 40
59	H237-05	SR 237	SR 237 Eastbound Auxiliary Lanes: Mathilda Ave. to Fair Oaks Ave.	\$ 8
60	H237-06	SR 237	SR 237/Great America Pkwy. WB off-ramp Improvements	\$ 13
61	H237-07	SR 237	SR 237/North First St. Interchange Improvements	\$ 3
62	H237-08	SR 237	SR 237 Westbound/Eastbound Auxiliary Lanes (N. First St to Coyote Creek, and Zanker Rd. to N. First St.)	\$ 17
63	H280-01	I-280	I-280 Northbound: Second Exit Lane to Foothill Expressway	\$ 3

ATTACHMENT A
HIGHWAY PROJECT LIST

#	NEW VTP ID	Route	Project Title	Cost (\$M) in 2017
64	H280-02	I-280	I-280 Northbound Braided Ramps between Foothill Expressway and SR 85	\$ 47
65	H280-03	I-280	I-280/Stevens Creek Blvd./Lawrence Expwy.Interchange Improvements (Tier 2 Exp Plan 2040)	\$ 120
66	H280-04	I-280	I-280/De Anza Blvd. Interchange Improvements	\$ 60
67	H280-05	I-280	I-280/Wolfe Rd. Interchange Improvements	\$ 85
68	H280-06	I-280	I-280/Saratoga Ave. Interchange Improvements	\$ 50
69	H280-07	I-280	I-280/Winchester Blvd. Interchange Improvements	\$ 90
70	H280-08	I-280	I-280/Leigh Ave./Leland Ave. Interchange Improvements	\$ 95
71	H280-09	I-280	I-280 Soundwalls - from Robelda Rd. in Los Altos to South 11th St. in San Jose	\$ 25
72	H280-10	I-280	I-280 Downtown Access Improvements between 3rd St. and 7th St.	\$ 31
73	H280-11	I-280	I-280/Senter Rd. Interchange	\$ 54
74	H280-12	I-280	I-280/San Tomas Expressway New Interchange	\$ 50
75	H280-13	I-280	Northbound I-280 Connector from Stevens Creek Blvd.	\$ 50
76	H280-14	I-280	I-280/Foothill Expressway Interchange Modifications (Tier 1 Exp Plan 2040)	\$ 5
77	H280-15	I-280	I-280/Oregon-Page Mill Road Interchange Improvements (Tier 1 Exp Plan 2040)	\$ 21
78	H280-16	I-280	I-280/Bird Interchange Improvements	\$ 8
79	H680-01	I-680	I-680/Jacklin Rd. Interchange Improvements	\$ 3
80	H680-02	I-680	I-680/Calaveras Blvd. Interchange Improvements	\$ 30
81	H680-03	I-680	I-680/Montague Expwy. Interchange Improvement (Tier 2 Exp Plan 2040)	\$ 30
82	H680-04	I-680	I-680/Capitol Ave. Interchange Improvements	\$ 8
83	H680-05	I-680	I-680/Hostetter Rd. Interchange Improvements	\$ 10
84	H680-06	I-680	I-680/Berryessa Rd. Interchange Improvements	\$ 40
85	H680-07	I-680	I-680 Auxiliary Lanes (Berryessa Rd. to McKee Rd.)	\$ 20
86	H680-08	I-680	I-680/Alum Rock Ave./McKee Rd. Interchange Improvements	\$ 40
87	H680-09	I-680	I-680 Auxiliary Lanes (Capitol Expwy. to Berryessa Rd.)	\$ 20
88	H680-10	I-680	I-680 Soundwalls - Jackson Ave. in San Jose to Hostetter Rd. in Milpitas	\$ 10
89	H680-11	I-680	I-680/Capitol Expwy./Jackson Ave. Interchange Improvements	\$ 50
90	H680-12	I-680	I-680 Soundwalls - Capitol Expwy. to Mueller Ave. in San Jose	\$ 6
91	H680-13	I-680	I-680/King Rd. Interchange Improvements	\$ 40
92	H880-01	I-880	I-880/Montague Expwy. Interchange Improvement	\$ 18
93	H-NEW	N/A	Santa Cruz Toll Corridor Tunneled Highway with Light Rail	\$ 5,031
				\$ 11,085

ATTACHMENT A
TRANSIT PROJECT LIST

Agency	#	Project Title	COST (\$M) in 2017
Campbell	1	Implementation of Future Mass Transit Needs for Santa Clara County	\$ 25.0
Cupertino	2	Comprehensive Systems Study for Future Mass Transit in Santa Clara County	\$ 1.0
	3	Future Mass Transit Needs for Santa Clara County	\$ 810.0
	4	Transit Stop Enhancements	\$ 9.0
	5	Tri-School Area Shuttle Service	\$ 1.1
	6	Cupertino Bus/Shuttle Service Expansion	\$ 2.2
Gilroy	7	South County Commuter Rail service enhancements	\$ 19.0
	8	CaHSR Station at Downtown Gilroy Transit Center	\$ 201.0
Los Altos	9	Future Mass Transit Needs for Santa Clara County Study	\$ 2.5
Morgan Hill	10	Expand Loading Platform at Caltrain Station	\$ 0.4
Mountain View	11	Study of Mass Transit Needs for Santa Clara County	\$ 25.0
	12	Implementation Funding for Future Mass Transit Investments in Santa Clara County	\$ 750.0
	13	Reversible Transit Lane on Shoreline Boulevard	\$ 13.5
	14	Downtown Transit Center Improvements	\$ 126.2
Palo Alto	15	Future Mass Transit Needs for Santa Clara County Study	\$ 25.0
	16	Palo Alto Shuttle Project	\$ 22.0
	17	Caltrain Quiet Zones	\$ 5.0
	18	Caltrain Grade Crossings - Safety Improvements (Fencing)	\$ 1.3
	19	Caltrain Grade Crossings - Safety Improvements (Camera Intrusion Detection System)	\$ 0.7
San Jose	20	Palo Alto Inter-modal Transportation Center (PAITC)	\$ 50.0
	21	Implement North San Jose Transit Improvements	\$ 39.0
	22	West San Carlos Light Rail Station	\$ 12.1
	23	Implement Mineta San Jose International Airport APM connector	\$ 70.2
Saratoga	25	City of Saratoga Senior Transportation Program	\$ 0.5
VTA	26	Downtown San Jose Double Track	\$ 57.2
	27	VTA Transportation Demand Management Development Grant Program	\$ 150.0
	28	SVRT Phase II (San Jose to Santa Clara)	\$ 4,700.0
	29	Upgraded Santa Clara Great America Intermodal Station	\$ 200.0
	30	Caltrain Railroad Maintenance (Santa Clara County Share)	\$ 419.0
	31	Caltrain Santa Clara County Station Area Enhancements	\$ 42.0
	32	Caltrain System Performance and Reliability (Santa Clara County Share)	\$ 58.0
	33	Caltrain Modernization (CalMod 2.0)	\$ 214.0
	34	ACE Operations (Santa Clara County Share)	\$ 127.7
	35	ACE Alviso Wetlands Doubletrack	\$ 156.0
	36	New Grade Separations	\$ 150.3
	37	Express Bus Countywide Expansion	\$ 500.2
	38	Tasman West Reconstruction	\$ 150.3
	39	North Bayshore Light Rail	\$ 430.3
	40	Light Rail Vehicle replacement	\$ 500.2
	41	LRV additional vehicle purchase	\$ 87.5
	42	Guadalupe Rail Yard Improvements	\$ 148.0
	43	De Anza to East San Jose Light Rail	\$ 949.1
	44	Alviso to Blossom Hill DMU service	\$ 530.0

ATTACHMENT A
TRANSIT PROJECT LIST

Agency	#	Project Title	COST (\$M) in 2017
VTA	45	Winchester Line Double Tracking and Platform	\$ 90.2
	46	North First Street light rail speed Improvements	\$ 10.5
	47	New bus yard (250 buses)	\$ 240.0
	48	Park & Ride Improvements	\$ 144.0
	49	Affordable fares	\$ 60.0
	50	Bus Stop Improvements	\$ 60.0
	51	Fast and Reliable Bus Network	\$ 250.0
	52	Enhance Frequent Core Bus Network	\$ 2,143.0
	53	Frequent Core Bus Network	\$ 502.0
	54	Reconstruct Mountain View Transit Center	\$ 503.6
	55	Bus Facility Upgrades at Cerone and Chaboya	\$ 234.5
	56	De Anza College Transit Center	\$ 52.8
	57	Downtown San Jose Subway	\$ 996.9
	58	Extend high-rail transit from Winchester Station to Route 85 (Vasona Junction)	\$ 176.0
	59	Extend Capitol Expressway light rail to Eastridge Transit Center - Phase II	\$ 293.0
	60	Implement El Camino Rapid Transit Project	\$ 275.5
	61	Implement Stevens Creek Rapid Transit Project	\$ 196.0
	62	Extend BART to Berryessa (includes environmental, preliminary engineering, property acquisition and construction phases)	\$ 3,226.5
	63	Santa Cruz Metro Bus Purchase (VTA Share)	\$ 6.6
	64	Express Bus Highway Stations	\$ 305.0
Outreach	65	Senior Transportation Mobility Management (STAR) Program	\$ 46.0
			\$ 21,593.6

ATTACHMENT A

EXPRESSWAY PROJECT LIST

Agency	#	Project Title	COST (\$M) in 2017
Campbell	1	Widen San Tomas Expressway to 8 Lanes from Stevens Creek Blvd to Campbell Ave	\$ 40.0
San Jose	2	Montague Expressway / Trimble Road Flyover	\$ 49.0
	3	Widen Montague Expressway to 8-lanes for HOV lanes between Lick Mill and Trade Zone boulevards and on Guadalupe River Bridge and Penitencia Creek Road	\$ 17.0
	4	Widen Montague Expressway between Trade Zone and I-680	\$ 16.0
	5	Montague Expressway & McCarthy/O'Toole Interchange Improvements	\$ 48.0
	6	San Tomas Expwy: Widen from Moorpark to Homestead	\$ 51.1
Santa Clara County	7	Foothill Expressway at Magdalena/Springer Intersection Improvements (Tier 2 Exp Plan 2040)	\$ 2.0
	8	Montague Expressway widening between Trade Zone and Main/Oakland (Tier 1 Exp Plan 2040)	\$ 2.1
	9	Montague Expressway Widening Between Great Mall to Trade Zone (Tier 1 Exp Plan 2040)	\$ 6.2
	10	Foothill Expressway widening between El Monte and San Antonio (Tier 1 Exp Plan 2040)	\$ 2.3
	11	Montague Expressway at Mission College Boulevard Intersection (Tier 2 Exp Plan 2040)	\$ 18.0
	12	San Tomas Expressway at Scott Boulevard Intersection Improvements (Tier 2 Exp Plan 2040)	\$ 2.0
	13	Grade Separation at Central Expressway & Moffett/Castro & Caltrain Tracks (Tier 1 Exp Plan 2040)	\$ 150.0
	14	Central Expressway at Bowers Ave Intersection Interim Improvement (Tier 2 Exp Plan 2040)	\$ 2.0
	15	Central Expressway Auxiliary Lanes between Lawrence and Mary (Tier 2 Exp Plan 2040)	\$ 20.3
	16	Capitol Expressway Widening from I-680 to Capitol Avenue (Tier 1 Exp Plan 2040)	\$ 12.1
	17	Widen Lawrence Expressway between Moorpark and I-280 (Tier 2 Exp Plan 2040)	\$ 7.8
	18	Lawrence Expressway at Moorpark/Bollinger Intersection Improvements (Tier 2 Exp Plan 2040)	\$ 1.8
	19	Almaden Expressway at SR-85 - Interim Improvements (Tier 1 Exp Plan 2040)	\$ 0.5
	20	Lawrence Expressway at Saratoga Avenue Intersection Improvements (Tier 2 Exp Plan 2040)	\$ 2.0
	21	Almaden Expressway at Branham Lane Intersection Improvement (Tier 1 Exp Plan 2040)	\$ 0.7
	22	Almaden Expressway Widening (Tier 2 Exp Plan 2040)	\$ 10.7
	23	Almaden Expressway at Camden Ave intersection improvements (Tier 1 Exp Plan 2040)	\$ 2.7
	24	Central Expressway at Thompson (Tier 1 Exp Plan 2040)	\$ 0.5
	25	Lawrence Expressway at Homestead Road Interim Improvements (Tier 1 Exp Plan 2040)	\$ 2.7
	26	Lawrence Expressway right-in/out closures (Tier 2 Exp Plan 2040)	\$ 1.5
	27	Lawrence Expressway at Homestead Road Grade Separation (Tier 1 Exp Plan 2040)	\$ 100.0
	28	Lawrence Expressway from Reed/Monroe to Arques Grade Separation (Tier 1 Exp Plan 2040)	\$ 440.0
	29	Montague Expressway widening between Main/Oakland and McCarthy/O'Toole (Tier 1 Exp Plan 2040)	\$ 35.2
	30	San Tomas Expressway Widening between Homestead and Stevens Creek (Tier 1 Exp Plan 2040)	\$ 42.0
	31	Santa Teresa-Hale Corridor widening (Tier 1 Exp Plan 2040)	\$ 8.4
	33	Oregon-Page Mill widening between I-280 and Foothill Expressway (Tier 1 Exp Plan 2040)	\$ 23.5
	34	Oregon-Page Mill intersection improvements (Tier 1 Exp Plan 2040)	\$ 2.7
	35	Oregon-Page Mill/El Camino Real (Tier 1 Exp Plan 2040)	\$ 2.4
	37	Santa Teresa-Hale Corridor Extension (Tier 1 Exp Plan 2040)	\$ 13.8
	38	Santa Teresa/Hale Corridor various intersection improvements (Tier 2 Exp Plan 2040)	\$ 2.5
	39	Santa Teresa direct connection between Sunnyside and DeWitt (Tier 2 Exp Plan 2040)	\$ 8.1
	41	LRT grade separation at Montague Expressway/First Street (Tier 2 Exp Plan 2040)	\$ 95.0
	42	Grade separate Caltrain tracks from Rengstorff Ave at Central Expressway (Tier 1 Exp Plan 2040)	\$ 120.0
			\$ 1,362.6

ATTACHMENT A

LOCAL STREETS AND ROADS PROJECT LIST

Agency	#	Project Title	COST (\$M) in 2017
Campbell	1	Dell Avenue Area Improvements	\$ 4.0
	2	Campisi Way Improvements	\$ 2.0
	3	Citywide Sidewalk Gap Closure	\$ 7.0
Cupertino	4	McClellan Road Bridge Replacement	\$ 6.0
	5	Citywide ADA curb ramp improvements	\$ 4.0
	6	Stevens Creek Blvd Bridge Replacement over Stevens Creek	\$ 8.0
Gilroy	7	Extend Buena Vista Avenue from Santa Teresa Boulevard to Monterey Road	\$ 10.0
	8	IOOF Ave US101 Overcrossing	\$ 16.9
	9	Tenth Street Bridge over Uvas Creek	\$ 16.3
	10	Las Animas Ave US 101 Overcrossing	\$ 10.8
	12	Old Gilroy Street "Community Access" US101 Overcrossing	\$ 12.2
	13	Maple Ave. Overcrossing	\$ 30.0
Los Altos	14	El Monte Avenue Street Resurfacing Project	\$ 2.1
	15	Fremont Avenue Street Resurfacing	\$ 1.3
Los Gatos	16	Blossom Hill Road South Side (Union Avenue to Regent Drive)	\$ 2.0
	17	HWY 9 @ North Santa Cruz Avenue	\$ 2.0
	18	Lark Avenue Improvements from HWY 17 to Los Gatos Blvd	\$ 4.0
	19	Blossom Hill Road Widening @ HWY 17	\$ 10.0
	20	Lark Avenue Widening from Winchester Blvd. to HWY 17	\$ 3.0
	21	Los Gatos-Almaden Road Improvement from Los Gatos Boulevard to National Avenue	\$ 4.0
	22	Los Gatos Boulevard Improvement from Lark to Samaritan Drive	\$ 4.0
	23	Los Gatos Boulevard and Lark Avenue Intersection improvements	\$ 1.2
	24	Los Gatos Blvd and Samaritan Drive Intersection Improvements	\$ 1.0
	25	Pollard Road Improvements from York to Knowles Drive	\$ 2.0
	26	Union Avenue Improvements from Blossom Hill Road to Los Gatos-Almaden Road	\$ 3.0
	27	Wedgewood Avenue improvements from Granada to Wimbledon	\$ 3.0
	28	Winchester Blvd. Improvements from Daves Ave to Lark	\$ 4.0
	29	Blossom Hill Road (BH Park to Union) Improvement Project	\$ 3.0
Milpitas	30	Dixon Landing Road/Milpitas Blvd. Intersection Improvements	\$ 4.0
	31	Widen Calaveras Boulevard overpass from 4-lanes to 6-lanes	\$ 85.0
Morgan Hill	32	Monterey Road Corridor Safety Improvements	\$ 2.4
	33	Depot Street Realignment	\$ 1.3
	34	Butterfield Blvd. North Extension	\$ 1.1
Mountain View	36	Castro Street/Moffett Boulevard/Central Expressway Intersection Improvements	\$ 2.0
	37	San Antonio Road Interchange / Charleston Road Connection	\$ 101.0
	38	San Antonio Ramp to Southbound Central Expressway (Tier 2 Expressway Study)	\$ 31.8
	39	Castro Street/Moffett Boulevard Closure/Grade Separation	\$ 150.0
	40	Mountain View Rengstorff Avenue Railroad Grade Separation	\$ 150.1
	41	Shoreline Boulevard Transportation Corridor Improvements Full Build Out	\$ 10.2
Palo Alto	42	Caltrain Grade Separation - Charleston and Meadow	\$ 527.0
	43	Caltrain Grade Separation - Churchill	\$ 196.0
	44	Charleston Road / Arastradero Road Corridor Improvements	\$ 10.0

ATTACHMENT A

LOCAL STREETS AND ROADS PROJECT LIST

Agency	#	Project Title	COST (\$M) in 2017
San Jose	45	Chynoweth/Thornwood Extension from Almaden Expwy to Winfield	\$ 21.0
	46	Widen Zanker Road from 4-lanes to 6-lanes	\$ 67.0
	47	Alum Rock Falls over Penitencia Creek Bridge Replacement	\$ 32.0
	48	Implement improvements to the North First Street Core Area grid	\$ 93.0
	49	Senter Road Widening from Umbarger to Lewis	\$ 8.0
	50	Widen Oakland Road from 4-lanes to 6-lanes between U.S. 101 and Montague Expressway	\$ 15.0
	51	Implement miscellaneous intersection improvements in North San Jose	\$ 44.0
	52	Widen Brokaw Bridge over Coyote Creek	\$ 29.0
	53	Santa Clara Street at Coyote Creek Bridge Replacement	\$ 33.0
	54	Extend Charcot Avenue over I-880	\$ 35.0
	55	Highwood Drive over North Babb Creek Bridge Replacement	\$ 11.0
	56	City of San Jose General Plan Local Streets Improvements	\$ 13.0
	57	Downtown Couplet Conversions	\$ 27.6
	58	South Bascom Complete Streets from Parkmoor to Southwest	\$ 33.0
	59	East Santa Clara Complete Streets from 7th St to 17th St	\$ 7.0
	60	Winchester Blvd. Road Diet and Pedestrian and Bicycle Facilities Improvements from 1-280 to City Limit	\$ 3.5
	61	Stevens Creek Blvd. Complete Street Improvements from I-880	\$ 15.0
	62	West San Carlos Streetscape and Pedestrian Improvements	\$ 16.2
	63	San Jose Vision Zero Priority Safety Corridor Improvements	\$ 38.0
	64	Noble Avenue Bridge over Penitencia Creek	\$ 28.0
	65	O'Connor Drive Bridge over Forest Avenue	\$ 34.0
	66	King Road Bridge Replacement and Widening at Penitencia Creek	\$ 20.0
	67	Chynoweth/Monterey Rd/UPRR Grade Separation Project	\$ 43.0
	68	Widen Coleman Avenue from 4-lanes to 6-lanes between I-880 and Taylor Street	\$ 17.0
	69	Extend Autumn Parkway from Julian Street to San Carlos Street and implement improvements from St. John Street to Park Avenue	\$ 45.0
	70	Almaden Road Improvement from Malone Road to Curtner Avenue	\$ 8.0
	71	San Carlos Street Bridge Replacement and Widening	\$ 37.1
	72	Branham/Snell/Chynoweth Area Roadway Improvements	\$ 21.0
	73	Construct Caltrain grade separation at Skyway	\$ 43.0
	74	Construct Caltrain grade separation at Branham Lane	\$ 40.0
	75	Umbarger Rd./Barberry Ln. Overcrossing at US 101	\$ 38.0
	76	Holly Hill Dr./Havana Dr. Overcrossing at US 101	\$ 38.0
	77	Thomas Rd./Kenneth St./Alfred St. Overcrossing at US 101	\$ 40.0
	78	I-680/Mather Dr. and Muller Ave. Overcrossing	\$ 30.0
	79	I-680/Madden Ave. Overcrossing	\$ 30.0
	80	I-680/Mabury Rd. Overcrossing	\$ 20.0
Santa Clara	81	Landscape Improvements at Santa Clara Gateways	\$ 15.0
	82	Widen intersection at El Camino Real/Lafayette Street	\$ 1.0
	83	Implement capacity increasing improvements at the intersection of Great America Parkway/Mission College Boulevard	\$ 8.3
Sunnyvale	84	Intersections and improve sidewalks throughout the city of Sunnyvale	\$ 18.0
	85	Sunnyvale Downtown Specific Plan Transportation Improvements	\$ 17.0
	86	Extend Mary Avenue north across Route 237	\$ 78.0
	87	Realign Wildwood Avenue to connect with Lawrence Expressway (includes new traffic signal at Lawrence Expressway/Wildwood Avenue intersection)	\$ 7.0
	88	Mary Avenue Rail Road Grade Separation	\$ 80.0
	89	Sunnyvale Avenue Rail Road Grade Crossing	\$ 100.0
Santa Clara County	90	Watsonville Rd. Center Turn Lane	\$ 8.1
	91	Center Ave & Marcella Ave Two-lane connection & new bridge	\$ 3.4
	92	Marcella Ave. Two-Lane Realignment	\$ 7.0
	93	Railroad Crossing Improvements at Church Ave. and Monterey Hwy.	\$ 0.8
	94	DeWitt Ave/Sunnyside Ave realignment at Edmundsen Ave	\$ 7.7
	95	Fitzgerald Ave/Masten Ave realignment at Monterey Hwy	\$ 0.7
	96	Hill Rd. Extension from East Main Ave. to Peet Rd.	\$ 9.5
	97	Rural Road Safety Program	\$ 25.0
VTA	98	Santa Clara Countywide Pavement Management Program	\$ 7,000.0
	99	Lawrence Expressway Multimodal Grade Separated Toll Corridor	\$ 1,000.0
			\$ 10,908.6

ATTACHMENT A

LOCAL OPERATION SYSTEMS PROJECT LIST

Agency	#	Project Title	COST (\$M) in 2017
Campbell	1	Reactivation of Traffic Count Stations	\$ 0.1
	2	Winchester Blvd. Intelligent Transportation System Phase 2	\$ 0.2
	3	ATMS Enhancements	\$ 0.0
	4	Downtown Flashing Beacon Systems	\$ 0.3
	5	Adaptive Pedestrian Detection Systems	\$ 0.2
	6	Winchester/Latimer Signal Modification	\$ 0.1
	7	Hamilton/Central Signal Modification	\$ 0.2
	8	Hamilton/April Signal Modification	\$ 0.2
Cupertino	9	Traffic Operations Center Upgrade	\$ 0.5
	10	Citywide Advanced Traffic Management System Implementation	\$ 0.5
	11	Citywide traffic monitoring camera expansion	\$ 0.2
	12	Citywide traffic signal retiming and coordination	\$ 0.3
	13	De Anza Blvd Advanced Traffic Management System	\$ 0.6
	14	Citywide ADA Pedestrian Signal Upgrades	\$ 1.0
	15	Miscellaneous Citywide Traffic Signal Upgrades	\$ 10.0
Gilroy	16	Flood Watch Camera System (iNet Phase 3)	\$ 0.7
	17	Adaptive traffic signal control system (iNet Ph 1)	\$ 1.2
	18	Gilroy Downtown Parking Guidance/Event Management System	\$ 1.2
	19	Traffic Signal System Upgrade (iNet Ph 2)	\$ 5.0
	20	ITS Enhancements on Santa Teresa Blvd	\$ 2.6
	21	SR 152 (First Street) Signal System Upgrade for complete streets and "Caltrans Main Street" candidate street conversion.	\$ 3.0
	22	Downtown and 10th Street Corridor Signal Upgrades	\$ 2.0
	23	Downtown Parking Management System	\$ 0.5
	24	Gilroy Signal Upgrades	\$ 1.3
	25	Community Bus Signal Pre-emption	\$ 0.6
Los Altos	26	Advanced Traffic Management System	\$ 5.0
Los Gatos	27	Los Gatos Traffic Signal and Information System	\$ 4.0
	28	Traffic Corridor Study Project	\$ 1.0
Milpitas	29	South Milpitas Blvd. SMART Corridor	\$ 0.6
	30	Citywide Adaptive Bicycle and Pedestrian Timing	\$ 0.6
	31	Citywide video detection/monitor	\$ 0.8
Monte Sereno	32	SR-9 Traffic Signal Upgrades and Interconnect	\$ 1.0
Morgan Hill	33	Install adaptive signal technology at all locations	\$ 2.5
	34	Arterial Intersection Efficiency Improvements	\$ 1.0
Mountain View	35	Mountain View Citywide Traffic Signal Upgrade and IP Traffic Signal Access	\$ 5.0
	36	Rengstorff Avenue Adaptive Signal System	\$ 1.6
Palo Alto	37	Palo Alto Downtown Parking Improvements	\$ 2.5
	38	Citywide Traffic Signal CCTV/EV Preemption Project	\$ 1.4
	39	Citywide traffic signal retiming and coordination	\$ 1.0
	40	Palo Alto Downtown and Calif. Ave. Parking Supply and Management Program	\$ 10.0
San Jose	41	San Jose Proactive Signal Retiming Program	\$ 60.0
	42	San Jose Transportation Communications Network Enhancements	\$ 27.1
	43	San Jose Traffic Signal System Upgrades	\$ 27.1
	44	Silicon Valley ITS Program Upgrades	\$ 35.2
	45	City of San Jose Red Light Running Enforcement Program	\$ 3.2
	46	San Jose Emergency Vehicle Preemption System	\$ 10.8
	47	Eastridge/Evergreen Area Advanced Traffic Management System	\$ 5.4
	48	Saratoga/Moorpark Advanced Traffic Management System	\$ 5.4
	49	San Jose Traffic Surveillance Video System Expansion	\$ 3.2
	50	San Jose Multimodal Operations and Efficiency	\$ 21.6
	51	San Jose Adaptive Traffic Management System	\$ 10.8
	52	San Jose Accessible Pedestrian Signal System Upgrade	\$ 2.2
	53	San Jose Traffic Signal Installation and Modification	\$ 17.9
	54	Transportation Innovation Zone Infrastructure Enhancements	\$ 5.4
	55	San Jose General Plan Technology Upgrades	\$ 12.6
	56	First/Last Mile Trip Completion Alternatives	\$ 1.5
	57	Streetlight Conversion to LED	\$ 37.9
	58	Balanced Transportation Education Program	\$ 5.4
	59	San Jose TMC System Integration	\$ 16.2
	60	San Jose Coleman-Airport-Avaya Stadium Area Advanced Traffic Management System	\$ 5.4
	61	San Jose Citywide Roadways Performance Monitoring System	\$ 10.8
	62	San Jose Wayfinding Program	\$ 3.0

ATTACHMENT A

LOCAL OPERATION SYSTEMS PROJECT LIST

Agency	#	Project Title	COST (\$M) in 2017
Santa Clara	63	Monroe Street @ Bellomy Street Signal Upgrade	\$ 1.0
	64	Homestead Road @ Lincoln Street Signal Upgrade	\$ 1.0
	65	Santa Clara Communications Network Upgrade	\$ 6.6
	66	Santa Clara Traffic Signals Upgrade	\$ 5.5
	67	Citywide Traffic Monitoring Cameras	\$ 3.0
	68	Citywide Bicycle Detection	\$ 4.8
	69	Citywide Pedestrian Signal Upgrades	\$ 4.2
	70	Santa Clara Adaptive Traffic Signal System	\$ 7.2
	71	Lafayette Street Reversible Lane Control Upgrade	\$ 3.6
	72	North Santa Clara Event Management System	\$ 9.2
	73	Video Detection System Upgrade	\$ 2.5
	74	Travel Time Monitoring System	\$ 3.0
	75	Pedestrian Crosswalk Warning System	\$ 5.0
	76	Traffic Signal Coordination Update	\$ 3.5
	77	Traffic Signal Traffic Responsive Plan	\$ 5.0
	78	Citywide Emergency Vehicle Preemption for Traffic Signals	\$ 3.0
Saratoga	79	Herriman Ave/Saratoga Ave Traffic Signal Project	\$ 0.4
	80	Verde Vista Ln. Traffic Signal	\$ 0.4
	81	Citywide Accessible Pedestrian Signals	\$ 0.4
Sunnyvale	82	Advanced Adopted Traffic Management System (AATMS) and ITS Architecture Deployment	\$ 3.0
	83	Install pedestrian countdown signals in Sunnyvale	\$ 0.2
	84	Traffic Adaptive Signal Controller Update	\$ 4.0
	85	Citywide CCTV Camera Deployment	\$ 1.3
	86	Citywide Traffic Signal Controller Update	\$ 0.7
	87	Citywide Count and Speed Monitoring Stations	\$ 1.2
	88	ITS Communications Infrastructure	\$ 2.0
	89	Traffic Management Center Integration	\$ 0.4
	90	Emergency Preemption Receiver Installation	\$ 1.2
	91	Traffic Signal Reconstruction to Downtown Streetscape Standards	\$ 2.3
Santa Clara County	92	Expressway ITS/Signal System (Tier 2 Exp Plan 2040)	\$ 68.0
	93	Expressway ITS/Signal System (Tier 1 Exp Plan 2040)	\$ 17.5
VTA	94	Countywide Freeway Traffic Operation System and Ramp Metering Improvements	\$ 30.1
	95	Regional Transportation Operations Personnel Service	\$ 6.0
	96	Regional ITS Maintenance Service	\$ 2.4
			\$ 608.1

ATTACHMENT A
BICYCLE AND PEDESTRIAN PROJECT LIST

Agency	#	Project Title	COST (\$M) in 2017
Campbell	1	Hamilton Avenue/Highway 17 Bicycle Overcrossing	\$ 4.0
	2	Latimer Avenue Pedestrian Overcrossing	\$ 5.1
	3	Ped/Bike Bridge over SR 17 from Railway/Sunnyside to Campbell Technology Pkwy	\$ 5.0
	4	Bike Share Program	\$ 0.1
	5	Los Gatos Creek Trail expansion on west side (Hamilton to Campbell)	\$ 2.5
	6	San Tomas Aquino Creek Trail	\$ 1.8
	7	San Tomas Expressway Bike/Ped Path	\$ 0.5
	8	Bascom Avenue Great Streets Project	\$ 1.0
	9	Citywide School Sidewalks	\$ 1.0
	10	Downtown Pedestrian and Bicycle Enhancements	\$ 1.7
	11	Harriet Avenue Sidewalks	\$ 0.8
	12	Widen Los Gatos Creek Trail on east side (Camden to Campbell)	\$ 0.3
	13	Hamilton Ave. Medians, Bicycle, and Pedestrian Enhancements	\$ 1.8
Cupertino	14	Citywide Sidewalk Gap Closure	\$ 7.0
	15	Stevens Creek Trail grade separation at Stevens Creek Blvd	\$ 3.0
	16	Foothill Blvd Bike Lane and Sidewalk Improvements	\$ 0.5
	17	Stevens Canyon Road Widening, Bike and Ped Improvements	\$ 10.0
	18	Stevens Creek Trail Completion	\$ 16.0
	19	Saratoga Creek Trail Extension: Lawrence Expressway to Mitty Way	\$ 8.1
	20	Union Pacific Rail Trail	\$ 20.3
	21	Bike/Ped Bridge Over UPRR Tracks Snyder-Hammond House	\$ 5.0
	22	Citywide ADA Pedestrian Signal Upgrades	\$ 1.0
	23	Bicycle Transportation Plan Implementation	\$ 10.0
	24	Mary Avenue Complete Street Conversion	\$ 0.5
	25	Citywide Class 1 Bikeway Network Implementation	\$ 10.0
	26	Stelling Road Complete Street Project	\$ 0.5
Gilroy	27	Lions Creek Bike Trail (West of Kern to Day)	\$ 2.3
	28	Lions Creek Trail (W of Santa Teresa – Christopher HS)	\$ 0.8
	29	Northern Uvas Creek Trail (Gilroy Gardens Trail Extension)	\$ 2.3
	30	West Branch Llagas Creek Trail	\$ 0.5
	31	Southern Uvas Creek (Sports Park Bile Trail)	\$ 5.9
	32	Lions Creek Trail (Kern Bridge Gap Closure)	\$ 1.4
	33	Safe Routes to School/Complete Streets	\$ 2.4
	34	Santa Teresa Expressway Bike Detection	\$ 2.7
Los Altos	35	Miramonte Avenue Bikeway Improvements	\$ 1.6
	36	Stevens Creek Trail Link	\$ 3.5
	37	Completing Bikeway Network-Other than Miramonte	\$ 1.6
	38	Implementation of Los Altos Pedestrian Plan	\$ 13.1
Los Altos Hills	39	Fremont Road Pathway Phase 2: Concepcion Road to Arastradero Road	\$ 0.9
	40	Hale Creek Path Connecting to El Monte Road	\$ 0.5
	41	El Monte Road: Stonebrook to Voorhees (Segment 4)	\$ 0.6
Los Gatos	42	Blossom Hill Road Widening North Side (Union Ave. to Westhill Drive)	\$ 2.0
	43	HWY 9 – Los Gatos Creek Connector	\$ 3.0
	44	Highway 9 (HWY 17 to Los Gatos Blvd) Complete Streets	\$ 10.0
	45	Knowles from Pollard to Winchester Complete Streets	\$ 2.0
	46	Los Gatos Blvd. bike lane project from Camino Del Sol to Blossom Hill Road	\$ 3.0

ATTACHMENT A
BICYCLE AND PEDESTRIAN PROJECT LIST

Agency	#	Project Title	COST (\$M) in 2017
Milpitas	47	Berryessa Creek Trail (Reach 4 - 6): Hillview Drive to San Jose City limits	\$ 6.9
	48	So. Milpitas Boulevard from Calaveras Boulevard to Montague Expwy Bicycle Path & Sidewalk on east side (1.5 miles)	\$ 29.0
	49	Berryessa Creek Trail (Reach 4 - 6): Hillview Drive to San Jose City limits	\$ 6.9
Milpitas/ VTA	50	Montague Expwy Bike/Ped Overcrossing at Milpitas BART Station	\$ 7.8
Morgan Hill	51	Monterey Road Corridor Safety Improvements	\$ 2.4
	52	Butterfield Linear Park Expansion	\$ 1.2
	53	Coyote Creek Trail Connection	\$ 0.3
	54	Pedestrian Rail Crossing Enhancements	\$ 2.0
	55	Main Avenue Bike Lanes	\$ 0.2
	56	Sobrato High School Bike Access Improvements	\$ 0.5
	57	West Little Llagas Creek Trail, Main Avenue to Spring Avenue	\$ 1.5
Mountain View	58	Stevens Creek Trail Reach 4 Segment 2: Dale/Heatherstone to Mountain View High School	\$ 17.2
	59	Stevens Creek Trail: New Trailhead at Landels School	\$ 1.6
	60	Permanente Creek Trail Extension Feasibility Study (Part II)	\$ 0.2
	61	Shoreline Boulevard Pathway over Central Expressway and Railroad	\$ 2.4
	62	Shoreline Boulevard Cycle Track -- Stierlin Road to Terra Bella	\$ 9.6
	63	Shoreline Boulevard/US Route 101 Pedestrian/Bicycle Overcrossing	\$ 22.1
	64	Permanente Creek Trail: Modification to Under-crossing at Amphitheatre Parkway	\$ 0.8
	65	Mayfield Tunnel Ped/Bike under Central Expressway connecting to San Antonio Caltrain station	\$ 9.0
	66	Old Middlefield Way Bike Lanes	\$ 0.7
	67	Moffett Boulevard Bike Lanes	\$ 0.9
	68	California Street Ped/Bike complete street implementation (including potential road diet) (Showers to Bryant_	\$ 30.3
	69	Shoreline Blvd. Ped/Bike Complete Street Implementation (including potential road diet) (El Camino Real to Montecito)	\$ 20.3
	70	Escuela Ave. Ped/Bike complete street implementation (Latham to Crisanto)	\$ 11.2
	71	Bernardo Bike/Ped Tunnel	\$ 10.2
	72	Bay Area Bike Share 20 Stations in Mountain View	\$ 3.1
	73	Permanente Creek Trail: Grade Separation at Charleston Road	\$ 4.6
	74	Mountain View Stevens Creek Trail: Middlefield Road North Side Access	\$ 1.0
	75	Palo Alto-Sunnyvale Bicycle Regional Connections	\$ 1.2
	76	El Camino Real Bike Lanes	\$ 0.5
Palo Alto	77	South Palo Alto Caltrain Pedestrian/Bicycle Grade Separation	\$ 13.0
	78	California Avenue Caltrain Undercrossing	\$ 13.0
	79	Palo Alto Transit Center/University Ave. Undercrossing	\$ 10.0
	80	US 101 / Adobe Creek Pedestrian and Bicycle Over Crossing	\$ 13.0
	81	Bicycle Boulevards Network Project	\$ 20.0
	82	Enhanced Bikeways Project	\$ 20.0
	83	Downtown Palo Alto Pedestrian Facility Upgrades	\$ 3.0
	84	Matadero Creek Trail and Undercrossing at US 101	\$ 7.0
	85	Bike Share Expansion	\$ 11.0
	86	Adobe Creek Reach Trail: West Bayshore Road to Louis Road	\$ 0.1

ATTACHMENT A
BICYCLE AND PEDESTRIAN PROJECT LIST

Agency	#	Project Title	COST (\$M) in 2017
San Jose	87	Airport Blvd from Guadalupe River Trail to Coleman Ave. Bike & Pedestrian Connection	\$ 4.1
	88	Auzerais Ave from Sunol St to Race St Bicycle and Pedestrian	\$ 2.4
	89	Montgomery St/Bird Ave from Santa Clara St to West Virginia St Bicycle and Pedestrian Corridor	\$ 3.8
	90	Blossom Hill Road/Silver Creek Valley Road from Monterey Rd. to Coyote Ck Trail Multiuse Path	\$ 6.6
	91	Calero Ave from Allen Ave to Palmia Dr Bikeway Project	\$ 0.4
	92	Branham Lane Bikeway: Camden Avenue to Coyote Creek Trail	\$ 13.4
	93	Capitol Avenue/Capitol Expressway Bikeway from Penitencia Creek Road/Trail to Quimby Road/Thompson Creek	\$ 0.3
	94	Cottle Road Multi-Use Path from Hospital Parkway to Poughkeepsie Road	\$ 2.9
	95	Havana Dr/ Holly Hill Drive Bike/Ped Bridge at US 101	\$ 9.2
	96	Hedding St. Bikeway: Winchester Blvd. to Ruff Dr (Hwy 87)	\$ 0.3
	97	Highway 87 Trail Connection Multi-Use Path: Unified Way through Curtner Light Rail Station Park and Ride to Carol Drive at Hwy 87	\$ 2.1
	98	Hwy 237 Bikeway from Great America Parkway to Zanker	\$ 0.5
	99	Los Gatos Creek Trail Reach 5d: Park Avenue to Santa Clara Avenue (Diridon Station Segment)	\$ 9.2
	100	Los Gatos Creek Trail Reach 5b and 5c: Auzerais Avenue south of W. San Carlos Avenue to Park Avenue/Montgomery Avenue (Trail and Undercrossing)	\$ 6.3
	101	Monroe Bikeway: Newhall Street to Tisch Way	\$ 0.3
	102	Newhall Street Bike/Ped Overcrossing over Caltrain Tracks	\$ 8.8
	103	North San Jose Bike/Ped Improvements: Connections to Guadalupe River Trail/Coyote Creek Trail/Alviso Neighborhood	\$ 37.9
	104	Park Avenue/San Fernando Street/San Antonio Bikeway	\$ 0.3
	105	Three Creeks Trail: West from Los Gatos Creek Trail/Lonus Street to Coyote Creek Trail	\$ 2.2
	106	Citywide Implementation- Several Projects from Bike Plan 2020	\$ 6.0
	107	Coyote Creek Trail (Montague Expwy to Old Oakland Road)	\$ 9.4
	108	Coyote Creek Trail (Old Oakland Road to Watson Park)	\$ 9.4
	109	Coyote Creek Trail (Watson Park to Williams Street Park)	\$ 6.3
	110	Coyote Creek Trail (William St Park to Kelley Park)	\$ 3.6
	111	Upper Penitencia Creek Trail Connector Phase 2: Berryessa BART to Coyote Creek	\$ 2.5
	112	Capitol Expwy Bike and Pedestrian Improvements from 1-680	\$ 5.4
	113	Almaden Expwy Bike and Pedestrian Improvements from Foxworthy Ave to Trinidad Dr	\$ 5.4
	114	Phelan Avenue Pedestrian & Bike Bridge over Coyote Creek	\$ 7.4
	115	Capitol Expressway at 1-680 Bike and Pedestrian Improvements	\$ 1.8
	116	Three Creeks Trail East from Guadalupe River to Coyote Creek Trail	\$ 48.7
	117	Coyote Creek Trail from Story Rd to Phelan through Kelley Park	\$ 2.7
	118	Bay Trail 9/9B: Lower Guadalupe River Trail connection	\$ 15.2
	119	Bay Trail: Alviso Frontage	\$ 32.5
	120	Coyote Creek Trail from Phelan Avenue to Tully Road	\$ 3.2
	121	Lower Guadalupe River Access Ramps	\$ 10.8
	122	Five Wounds Trail from William Street to Mabury Road/Berryessa	\$ 21.6
	123	Thompson Creek Trail from Quimby Road to County border	\$ 21.6
	124	Lower Silver Creek Trail from Coyote Creek Trail/Berryessa B Capitol Light Rail)	\$ 32.5
	125	San Jose Citywide ADA Curb Ramp Improvements	\$ 64.9
	126	San Jose Citywide Sidewalk Gap Closure- Phase I	\$ 50.0
	127	Guadalupe River Trail -Virginia to Blossom Hill Rd	\$ 20.5

ATTACHMENT A
BICYCLE AND PEDESTRIAN PROJECT LIST

Agency	#	Project Title	COST (\$M) in 2017
Santa Clara	128	Winchester Bicycle & Pedestrian Overcrossing	\$ 10.0
	129	Kiely Bicycle & Pedestrian Overcrossing	\$ 10.0
	130	Tasman Pedestrian Overcrossing	\$ 10.0
	131	Citywide Sidewalk Connections	\$ 55.0
	132	Benton St. Bike Lanes: Lawrence Expwy. to San Tomas Expwy	\$ 0.6
	133	Bowers Ave./Kiely Blvd. Bike Lanes: Cabrillo Ave. to Stevens Creek Blvd	\$ 1.0
	134	Calabazas Creek Trail: From SR 237 to Lochinar Ave.	\$ 23.5
	135	Lafayette St. Bike Lanes: Agnew Rd. to Reed St	\$ 1.2
	136	Lick Mill Blvd. Bike Lanes from Tasman Dr. to Hope Dr	\$ 0.3
	137	Mission College Blvd. Bike Lanes from Mission College Blvd. to Wildwood Ave. (City Limits)	\$ 0.3
	138	Pruneridge Ave. Bike Lanes: Pomeroy Ave. to Winchester Blvd.	\$ 0.9
	139	San Tomas Aquino Creek Spur Trail Phase 2: El Camino Real to Homestead Rd.	\$ 4.6
	140	Saratoga Ave. Bike Lanes: Los Padres Blvd. to San Tomas Expwy	\$ 0.3
	141	Saratoga Creek Trail: Cabrillo Ave. to Forbes Ave. and Undercrossing at Kiely Blvd. and Homestead Rd.	\$ 3.5
	142	Benton St. Bike Lanes: Monroe St. to Railroad Ave.	\$ 0.2
	143	De La Cruz Blvd. Bike Lanes: Central Expwy to Brokaw Rd	\$ 0.7
	144	Hetch-Hetchy Trail: Calabazas Creek to Lick Mill Blvd	\$ 6.6
	145	Lafayette St. Bike Lanes: Calle de Luna to Yerba Buena Way	\$ 0.3
	146	San Tomas Aquino Creek Trail Underpass at 49er Stadium	\$ 4.2
	147	Calabazas Boulevard Bike Lanes from Monroe Street to Cabrillo	\$ 0.3
	148	Monroe Street Bike Lanes from Lawrence Expressway to San Tomas-Aquino Creek	\$ 0.9
	149	San Tomas Aquino Creek Trail/Agnew Road At-grade Improvements	\$ 0.4
	150	San Tomas Aquino Creek Trail Pavement Rehabilitation Project	\$ 0.4
	151	San Tomas Aquino Creek Spur Trail Phase III along San Tomas Expressway from Homestead Rd to Stevens Creek Boulevard	\$ 8.5
	152	Class I Bicycle Parking (lockers)	\$ 0.5
	153	Class II Bicycle Parking (Racks)	\$ 0.2
	154	Pedestrian Connection Between Valley Fair Mall and Santana Row	\$ 10.0
Santa Clara County	155	Santa Teresa Blvd. Bicycle Delineation and Shoulder Widening (BEP Submittal)	\$ 0.6
	156	Watsonville Rd. Shoulders from Santa Teresa Blvd. to SR-152 (BEP Submittal)	\$ 7.9
	157	Oregon-Page Mill/I-280 interchange interim bike improvements (BEP Submittal)	\$ 0.2
	158	Fitzgerald Ave. Bicycle Shoulder widening from Santa Teresa Blvd. to Monterey Hwy. (BEP Submittal)	\$ 2.4
	159	Coyote Creek Trail: Hellyer Park to Malaguerra Ave (BEP Submittal)	\$ 3.2
	160	Trails in Expressway Rights-of-Way (BEP Submittal)	\$ 30.0
	161	Trails in County Roads Rights-of-Way (BEP Submittal)	\$ 55.0
	162	Popular Bicycle Rural Roads Improvements (BEP Submittal)	\$ 5.0
	163	McKean Rd. Shoulder Improvements: Harry Rd. to Bailey Ave. (BEP Submittal)	\$ 7.4
	164	Los Gatos Creek Trail: Lark Ave. to Blossom Hill Dr. (BEP Submittal)	\$ 1.8
	165	Doyle Rd bicycle and pedestrian trail connection to Saratoga Creek Trail (BEP Submittal)	\$ 0.5
	166	Safe Routes to School Direct Education Programming	\$ 55.0

ATTACHMENT A

BICYCLE AND PEDESTRIAN PROJECT LIST

Agency	#	Project Title	COST (\$M) in 2017
Santa Clara County	167	Countywide Safe Routes To School (SRTS) Coordination	\$ 48.5
Saratoga	168	Blue Hills School RR Crossing Safety Project	\$ 0.7
	169	Saratoga Ave Sidewalk Pedestrian Improvements	\$ 0.4
	170	Highway 9 Pedestrian Safety Improvement Project (Phase 5)	\$ 2.3
	171	Joe's Trail: Saratoga-Sunnyvale Rd to Prospect Rd	\$ 0.9
	172	Saratoga-to-the-Sea Trail: From Saratoga Village to Quarry Park	\$ 3.0
	173	Saratoga-to-the-Sea Trail: From Quarry Park to Sanborn Park	\$ 2.5
	174	Citywide Dedicated Bicycle Lanes	\$ 1.3
	175	Dedicated Bicycle Lanes on Prospect Road: From Stelling Rd to Fremont Older	\$ 2.7
	176	Lighted Crosswalk with Rapid Flash Beacons at Quito Rd and McCoy Ave	\$ 0.1
	177	Lighted Crosswalk with Rapid Flash Beacons at Cox Ave and Miller Ave	\$ 0.1
	178	Quito Rd sidewalk gap closure and Bike Lane Improvements: From SR 85 to Allendale Ave	\$ 0.3
Sunnyvale	179	Buildout of City's Bike Plan	\$ 5.0
	180	Build-out of City's Pedestrian and Safe Route to School Plans	\$ 5.0
	181	Fair Oaks / Tasman East Channel Trail from Greenbelt to Tasman Drive	\$ 0.7
	182	Fair Oaks Junction Trail from Arques Ave to Wolfe Road along East Channel Trail	\$ 0.2
	183	Olive Avenue Bike Lanes: Mathilda to Fair Oaks	\$ 0.02
	184	Belleville Way Bike Lanes and Bike Detection: Fremont to Homestead	\$ 0.1
	185	Bernardo Avenue Bike Lanes and Bike Detection: El Camino Real to Evelyn	\$ 0.2
	186	Bernardo Ave Bike Lanes and Bike Detection: Remington to Homestead	\$ 0.2
	187	Bernardo Avenue Caltrain Undercrossing: Evelyn Avenue to Central Expressway	\$ 9.8
	188	California Ave Bike Lanes and Bike Detection: Mary to Fair Oaks	\$ 0.2
	189	El Camino Real Bike Lanes: West City Limits to East City Limits (plus bike detection at 13 intersections)	\$ 0.4
	190	Fair Oaks Ave Bike Lanes, Medians, and Detection: Old San Francisco Road to Ahwanee Avenue	\$ 1.2
	191	Hollenbeck Avenue Bike Lanes and Bike Detection: Danforth Drive to Alberta Avenue	\$ 0.2
	192	Java Drive Bike Lanes and Bike Detection: Via Road Diet from Mathilda to Crossman Avenue	\$ 0.1
	193	Lakewood/Sandia Drive Bike Lanes	\$0.02
	194	Mary Avenue Bike Lanes: Fremont to Maude	\$ 1.8
	195	Mathilda Avenue Bike Lanes: US 101 to El Camino Real	\$ 4.1
	196	Maude Avenue Bike Lanes: Mathilda to Wolfe	\$ 0.8
	197	Moffett Park Area East Channel Trail and West Channel Trail	\$ 4.8
	198	Sunnyvale Stevens Creek Trail and Structures: Dale/Heatherstone to Homestead Road (2.5 mi bike path, 4 structures and 1.2 mi bike lane)	\$ 20.0
	199	Tasman Drive Bike Lanes and Bike Detection: Via Road Diet from Fair Oaks Avenue to Reamwood Drive	\$ 0.3
VTA	200	Upper Penitencia Creek Trail Connector Phase 1: Berryessa BART Station (OBAG)	\$ 2.12
	201	Capitol Caltrain Station Undercrossing	\$ 9.29
	202	Countywide Complete Streets Program	\$ 100.0
	203	Vision Zero Santa Clara County	\$ 100.0
	204	Countywide Bicycle Superhighway Program-Santa Clara County	\$ 325.0
	205	Implementation of Countywide Bicycle Plan	\$ 175.0
	206	First Mile-Last Mile Transit Connections: Bike Access	\$ 20.0
	207	First-Last Mile Transit Connections: Pedestrian Access to Transit Plan Implementation	\$ 35.0

ATTACHMENT A
BICYCLE AND PEDESTRIAN PROJECT LIST

Agency	#	Project Title	COST (\$M) in 2017
VTA/SJ	208	Capitol Expressway Pedestrian/Bicycle Crossing at Eastridge Transit Center	\$ 1.5
VTA/SJ/SC	209	Santa Clara Caltrain Station Undercrossing Extension	\$ 13.7
			\$ 2,208.6

ATTACHMENT A

ENVISION DUPLICATE PROJECTS

TRANSIT					Notes
	Campbell	Extend light-rail transit from Winchester Station to Route 85 (Vasona Junction)	\$ 176.0		Under VTA Transit Heading
		Implementation of Future Mass Transit Needs for Santa Clara County	\$ 25.0		Added to project list.
	Cupertino	Comprehensive Systems Study for Future Mass Transit in Santa Clara County	\$ 1.0		Added to project list.
		Caltrain Capacity Expansion - Santa Clara Portion	\$ 50.0		Captured under separate Caltrain Listing
		Future Mass Transit Needs for Santa Clara County	\$ 810.0		Added to project list.
	Los Altos	Future Mass Transit Needs for Santa Clara County Study	\$ 2.5		Added to project list.
	Los Gatos	Vasona Light Rail Project	\$ 10.0		Under VTA Transit Heading
	Mountain View	Caltrain Request for Station Improvements	\$ 165.0		Captured under separate Caltrain Listing
		Caltrain Request for Electrified, Modernized Trains/Station Modifications	\$ 430.0		Captured under separate Caltrain Listing
		Caltrain Request for System Performance and Reliability	\$ 162.0		Captured under separate Caltrain Listing
		Implementation Funding for Future Mass Transit Investments in Santa Clara County	\$ 750.0		Added to project list.
		Study of Mass Transit Needs for Santa Clara County	\$ 25.0		Added to project list.
	Palo Alto	Caltrain Station Improvements	\$ 44.0		Captured under separate Caltrain Listing
		Caltrain System Performance and Reliability	\$ 60.0		Captured under separate Caltrain Listing
		Electrified, Modernized Trains / Station Modifications (CalMod 2.0)	\$ 223.0		Captured under separate Caltrain Listing
		Future Mass Transit Needs for Santa Clara County Study	\$ 25.0		Added to project list.
	San Jose	Double Vasona Light Rail Corridor from Diridon to Fruitvale and Bascom to Campbell	\$ 65.1		Duplicate on VTA Transit List
	VTA	Caltrain Santa Clara County Safety/Grade Separation Program	\$1,592.0		Captured under individual City listings.

XPWY	Campbell	San Tomas/SR 17 Interchange Interim Improvements	\$ 2.0	On Highway List
	San Jose	Construct interchange at I-880 and Montague Expressway (includes improvements to Montague Expressway)	\$ 16.0	On Highway List
	Sunnyvale	Grade Separation - Lawrence Expressway and Homestead Road	\$ 100.0	On County Tier 1 List
		Grade Separation Lawrence Expressway from Reed/Monroe to Arques	\$ 440.0	On County Tier 1 List
	SC County	Montague Expressway and I-680 interchange modification and widening (Tier 2 Exp Plan 2040)	\$ 30.1	On Highway List
		Lawrence/Stevens Creek/I-280 Interchange (Tier 2 Exp Plan 2040)	\$ 120.2	On Highway List
		San Tomas Expressway at SR-17 Interim improvements (Tier 1 Exp Plan 2040)	\$ 1.6	On Highway List

ATTACHMENT A
ENVISION DUPLICATE PROJECTS

LSR	Santa Clara	Citywide Street Pavement Maintenance/Rehabilitation Project	\$ 65.0	Captured under LSR Pavement Program
	Gilroy	30-year unfunded Pavement Maintenance gap	\$ 125.0	Captured under LSR Pavement Program
	Morgan Hill	Santa Teresa/Hale Avenue Extension Project	\$ 13.8	Captured under Expwy List
SOM	San Jose	Silicon Valley TIMC - San Jose Police Department Integration	\$ 16.2	Removed per SJ
		Brokaw-Airport Area Advanced Traffic Management System	\$ 5.4	Removed per SJ
		SJ Citywide Count and Speed Monitoring System	\$ 10.8	Removed per SJ



Date: September 17, 2015
 Current Meeting: October 1, 2015
 Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
 Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Board Secretary, Elaine Baltao

SUBJECT: Appointments to the State Route (SR) 85 Corridor Policy Advisory Board

Policy-Related Action: No

Government Code Section 84308 Applies: No

ACTION ITEM

RECOMMENDATION:

Approve the appointments to the State Route 85 Corridor Policy Advisory Board.

BACKGROUND:

VTA policy advisory boards (PAB) are established by the VTA Board of Directors to ensure that the local jurisdictions most affected by major transportation capital improvement projects are involved and have a voice in guiding the planning, design and construction of those projects. PABS provide input, perspective and recommendations to the VTA Board and administration.

The Board established the State Route (SR) 85 Corridor PAB comprised of voting membership from jurisdictions within or near the corridor. These include the County of Santa Clara and the cities of Campbell, Cupertino, Los Altos, Los Gatos, Monte Sereno, Mountain View, San José, Saratoga and Sunnyvale. In addition, one ex-officio, non-voting member and alternate may be appointed by the California Department of Transportation (Caltrans).

The VTA Administrative Code provides that each of these voting positions, jurisdictions may appoint governing board members to serve as its representative and alternate member. All appointments by external bodies to VTA PABs require ratification by the Board of Directors.

DISCUSSION:

Submitted for Board ratification are appointments to the SR 85 Corridor PAB made by member jurisdictions. They are:

- Megan Satterlee, representing the City of Los Altos (Member)
- Jean Mordo, representing the City of Los Altos (Alternate Member)
- Bijan Sartipi, representing Caltrans (Ex-Officio Member)
- Dan McElhinney, representing Caltrans (Ex-Officio Alternate Member)

Individuals appointed to voting positions meet the requirement of being a current governing board member from the appointing jurisdiction.

ALTERNATIVES:

The Board could choose to not ratify any or all of these appointments.

FISCAL IMPACT:

There is no fiscal impact as a result of this action.

STANDING COMMITTEE DISCUSSION/RECOMMENDATION:

The Governance & Audit Committee will consider this item at its October 1, 2015 meeting, which immediately precedes the October Board of Directors meeting where this same item will be considered by the Board. Due to this, the Governance & Audit Committee's recommendation on this item will be verbally relayed to the Board during its consideration of this item.

Prepared by: Stephen Flynn, Advisory Committee Coordinator
Memo No. 5198



Date: September 23, 2015
 Current Meeting: October 1, 2015
 Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
 Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Director of Government Affairs, Jim Lawson

SUBJECT: Cooperative Agreement with the Peninsula Corridor Joint Powers Board (Caltrain) for real property acquisitions in Santa Clara County that are required for the Peninsula Corridor Electrification Project (PCEP)

Policy-Related Action: Yes

Government Code Section 84308 Applies: No

ACTION ITEM

RECOMMENDATION:

Authorize the General Manager to negotiate and execute a Cooperative Agreement (Agreement) with the Peninsula Corridor Joint Powers Board (Caltrain) regarding the parties' responsibilities for real property acquisitions in Santa Clara County that are required for the Peninsula Corridor Electrification Project (PCEP). This authorization would also permit staff to agendize hearings for its Board to consider the adoption of resolutions of necessity if negotiated acquisition activities were unsuccessful.

BACKGROUND:

The Santa Clara Valley Transportation Authority (VTA) is a member of the joint powers authority known as Caltrain. The PCEP will require real estate acquisitions for the construction and maintenance of the improvements constructed as part of the project. In Santa Clara County, the PCEP Final Environmental Impact Report, indicates up to 56 parcels may be impacted. All but two of the required property interests are slivers of parcels needed for placement of the poles or easements for the electric safety zone (ESZ). The other two properties will be required for traction power facilities.

DISCUSSION:

It is Caltrain's intent to acquire these parcels by negotiation. If negotiations are unsuccessful, it is Caltrain's intent to have those parcels acquired by eminent domain. However, Caltrain does not have the power of eminent domain in Santa Clara County. Therefore, Caltrain has requested

VTA, as a member of the joint powers authority, to perform that function under our statutory authority. VTA cannot, however, precommit to any eminent domain action in advance of the VTA Board's adoption of a resolution of necessity. As a result, VTA can only commit that its staff would agendize the public hearings for this Board to independently consider whether to adopt a resolution of necessity for the acquisition of the properties. Nothing herein would bind a future Board to authorize condemnation of any property.

A similar agreement was executed in September for San Mateo County and the one for San Francisco County will be executed in the coming months. The Cooperative Agreement sets forth the process by which VTA will work with Caltrain to acquire the property interests by negotiation as well as the process by which VTA will consider requisite property condemnations on behalf of, and in coordination with Caltrain. The costs of all property acquisitions, as well as attorneys' fees and consultant costs, related to any condemnation shall be solely borne by Caltrain.

A Cooperative Agreement was used successfully by VTA and Caltrain in connection with prior projects. About 10 years ago, a Cooperative Agreement effectively coordinated efforts between VTA and Caltrain to acquire necessary property interests for the Centralized Equipment Maintenance and Operations Facility (CEMOF) project in the City of San José through eminent domain. More recently, Caltrain worked with SamTrans under a Cooperative Agreement to acquire certain property interests needed for the San Bruno Grade Separation Project.

ALTERNATIVES:

The Board could chose to decline granting this authority to the General Manager. This would negatively impact the Board's previous support of the PCEP. Without this agreement it is unlikely that Caltrain would be able to advance the PCEP.

FISCAL IMPACT:

The cost of acquiring the real estate and easements is the responsibility of Caltrain and as a member of the joint powers authority, VTA may be responsible for a portion of those costs. However, the authorization of VTA to undertake eminent domain proceedings on Caltrain's behalf is not expected to impact the overall cost or VTA's share. VTA may incur some minor administrative costs. Extraordinary costs of administering the program (if any) will be funded by Caltrain.

Prepared by: Jim Lawson
Memo No. 5219



Date: September 24, 2015
 Current Meeting: October 1, 2015
 Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
 Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Chief Financial Officer, Raj Srinath

SUBJECT: Annual Operations Insurance Renewal Report for Fiscal Year 2015-2016

FOR INFORMATION ONLY

BACKGROUND:

On May 7, 2015, the Board of Directors authorized the purchase of the FY 2015-2016 Operations Insurance Program for an amount not to exceed \$3,575,000. We advised the Board that specific premium quotes from potential Insurance Carriers were not available in May due to conditions in the insurance market in which underwriters were only willing to review policy applications and provide premium quotes for thirty (30) days prior to the renewal date of July 1, 2015. Therefore, the Board provided purchasing authority based on an estimated cost range developed by Alliant, VTA's insurance broker.

This memorandum provides a summary of VTA's FY 2015-2016 transit operations insurance program. The transit operations insurance program provides VTA with coverage for claims of loss arising out of General Liability, Auto Liability, Public Officials/Employment Practices Liability, Cyber and Environmental/Pollution Liability as well as Real Property, Boiler & Machinery, Bus and Light Rail Vehicles, Vans and Mobile Equipment. VTA's River Oaks Campus and the Cerone Facilities have been insured for flood damage through a stand-alone insurance program.

DISCUSSION:

During the marketing process VTA's broker, Alliant Insurance Services, solicited premium quotes from numerous domestic and international insurance companies that provided the best protection from risk, at a competitive premium and within VTA's tolerance to absorb or transfer the risk's financial responsibility. The insurance market for transit risks continues to be a very narrow group of insurers. Thus, some insurance markets refrained from quoting due to limited capacity, decisions to withdraw for the California market, and/or the inability to provide competitive premium quotes for risks inherent to the public sector and transit agencies.

Ultimately, Insurance Carriers were selected based on premium cost and coverage criteria, underwriting background, their historical track record of insuring governmental agencies, their adequacy of financial reserves as well as possessing an A.M. Best insurance carrier rating of “Excellent” or better.

Coverage was bound and annual policies were purchased with an effective date of July 1, 2015 and an expiration date of July 1, 2016.

The total premium cost for the FY 2015/2016 Operations Insurance Program is \$3,301,391 which is \$273,609 less than what was authorized by the Board I May, 2015. While the premium for the overall insurance program increased by \$168,447 over the expiring program, three new insurance policies were added, namely, crime, cyber and environmental/pollution liability. In addition, Real Property values and bus inventory values increased from the prior year due to updated real estate appraisals and new bus acquisitions. For 2015-2016, VTA’s real property insurance limits were increased from \$70,000,000 to \$80,000,000 to reflect the increases in real property values. Lastly, overall coverage was broadened through a number of enhancements providing added protection to VTA in the event of an unforeseen property loss.

The bus and rail fleet inventories will be audited quarterly to allow for premium adjustments for reductions or additions in fleet size, including the retirement and/or replacement of older standard buses and the addition of new hybrid buses.

See Attachment A for a summary of the FY 2015/2016 Insurance Program.

Prepared By: Raj Srinath
Memo No. 5196

LIABILITY COVERAGE STRUCTURE

July 1, 2015 to July 1, 2016



\$100M	<u>4th Layer (\$50M x \$50M)</u> Aggregate Limit \$50M Apollo (Lloyd's) – 12.5% Torus – 12.5% Steadfast (Zurich) – 10% XL Dublin – 40% Argo Re – 25%	Premium: \$332,760 Per M: \$6,655 Terrorism: Excluded
\$50M	<u>3rd Layer (\$25M x \$25M)</u> Aggregate Limit \$25M AWAC Bermuda - 100%	Premium: \$342,400 Per M: \$13,696 Terrorism: Excluded
\$25M	<u>2nd Layer (\$20M x \$5M)</u> Aggregate Limit \$20M Steadfast (Zurich NA) – 25% Ironshore (Lloyd's) – 25% Aspen (Lloyds) - 22% Aegis (Lloyd's) – 18% Apollo (Lloyd's) – 10%	Premium: \$1,185,880 Per M: \$59,294 Terrorism: Included
\$5M	<u>1st Layer (\$2M x \$3M)</u> Aggregate Limit \$2M Princeton E&S (Munich Re) - \$2M	Premium: \$419,869 Per M: \$209,935 Terrorism: Included
	<u>Self Insured Retention (\$3M)</u> VTA	

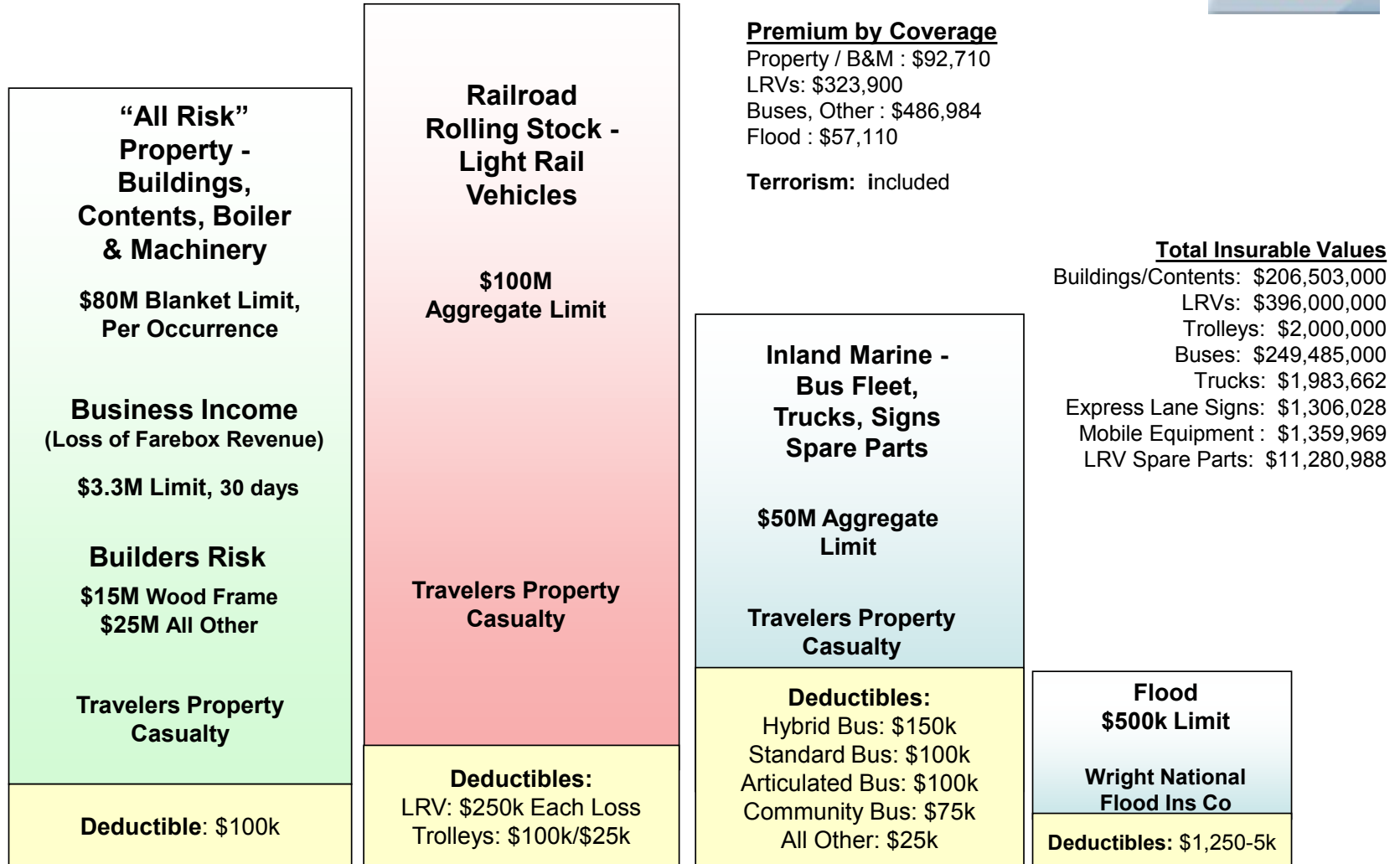


Not to Scale

6.13.a

PROPERTY / INLAND MARINE COVERAGE STRUCTURE

July 1, 2015 to July 1, 2016



Not to Scale

EXHIBIT F

NEW COVERAGES ADDED - CRIME, CYBER, POLLUTION & TANK LIABILITY COVERAGES

July 1, 2015 to July 1, 2016



Premium by Coverage (at inception)

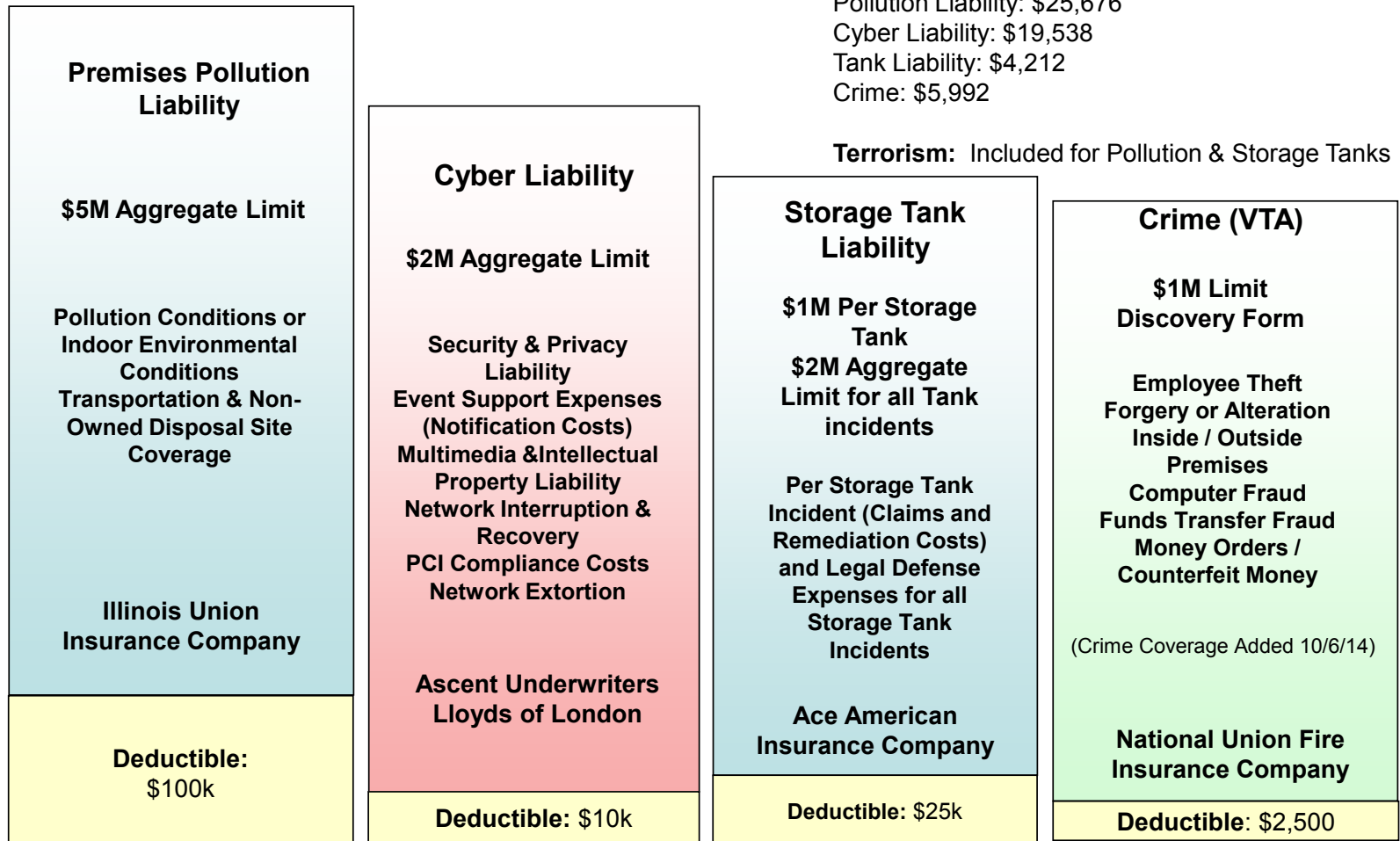
Pollution Liability: \$25,676

Cyber Liability: \$19,538

Tank Liability: \$4,212

Crime: \$5,992

Terrorism: Included for Pollution & Storage Tanks



Not to Scale



Date: September 9, 2015
 Current Meeting: October 1, 2015
 Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
 Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Director of Government Affairs, Jim Lawson

SUBJECT: Legislative Update Matrix

FOR INFORMATION ONLY

BACKGROUND:

The Legislative Update Matrix describes the key bills that are being considered by the California State Legislature during the 2015-2016 regular session, as well as the 2015 special session called by Gov. Jerry Brown to address issues related to transportation funding. The matrix indicates the status of these measures and any VTA positions with regard to them.

DISCUSSION:

The Legislature reconvened on August 17, 2015, following a month-long summer recess. Pursuant to the state Constitution, the regular session is scheduled to end at midnight on September 11, 2015. Any measures not sent to Gov. Brown by that deadline would become “two-year bills” and may be reconsidered next year.

Running concurrent with the regular session is a special session that the Governor called to focus the Legislature’s attention on addressing the significant funding shortfalls that exist for maintenance and rehabilitation work on both the state highway and local roadway systems. While the special session may extend beyond September 11, there are no plans on the part of either Gov. Brown or the legislative leadership to keep senators and Assemblymembers in Sacramento after that date.

Transportation Funding Special Session: New life was breathed into the special session on September 3, 2015, when the Brown Administration announced a plan that includes roughly \$3 billion per year in new funding for transportation, plus one-time infusions of \$500 million in cap-and-trade auction proceeds and \$876 million through the repayment of loans owed by the General Fund to various transportation accounts. The Governor’s announcement was the first sign of progress in the special session since SBX1-1 (Beall) was introduced on June 22, 2015.

Gov. Brown's plan calls for annually investing:

- \$1.6 billion for maintenance and rehabilitation of state highways.
- \$1.05 billion for local streets/roads.
- \$250 million for a State-Local Partnership Program to reward counties that impose voter approved taxes or fees for transportation purposes.
- \$200 million for trade corridors.

The revenues for these investments would be generated by increasing the diesel excise tax by 11 cents per gallon, indexing both the gasoline and diesel excise taxes for inflation, and imposing a new road improvement charge of \$65 per year on all motor vehicles to be collected by the Department of Motor Vehicles (DMV) as part of the annual vehicle registration process.

The \$500 million in one-time cap-and-trade auction proceeds would be distributed to the Transit and Intercity Rail Capital Program (\$400 million), and to a new, competitive Low Carbon Road Program for complete streets and other city and county roadway projects that reduce greenhouse gas emissions (\$100 million).

The \$876 million in General Fund loan repayments would be allocated as follows:

- \$334 million for trade corridors.
- \$265 million for the Transit and Intercity Rail Capital Program.
- \$132 million for state highways.
- \$148 million for the state's Traffic Congestion Relief Program.

Meanwhile, SBX1-1 calls for generating approximately \$4 billion-\$5 billion a year in new transportation revenues through five different tax and fee increases, with the revenues being targeted for maintenance and rehabilitation work on the state highway and local roadway systems, and for goods movement projects programmed by the California Transportation Commission (CTC) under the existing Trade Corridors Improvement Fund.

Given that both Gov. Brown's plan and SBX1-1 require a two-thirds vote of the Legislature, much attention is being focused on finding the necessary Republican votes, while ensuring that moderate Democrats representing competitive Senate and Assembly districts do not defect. So far, the Assembly and Senate GOP caucuses have been holding firm in their opposition to any transportation funding legislation that would impose new taxes or fees.

In addition, Republicans have countered with their own package of bills that would do the following: (1) allow for the use of cap-and-trade auction proceeds for state highways and local streets/roads; (2) make existing statutory authority for using public-private partnerships for transportation projects permanent; (3) convert the State Transportation Improvement Program (STIP) to block grants; (4) create an Office of the Transportation Inspector General to audit and, if necessary, investigate the California High-Speed Rail Authority and Caltrans to ensure that they are operating efficiently, effectively, and in compliance with federal and state laws; (5) provide an exemption from the California Environmental Quality Act (CEQA) for projects

occurring within existing rights-of-way; (6) pull the CTC out from under the California State Transportation Agency (CalSTA) and re-establish it as a separate state government entity; and (7) require Caltrans to contract out a certain percentage of engineering work.

Also a high priority for Republicans is SCAX1-1 (Huff), a constitutional amendment that would protect taxes and fees imposed on motor vehicles from being loaned to the General Fund, from being used to pay for general obligation bond debt service, or from being diverted to other non-transportation purposes. If enacted, this constitutional amendment, among other things, would end the current practice of using \$1 billion in annual vehicle weight fees revenues for bond debt service, and require any increase in the vehicle license fee above the current 0.65 percent of the market value of a vehicle to be dedicated for transportation purposes, rather than distributed to the General Fund.

Express Lanes: AB 194 (Frazier) establishes a process that would allow VTA and other regional transportation agencies, as defined, to submit applications for constructing and operating express lanes and other toll facilities on the state highway system within their respective jurisdictions to the CTC for review and approval. While several agencies in California, including VTA, have existing statutory authority to implement express lanes on the state highway system, the number of corridors that each agency can pursue is capped. Given the success of the express lanes that are currently in operation in California, as well as a growing interest on the part of communities throughout the state to build out full express lane networks, there is a need to put in place a way for VTA and other regional transportation agencies to implement additional express lanes, as well as other toll facilities, without having to seek specific legislative authorization on a corridor-by-corridor basis. AB 194 would accomplish this objective.

Transit and Intercity Rail Capital Program: SB 9 (Beall) proposes to incorporate into the Transit and Intercity Rail Capital Program several concepts that have been successfully used for other federal and state transportation funding programs. For example, SB 9 requires CalSTA, which is responsible for selecting the projects to be funded, to develop a five-year program of projects (to be updated every two years), rather than initiating a new competitive process every fiscal year. This approach is used for the STIP. In addition, SB 9 authorizes CalSTA to enter into multi-year agreements with public transit agencies for projects that are proposed to be funded over more than one fiscal year. This approach is used by the Federal Transit Administration (FTA) for the New Starts/Small Starts Program. Finally, the legislation enables a public transit agency that is seeking Transit and Intercity Rail Capital Program funding for a multi-year project to obtain a Letter of No Prejudice (LONP) from CalSTA, thereby allowing the transit agency to advance its project using local dollars and to be reimbursed with state money. LONPs are commonly used at the federal level, and have been authorized through prior legislation for the state's various Proposition 1B programs and for the state's Traffic Congestion Relief Program (TCRP). The combination of these provisions in SB 9 would open the door for the Transit and Intercity Rail Capital Program to better accommodate large transit expansion projects, such as Phase 2 of VTA's BART Silicon Valley Extension Project.

Bus Axle Weights: AB 1250 (Bloom) permanently exempts all public transit buses that were purchased through a solicitation issued after January 1, 2013, and before January 1, 2016, from

the state's single axle weight limit to ensure that these buses would be able to continue to operate legally. Buses procured through a solicitation issued before January 1, 2013, already are excluded from the limit. For public transit buses procured through a solicitation issued after January 1, 2016, AB 1250 replaces the existing gross weight limit with a new unladen weight limit of 25,000 pounds per single axle. To push manufacturers to design and build increasingly lighter buses over time, AB 1250 gradually reduces this unladen weight limit until it reaches 22,000 pounds per single axle on January 1, 2022.

Negotiations involving the California Transit Association, the League of California Cities and the California State Association of Counties (CSAC) are still taking place on the following two issues: (1) whether articulated buses should be treated differently; and (2) how to best account for purchase contracts and their corresponding delivery schedules for public transit buses that are being manufactured through solicitations issued after January 1, 2013, and before January 1, 2016. It is likely that AB 1250 will need to be amended on the Senate Floor before the bill is taken up for a vote.

Passenger Misconduct Violations: SB 413 (Wieckowski) makes several changes to state statutes governing prohibited conduct on public transit vehicles. Of particular interest to VTA are provisions in the bill that would allow a public transit agency to issue citations to passengers who refuse to yield seating reserved for seniors and disabled persons, if the agency's governing board enacts an ordinance to that effect.

TDA and STA: SB 508 (Beall) updates existing state law pertaining to public transit funding under the Transportation Development Act (TDA) and STA. The bill clarifies that liability insurance and settlement payments; fuel; alternative fuel programs; power, including electricity; and federal and state mandates are excluded from the definition of operating costs when determining whether a public transit agency meets the farebox recovery and efficiency requirements for TDA and STA funding. These provisions would ensure that an agency's TDA and STA funds are not jeopardized because of sudden, unplanned and unavoidable operating cost increases resulting from external factors that the agency cannot reasonably control.

In addition, SB 508 attempts to lessen the impact to a public transit agency's operating budget if the agency fails to meet the STA efficiency standard. Under current state law, a public transit agency is prohibited from using its formula share of STA funds for operating purposes if its total operating cost per revenue vehicle hour, as adjusted by the Consumer Price Index, exceeds the previous year's cost or, alternatively, the average of the prior three years. In such cases, the public transit agency can spend its STA funds only on capital projects. This efficiency measure is set up as a "pass/fail" standard, meaning that if a public transit agency exceeds the standard by even the smallest of margins, it cannot use any of its STA formula share for operating purposes. SB 508 would, instead, put in place a proportional penalty. For example, under the provisions of this measure, if a public transit agency were to exceed the standard by 5 percent, it could not use 5 percent of its STA formula share for operating purposes.

Local Sales Taxes: Unexpectedly, Gov. Brown vetoed AB 464 (Mullin), which would have raised the combined rate of all local option transactions and use taxes that could be imposed in a county from 2 percent to 3 percent. In a very brief veto message, the Governor wrote, "I am

reluctant to approve this measure in view of all the taxes being discussed and proposed for the 2016 ballot.” In Santa Clara County, the current room under the 2 percent cap is $\frac{1}{2}$ percent in the city of Campbell and $\frac{3}{4}$ percent elsewhere.

Climate Change: There are two major climate change bills under consideration by the Legislature. The first is SB 350 (de Leon), which sets the following three targets to be achieved by 2030: (1) reducing petroleum use in motor vehicles by 50 percent; (2) doubling the energy efficiency of buildings; and (3) increasing retail sales of renewable electricity to 50 percent. The other measure is SB 32 (Pavley), which requires the California Air Resources Board (CARB) to establish statewide greenhouse gas emissions limits equivalent to the following: (1) 40 percent below the 1990 level to be achieved by 2030; and (2) 80 percent below the 1990 level to be achieved by 2050.

Prepared By: Kurt Evans, Government Affairs Manager
Memo No. 4972

LEGISLATIVE UPDATE
2015 - 2016 State Legislative Session
September 4, 2015

2015 Regular Session Calendar

DAY	JANUARY
1	Statutes signed into law in 2014 take effect.
5	Legislature reconvenes.
10	Budget must be submitted by the Governor to the Legislature on or before this date.
30	Last day to submit bill requests to the Legislative Counsel's Office.

DAY	FEBRUARY
27	Last day for new bills to be introduced.

DAY	MARCH
26	Spring Recess begins upon adjournment.

DAY	APRIL
6	Legislature reconvenes from Spring Recess.

DAY	MAY
1	Last day for policy committees to hear and report fiscal bills introduced in their house of origin.
15	Last day for policy committees to hear and report to the floor non-fiscal bills introduced in their house of origin.
29	Last day for fiscal committees to hear and report to the floor bills introduced in their house of origin.

DAY	JUNE
5	Last day for bills to be passed out of their house of origin.
15	Budget must be passed by midnight.

DAY	JULY
17	Last day for policy committees to hear and report bills introduced in the other house. Summer Recess begins upon adjournment, provided that the Budget Bill has been enacted.

DAY	AUGUST
17	Legislature reconvenes from Summer Recess.
28	Last day for fiscal committees to hear and report to the floor bills introduced in the other house.

DAY	SEPTEMBER
4	Last day to amend bills on the Assembly and Senate floors.
11	Last day for each house to pass bills. Interim Study Recess begins at the end of this day's session.

DAY	OCTOBER
11	Last day for the Governor to sign or veto bills passed by the Legislature before September 11, and in his possession after September 11.

DAY	JANUARY 2016
1	Statutes signed into law in 2015 take effect.
6	Legislature reconvenes.

State Assembly Bills

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 2 (Alejo) Community Revitalization and Investment Authorities	Authorizes cities, counties and special districts to establish community revitalization and investment authorities to invest property tax increment revenues to carry out provisions of the state's Community Development law for purposes related to infrastructure, affordable housing and economic revitalization. Prohibits a school entity from participating in a community revitalization and investment authority. Prohibits a city or county that created a redevelopment agency that was dissolved from forming a community revitalization and investment authority until the successor agency or designated local authority for the former redevelopment agency has received a finding of completion from the Department of Finance that the former redevelopment agency is fully dissolved. Requires at least 80 percent of the land calculated by census tracts within the area for which a community revitalization and investment authority is proposed to be formed to be characterized by both of the following conditions: (1) an annual median household income that is less than 80 percent of the statewide annual median income; and (2) three of the following four conditions: non-seasonal unemployment that is at least 3 percent higher than statewide median unemployment, crime rates that are 5 percent higher than the statewide median crime rate, deteriorated or inadequate infrastructure, or deteriorated commercial or residential structures. Allows a community revitalization and investment authority to do the following: (1) provide funding to rehabilitate, repair, upgrade, or construct infrastructure; (2) remedy or remove a release of hazardous substances pursuant to the Polanco Redevelopment Act; (3) provide for seismic retrofits of existing buildings; (4) acquire and transfer property pursuant to eminent domain; (5) adopt a community revitalization and investment plan; (6) make loans or grants for owners or tenants to improve, rehabilitate or retrofit buildings or structures in the plan area; (7) construct foundations, platforms and other like structural forms necessary for the provision or utilization of air rights sites for buildings to be used for residential, commercial industrial or other uses contemplated by the community revitalization and investment plan; and (8) provide direct assistance to businesses within the plan area in connection with new or existing facilities for industrial or manufacturing uses. Allows a community revitalization and investment authority to receive property tax increment revenues from only those affected taxing entities that have adopted a resolution approving the authority's investment plan. Requires a community revitalization and investment authority to adopt a program that prohibits the number of housing units for extremely low-income, very-low-income and low-income households in the investment plan area from being reduced during the effective period of the plan. Requires the replacement of such housing units within two years of their displacement. Every 10 years, requires a community revitalization and investment authority to conduct a protest proceeding to consider whether the property owners within the area wish for the authority to continue to take further actions to implement its investment plan. Every five years, requires a community revitalization and investment authority to contract for an independent audit with respect to the maintenance and replacement of affordable housing.	7/7/15	Senate Floor	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 4 (Linder) Vehicle Weight Fee Revenues	Until January 1, 2020, prohibits vehicle weight fee revenues from being used to pay debt service for transportation-related, general obligation bonds or from being loaned to the General Fund.	As Introduced	Assembly Transportation Committee	Support
AB 6 (Wilk) High-Speed Rail: Bond Funding	Specifies that no further bonds shall be sold for high-speed rail purposes pursuant to the Safe, Reliable High-Speed Passenger Train Bond Act for the 21 st Century (Proposition 1A), except as specifically provided with respect to an existing appropriation for early improvement projects related to the Phase I blended system. Upon appropriation by the Legislature, requires the unspent proceeds received from outstanding bonds issued and sold for high-speed rail purposes prior to the effective date of the provisions of this bill to be redirected to retiring the debt incurred from the issuance and sale of those outstanding bonds. Allows the remaining unissued bonds, as of the effective date of the provisions of this bill, that were authorized for high-speed rail purposes to be issued and sold. Upon appropriation by the Legislature, requires the net proceeds from the sale of these remaining unissued bonds to be made available to fund the construction of school facilities for K-12 and higher education. Makes no changes to the authorization under Proposition 1A for the issuance of \$950 million in bonds for rail purposes other than high-speed rail.	As Introduced	Assembly Transportation Committee	
AB 12 (Cooley) State Agency Regulations	By January 1, 2018, requires each state agency to do all of the following: (1) review all provisions of the California Code of Regulations adopted by that state agency; (2) identify any regulations that are duplicative, overlapping, inconsistent, or out-of-date; and (3) adopt, amend or repeal regulations to reconcile or eliminate any duplication, overlap, inconsistencies, or out-of-date provisions.	8/19/15	Senate Appropriations Committee	
AB 21 (Perea) Global Warming Solutions Act of 2006: Scoping Plan	In preparing the scoping plan for reducing greenhouse gas emissions in the state pursuant to the Global Warming Solutions Act of 2006, requires the California Air Resources Board (CARB) to consider the facilitation of the electrification of the transportation sector.	5/5/15	Senate Floor	
AB 23 (Patterson) Cap-and-Trade: Transportation Fuels	Prohibits the inclusion of suppliers of transportation fuels in the cap-and-trade system administered by the California Air Resources Board (CARB). Applies the provisions of the bill retroactively from January 1, 2015.	As Introduced	Assembly Natural Resources Committee	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 24 (Nazarian) Transportation Network Companies: Public Safety Requirements	Requires a transportation network company to do all of the following: (1) participate in the Department of Motor Vehicles (DMV) pull-notice system to regularly check the driving records of all participating drivers; (2) register any vehicle used to transport passengers for compensation with the California Public Utilities Commission (CPUC) and display an identifying symbol prescribed by the CPUC on the vehicle; and (3) provide for a mandatory controlled substance and alcohol testing certification program as adopted by the CPUC. Requires drivers hired or initially retained by a transportation network company on or after January 1, 2016, to be subject to mandatory drug and alcohol testing prior to employment or retention. For drivers hired or initially retained before January 1, 2016, requires a drug and alcohol test to be completed before January 1, 2017.	4/22/15	Assembly Appropriations Committee	
AB 28 (Chu) Bicycle Safety: Rear Lights	Requires a bicycle operated during darkness upon a highway, sidewalk or bikeway to be equipped with a rear red reflector, or a solid or flashing red light with a built-in reflector on the rear that is visible from a distance of 500 feet to the rear when the bicycle is directly in front of lawful upper beams of headlamps on a motor vehicle.	8/31/15	Governor's Office	
AB 33 (Quirk) Energy Sector Emissions Reduction Advisory Council	Establishes the Energy Sector Emissions Reduction Advisory Council. Requires the council to recommend strategies for the electricity sector, other than and in addition to any market-based mechanism, for incorporation into the California Air Resources Board (CARB) scoping plan for reducing greenhouse gas emissions. Requires the recommendations to be based on the conclusions from all of the following analyses to be performed by the council: (1) an analysis of the various strategies that could be implemented to reduce greenhouse gas emissions from the electricity sector and integrate increasing amounts of renewable energy into the electricity grid; (2) an economic analysis using the best available models and data of the various strategies identified; and (3) an analysis of the benefits to the health, safety and welfare of state residents, worker safety, the state's environment and quality of life, and any other benefits associated with the various strategies identified. Requires the council to put together a schedule that would ensure that its recommendations and analyses are delivered to CARB early enough to be considered during the development of the next scoping plan update. Provides that the council shall cease to exist as of the end of the following December 31 after it delivers its recommendations and analyses to CARB.	8/18/15	Senate Floor	
AB 40 (Ting) Toll Bridges: Pedestrians and Bicyclists	Prohibits imposing a toll on the passage of a pedestrian or bicycle over the Golden Gate Bridge or any state-owned toll bridge where the travel of pedestrians and bicyclists is otherwise authorized.	4/15/15	Senate Floor	
AB 51 (Quirk) Motorcycles: Lane Splitting	Allows a motorcycle that has two wheels in contact with the ground to be driven between rows of stopped or moving vehicles in the same lane, including both divided and undivided streets, roads or highways, if both of the following conditions are present: (1) the motorcycle is not driven at a speed of more than 50 miles per hour (mph); and (2) the motorcycle is not driven more than 15 mph faster than the speed of traffic moving in the same direction. Specifies that the provisions of the bill do not authorize a motorcycle to be driven in contravention of other laws relating to the safe operation of a vehicle.	5/22/15	Senate Transportation & Housing Committee	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 61 (Allen) Private Shuttles	Allows a public transit agency, by ordinance or resolution, to permit the vehicles of a private shuttle service provider to stop for the loading or unloading of its passengers alongside any or all curb spaces designated for the passengers of the public transit agency's buses. States that it is not the intent of the Legislature to replace public transit service.	4/20/15	Assembly Transportation Committee	
AB 95 (Budget Committee) Transportation Budget Trailer Bill	Provides for the statutory changes necessary to implement the transportation elements of the FY 2016 Budget Act. Extends until July 1, 2016, the current suspension of a provision that restricts a public transit agency from using State Transit Assistance (STA) funding for operations if its operating costs have increased by more than the Consumer Price Index (CPI). Eliminates the Transportation Investment Fund and the Pedestrian Safety Account, and transfers their assets and liabilities to the State Highway Account. Modifies the qualification requirements of certain High-Speed Rail Peer Review Group member positions to broaden eligibility to include experience with large infrastructure projects and with governing intercity or commuter passenger train services. Simplifies the California High-Speed Rail Authority's reporting requirements to align with the release of its Business Plan, which is every other year. By April 1, 2016, requires Caltrans to submit a report to the Legislature on the potential benefits to safety, greenhouse gas emissions reductions, service levels, and operating costs that would result by improving grade separations at key intersections, as defined by the Federal Railroad Administration (FRA), along the state's intercity rail corridors. Increases the number of green stickers that can be issued by the Department of Motor Vehicles (DMV) to allow certain low-emission and fuel-efficient vehicles to use high-occupancy vehicle (HOV) lanes regardless of the number of occupants from 70,000 to 85,000.	6/11/15	Signed into Law: Chapter #12	
AB 102 (Rodriguez) Railroad and Surface Transportation Safety and Emergency Planning	Requires the Office of Emergency Services to develop a state regional railroad and surface transportation accident preparedness and immediate response plan. Requires the office to biennially review the training of all emergency response personnel with responsibilities along rail lines and other surface transportation routes to ascertain the level of readiness to respond to an accident involving hazardous materials. As part of this review, requires the office to determine where there are gaps in the ability to respond to spills of hazardous materials in California, and to specify what is required to continue funding the training and response teams to close those gaps. Creates the Regional Railroad and Surface Transportation Accident Preparedness and Immediate Response Force within the Office of Emergency Services. Requires the force to be responsible for providing regional and onsite response capabilities in the event of: (1) a release of hazardous materials from a rail car, or a railroad accident involving a rail car; or (2) a hazardous materials release from a truck accident. Requires the Office of Emergency Services to establish a schedule of fees to be impose on any person owning hazardous materials that are transported by rail or surface transportation in California. Upon appropriation by the Legislature, requires the revenues generated by these fees to be used for purposes related to the transportation of hazardous materials. Requires every person who operates a railroad that transports hazardous materials by rail car to register with the Board of Equalization.	3/26/15	Assembly Environmental Safety & Toxic Materials Committee	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 156 (Perea) Cap-and-Trade: Disadvantaged Communities Technical Assistance Program	Requires the California Air Resources Board (CARB) to prepare and post on its Internet Web site a report on the projects being funded with cap-and-trade auction proceeds from the Greenhouse Gas Reduction Fund. Requires this report to include all of the following: (1) a general description of each project; (2) the location where each project will be implemented; (3) the estimated date of completion of each project; (4) the amount awarded to each project; and (5) the status of any revenues in the Greenhouse Gas Reduction Fund not awarded to projects and the reasons why those moneys have not been awarded. Upon an appropriation of cap-and-trade auction proceeds from the Greenhouse Gas Reduction Fund, requires CARB to establish a comprehensive technical assistance program for eligible applicants assisting disadvantaged communities that CARB determines require technical assistance in accessing programs funded with cap-and-trade auction proceeds. Requires this program to provide assistance to eligible applicants with regard to any of the following: (1) identifying state agencies with appropriate grant programs; (2) developing competitive project proposals to apply for cap-and-trade funding available through state agencies; (3) coordinating existing local programs to reduce greenhouse gas emissions with new programs receiving cap-and-trade funding; or (4) conducting community outreach to residents of disadvantaged communities that CARB determines require such assistance. Requires the technical assistance provided pursuant to the bill to promote programs that reduce greenhouse gas emissions and demonstrate a direct, meaningful benefit to disadvantaged communities.	8/18/15	Senate Appropriations Committee	
AB 157 (Levine) Richmond-San Rafael Bridge	If the Metropolitan Transportation Commission (MTC) and Caltrans develop a project to open the third lane on the Richmond-San Rafael Bridge to automobile traffic on the eastbound level and to bicycle traffic on the westbound level, allows the lead agency for the project, to the extent feasible, to complete the design work for the project simultaneously with the environmental review conducted pursuant to the California Environmental Quality Act (CEQA).	6/25/15	Governor's Office	
AB 162 (Rodriguez) State Highways: Wrong-Way Driving	Requires Caltrans, in consultation with the California Highway Patrol (CHP), to update a 1989 report on wrong-way driving on state highways. Requires this update to: (1) account for technological advancements and innovations that have occurred since the publication of the 1989 report; and (2) include a review of methods studied or implemented by other jurisdictions or non-governmental entities to prevent wrong-way drivers from entering state highways. Requires the update to identify any additional treatments and technologies that have the potential to reduce the number of instances of wrong-way driving on state highways, as well as a plan to incorporate those treatments and technologies into Caltrans' Wrong-Way Monitoring and Mitigation Program for the state highway system.	5/19/15	Signed into Law: Chapter #101	
AB 169 (Maienschein) Local Governments: Posting of Public Records on the Internet	Requires a public record voluntarily posted by a local agency on an Internet Resource that is described or titled as "open data" to be: (1) retrievable, downloadable, indexable, and electronically searchable by commonly used Internet search applications; (2) platform independent and machine readable; (3) available to the public free of charge and without restriction that would impede the reuse or redistribution of the public record; and (4) able to retain the data definitions and structure present when the data was compiled, if applicable. Specifies that the provisions of the bill do not apply to a school district.	6/18/15	Governor's Office	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 194 (Frazier) Express Lanes and Toll Facilities	Authorizes the California Transportation Commission (CTC) to review and approve an unlimited number of project applications submitted to the commission by regional transportation agencies, including the Santa Clara Valley Transportation Authority (VTA), and Caltrans for constructing and operating express lanes and other toll facilities on the state highway system pursuant to eligibility criteria set forth in guidelines established by the commission. At a minimum, requires the eligibility criteria to include the following: (1) a demonstration that the proposed toll facility will improve the state highway corridor's performance; (2) a requirement that the proposed toll facility is contained in the constrained portion of the applicable regional transportation plan (RTP); (3) evidence of cooperation between the applicable regional transportation agency and Caltrans; (4) a requirement that a project initiation document has been completed for the proposed toll facility; and (5) a demonstration that a complete funding plan has been prepared. For each application submitted, requires the CTC to conduct at least one public hearing at or near the proposed toll facility. Requires a regional transportation agency that submits an application to the CTC to reimburse the commission for all of its costs and expenses incurred in processing the application. Requires toll facilities approved by the CTC on or after January 1, 2016, to be subject to the following minimum requirements: (1) a regional transportation agency sponsoring a toll facility shall enter into an agreement with the California Highway Patrol (CHP) that addresses all law enforcement matters related to the toll facility; (2) a regional transportation agency sponsoring a toll facility shall enter into an agreement with Caltrans that addresses all matters related to the design, construction, maintenance, and operation of the toll facility; (3) a regional transportation agency sponsoring a toll facility shall be responsible for reimbursing Caltrans and the CHP for their costs related to the toll facility pursuant to agreements between the agency, and Caltrans and the CHP; and (4) the agency sponsoring the toll facility shall be responsible for establishing, collecting and administering the tolls. Provides that the revenues generated from the operation of the toll facility shall be available to the sponsoring agency for the direct expenses related to the following: (1) debt issued to construct, repair, rehabilitate, or reconstruct any portion of the toll facility; payment of debt service; and satisfaction of other covenants and obligations related to indebtedness of the toll facility; and (2) development, maintenance, repair, rehabilitation, improvement, reconstruction, administration, and operation of the toll facility, including collection and enforcement. Requires all remaining revenues generated by the toll facility to be used in the corridor from which the revenues were generated pursuant to an expenditure plan developed by the sponsoring agency. Requires a regional transportation agency and Caltrans to consult with each other in the development of such an expenditure plan. For any project involving the conversion of an existing high-occupancy vehicle (HOV) lane to an express lane, requires the sponsoring agency to demonstrate that the project will, at a minimum, result in expanded efficiency of the state highway corridor in terms of travel time reliability, passenger throughput or other efficiency benefits. Authorizes a regional transportation agency to issue bonds to finance the construction of the toll facility or any projects included in an expenditure plan specifying how any net revenues generated by the toll facility would be used. Allows a regional transportation agency and Caltrans to require any vehicle accessing a toll facility to have an electronic toll collection transponder or other electronic device for enforcement or tolling purposes. Specifies that nothing in the bill authorizes nor prohibits the conversion of any existing non-toll lanes into toll lanes, except that a HOV lane may be converted into an express lane.	9/4/15	Senate Floor	Support

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 198 (Frazier) Tow Trucks	In the event of an emergency occurring on a roadway that requires the rapid removal of impediments to traffic or in order to render assistance to a disabled vehicle obstructing the roadway, authorizes a tow truck driver who is either operating under an agreement with the law enforcement agency responsible for investigating traffic collisions on the roadway, or summoned by the owner or operator of a vehicle involved in a collision or that is otherwise disabled on the roadway to utilize the center median or right shoulder of the roadway if certain, specified conditions are met.	6/2/15	Signed into Law: Chapter #30	
AB 210 (Gatto) HOV Lanes: Los Angeles County	Beginning July 1, 2016, requires high-occupancy vehicle (HOV) lanes on the following portions of the state highway system in Los Angeles County to operate only during hours of heavy commuter traffic, as determined by Caltrans: (1) SR 134 between SR 170 and SR 210; and (2) SR 210 between SR 134 and SR 57. On or after May 1, 2017, authorizes Caltrans to reinstate 24-hour HOV lanes on these corridors if the department determines that there is an adverse impact on safety, traffic conditions or the environment by limiting the use of HOV lanes only during heavy commuter traffic hours.	As Introduced	Senate Floor	
AB 219 (Daly) Prevailing Wage: Concrete Delivery	Requires prevailing wages to be paid for the hauling and delivery of ready-mixed concrete to carry out a public works contract. Requires the applicable prevailing wage rate to be the rate for the geographic area in which the concrete factory or batching plant is located. Specifies that the provisions of the bill apply to contracts that are awarded after January 1, 2016.	8/31/15	Governor's Office	
AB 227 (Alejo) Transportation Funding	Retains the revenues generated by vehicle weight fees in the State Highway Account, and requires the General Fund to pay debt service on transportation general obligation bonds. With regard to the revenues derived from increases in the state gasoline excise tax resulting from the transportation funding swap initially enacted in 2010 and reaffirmed in 2011, requires all of the money to be allocated in the following manner: (1) 44 percent to the State Transportation Improvement Program (STIP); (2) 44 percent to cities and counties for local streets and roads; and (3) 12 percent to the State Highway Operation & Protection Program (SHOPP). With respect to any loans made to the General Fund from the State Highway Account, the Public Transportation Account, the Bicycle Transportation Account, the Motor Vehicle Fuel Account, the Highway Users Tax Account, the Pedestrian Safety Account, the Transportation Investment Fund, the Traffic Congestion Relief Fund, the Motor Vehicle Account, and the Local Airport Loan Account with a repayment date of January 1, 2019, or later to be repaid to the account from which the loan was made by December 31, 2018. Recaptures revenues generated by Caltrans through the rental or sale of property, the sale of documents and other miscellaneous services to the public for transportation purposes.	4/15/15	Assembly Budget Committee	Support
AB 239 (Gallagher) Global Warming Solutions Act: Regulations	Beginning January 1, 2016, prohibits the California Air Resources Board (CARB) from adopting or amending regulations pursuant to the Global Warming Solutions Act. Authorizes CARB to submit to the Legislature recommendations on how to achieve the goals of the act.	As Introduced	Assembly Natural Resources Committee	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 313 (Atkins) Enhanced Infrastructure Financing Districts	Makes a number of changes to current state statutes pertaining to enhanced infrastructure financing districts with regard to replacement housing requirements, public financing authorities, very low income housing, hazardous substance release clean-up, appropriations limits, and validation proceedings. Authorizes an enhanced infrastructure financing district to finance the acquisition, construction or rehabilitation of housing for persons of very low income for rent or purchase. Requires an enhanced infrastructure financing district's financing plan to include a series of specified actions if any dwelling units are proposed to be removed or destroyed either in the course of private development financed by the district or by public works construction resulting from the district's financing plan. Requires a city or county to establish a public financing authority at the same time that it adopts a resolution of intent to form an enhanced infrastructure financing district. Allows a special district to participate on the public financing authority for an enhanced infrastructure financing district if it is providing any portion of the funding included in the district's financing plan. Provides that property tax increment revenues allocated to an enhanced infrastructure financing district are not subject to the appropriations limits in the California Constitution.	8/25/15	Governor's Office	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 318 (Chau) Lost Items Found on Public Transit Property	If a lost or unclaimed item worth \$100 or more in value is found on a vehicle or the property of a public transit agency, requires the person who found the item to turn it in to the public transit agency, rather than to law enforcement. Provides 90 days for the owner of the item to reclaim it from the public transit agency. Allows the public transit agency to require payment by the owner of a reasonable charge to defray the costs of storage and care of the property. If the reported value of the item is \$250 or more, and no owner appears and proves his or her ownership of the item within 90 days, requires the public transit agency to cause notice of the item to be published at least once in a newspaper of general circulation. If, after seven days, no owner appears and proves his or her ownership of the item, and the person who found or saved the item pays the cost of the publication, provides that the title shall vest in that person. If the item was found in the course of employment by an employee of the public transit agency, requires the item to be sold at public auction. If the reported value of the item is less than \$250, and no owner appears and proves his or her ownership of the item within 90 days, provides that the title shall vest in the person who found the item. If the item was found in the course of employment by an employee of the public transit agency, requires the item to be sold at public auction. Applies all of the following with respect to lost or unclaimed bicycles turned in to or held by a public transit agency: (1) if the owner of a bicycle appears within 45 days after receipt by the public transit agency, proves his or her ownership, and pays all reasonable charges, requires the public transit agency to restore the bicycle to the owner; (2) if the bicycle remains unclaimed after 45 days, allows the public transit agency to dispose of it by sale at a public auction to the highest bidder; (3) requires the public transit agency to give notice of the sale at least five days prior to the auction by publication in a newspaper of general circulation in the county in which the bicycle was found; (4) if a bicycle remains unsold after the auction, allows the public transit agency to destroy or otherwise dispose of it; and (5) allows a public transit agency to donate an unclaimed bicycle after 45 days to a charitable organization if the agency's board of directors holds a public hearing to determine the organization that would receive the bicycle and the agency provides notice at least five days prior to the donation by publication in a newspaper of general circulation in the county in which the agency operates. Prohibits a public transit agency from donating unclaimed bicycles more than two times per calendar year. Provides that the number of bicycles donated shall not exceed 25 percent of the total number of lost or unclaimed bicycles found or saved by the public transit agency during the prior six months. Requires any public transit agency that donates unclaimed bicycles to a charitable organization pursuant to the provisions of this bill to submit a report, as specified, to the Assembly and Senate Judiciary Committees by January 1, 2020. Repeals all of the provisions of the bill on January 1, 2021.	6/11/15	Senate Judiciary Committee	
AB 323 (Olsen) CEQA: Exemption for Certain Roadway Projects	Extends until January 1, 2020, an existing California Environmental Quality Act (CEQA) exemption for a project to repair, maintain or make minor alterations to an existing roadway if all of the following conditions are met: (1) the project is carried out by a city or county with a population of less than 100,000 persons; (2) the project will improve public safety; and (3) the project does not cross a waterway.	4/6/15	Signed into Law: Chapter #52	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 338 (R. Hernandez) LA Metro: Local Transportation Sales Taxes	In addition to any other tax that it is authorized to impose or has imposed, allows the Los Angeles County Metropolitan Transportation Authority (LA Metro) to impose a transactions and use tax at the rate of 0.5 percent for a period not to exceed 30 years that would be applicable in the incorporated and unincorporated areas of Los Angeles County. Requires the ordinance imposing the tax to contain the following: (1) an expenditure plan that lists the transportation projects and programs to be funded from net revenues from the tax; (2) a requirement that the expenditure plan include measures to ensure that net revenues are share equitably between regions of the county; (3) a provision limiting LA Metro's costs of administering the ordinance and the net revenues from the tax to 1.5 percent of the total tax revenues; (4) a requirement that the net revenues from the tax, defined to mean the total tax revenues less any refunds, costs of administration by the state Board of Equalization and LA Metro's administrative costs, be used to fund the transportation projects and programs identified in the expenditure plan; (4) a requirement that LA Metro, during the period that the ordinance is operative, allocate 20 percent of all net revenues from the tax for operating costs associated with bus service provided by LA Metro and the municipal transit operators in Los Angeles County; and (5) a requirement that LA Metro, during the period that the ordinance is operative, allocate 5 percent of all net revenues from the tax for rail operations. Requires LA Metro to notify the Legislature prior to taking action on any amendments to the adopted expenditure plan. Provides that the ordinance shall become operative if approved by a two-thirds vote of the electorate in Los Angeles County. Authorizes LA Metro to incur bonded indebtedness payable from the net revenues of the tax.	4/13/15	Senate Transportation & Housing Committee	
AB 378 (Mullin) US 101 Corridor	States the intent of the Legislature to enact a bill to provide such powers, responsibilities, funding, and financing mechanisms; innovative project delivery authority; and governance structures as may be necessary, convenient and beneficial to enable responsible local, regional and state agencies to substantially improve mobility in the US 101 Corridor in San Francisco, San Mateo and Santa Clara Counties.	As Introduced	Assembly Desk	
AB 397 (Mathis) High-Speed Rail: Bond Funding	Specifies that no further bonds shall be sold for high-speed rail purposes pursuant to the Safe, Reliable High-Speed Passenger Train Bond Act for the 21 st Century (Proposition 1A), except as specifically provided with respect to an existing appropriation for early improvement projects related to the Phase I blended system. Upon appropriation by the Legislature, requires the unspent proceeds received from outstanding bonds issued and sold for high-speed rail purposes prior to the effective date of the provisions of this bill to be redirected to retiring the debt incurred from the issuance and sale of those outstanding bonds. Allows the remaining unissued bonds, as of the effective date of the provisions of this bill, that were authorized for high-speed rail purposes to be issued and sold. Upon appropriation by the Legislature, requires the net proceeds from the sale of these remaining unissued bonds to be made available to fund the construction of water capital projects, including desalination facilities, wastewater treatment and recycling facilities, reservoirs, water conveyance infrastructure, and aquifer recharge. Makes no changes to the authorization under Proposition 1A for the issuance of \$950 in bonds for rail purposes other than high-speed rail.	4/14/15	Assembly Transportation Committee	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 400 (Alejo) Changeable Message Signs	Prior to June 30, 2016, requires Caltrans to update its internal policies to allow displays of the following information on changeable message signs: (1) safety messages; (2) transportation-related messages; (3) reminders to register to vote, as requested by the Secretary of State's Office, but not more than 2 days prior to, and on the last day to, register to vote in a particular statewide general, primary or special election; and (4) reminders to vote, as requested by the Secretary of State's Office, as elections approach, but not more than 2 days prior to, and on the day of, a particular statewide general, primary or special election. Prohibits Caltrans from displaying any information on a changeable message sign related to registering to vote or reminders to vote unless the U.S. Department of Transportation, or any of its agencies, has expressly approved the display of such information.	8/31/15	Governor's Office	
AB 422 (McCarty) SacRT: Line of Credit	Pursuant to a resolution adopted by its board of directors, authorizes the Sacramento Regional Transit District (SacRT) to seek and obtain a short-term revolving line of credit for operating purposes in anticipation of receipt of federal operating grants, with the extension of credit evidenced by a note. Allows SacRT to pledge anticipated grants and any other funds available, including fare revenues, as security for repayment of the note, the interest on the note, and the related obligations evidenced by the note. Requires the note to have a maturity date of not more than 60 months from the date of issuance. Authorizes SacRT to pledge anticipated federal operating grants and other available funds over a multi-year period. Requires SacRT to set aside and apply all amounts received from the pledged federal operating grants to the repayment of any outstanding indebtedness incurred. Provides that these federal operating grant revenues may not be used for any other purpose until such time as the indebtedness is fully repaid.	7/16/15	Governor's Office	
AB 457 (Melendez) Express Lanes: CTC Reporting Requirements	Requires the California Transportation Commission (CTC) to prepare and submit a report to the Legislature every two years, as opposed to annually, on the progress of the development and operation of express lanes that the commission previously approved for implementation by the Metropolitan Transportation Commission (MTC) and the Riverside County Transportation Commission (RCTC).	3/26/15	Assembly Transportation Committee	
AB 464 (Mullin) Local Sales Tax Add-Ons	Raises the cap on local sales tax "add-ons" that could be enacted within a county from 2 percent to 3 percent.	6/17/15	Vetoed by the Governor	Support

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 498 (Levine) Wildlife Corridors	Includes within the authorized purposes of a conservation bank the protection of habitat connectivity for fish and wildlife resources. Declares that it is the policy of the state to encourage, wherever feasible and practicable, voluntary steps to protect the functioning of wildlife corridors through various means. Specifies that those means may include: (1) acquiring or protecting wildlife corridors as open space through conservation easements; (2) installing wildlife-friendly or directional fencing; (3) siting mitigation and conservation banks in areas that provide habitat connectivity for affected fish and wildlife resources; or (4) providing roadway undercrossings, overpasses, oversized culverts, or bridges to allow for fish passage and the movement of wildlife between habitat areas. Specifies that the fact that a project applicant does not take voluntary steps to protect the functioning of a wildlife corridor prior to initiating the application process for a project shall not be grounds for denying a permit or requiring additional mitigation beyond what would be required to mitigate project impacts under other applicable laws.	8/31/15	Governor's Office	
AB 516 (Mullin) Temporary License Plates	No later than January 1, 2018, requires the Department of Motor Vehicles to develop and implement an operational system that allows a vehicle dealer or lessor-retailer to electronically report the sale of a vehicle and provide a temporary license plate. Requires the dealer or lessor-retailer to attach a temporary license plate at the point of sale. Allows a vehicle to operate with temporary license plates until either: (1) the permanent license plates and registration card are received by the vehicle owner; or (2) 90 days have lapsed from the vehicle's selling date. Allows a vehicle to continue to display a report-of-sale form or temporary license plates after 90 days if the owner has not yet received the permanent license plates, and provides proof that he or she has submitted an application to the DMV. Requires the DMV to assess a fee for the recording of notices of delinquent parking and toll evasion violations given to the department by a processing agency that is sufficient to provide a total amount equal to at least its actual costs related to administering the electronic report-of-sale and temporary license plate system. Beginning January 1, 2018, authorizes vehicle dealers to raise their document processing fees by \$10. In addition, allows vehicle dealers to impose an electronic filing charge for reporting vehicle sales and producing temporary license plates. Specifies that it is a felony for a person to alter, forge, counterfeit, or falsify a temporary license plate.	7/16/15	Senate Floor	Support
AB 518 (Frazier) Caltrans Reporting Requirements	Eliminates a requirement in existing law for Caltrans to annually compile information and report to the Legislature on the number of projects for which an agreement to transfer funds to a local or regional agency was not executed within 90 days from the date on which the California Transportation Commission (CTC) approved an allocation request for the project, as well as the reasons for that occurrence.	As Introduced	Assembly Transportation Committee	
AB 528 (Baker) BART Employees: Strike Prohibition	Prohibits the employees of the Bay Area Rapid Transit District (BART) from engaging in a strike or work stoppage if the BART Board of Directors maintains the compensation and benefit provisions of an expired contract, and an employee or union has agreed to a provision prohibiting strikes in the expired or previous written labor contract. Provides that an employee whom BART finds willfully engaged in a strike or work stoppage in violation of the provisions of this bill is subject to dismissal if that finding is sustained upon conclusion of the appropriate proceedings necessary for the imposition of a disciplinary action.	As Introduced	Assembly Public Employees, Retirement & Social Security Committee	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 552 (O'Donnell) Public Works Contracts: Delay Damages	Provides that a public works contract entered into on or after January 1, 2016, that contains a clause expressly requiring a contractor to be responsible for delay damages is not enforceable unless those damages have been liquidated to a set amount and identified in the contract. Provides that the bill shall not be construed to limit a right or remedy that a public agency has to enforce the terms of a public works contract, except for a clause that expressly requires a contractor to be liable for delay damages.	8/24/15	Senate Floor	
AB 590 (Dahle) Cap-and-Trade: Biomass Power Generation	Allows cap-and-trade auction proceeds deposited into the Greenhouse Gas Reduction Fund to be made available to the State Energy Resources Conservation and Development Commission, upon appropriation by the Legislature, for purposes related to maintaining the current level of biomass power generation and geothermal energy generation in California, and revitalizing currently idle facilities in strategically located regions. To be eligible for funding, requires a generation facility to satisfy all of the following: (1) the energy is generated on and after January 1, 2016; (2) the energy is generated using biomass wood wastes and residues or geothermal resources, and is sold to a load-serving entity; (3) the energy is generated at a facility with a generation capacity of more than three megawatts; and (4) the energy is generated within California and sold to customers within the state. In prioritizing projects for funding, requires the State Energy Resources Conservation and Development Commission to maximize the reduction of greenhouse gas emissions achieved by a project for each dollar awarded. Working in consultation with the California Air Resources Board (CARB), requires the State Energy Resources Conservation and Development Commission to ensure that projects receiving funding achieve net reductions in greenhouse gas emissions.	7/9/15	Senate Appropriations Committee	
AB 604 (Olsen) Electrically Motorized Skateboards	Defines "electrically motorized skateboard" to mean any four-wheeled device that: (1) has a floorboard designed to be stood upon when riding that is not greater than 60 inches deep and 18 inches wide; (2) is designed to transport only one person; and (3) has an electric propulsion system averaging less than 1,000 watts, the maximum speed of which, when powered solely by a propulsion system on a paved level surface, is no more than 20 miles per hour (mph). Allows a local authority, by ordinance or resolution, to adopt rules and regulations prohibiting or restricting persons from riding or propelling electrically motorized skateboards on highways, sidewalks or roadways. Provides that an electrically motorized skateboard shall be operated only by a person who is 14 years of age or older. Allows an electrically motorized skateboard to be operated by a person under 18 years of age only if the person is wearing a properly fitted and fastened bicycle helmet. Specifies that it is unlawful for a person to operate an electrically motorized skateboard upon a highway while under the influence of an alcoholic beverage or any drug, or under the combined influence of an alcoholic beverage or any drug.	6/24/15	Senate Floor	
AB 620 (R. Hernandez) Express Lanes: Hardship Exemption from Paying Tolls	In implementing express lanes in the I-10 and I-110 Corridors, requires the Los Angeles County Metropolitan Transportation Authority (LA Metro) to provide a hardship exemption from the payment of toll charges for low-income commuters who meet the eligibility requirements for certain, specified assistance programs.	As Introduced	Assembly Transportation Committee	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 645 (Williams) Electricity: California Renewables Portfolio Standard	Pursuant to the California Renewables Portfolio Standard, requires the California Public Utilities Commission (CPUC), by January 1, 2017, to establish the quantity of electricity products from eligible renewable energy resources to be procured by each retail seller for specified compliance periods sufficient to ensure that the procurement of electricity products from these resources achieves 50 percent of retail sales by December 31, 2030. Requires the quantities to reflect reasonable progress in each of the intervening years sufficient to ensure that the procurement of electricity products from eligible renewable energy resources achieves 25 percent of retail sales by December 31, 2016; 33 percent by December 31, 2020; 38 percent by December 31, 2023; 44 percent by December 31, 2026; and 50 percent by December 31, 2030. Requires the CPUC to require retail sellers to procure not less than 50 percent of retail sales of electricity products from eligible renewable energy resources in all subsequent years.	As Introduced	Senate Appropriations Committee	
AB 676 (Calderon) Employment: Status as Unemployed	Beginning July 1, 2016, prohibits an employer from doing either of the following: (1) publishing in print, on the Internet or in any other medium an advertisement or announcement for any job that includes a provision stating or indicating that an unemployed person is not eligible for the job; or (2) asking an applicant for employment to disclose, orally or in writing, his or her employment status until the employer has determined that the applicant meets the minimum employment qualifications for the position, as stated in the published notice for the job. Specifies that the bill shall not be construed to prohibit an employer from: (1) publishing in print, on the Internet or in any other medium an advertisement or announcement for any job that contains any provisions setting forth the qualifications for the job; (2) setting forth qualifications for any job; (3) obtaining information regarding an individual's employment, including recent relevant experience; (4) having knowledge of a person's employment status; (5) inquiring as to the reasons for an individual's employment status; (6) refusing to offer employment to a person because of the reasons underlying an individual's employment status; or (7) otherwise making employment decisions pertaining to that individual.	8/31/15	Governor's Office	
AB 678 (O'Donnell) Energy Efficiency and Greenhouse Gas Reductions Ports Program	Requires the California Air Resources Board (CARB), in conjunction with the State Energy Resources Conservation and Development Commission, to develop and implement an Energy Efficiency and Greenhouse Gas Reductions Ports Program. Provides that the purpose of this program is to fund energy efficiency upgrades and investments at public ports that help reduce the emissions of criteria pollutants, toxic air contaminants and greenhouse gases. Authorizes CARB to expend cap-and-trade auction proceeds that it receives from an appropriation from the Greenhouse Gas Reduction Fund to implement the program. In order to receive funding from the program for energy-related projects, requires a port to develop and adopt, in consultation with the respective electric utility providing service to the port, an energy plan. Requires a port's energy plan to be approved by the State Energy Resources Conservation and Development Commission. Provides that the plan shall: (1) adhere to the state's preferred energy loading order; and (2) require benchmarking for energy retrofit projects and reporting of measurable energy savings. In prioritizing projects for funding, requires CARB to consider the extent to which a project would reduce greenhouse gas emissions, and provide environmental and public health co-benefits, including improved air and water quality.	8/18/15	Senate Appropriations Committee	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 692 (Quirk) Very Low Carbon Transportation Fuels	Beginning January 1, 2017, requires at least 3 percent of the aggregate amount of bulk transportation fuel purchased by the state to be procured from very low carbon transportation fuel sources. Requires this amount to be increased by 1 percent each year thereafter until January 1, 2024. Defines “very low carbon transportation fuel” to mean a liquid or gaseous transportation fuel having no greater than 40 percent of the carbon intensity of the closest comparable petroleum fuel for that year, as measured by the methodology in the low-carbon fuel standard regulation promulgated by the California Air Resources Board (CARB). Provides that if the Department of General Services, in consultation with CARB, makes a determination that very low carbon transportation fuel does not perform adequately for its intended use, or is not available at a reasonable price and in a reasonable period of time, then the state shall procure such fuel only to the extent feasible.	9/4/15	Senate Floor	
AB 720 (Cooley) Cap-and-Trade: Market-Based Compliance Mechanisms	For any market-based compliance mechanism that the California Air Resources Board (CARB) might adopt pursuant to the Global Warming Solutions Act of 2006, requires CARB to allow participating entities to freely sell or transfer greenhouse gas emissions allowances held in a holding account or compliance account, except for allowances that have been expressly retired to meet a compliance obligation. In addition, requires CARB to set a price cap on any allowances offered for purchase through the board.	As Introduced	Assembly Natural Resources Committee	
AB 726 (Nazarian) LA Metro: Articulated Buses	Authorizes the Los Angeles County Metropolitan Transportation Authority (LA Metro) to operate articulated buses that are longer than 60 feet, but do not exceed a length of 82 feet on the route designated as the Orange Line, and between that line, terminals and maintenance facilities. Requires LA Metro to establish a route review committee to perform a review of the Orange Line route, and any necessary routes from the Orange Line to maintenance and storage yards upon which LA Metro proposes to operate a bus greater than 60 feet in length. Requires the route review committee, by a majority vote, to determine whether the Orange Line is suitable for the safe operation of a bus exceeding 60 feet in length. Specifies that implementation of the provisions of this bill is subject to collective bargaining requirements under state law and LA Metro’s enabling statutes. If portions of the proposed routes for these buses are on state highways, requires a determination by both Caltrans and the California Highway Patrol (CHP) that those portions of the route are suitable for the operation of the buses.	9/1//15	Senate Floor	
AB 742 (Gallagher) Heavy-Duty Diesel-Fueled Vehicles	Prohibits the California Air Resources Board (CARB) from enforcing regulations relating to the reduction of emissions of diesel particulate matter, oxides of nitrogen and other criteria pollutants from in-use diesel-fueled vehicles until CARB completes a review of the safety of any particulate-matter filters required to be installed on those affected vehicles.	As Introduced	Assembly Transportation Committee	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 744 (Chau) Planning and Zoning: On-Site Parking Requirements	Upon the request of a developer, prohibits a city or county from imposing a vehicular parking ratio, inclusive of handicapped and guest parking, in excess of 0.5 spaces per bedroom on a development that meets the following criteria: (1) the development includes the maximum percentage of low-income or very low-income units; and (2) the development is located within one-half mile of a major transit stop, and there is unobstructed access to that transit stop from the development. Upon the request of a developer, prohibits a city or county from imposing a vehicular parking requirement, inclusive of handicapped and guest parking, in excess of a specified number of spaces per unit for a development consisting solely of rental units, exclusive of a manager's unit or units, with an affordable housing cost to lower-income families, if the development meets any of the following criteria: (1) the development is located within one-half mile of a major transit stop, and there is unobstructed access to that transit stop from the development; (2) the development is a for-rent housing development for individuals who are 62 years of age or older; or (3) the development is a special needs housing development. If a city, county or independent consultant has conducted an area-wide or jurisdictional-wide parking study in the last seven years, allows the city or county to impose a higher vehicular parking ratio for these types of developments based on substantial evidence found in the parking study that includes: (1) an analysis of parking availability; (2) differing levels of transit access; (3) walkability access to transit services; (4) the potential for shared parking; (5) the effect of parking requirements on the cost of market-rate and subsidized developments; and (6) the lower rates of car ownership for low-income and very low-income individuals, including seniors and special needs individuals. Specifies that the bill does not preclude a city or county from reducing or eliminating a parking requirement for development projects of any type in any location.	8/18/15	Assembly Floor: Concurrence	
AB 754 (Ridley-Thomas) Small Business Tax Relief in LA County	States the intent of the Legislature to enact a bill to provide tax relief to small businesses in Los Angeles County during periods of disruption caused by transit-related construction activities conducted by the Los Angeles County Metropolitan Transportation Authority (LA Metro) that result in decreased business revenues.	As Introduced	Assembly Desk	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 779 (Garcia) Congestion Management Programs	Makes a number of modifications to state statutes pertaining to congestion management programs (CMPs). Eliminates the requirement that an infill opportunity zone must be located within one-half mile of a major transit stop and, instead, allows a city or county to designate an area as an infill opportunity zone if it is a transit priority area within a sustainable communities strategy or alternative planning strategy adopted by the applicable metropolitan planning organization (MPO). Replaces traffic level of service standards within a CMP with “measures of effectiveness” established for a system of highways and roadways designed by the congestion management agency (CMA). Requires the performance element of a CMP to include performance measures that support greenhouse gas emissions reduction objectives, as well as mobility, air quality, land-use, and economic objectives. Requires the land-use element of a CMP to analyze the relationship between land-use decisions made by local jurisdictions and regional transportation systems, instead of analyzing the impacts of local land-use decisions on regional transportation systems. If the capital improvement program (CIP) element of a CMP includes capacity enhancement projects, requires the CIP to evaluate the potential for those enhancement projects to induce additional travel. Requires a CMA to develop a uniform data base on transportation conditions for use in a countywide transportation computer model, instead of a uniform data base on traffic impacts. At least biennially, requires a CMA to determine if the applicable county and cities are conforming to its CMP, including, but not limited to, the following: (1) achieving performance standards for the transportation system as provided in the performance element of the CMP; (2) adoption and implementation of a program to analyze the relationship between land-use decisions and the regional transportation system; and (3) adoption and implementation of a deficiency plan, if required. Requires a city or county to prepare a deficiency plan if the CMA determines that it is not conforming with the CMP. Regarding the preparation of a deficiency plan, adds the following to the list of exclusions from an analysis of the cause of a deficiency: (1) traffic generated by any mixed-use development located within a transit priority project area or infill opportunity zone; (2) traffic generated by any transit priority project, as defined; and (3) improvements to facilities for bicyclists, pedestrians and public transportation. Specifies that the CMP statutes shall not be interpreted to require a local agency to implement improvements to reduce delay at intersections or roadway segments that the local agency determines would impede the development of a balanced, multimodal transportation network that meets the needs of all users of streets, roads and highways for safe and convenient travel in a manner set forth in the circulation element of the local agency’s general plan.	8/19/15	Senate Transportation & Housing Committee	
AB 809 (Obernolte) Local Initiative Measures	If a local ordinance proposes to impose a tax or raise the rate of a current tax, requires the ballot to include in the statement of the ordinance to be voted on the amount of money to be raised annually, and the rate and duration of the tax to be levied.	3/26/15	Governor’s Office	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 828 (Low) Regulated Transportation Services	Until January 1, 2018, excludes any motor vehicle operated in connection with a transportation network company from the definition of “commercial vehicle” if the vehicle: (1) is operated only for passenger service; (2) is limited to seven passengers, not including the driver; (3) is operated exclusively by the person to whom it is registered or insured; (4) is not a paratransit vehicle; (5) is not operated for public transit services; and (6) is not operated for school bus services. Requires the California Public Utilities Commission (CPUC) to conduct an investigation to consider whether existing statutes and regulations relating to transportation services meet the public interest, encourage innovation, and create a fair and competitive transportation market between companies that provide regulated transportation services. Requires the CPUC to complete this investigation, and report its conclusions and recommendations to the Legislature by January 1, 2017.	7/14/15	Senate Energy, Utilities & Communications Committee	
AB 869 (Cooper) Fare Evasion and Prohibited Conduct on Transit Vehicles	For those public transit agencies that use an administrative adjudication process for fare evasion and passenger misconduct violations, provides that a person who fails to pay the administrative penalty when due or to have the violation dismissed may be subject to criminal penalties. Requires the public transit agency to include in the notice of fare evasion or passenger misconduct a printed statement indicating that the person may be charged with an infraction or misdemeanor if the administrative penalty is not paid when due or is not dismissed. Requires the public transit agency to dismiss the original notice of fare evasion or passenger misconduct, and to make no further attempts to collect the administrative penalty if the person is charged with an infraction or misdemeanor after failing to pay the administrative penalty or failing to successfully complete the administrative adjudication process. Requires the public transit agency to serve the person charged with an infraction or misdemeanor with a new notice of fare evasion or passenger misconduct that sets forth the criminal violation.	6/18/15	Senate Floor	
AB 875 (Harper) Low-Speed Electric Bicycles	Allows a low-speed electric bicycle to be operated on a bicycle path or trail; bikeway; bicycle lane; equestrian trail; or hiking or recreational trail. Defines “low-speed electric bicycle” to mean a two- or three-wheeled device that has fully operative pedals for propulsion by human power and has an electric motor that meets all of the following requirements: (1) has a power output of not more than 750 watts; (2) is incapable of propelling the device at a speed of more than 20 miles per hour on a paved level surface when ridden by an operator who weighs 170 pounds; (3) is incapable of further increasing the speed of the device when human power is used to propel the device faster than 20 miles per hour; and (4) has a weight of not more than 80 pounds.	As Introduced	Assembly Transportation Committee	
AB 877 (Chu) California Transportation Commission and Transportation Funding	Expands the California Transportation Commission (CTC) to 15 members, with one additional ex officio, non-voting member being appointed by the Assembly Speaker and one additional ex officio, non-voting member being appointed by the Senate Rules Committee. States the intent of the Legislature to enact a bill to find a revenue stream to supplement the fuel excise tax to provide additional funding for transportation infrastructure projects in California.	3/26/15	Assembly Transportation Committee	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 883 (Low) Employment: Public Employee Status	Beginning July 1, 2016, prohibits a state or local agency from doing any of the following: (1) publishing in print, on an Internet Web site or in any other medium an advertisement or announcement for any job that includes a provision stating or indicating that an individual's status as a current or former public employee disqualifies the individual from eligibility for employment; or (2) asking an applicant for employment to specifically disclose, orally or in writing, his or her status as a current or former public employee until the employer has determined that the applicant meets the minimum employment qualifications for the position, as stated in the published notice for the job. Specifies that the bill shall not be construed to prohibit an employer from: (1) publishing in print, on an Internet Web site or in any other medium an advertisement or announcement for a job that contains provisions setting forth the qualifications for the job; (2) setting forth qualifications for a job; (3) obtaining information regarding an individual's current or former status as a public employee, including recent relevant experience; (4) having knowledge of a person's current or former status as a public employee; or (5) otherwise making employment decisions pertaining to that individual.	9/4/15	Senate Floor	
AB 914 (Brown) Toll Facilities: San Bernardino County	Authorizes the San Bernardino County Transportation Commission to construct, administer and operate express lanes and other toll facilities on: (1) I-10 and I-15 within San Bernardino County; (2) approaching and departing connectors on I-10 extending into Los Angeles County, subject to an agreement with the Los Angeles County Metropolitan Transportation Authority (LA Metro); and (3) the connection to the I-15 express lanes in Riverside County, subject to an agreement with the Riverside County Transportation Commission (RCTC).	9/4/15	Senate Floor	
AB 946 (Ting) Electric Vehicle Charging Stations	Provides that electric vehicle charging infrastructure projects in disadvantaged communities are eligible for funding under the state's Alternative and Renewable Fuel Vehicle Technology Program.	4/21/15	Assembly Appropriations Committee	
AB 1015 (Bloom) Parking: Car-Share Vehicles	Allows a local authority, by ordinance or resolution, to designate certain streets or portions of streets for the non-exclusive parking privilege of motor vehicles participating in a car-share vehicle or ridesharing program.	4/23/15	Signed into Law: Chapter #41	
AB 1017 (Campos) Salary History Information	Prohibits an employer from seeking salary history information about an applicant for employment.	8/24/15	Assembly Floor: Concurrence	
AB 1030 (Ridley-Thomas) Cap-and-Trade: Disadvantaged Workers	For projects involving hiring that are seeking an allocation of cap-and-trade auction proceeds from the Greenhouse Gas Reduction Fund, requires priority to be given to those projects that support the targeted training and hiring of workers from disadvantaged communities for career-track jobs.	7/7/15	Senate Appropriations Committee	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 1033 (Garcia) Infrastructure Financing	Enacts the California Economic Development Infrastructure Act of 2015. Authorizes the California Infrastructure and Economic Development Bank to award participation rights to corporations to deliver infrastructure projects for the state that have been determined as appropriate for financing through a public-private partnership. Provides that such participation rights include a commitment by the state to allow a corporation to compete for state public-private partnership infrastructure projects. Provides that eligible infrastructure projects include goods movement, public transit, solid waste collection and disposal, water treatment and distribution, and defense conversion.	As Introduced	Assembly Jobs, Economic Development & the Economy Committee	
AB 1068 (Allen) CEQA: Priority Projects	Enacts the Priority Project Parity Act of 2015. By November 15 of each year, authorizes each member of the Legislature to annually nominate and submit to the Governor one project within his or her respective district as a priority project. Requires the Governor to designate a project as a priority project if all of the following are met: (1) the project will result in at least 100 new or retained full-time jobs; (2) the project is consistent with an adopted sustainable communities strategy for the region in which the project is located; and (3) the project applicant certifies its intent to remain in the location of the project for a minimum of five years. For purposes of complying with the requirements of the California Environmental Quality Act (CEQA), allows the environmental impact report (EIR) for a priority project to tier from an earlier EIR completed for the existing or earlier versions of the project. Requires the tiered EIR to be limited to the consideration of significant adverse impacts resulting from the project: (1) that were not previously identified in the earlier EIR; or (2) that were identified in the earlier EIR, but are more severe than previously identified. Provides that a new EIR is not required for a priority project that has already been included in an EIR prepared and certified under CEQA; however, requires the lead agency to prepare an addendum to the prior EIR to explain to the public and other interested stakeholders the manner in which the project had been addressed in the prior EIR. Prohibits a court from staying or enjoining the implementation of a priority project unless the court finds either of the following: (1) the continued implementation of the priority project presents an imminent threat to public health and safety; or (2) the priority project site contains unforeseen important Native American artifacts; or unforeseen important historical, archaeological or ecological values that would be materially, permanently and adversely affected by the continued implementation of the project.	As Introduced	Assembly Natural Resources Committee	
AB 1087 (Grove) Cap-and-Trade: High-Speed Rail	Restates that cap-and-trade auction proceeds allocated from the Greenhouse Gas Reduction Fund for high-speed rail purposes shall be used for the following components of the initial operating segment and Phase 1 blended system as described in the California High-Speed Rail Authority's 2012 Business Plan: (1) acquisition and construction; (2) environmental review and design; (3) other capital costs; and (4) repayment of any loans made to the High-Speed Rail Authority to fund the project.	As Introduced	Assembly Transportation Committee	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 1096 (Chiu) Electric Bicycles	Defines “electric bicycle” as a bicycle equipped with fully operable pedals and an electric motor of less than 750 watts. Establishes three classes of electric bicycles as follows: (1) class 1 electric bicycle or low-speed, pedal-assisted electric bicycle, which is defined as a bicycle equipped with a motor that provides assistance only when the rider is pedaling, and that ceases to provide assistance when the bicycle reaches the speed of 20 miles per hour (mph); (2) class 2 electric bicycle or low-speed, throttle-assisted electric bicycle, which is defined as a bicycle equipped with a motor that may be used exclusively to propel the bicycle, and that is not capable of providing assistance when the bicycle reaches the speed of 20 mph; and (3) class 3 electric bicycle or speed pedal-assisted electric bicycle, which is defined as a bicycle equipped with a speedometer, as well as with a motor that provides assistance only when the rider is pedaling, and that ceases to provide assistance when the bicycle reaches the speed of 28 mph. Beginning January 1, 2017, requires manufacturers and distributors of electric bicycles to affix a label to each electric bicycle that describes its classification number, top assisted speed and motor wattage. Authorizes a public agency to adopt rules or regulations to restrict or specify the conditions for the use of electric bicycles on public property under the jurisdiction of that agency. Requires a person riding an electric bicycle to comply with all laws relating to the operation of a regular bicycle. Prohibits persons under 16 years of age from operating a class 3 electric bicycle. Requires persons operating or riding on a class 3 electric bicycle to wear a helmet. Prohibits the operation of class 3 electric bicycles on a bicycle path or trail, bikeway, bicycle lane, equestrian trail, hiking trail, or recreational trail, unless it is within or adjacent to a roadway, or unless that operation is authorized by a local ordinance. Allows a local authority, by ordinance, to prohibit the operation of class 1 or class 2 electric bicycles on such paths or trails. Requires an electric bicycle to comply with the equipment and manufacturing requirements for bicycles adopted by the U.S. Consumer Product Safety Commission. Requires an electric bicycle to operate in a manner so that either: (1) the electric motor disengages or stops functioning when the brakes are applied; or (2) the release or activation of a switch or other mechanism disengages or stops the electric motor from functioning. Specifies that a person operating an electric bicycle is not subject to financial responsibility, driver’s license, registration, or license plate requirements.	6/15/15	Senate Floor	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 1098 (Bloom) Congestion Management Programs	Eliminates traffic level of service standards as an element of a congestion management program, as well as the requirement that a city or county prepare a deficiency plan when highway or roadway level of service standards are not met. Instead, requires a congestion management program to include, at a minimum, performance measures related to vehicle miles traveled, air emissions, and bicycle, pedestrian and public transit mode share, as determined by the applicable regional agency. Requires the travel demand element of a congestion management program to include a broad range of transportation options. Requires a congestion management program to analyze the interaction between land-use decisions made by local jurisdictions and the regional transportation system. For roadway capacity expansion projects included in the capital improvement program element of a congestion management program, requires an analysis of the potential for induced vehicle travel. Requires the applicable regional agency to evaluate: (1) the consistency between a county congestion management program and the regional transportation plan, including any adopted sustainable communities strategy; and (2) how a county congestion management program contributes to achieving the greenhouse gas emissions reduction target that has been assigned to the region by the California Air Resources Board (CARB).	3/26/15	Assembly Transportation Committee	
AB 1138 (Patterson) High-Speed Rail: Eminent Domain	Prohibits the California High-Speed Rail Authority, and the State Public Works Board acting on behalf of the authority, from adopting a resolution of necessity to commence an eminent domain proceeding to acquire a parcel of real property on a corridor or usable segment of the state's proposed high-speed train system unless the resolution includes both of the following: (1) identification of the sources of all funds that are to be invested in that corridor or usable segment, and the anticipated time of receipt of those funds; and (2) a certification that the authority has completed all necessary project level environmental clearances necessary to proceed to construction of the corridor or usable segment.	As Introduced	Assembly Transportation Committee	
AB 1160 (Harper) Automated Traffic Enforcement Systems	Beginning January 1, 2016, prohibits a governmental agency from installing an automated traffic enforcement system. Allows a governmental agency that has an automated traffic enforcement system in place on January 1, 2016, to continue to operate the system after that date only if the agency begins conducting a traffic safety study at each intersection where the system is in use to determine whether the system resulted in a reduction in the number of traffic accidents involving failing to stop at a red light or failing to stop at a red light when making a right turn at that intersection. Requires the traffic safety study to be completed by January 1, 2017. If the traffic safety study shows that the use of an automated traffic enforcement system did not reduce the number of traffic accidents occurring at an intersection by a statistically significant number, requires the governmental agency to terminate the use of the system at that intersection no later than January 1, 2018.	4/14/15	Assembly Transportation Committee	
AB 1169 (Gomez) Strategic Growth Council: Funding for Projects	Requires all recipients of state grant funding from the Strategic Growth Council or any of its member state agencies for a project located in a public place and that provides public benefits to post signs acknowledging the source of funds for the project pursuant to guidelines adopted by the council. If the state funding equals 50 percent or more of the total costs of the project, requires the state funding sources to be listed first on the signs.	8/17/15	Senate Floor	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 1171 (Linder) CMGC Contacting: Local Expressways	Authorizes regional transportation agencies, including the Santa Clara Valley Transportation Authority (VTA), to use the Construction Manager/General Contractor (CMGC) project delivery method to design and construct projects on expressways that are not on the state highway system if the projects are developed in accordance with an expenditure plan approved by the voters. Requires the entity responsible for the maintenance of local streets and roads within the jurisdiction of the expressway to be responsible for the maintenance of the expressway.	6/19/15	Assembly Desk	Support
AB 1176 (Perea) Advanced Low-Carbon Diesel Fuels Access Program	Establishes the Advanced Low-Carbon Diesel Fuels Access Program to be administered by the State Energy Resources Conservation and Development Commission, in consultation with the California Air Resources Board (CARB). Specifies that the purpose of the program is to reduce greenhouse gas emissions of diesel motor vehicles by providing capital assistance for projects that expand advanced low-carbon diesel fueling infrastructure in communities that are disproportionately impacted by environmental hazards and where the greatest air quality impacts can be identified. Requires cap-and-trade auction proceeds from the Greenhouse Gas Reduction Fund to be available, upon appropriation by the Legislature, for implementing this program.	8/18/15	Senate Appropriations Committee	
AB 1179 (Rendon) Cap-and-Trade: Reporting Requirements	Requires the California Air Resources Board (CARB) to prepare and post on its Internet Web site a report on the projects being funded with cap-and-trade auction proceeds from the Greenhouse Gas Reduction Fund. Requires the report to include all of the following: (1) a general description of each project; (2) the location where each project will be implemented; (3) the estimated date of completion of each project; (4) the amount awarded to each project; and (5) the status of any revenues in the Greenhouse Gas Reduction Fund not awarded to projects and the reasons why.	As Introduced	Assembly Appropriations Committee	
AB 1236 (Chiu) Electric Vehicle Charging Stations	Requires a city or county to administratively approve an application to install an electric vehicle charging station through the issuance of a building permit or similar non-discretionary permit. If a building official of a city or county makes a finding based on substantial evidence that the electric vehicle charging station could have a specific, adverse impact on public health or safety, allows the city or county to require the applicant to apply for a use permit. Prohibits a city or county from denying an application for a use permit to install an electric vehicle charging station unless it makes written findings based on substantial evidence in the record that the proposed station would have a specific, adverse impact on public health or safety, and there is no feasible method to satisfactorily mitigate or avoid that impact. By September 30, 2016, requires every city and county in the state with a population of 200,000 or more residents to adopt an ordinance that creates an expedited, streamlined permitting process for electric vehicle charging stations. By September 30, 2017, requires every city and county in the state with a population of less than 200,000 residents to adopt the same ordinance.	8/27/15	Senate Floor	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 1250 (Bloom) Public Transit Buses: Single Axle Weight Limit	Exempts from the state's 20,500-pound single axle gross weight limit the following: (1) a public transit bus procured through a solicitation issued before January 1, 2016; and (2) a public transit bus purchased through an option period in a multi-year contract entered into before January 1, 2016, if that option period does not exceed five years from the date of the original contract or extend beyond January 1, 2021, whichever is earlier. For public transit buses procured through a solicitation issued after January 1, 2016, establishes a new unladen weight limit of 25,000 pounds per single axle. Incrementally reduces this limit over time until it reaches 22,000 pounds per single axle on January 1, 2022. By July 1, 2016, requires a public transit agency operating an articulated bus to provide notice to all cities and counties in whose jurisdiction the bus will run during the upcoming calendar year, identifying the approximate routes upon which the bus is expected to be scheduled for service. Thereafter, requires a public transit agency operating an articulated bus to annually provide notice by July 1 to all cities and counties in whose jurisdiction the bus will run during the upcoming calendar year, identifying any changes to the service on those routes and any new routes upon which the bus is expected to be scheduled for service for the upcoming year. Requires the notice to include data from information provided by the bus manufacturer to the public transit agency, identifying the weight of the articulated bus.	9/4/15	Senate Floor	Support
AB 1251 (Gomez) Greenway Development and Sustainment Act	Enacts the Greenway Development and Sustainment Act. Authorizes a tax-exempt non-profit organization that has as its primary purpose the preservation, protection or enhancement of land in its natural, scenic, historical, agricultural, forested, or open-space conditions to acquire and hold a conservation easement for the development of a greenway. Defines "greenway" to mean a pedestrian and bicycle, non-motorized vehicle transportation, and recreational travel corridor that meets certain, specified requirements. Includes greenways in the definition of "open-space land" for local planning purposes. Provides that a recorded greenway easement constitutes an enforceable restriction for purposes of the property tax provisions in the federal Internal Revenue Code.	6/24/15	Senate Floor	
AB 1265 (Perea) Public-Private Partnerships	Extends existing statutory authority for Caltrans and regional transportation agencies, including the Santa Clara Valley Transportation Authority (VTA), to utilize public-private partnerships for transportation infrastructure projects to January 1, 2030.	4/29/15	Assembly Appropriations Committee	Support
AB 1284 (Baker) Toll Bridge Program Oversight Committee	Subjects the Toll Bridge Program Oversight Committee, which oversees seismic retrofit and replacement projects related to the seven state-owned toll bridges in the Bay Area, to the requirements under the Bagley-Keene Open Meeting Act.	4/8/15	Signed into Law: Chapter #172	
AB 1287 (Chiu) San Francisco: Forward-Facing Cameras	Indefinitely extends the authorization for the city/county of San Francisco to install forward-facing cameras on San Francisco Municipal Transportation Agency (San Francisco Muni) buses for the purpose of video-imaging parking violations occurring in transit-only traffic lanes.	6/18/15	Senate Judiciary Committee	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 1288 (Atkins) Cap-and-Trade: Covered Sources	Deletes language in current state law that limits the applicability of California's cap-and-trade system to sources or categories of sources that emit greenhouse gas emissions from January 1, 2012, to December 31, 2020.	As Introduced	Senate Floor	
AB 1315 (Alejo) Public Contracts: Water Pollution Prevention Plans	Prohibits a public entity from delegating to a contractor the development of a plan used to prevent or reduce water pollution or runoff on a public works contract.	4/21/15	Assembly Appropriations Committee	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 1335 (Atkins) Building Homes and Jobs Act	Enacts the Building Homes and Jobs Act. Beginning January 1, 2016, imposes a fee of \$75 to be paid at the time of recording of every real estate instrument, paper or notice required or permitted by law to be recorded per each single transaction per single parcel of real property. Specifies that this fee shall not exceed \$225. Prohibits the fee from being imposed on any real estate instrument, paper or notice recorded in connection with a transfer of real property that is a residential dwelling to an owner-occupier. Deposits the revenues derived from the fee in the Building Homes and Jobs Trust Fund for expenditure by the Department of Housing and Community Development. Upon appropriation by the Legislature, requires 20 percent of the revenues in the trust fund to be expended for affordable owner-occupied workforce housing, and 10 percent to address affordable homeownership and rental housing opportunities for agricultural workers and their families. Requires the remainder of the money in the trust fund to be expended for the following purposes: (1) the development, acquisition, rehabilitation, and preservation of rental housing that is affordable to extremely low-income, very low-income, low-income, and moderate-income households; (2) affordable rental and ownership housing that meets the needs of a growing workforce up to 120 percent of area median income; (3) matching portions of funds placed into local or regional housing trust funds; (4) matching portions of funds available through the Low and Moderate Income Housing Asset Fund; (5) capitalized reserves for services connected to the creation of new permanent supportive housing, including developments funded through the Veterans Housing and Homelessness Prevention Program; (6) emergency shelters, transitional housing and rapid rehousing; (7) accessibility modifications; (8) efforts to acquire and rehabilitate foreclosed or vacant homes; and (9) homeownership opportunities, including down payment assistance. At the time of the Department of Finance's adjustments to the proposed FY 2016 budget, requires the Department of Housing and Community Development to submit to the Legislature an initial Building Homes and Jobs Investment Strategy. Beginning with FY 2021, and every five years thereafter, requires the department to update this investment strategy and submit it to the Legislature concurrent with the release of the Governor's proposed budget. Requires the investment strategy to do all of the following: (1) identify the statewide needs, goals, objectives, and outcomes for housing for a five-year period; (2) provide for a geographically balanced distribution of funds, including a 50-percent direct allocation to local governments; (3) emphasize investments that serve households that are at or below 60 percent of area median income; (4) encourage economic development and job creation by helping to meet the housing needs of a growing workforce up to 120 percent of area median income; (5) identify opportunities for coordination among state departments and agencies; (6) incentivize the use and coordination of non-traditional funding sources; and (7) incentivize innovative approaches that produce cost savings to local and state services by reducing the instability of housing for frequent, high-cost users of hospitals, jails, detoxification facilities, psychiatric hospitals, and emergency shelters. Requires expenditure requests in the Governor's proposed budget to be consistent with the Building Housing and Jobs Investment Strategy. Declares the intent of the Legislature to enact a bill to create a Secretary of Housing within state government to oversee all activities related to housing in California.	6/3/15	Assembly Floor	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 1336 (Salas) Cap-and-Trade: Disadvantaged Communities	Requires a minimum of 40 percent, rather than 25 percent, of available cap-and-trade auction proceeds in the Greenhouse Gas Reduction Fund to be allocated to projects that benefit disadvantaged communities.	3/26/15	Assembly Natural Resources Committee	
AB 1347 (Chiu) Public Works Contracts: Claims	Establishes a claim resolution process that would be applicable to all public works contracts entered into by a public entity on or after January 1, 2016. Upon receipt of a claim from a contractor sent by registered mail or certified mail with return receipt requested, requires the public entity to conduct a reasonable review of the claim and, within a period not to exceed 45 days, to provide a written statement to the contractor identifying what portion of the claim is disputed and what portion is undisputed. Allows this time period to be extended by mutual agreement between the public entity and the contractor. Requires the contractor to furnish reasonable documentation to support the claim. Specifies that if a public entity needs approval from its governing board to provide such a written statement to the contractor and its governing board does not meet within the 45-day period or within the mutually agreed to extension of time following receipt of the claim, allows the public entity to have up to three days following the next publicly noticed meeting of its governing board after the 45-day period or time extension to provide the written statement to the contractor. Provides that failure by the public entity to respond to the claim within the specified time period shall result in the claim being rejected in its entirety. Requires any payment due on the undisputed portion of the claim to be processed and made within 60 days after the public entity issues its written statement. If the contractor disputes the public entity's written statement or if the public entity fails to respond to a claim within the time prescribed, allows the contractor to demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Requires any disputed portion of the claim following the conclusion of the meet-and-confer conference, as identified in writing, to be submitted to non-binding arbitration, with the public entity and the contractor sharing the associated costs equally. Unless otherwise agreed to by the public entity and the contractor in writing, provides that the mediation conducted pursuant to this bill shall excuse any further obligation to mediate after litigation has commenced. Allows a contractor to present a claim to a public entity on behalf of a subcontractor or a lower-tier subcontractor lacking legal standing to assert such a claim. Requires the contractor to notify the subcontractor in writing within 45 days as to whether the claim was presented to the public entity, or to provide the subcontractor a statement of reasons as to why the claim was not presented. Subjects amounts for claims not paid by the public entity to the contractor in a timely manner as required by this bill to bear interest at 7 percent per annum. Sunsets the provisions of the bill on January 1, 2019.	9/1/15	Senate Floor	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 1360 (Ting) Transportation Network Companies: Ridesharing	Allows a transportation network company or a charter-party carrier of passengers that prearranges a ride among multiple passengers who share the ride in whole or in part to charge an individual fare, rather than a vehicle-mileage or time-of-use fare, provided that all of the following conditions are met: (1) the vehicle seats no more than seven passengers, not including the driver; (2) the driver is a participating driver, as defined; (3) the vehicle is not used to provide public transit services or to carry passengers over a fixed route; (4) the vehicle is not used to provide pupil transportation or public paratransit services; and (5) the individual fare for each passenger is less than the fare that would be charged for the same ride to a passenger traveling alone.	7/2/15	Senate Energy, Utilities & Communications Committee	
AB 1364 (Linder) California Transportation Commission	Excludes the California Transportation Commission (CTC) from the California State Transportation Agency (CalSTA), and establishes it as a separate and independent entity in state government.	As Introduced	Assembly Transportation Committee	
AB 1398 (Wilk) CEQA: Sustainable Environmental Protection Act	Enacts the Sustainable Environmental Protection Act. Prohibits a cause of action on the grounds of non-compliance with the California Environmental Quality Act (CEQA) that relates to any topical area or criteria for which compliance obligations are identified. Also prohibits challenges to environmental documents based on non-compliance with CEQA if: (1) the environmental document discloses compliance with applicable environmental laws; (2) the project conforms with the use designation, density or building intensity in an applicable plan; and (3) the project approval incorporates applicable mitigation requirements into the environmental document. Specifies that the provisions of this bill only apply if the lead agency or project applicant has agreed to provide to the public in a readily accessible electronic format an annual compliance report prepared pursuant to a mitigation monitoring and reporting program required by CEQA.	As Introduced	Assembly Natural Resources Committee	
AB 1422 (Cooper) Transportation Network Companies: Pull-Notice System	Requires a transportation network company to participate in the Department of Motor Vehicles (DMV) pull-notice system to regularly check the driving records of all participating drivers, regardless of whether the participate driver is an employee or an independent contractor of the transportation network company.	7/16/15	Governor's Office	
AB 1459 (Kim) Toll Lanes: Orange County	Prohibits Caltrans from seeking or providing funding for construction of a toll lane on a public highway in Orange County unless the project is first approved by a two-thirds vote of the board of directors of the Orange County Transportation Authority (OCTA).	4/14/15	Assembly Transportation Committee	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
AB 1482 (Gordon) Climate Adaptation	By July 1, 2017, and every three years thereafter, requires the Natural Resources Agency to update the state's climate adaptation strategy, known as the Safeguarding California Plan. As part of the update, requires the Natural Resources Agency to coordinate with other state agencies to identify a lead agency or group of agencies to lead adaptation efforts in each sector. Requires updates to the Safeguarding California Plan to include all of the following: (1) vulnerabilities to climate change by sector, as identified by the lead agency or group of agencies, and by regions; and (2) priority actions needed to reduce risks in those sectors, as identified by the lead agency or group of agencies. Requires the Natural Resources Agency to report annually to the Legislature on actions taken by each applicable agency to implement the Safeguarding California Plan. To address the vulnerabilities identified in the Safeguarding California Plan, requires state agencies to work to maximize, where applicable and feasible, the following objectives: (1) educating the public about the consequences of climate change; (2) ensuring that there is a continued repository for scientific data on climate change and climate adaptation in California in order to facilitate educated state and local policy decisions; and to help identify primary risks from climate change to residents, property, communities, and natural systems across the state; (3) promoting the use of the plan to inform planning decisions; and to ensure that state investments consider climate change impacts, as well as promote the use of natural systems and natural infrastructure, when developing physical infrastructure to address adaptation; (4) encouraging regional collaborative planning efforts to address regional climate change impacts and adaptation strategies; (5) promoting drought resiliency through an integrated water supply, delivery and capture system that is coordinated; and that can be resilient to a multi-year drought scenario, while protecting water quality and public health; (6) building resilient communities by developing urban greening projects that reduce air pollution and heat reflection in urban areas; and that create livable, sustainable communities in urban cores to promote infill development and reduce greenhouse gas emissions; (7) protecting and enhancing habitat, species strongholds and wildlife corridors that are critical to the preservation of species that are at risk from the consequences of climate change; and (8) promoting actions to ensure healthy soils and sustainable agriculture; inform reliable transportation planning; improve emergency management response across sectors; ensure sufficient, reliable and safe energy; improve capacity to reduce and respond to public health threats; address the impacts of climate change on disadvantaged communities; and protect cultural resources from the impacts of climate change.	9/1/15	Assembly Floor: Concurrence	
AB 1509 (R. Hernandez) Employees: Protected Disclosures and Complaints	Prohibits an employer from discharging an employee, or in any manner discriminating, retaliating or taking an adverse action against an employee because he or she is a family member of a person who has: (1) filed a claim with or instituted a proceeding before the Labor Commissioner; (2) testified or is going to testify in a proceeding before the Labor Commissioner; (3) disclosed information to a government or law enforcement agency, as specified; (4) participated on an occupational health and safety committee; or (5) exercised any other rights under the state's Whistleblower Protection Statutes.	9/1/15	Governor's Office	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
ACA 3 (Gallagher) Public Employees' Retirement	Calls for placing before the voters an amendment to the California Constitution to make several changes to retirement benefits for public employees. Requires any enhancement to a public employee's retirement formula or benefit adopted on or after the effective date of this constitutional amendment to apply only to service performed on and after the operative date of the enhancement, and not to any service performed prior to that date. Provides that if a change to a public employee's retirement membership classification or a change in employment results in an enhancement to the retirement formula or benefit applicable to that employee, requires that enhancement to apply only to service performed on or after the operative date of the change, and not to service performed prior to that date. Specifies that an increase to a retiree's annual cost-of-living adjustment within existing statutory limits is not considered to be an enhancement to a retirement benefit.	As Introduced	Assembly Public Employees, Retirement & Social Security Committee	
ACA 4 (Frazier) Local Transportation Special Taxes	Calls for placing before the voters an amendment to the California Constitution to allow a city, county or special district to impose, extend or increase a sales and use or a transactions and use tax for the purpose of providing funding for local transportation projects, if approved by a 55 percent majority vote. Defines "local transportation project" to mean the planning, design, development, financing, construction, reconstruction, rehabilitation, improvement, acquisition, lease, operation, or maintenance of local streets, roads and highways; state highways and freeways; and public transit systems. Specifies that this constitutional amendment shall become effective upon approval by the voters, and shall apply to any local measure imposing, extending or increasing a sales and use or transactions and use tax to fund local transportation projects that is submitted at the same election.	8/17/15	Assembly Appropriations Committee	Support
ABX1-1 (Alejo) Transportation Funding	Retains the revenues generated by vehicle weight fees in the State Highway Account, and requires the General Fund to pay debt service on transportation general obligation bonds. With regard to the revenues derived from increases in the state gasoline excise tax resulting from the transportation funding swap initially enacted in 2010 and reaffirmed in 2011, requires all of the money to be allocated in the following manner: (1) 44 percent to the State Transportation Improvement Program (STIP); (2) 44 percent to cities and counties for local streets and roads; and (3) 12 percent to the State Highway Operation & Protection Program (SHOPP). With respect to any loans made to the General Fund from the State Highway Account, the Public Transportation Account, the Bicycle Transportation Account, the Motor Vehicle Fuel Account, the Highway Users Tax Account, the Pedestrian Safety Account, the Transportation Investment Fund, the Traffic Congestion Relief Fund, the Motor Vehicle Account, and the Local Airport Loan Account with a repayment date of January 1, 2019, or later to be repaid to the account from which the loan was made by December 31, 2018. Recaptures revenues generated by Caltrans through the rental or sale of property, the sale of documents and other miscellaneous services to the public for transportation purposes.	As Introduced	Assembly Desk	Support
ABX1-2 (Perea) Public-Private Partnerships	Extends existing statutory authority for Caltrans and regional transportation agencies, including the Santa Clara Valley Transportation Authority (VTA), to utilize public-private partnerships for transportation infrastructure projects indefinitely.	As Introduced	Assembly Desk	Support

State Assembly Bills	Subject	Last Amended	Status	VTA Position
ABX1-3 (Frazier) Transportation Funding: State Highways and Local Roadways	Declares the intent of the Legislature to enact a bill to establish permanent, sustainable sources of transportation funding to maintain and repair the state's highways, local roads, bridges, and other critical transportation infrastructure.	As Introduced	Senate Rules Committee	
ABX1-4 (Frazier) Transportation Funding: Trade Corridors and Local Transportation Infrastructure	Declares the intent of the Legislature to enact a bill to establish permanent, sustainable sources of transportation funding to improve the state's key trade corridors, and support efforts by local governments to repair and improve local transportation infrastructure.	As Introduced	Senate Rules Committee	
ABX1-6 (R. Hernandez) Cap-and-Trade: Affordable Housing and Sustainable Communities Program	Requires 20 percent of the cap-and-trade auction proceeds provided to the Affordable Housing and Sustainable Communities Program to be allocated to rural areas. Requires half of these funds to be allocated to eligible affordable housing projects. Requires the Strategic Growth Council to amend its guidelines for the Affordable Housing and Sustainable Communities Program to be consistent with the provisions of this bill.	As Introduced	Assembly Desk	
ABX1-7 (Nazarian) Cap-and-Trade: Public Transit Funding	Increases the amount of cap-and-trade auction proceeds continuously appropriated from the Greenhouse Gas Reduction Fund to the Low Carbon Transit Operations Program from 5 percent to 10 percent, and to the Transit and Intercity Rail Capital Program from 10 percent to 20 percent.	As Introduced	Assembly Desk	
ABX1-8 (Chiu) Diesel Sales Tax	Increases the sales and use tax rate on diesel fuel by 3.5 percent. Dedicates the revenues derived from this increase to the State Transit Assistance Program (STA).	As Introduced	Assembly Desk	
ABX1-9 (Levine) Richmond-San Rafael Bridge	By September 30, 2015, requires Caltrans to implement an operational improvement project that does the following: (1) temporarily restores to automobile traffic the third eastbound lane on I-580 that existed prior to 1977 and that was temporarily restored immediately following the Loma Prieta earthquake, from the beginning of the Richmond-San Rafael Bridge in Marin County to Marine Street in Contra Costa County; and (2) temporarily converts the existing one-way bicycle lane along the north side of westbound I-580 from the Marine Street Interchange to Stenmark Drive and the toll plaza in Contra Costa County into a bidirectional bicycle and pedestrian lane. Requires Caltrans to keep the temporary third automobile lane and the temporarily bidirectional bicycle lane in place until the department has completed the Richmond-San Rafael Bridge Access Improvement Project.	As Introduced	Assembly Desk	

State Assembly Bills	Subject	Last Amended	Status	VTA Position
ABX1-10 (Levine) Public Works Contracts: Mega-Infrastructure Projects	Prohibits a state entity in a mega-infrastructure project contract from providing for the payment of extra compensation to the contractor until the project has been completed, and an independent third party has verified that the project meets all architectural or engineering plans and safety specifications of the contract. Applies to contracts entered into or amended on or after the effective date of the bill. Defines “mega-infrastructure project” to mean the erection, construction, alteration, repair, or improvement of any public structure, building, road, or other public improvement of any kind that exceeds \$1 billion in cost.	As Introduced	Assembly Desk	
ABX1-12 (Nazarian) LA Metro: Public-Private Partnerships	Authorizes the Los Angeles County Metropolitan Transportation Authority (LA Metro) to enter into agreements with private entities for transportation projects in Los Angeles County, including on the state highway system, subject to various terms and requirements. Allow LA Metro to impose tolls and user fees for use of those projects. Requires LA Metro to implement such projects on the state highway system in cooperation with Caltrans pursuant to an agreement that addresses all matters related to design, construction, maintenance, and operation of state highway facilities in connection with the project. Authorizes LA Metro to issue bonds to finance any costs necessary to implement such a project, payable from revenues generated from the project or other available resources.	As Introduced	Assembly Desk	

State Senate Bills

State Senate Bills	Subject	Last Amended	Status	VTA Position
SB 1 (Gaines) Cap-and-Trade: Transportation Fuels	Delays the inclusion of suppliers of transportation fuels in the cap-and-trade system administered by the California Air Resources Board (CARB) from January 1, 2015, to January 1, 2025.	As Introduced	Senate Environmental Quality Committee	
SB 3 (Leno) Minimum Wage	Increases the minimum wage for all industries as follows: (1) to \$11 per hour beginning January 1, 2016; and (2) to \$13 per hour beginning July 1, 2017. Commencing on January 1, 2019, requires the Industrial Welfare Commission to automatically adjust the minimum wage each year to maintain employee purchasing power diminished by the rate of inflation that occurred during the previous year. Requires the automatic adjustment to be calculated using the California Consumer Price Index. Prohibits the Industrial Welfare Commission from adjusting the minimum wage if the average percentage of inflation for the previous year was negative. Specifies that the provisions of the bill apply to all industries, including public and private employment.	3/11/15	Assembly Appropriations Committee	
SB 5 (Vidak) Cap-and-Trade: Transportation Fuels	Delays the inclusion of suppliers of transportation fuels in the cap-and-trade system administered by the California Air Resources Board (CARB) from January 1, 2015, to January 1, 2020. Applies the provisions of the bill retroactively from January 1, 2015.	As Introduced	Senate Environmental Quality Committee	
SB 8 (Hertzberg) Sales and Use Tax: Services	Imposes a state sales and use tax on the gross receipts from the sale of, or the receipt of the benefits of, services at an unspecified rate.	2/10/15	Senate Governance & Finance Committee	

State Senate Bills	Subject	Last Amended	Status	VTA Position
SB 9 (Beall) Cap-and-Trade: Transit and Intercity Rail Capital Program	Clarifies that the Transit and Intercity Rail Capital Program funded with cap-and-trade auction proceeds will be used for transformative capital improvements that will modernize California's intercity, commuter and urban rail systems; and bus and ferry transit systems to achieve all of the following policy objectives: (1) reducing greenhouse gas emissions; (2) expanding and improving public transit service to increase ridership; (3) integrating the service of the state's various public rail operators, including integration with high-speed rail; and (4) improving public transit safety. Defines "transformative capital improvements" to mean a rail, bus or ferry project that will significantly reduce vehicle miles traveled, congestion and greenhouse gas emissions by creating a new transit system, increasing the capacity of an existing transit system, or otherwise significantly increasing the ridership of a transit system. In selecting projects for funding under this program, requires the California State Transportation Agency (CalSTA) to consider the extent to which a project reduces greenhouse gas emissions. In addition, requires CalSTA to consider whether a project: (1) reduces the number of auto trips; (2) improves connectivity, integration and coordination of the state's various public transit systems, including the high-speed rail system; (3) has supplemental funding committed to it from non-state sources; and (4) increases public transit ridership. Allows an eligible applicant to submit an application to CalSTA to fund a project over multiple fiscal years. Authorizes CalSTA to make multi-year funding commitments for projects that are proposed by an eligible applicant to be funded from the Transit and Intercity Rail Capital Program over a period of more than one fiscal year. Requires an application to: (1) define the project purpose, intended scope, proposed cost, intended funding sources, and schedule for project completion; (2) specify the phases of work for which an eligible applicant is seeking an allocation of funds from the Transit and Intercity Rail Capital Program; (3) identify the sources and timing of all funds required to undertake and complete any phase of a project for which an eligible applicant is seeking an allocation of funds from the Transit and Intercity Rail Capital Program; and (4) include information describing the funding sources and approach to ensuring that ongoing operating and maintenance costs of the project are funded through the useful life of the project, as applicable. Allows an eligible applicant to submit more than one grant application for consideration for funding under the Transit and Intercity Rail Capital Program. By July 1, 2018, requires CalSTA to approve a five-year program of projects for funding under the Transit and Intercity Rail Capital Program, beginning with FY 2019. Requires CalSTA to update the program of projects every two years. Allows an eligible applicant to use a project study report or equivalent document to demonstrate the eligibility of a project for inclusion in the five-year program of projects. For a project to be funded from the Transit and Intercity Rail Capital Program over a period of more than one fiscal year, requires CalSTA, at the request of an eligible application, to enter into and execute a multi-year funding agreement with the applicant for an amount of program dollars and for a duration, as determined jointly by CalSTA and the applicant. Allows for the use of Letters of No Prejudice (LONPs), so that project sponsors can advance their projects with local money and then get reimbursed with Transit and Intercity Rail Capital Program dollars when they become available.	9/1/15	Senate Floor: Concurrence	Support

State Senate Bills	Subject	Last Amended	Status	VTA Position
SB 16 (Beall) Road Maintenance and Rehabilitation Program	Establishes the Road Maintenance and Rehabilitation Program for an initial five-year period running through FY 2020. Allows the Legislature to reauthorize the program beyond FY 2020. Proposes to generate between \$2 billion and \$4 billion per year in new revenues for transportation purposes from the following sources: (1) a temporary 10-cent increase in the gasoline excise tax; (2) a temporary 12-cent increase in the diesel excise tax; (3) a temporary registration surcharge of \$35 per year imposed on all motor vehicles; (4) an additional, permanent registration surcharge of \$100 per year imposed on zero-emission vehicles; (5) full repayment over the next three years of all outstanding loans owed by the General Fund to the State Highway Account, the Motor Vehicle Fuel Account, the Highway Users Tax Account (HUTA), and the Motor Vehicle Account; and (6) permanent recapture of vehicle weight fee revenues for transportation projects to be accomplished incrementally over a five-year period. Provides for an incremental increase over a five-year period in the vehicle license fee from 0.65 percent to 1 percent of the market value of a vehicle to backfill the General Fund for the loss of vehicle weight fee revenues. Dedicates these license fee revenues to paying debt service for transportation-related general obligation bonds. Terminates the increases in the gasoline and diesel excise taxes, as well as the \$35 vehicle registration surcharge, if the Road Maintenance and Rehabilitation Program is not reauthorized. Calls for 2 cents of the 12-cent increase in the diesel excise tax to be deposited into the Trade Corridors Improvement Fund and used for goods movement projects programmed by the California Transportation Commission (CTC). Requires the balance to be deposited into a new Road Maintenance and Rehabilitation Account. Requires 5 percent of the funds in the Road Maintenance and Rehabilitation Account to be set aside for allocation to counties that currently do not have a local transportation sales tax in place, but gain voter approval for one after July 1, 2015. Requires the CTC to develop guidelines to define the specific methodology that would be used to distribute these funds to eligible counties. Specifies that any of the 5-percent set-aside that is not allocated to counties in a given fiscal year would be split 50/50 between the State Highway Operation and Protection Program (SHOPP) and local streets/roads. Allocates the remaining balance in the account after the 5-percent set-aside as follows: (1) 50 percent to the SHOPP; and (2) 50 percent to cities and counties for maintenance and rehabilitation work on their local roadway systems. In order to remain eligible for an allocation under the Road Maintenance and Rehabilitation Program, requires cities and counties to maintain their historic commitment of local funds for street/road purposes by annually spending not less than the average of its expenditures from FY 2010, FY 2011 and FY 2012. Establishes a substantial oversight role for the CTC to ensure that the funds allocated under the Road Maintenance and Rehabilitation Program are used by Caltrans and cities/counties in the most efficient and effective manner possible. Requires Caltrans, by April 1, 2016, to submit a plan to the CTC to increase the department's efficiency by up to 30 percent over the subsequent three years.	6/1/15	Senate Floor	Support

State Senate Bills	Subject	Last Amended	Status	VTA Position
SB 32 (Pavley) Greenhouse Gas Emissions Limit	Requires the California Air Resources Board (CARB), based on the best available scientific, technological and economic assessments, to approve all of the following: (1) a statewide greenhouse gas emissions limit that is equivalent to 40 percent below the 1990 level to be achieved by 2030; and (2) a statewide greenhouse gas emissions limit that is equivalent to 80 percent below the 1990 level to be achieved by 2050. Authorizes CARB to adopt an interim greenhouse gas emissions level target to be achieved by 2040. Requires CARB to make recommendations to the Governor and the Legislature on how to continue reductions of greenhouse gas emissions beyond 2050. Provides that the Legislature and appropriate state agencies should adopt complementary policies ensuring that long-term emissions reductions advance all of the following: (1) job growth and local economic benefits in California; (2) public health benefits for California residents, particularly in disadvantaged communities; (3) innovation in technology, as well as in energy, water and resources management practices; and (4) regional and international collaboration to adopt similar greenhouse gas emissions reduction policies.	6/1/15	Assembly Floor	
SB 34 (Hill) Automated License Plate Recognition Systems	Requires an operator and an end-user of an automated license plate recognition (ALPR) system to do all of the following: (1) maintain reasonable security procedures and practices, including operational, administrative, technical, and physical safeguards, to protect ALPR information from unauthorized access, destruction, use, modification, or disclosure; and (2) implement a usage and privacy policy in order to ensure that the collection, use, maintenance, sharing, and dissemination of ALPR information is consistent with respect for individuals' privacy and civil liberties. If an ALPR operator accesses or provides access to ALPR information, requires the operator to do both of the following: (1) maintain a record of that access; and (2) use that ALPR information only for the authorized purposes in its usage and privacy policy. In addition to any other sanctions, penalties or remedies provided under current law, allows an individual who has been harmed by a violation under the provisions of this bill to bring a civil action in any court of competent jurisdiction against a person who knowingly caused the harm. Includes in the definition of "personal information" data collected through the use or operation of an ALPR system, when that information is not encrypted and is used in combination with an individual's name.	7/13/15	Assembly Floor	
SB 39 (Pavley) HOV Lanes: Low-Emission and Fuel-Efficient Vehicles	Increases the number of green stickers that can be issued by the Department of Motor Vehicles (DMV) to allow certain low-emission and fuel-efficient vehicles to use high-occupancy vehicle (HOV) lanes regardless of the number of occupants from 70,000 to 85,000.	4/8/15	Assembly Transportation Committee	
SB 64 (Liu) California Transportation Plan	Requires the California Transportation Commission (CTC) to: (1) review the update to the California Transportation Plan prepared by Caltrans in 2015 and every five years thereafter; and (2) prepare specific, action-oriented and pragmatic recommendations for transportation system improvements. Requires the CTC to submit a report containing its specific recommendations to the Governor and the Legislature by December 31, 2016, and every five years thereafter. Requires the CTC to include in its annual report to the Legislature specific, action-oriented and pragmatic recommendations for legislation to improve California's transportation system.	6/24/15	Senate Floor: Concurrence	

State Senate Bills	Subject	Last Amended	Status	VTA Position
SB 122 (Jackson) CEQA: Record of Proceedings	At the request of a project applicant, requires the lead agency for California Environmental Quality Act (CEQA) purposes to prepare a record of proceedings concurrently with the preparation of a negative declaration, mitigated negative declaration, environmental impact report (EIR), or other environmental documents for the project, as specified. Requires the Office of Planning and Research to establish and maintain a database for the collection, storage, retrieval, and dissemination of environmental documents, notices of exemption, notices of preparation, notices of determination, and notices of completion provided to the office. Requires a lead agency to submit a sufficient number of copies, in either a hard copy or electronic form as required by the Office of Planning and Research, of its draft environmental document, proposed negative declaration or proposed mitigated negative declaration to the State Clearinghouse for review and comment by state agencies. Requires a lead agency to accept comments on these documents through electronic mail and to treat such comments as equivalent to written comments.	6/1/15	Assembly Appropriations Committee	
SB 158 (Huff) Public-Private Partnerships: I-710 Gap Closure Project	Allows Caltrans to enter into an agreement to implement a public-private partnership for the I-710 Gap Closure Project in Los Angeles County on or after January 1, 2017, which is when current state statutory authority for utilizing public-private partnerships for transportation projects expires.	3/26/15	Senate Transportation & Housing Committee	
SB 189 (Hueso) Clean Energy and Low-Carbon Economic and Jobs Growth Blue Ribbon Committee	Creates the Clean Energy and Low-Carbon Economic and Jobs Growth Blue Ribbon Committee within the California Environmental Protection Agency (CalEPA) to be comprised of seven members appointed by the Governor, the Speaker of the Assembly and the Senate Rules Committee. Requires the committee to consist solely of persons with expertise in economic, financial or policy aspects of clean energy, economic growth, job creation, workforce standards, or employment opportunities for disadvantaged workers. Requires the committee to advise state agencies on the most effective ways to: (1) expend funds related to clean energy and the reduction of greenhouse gas emissions; and (2) implement policies in order to maximize California's economic and employment benefits. In addition, requires the committee to do all of the following: (1) develop guidance for tracking, reporting and evaluating jobs outcomes for state clean energy and low-carbon investments; (2) develop guidance to measure the quantity and quality of jobs created by state clean energy and low-carbon investments, as well as the geographic and demographic distribution of those jobs; (3) advise state agencies on the most effective ways to require responsible contractor standards, as applicable, and minimum training and skill certifications for workers to ensure high-quality work for state clean energy and low-carbon investments; (4) advise state agencies on the most effective ways to connect disadvantaged communities to good quality jobs and career pathways created by state clean energy and low-carbon investments; and (5) advise state agencies on the most effective ways to align state clean energy and low-carbon training funds with existing state workforce development investments and strategies.	8/17/15	Assembly Appropriations Committee	
SB 192 (Liu) Bicycle Helmets	Requires the Office of Traffic Safety to conduct a comprehensive study of bicycle helmet use in California. Requires this study to include: (1) a determination of the percentage of California bicyclists who do not wear helmets; and (2) the fatalities and serious injuries that could have been avoided if helmets had been worn. Requires a report of the study's findings to be submitted to the Legislature by January 1, 2017.	4/30/15	Senate Appropriations Committee	

State Senate Bills	Subject	Last Amended	Status	VTA Position
SB 206 (Gaines) Vehicle Information Systems	Prohibits the California Air Resources Board (CARB) from obtaining locational data from a vehicle information system, except to assist the vehicle owner or operator to use as a defense in an enforcement action brought by CARB.	5/6/15	Senate Appropriations Committee	
SB 207 (Wieckowski) Greenhouse Gas Reduction Fund: State Agency Reporting	Requires any state agency expending cap-and-trade auction proceeds from the Greenhouse Gas Reduction Fund to post on its Internet Website a record describing each expenditure and how that expenditure would reduce greenhouse gas emissions.	3/24/15	Assembly Natural Resources Committee	
SB 231 (Gaines) Cap-and-Trade Funding: Water-Borne Transit	Allows water-borne transit to be eligible for cap-and-trade funding under the Low Carbon Transit Operations Program, and the Affordable Housing and Sustainable Communities Program.	6/2/15	Governor's Office	
SB 236 (Beall) City of San Jose: Streets, Highways and Public Service Easements	Until January 1, 2018, authorizes the San Jose City Council to vacate a public service easement located between Casselino Drive and Mullinix Way that is impassable for vehicular travel, if the council finds that the vacation will protect the public safety, or otherwise serve the public interest and convenience. Allows the council to reserve and except from such vacation an easement for a non-vehicular pathway for use by the public.	6/24/15	Governor's Office	
SB 246 (Wieckowski) Integrated Climate Adaptation and Resiliency Program	By January 1, 2017, requires the Office of Planning and Research to establish the Integrated Climate Adaptation and Resiliency Program to coordinate regional and local efforts with state climate adaptation strategies. Requires this program to include the following: (1) working with and coordinating local and regional efforts for climate adaptation and resilience; (2) assisting the Office of Emergency Services and other relevant state agencies with coordinating regular reviews and updates, as needed, of the state's Adaptation Planning Guide; (3) establishing, coordinating and maintaining a state clearinghouse for climate adaptation information; and (4) creating and conducting regular meetings of an advisory committee comprised of members from a range of disciplines in order to provide scientific and technical support. Within one year of an update of the Safeguarding California Plan, requires the Office of Emergency Services to review and update, as necessary, the state's Adaptation Planning Guide to provide tools and guidance to regional and local governments and agencies in creating and implementing climate adaptation and community resiliency plans and projects. Requires this update to: (1) consider the nexus between climate adaptation, community resiliency, public safety, and security; and (2) provide information and planning support for assessing climate vulnerabilities across impact sectors and regions, and for developing adaptation strategies that can be tailored to meet local needs.	9/4/15	Senate Floor: Concurrence	

State Senate Bills	Subject	Last Amended	Status	VTA Position
SB 254 (Allen) State Highways: Relinquishments	Authorizes the California Transportation Commission (CTC), without legislative action, to relinquish portions of the state highway system to a city or county, provided that the state highway facility is not an interstate highway or part of the state's interregional road network. Requires Caltrans to enter into an agreement with the local jurisdiction before the state highway facility can be relinquished. Requires this agreement to transfer all legal liability for the relinquished state highway facility from Caltrans to the local jurisdiction, as well as include any financial terms. Requires Caltrans and the local jurisdiction to agree on the condition of the relinquished state highway facility at the time of its transfer from the department to the local jurisdiction. Specifies that relinquishment shall not occur unless all of the following conditions are met: (1) the CTC has determined that the relinquishment is in the best interest of the state; (2) Caltrans completes a cost-benefit analysis on behalf of the state; and (3) the CTC holds a public hearing on the proposed relinquishment. In the case of a state highway that has been superseded by relocation, prohibits relinquishment until Caltrans has placed the facility in a state of good repair. By April 1, 2016, and biennially thereafter, requires Caltrans to report to the CTC on which state highway routes or segments primarily serve regional travel, and do not primarily facilitate the interregional movement of people and goods. Requires this report to: (1) identify those routes or segments that are the best candidates for relinquishment; and (2) include an aggregate estimate of future maintenance and preservation costs of the identified routes and segments. Requires the CTC to compile a list of all portions of the state highway system that have been relinquished in the previous 12 months and to include this information in its annual report to the Legislature.	6/2/15	Assembly Transportation Committee	
SB 272 (Hertzberg) California Public Records Act: Catalog of Enterprise Systems	In implementing the California Public Records Act, requires each local agency, except for a local educational agency, to create a catalog of enterprise systems to be made publicly available upon request in the office of the person designated by the agency's legislative body. Requires the catalog to disclose a list of the enterprise systems utilized by the local agency, as well as the following information for each system: (1) current system vendor; (2) current system product; (3) a brief statement of the system's purpose; (4) a general description of categories, modules or layers of data; (5) the department within the agency that serves as the system's primary custodian; (6) how frequently the system data is collected; and (7) how frequently system data is updated. Requires the catalog to be posted in a prominent location on the local agency's Internet Web site. Defines "enterprise system" to mean a software application or computer system that collects, stores, exchanges, and analyzes information that the agency uses that is both of the following: (1) a multi-departmental system or system that contains information collected about the public; and (2) a system of record that serves as an original source of data within the agency. Specifies that an enterprise system does not include the following: (1) information technology security systems, including firewalls and other cybersecurity systems; (2) physical access control systems, employee identification management systems, video monitoring, and other physical control systems; (3) infrastructure and mechanical control systems, including those that control or manage street lights, or water or sewer functions; (4) systems related to 911 dispatch and operation, or emergency services; or (5) the specific records that the information technology system collects, stores, exchanges, or analyzes. Requires the local agency to complete and post its catalog of enterprise systems by July 1, 2016, and to update the catalog annually.	8/17/15	Assembly Floor	

State Senate Bills	Subject	Last Amended	Status	VTA Position
SB 321 (Beall) Variable Gas Tax Rate	In calculating adjustments to the variable gas tax rate to be made for FY 2017 and each fiscal year thereafter in order to ensure that the same amount of revenue is generated as by the former state sales tax on gasoline pursuant to the 2010-2011 transportation funding swap, requires the Board of Equalization to use a combined average based on an estimate of fuel prices for the current fiscal year and the actuals for the four previous fiscal years, rather than using projections of fuel prices for only the upcoming fiscal year.	8/18/15	Assembly Appropriations Committee	Support
SB 344 (Monning) Commercial Driver's License: Education	Beginning January 1, 2018, requires a person, in addition to a written and driving test, to successfully complete a course of instruction from either a commercial driver training institution or a program offered by an employer that has been certified by the Department of Motor Vehicles (DMV) before he or she is issued an original commercial driver's license. Provides an exemption to this course of instruction requirement in the following cases: (1) a commercial motor vehicle driver with military motor vehicle experience who is currently licensed with the U.S. Armed Forces; (2) a commercial motor vehicle driver who presents a valid certificate of driving skill from an approved employer-testing program that includes a course of instruction that meets the minimum standards set by the DMV; (3) a commercial motor vehicle driver who presents a certificate issued by the California Highway Patrol (CHP) or a Transit Driver Training Record DL 260 form signed by an employer trainer certified by the Federal Transit Administration's "Train-the-Trainer" Program; or (4) a commercial motor vehicle driver who has received and documented training in compliance with the Education Code.	6/23/15	Assembly Appropriations Committee	
SB 348 (Galgiani) CEQA: Exemption for Railroad Grade Crossings	Extends from January 1, 2016, to January 1, 2019, an existing California Environmental Quality Act (CEQA) exemption relating to the closure of a railroad grade crossing by order of the California Public Utilities Commission (CPUC) that is determined to present a threat to public safety.	4/6/15	Signed into Law: Chapter #143	

State Senate Bills	Subject	Last Amended	Status	VTA Position
SB 350 (de Leon) Clean Energy and Pollution Reduction Act of 2015	Enacts the Clean Energy and Pollution Reduction Act of 2015. Requires the amount of electricity generated from renewable sources to be equal to at least 50 percent by December 31, 2030. Requires the California Air Resources Board (CARB) to adopt and implement motor vehicle standards, in-use performance standards and motor vehicle fuel specifications for the control of air contaminants and sources of air pollution that further achieving a reduction in petroleum use in motor vehicles by 50 percent by January 1, 2030, unless preempted by federal law. By January 1, 2017, requires CARB to prepare a strategy and implementation plan to achieve this reduction in petroleum use. Beginning January 1, 2020, and every three years thereafter, requires CARB to update this strategy and plan. Establishes a state policy to fully evaluate the economic and environmental costs of petroleum use, as well as the economic and environmental costs of other transportation fuels and options, and to establish a state transportation energy policy that results in the least economic and environmental cost. Establishes a state policy to exploit all practicable and cost-effective conservation and improvements in the efficiency of energy use and distribution, and to achieve energy security, diversity of supply sources and competitiveness of transportation energy markets in furtherance of reducing petroleum use in the transportation sector by 50 percent by January 1, 2030. By January 1, 2017, and every three years thereafter, requires the Energy Commission to update its program related to achieving greater energy savings in California's existing residential and non-residential building stock in furtherance of achieving an overall doubling of the energy efficiency of buildings by January 1, 2030. Establishes a state policy to encourage transportation electrification as a means to achieve ambient air quality standards and California's climate change goals. Requires the California Public Utilities Commission (CPUC), in consultation with CARB and the Energy Commission, to direct electrical corporations to propose multi-year programs and investments to accelerate widespread transportation electrification to reduce dependence on petroleum, meet air quality standards, and reduce greenhouse gas emissions to 40 percent below 1990 levels by 2030 and to 80 percent below 1990 levels by 2050. Requires the CPUC to review data concerning current and future electric transportation adoption rates and charging infrastructure utilization rates no less than every three years, and prior to any further authorization for an electrical corporation to collect additional new program costs related to transportation electrification in ratepayer rates. Requires CARB to identify and adopt appropriate policies to remove regulatory disincentives facing retail sellers and local publicly owned electric utilities from facilitating the achievement of greenhouse gas emissions reductions in other sectors through increased investments in transportation electrification. Requires these policies to include an allocation of greenhouse gas emissions allowances to retail sellers and local publicly owned electric utilities to account for increased greenhouse gas emissions in the electric sector from transportation electrification.	7/16/15	Assembly Floor	
SB 379 (Jackson) General Plans: Safety Element	Requires the safety element of a city's or county's general plan to be reviewed and updated as necessary to address climate adaptation and resiliency strategies applicable to that city or county. Requires the update to include a set of goals, policies and objectives based on a vulnerability assessment identifying the risks that climate change poses to the local jurisdiction and the geographic areas at risk from climate change impacts.	7/6/15	Governor's Office	

State Senate Bills	Subject	Last Amended	Status	VTA Position
SB 389 (Berryhill) CEQA: Sustainable Environmental Protection Act	Enacts the Sustainable Environmental Protection Act. Prohibits a cause of action on the grounds of non-compliance with the California Environmental Quality Act (CEQA) that relates to any topical area or criteria for which compliance obligations are identified. Also prohibits challenges to environmental documents based on non-compliance with CEQA if: (1) the environmental document discloses compliance with applicable environmental laws; (2) the project conforms with the use designation, density or building intensity in an applicable plan; and (3) the project approval incorporates applicable mitigation requirements into the environmental document. Specifies that the provisions of this bill only apply if the lead agency or project applicant has agreed to provide to the public in a readily accessible electronic format an annual compliance report prepared pursuant to a mitigation monitoring and reporting program required by CEQA.	4/6/15	Senate Environmental Quality Committee	
SB 391 (Huff) Assault and Battery: Public Transit Employees	Makes an assault committed against a public transit employee punishable by imprisonment in a county jail for up to one year, by a fine not to exceed \$2,000, or by both imprisonment and that fine. Makes a battery committed against a public transit employee punishable by imprisonment in a county jail for up to one year, by a fine not to exceed \$2,000, or by both imprisonment and that fine. Makes a battery committed against a public transit employee that results in an injury punishable by imprisonment in a county jail for up to one year, by a fine not to exceed \$2,000, or by both imprisonment and that fine; or by imprisonment in a county jail for 16 months, or two or three years.	4/21/15	Senate Public Safety Committee	
SB 398 (Leyva) Green Assistance Program	Establishes the Green Assistance Program to be administered by the California Environmental Protection Agency (CalEPA). Requires the Green Assistance Program to provide technical assistance to small businesses, small non-profit organizations and disadvantaged communities in applying for an allocation of cap-and-trade auction proceeds from the Greenhouse Gas Reduction Fund. Specifies that the Green Assistance Program may include the following: (1) basic information on available programs funded with cap-and-trade auction proceeds, and the eligibility requirements and deadlines for those programs; and (2) referrals to designated contact people in public agencies administering programs funded with cap-and-trade auction proceeds. Requires CalEPA to use existing resources appropriated by the Legislature in the annual Budget Act to administer the Green Assistance Program.	6/2/15	Assembly Appropriations Committee	
SB 400 (Lara) Cap-and-Trade: High-Speed Rail	Requires not less than 25 percent of the cap-and-trade auction proceeds continuously appropriated to the California High-Speed Rail Authority from the Greenhouse Gas Reduction Fund to be allocated for projects that either reduce or offset greenhouse gas emissions directly associated with the construction of the high-speed rail project and provide a co-benefit of improving air quality. Requires priority to be given to measures and projects in communities that are located in areas designated as extreme non-attainment. Provides that measures and project eligible for funding may include the following: (1) public transit improvements that reduce congestion; (2) transportation improvements that reduce congestion, including network improvements and roadway modifications; (3) alternative transportation options, including infrastructure improvements that support clean transportation, facilitate bicycle and pedestrian use, and connect bicycle and pedestrian routes to public transit facilities; (4) natural systems, including rural and urban forests, that reduce greenhouse gas emissions or increase the sequestration of carbon to mitigate the impacts of greenhouse gas emissions, and create greater climate resiliency; and (5) the use of low- and zero-emission equipment for transportation and construction.	6/1/15	Assembly Appropriations Committee	

State Senate Bills	Subject	Last Amended	Status	VTA Position
SB 413 (Wieckowski) Public Transit: Prohibited Conduct	Allows a public transit agency to issue citations for the following: (1) playing unreasonably loud sound equipment on or in a public transit facility or vehicle; (2) failing to comply with the warning of a public transit official related to disturbing another person by loud or unreasonable noise; and (3) failing to yield seating on a public transit vehicle reserved for an elderly or disabled person, if the agency enacts an ordinance to that effect after a public hearing.	9/3/15	Senate Floor: Concurrence	Support
SB 433 (Berryhill) Variable Gas Tax Rate: Department of Finance	For FY 2017 through FY 2021, requires the Department of Finance, rather than the Board of Equalization, to calculate any adjustments to the variable gas tax rate that would be needed to ensure that the same amount of revenue is generated as by the former state sales tax on gasoline pursuant to the 2010 transportation funding swap. Similarly, for FY 2017 through FY 2021, requires the Department of Finance, rather than the Board of Equalization, to adjust the diesel excise tax rate to maintain revenue neutrality with the increase in the state sales tax rate on diesel fuel that was enacted as part of the 2010 transportation funding swap.	5/7/15	Assembly Revenue & Taxation Committee	
SB 481 (Hueso) Local Government: Auditors	Prohibits the General Counsel's Office of a city, county or special district from having direct oversight over employees who conduct audits of those respective agencies.	6/18/15	Governor's Office	
SB 491 (Transportation Committee) Omnibus Transportation Bill	Enacts the annual omnibus bill of non-controversial and technical changes to state statutes pertaining to transportation. Among other things, requires the agency responsible for administering a county's share of Transportation Fund for Clean Air (TFCA) 40 percent funds to conduct a public meeting to adopt criteria for the expenditure of those funds, if the criteria have been modified from the previous year.	6/29/15	Governor's Office	
SB 497 (Vidak) Pupil Transportation Data	Beginning in FY 2015 and for each fiscal year thereafter, requires the state Department of Education to request pupil transportation data from each school district, charter school, county office of education, joint powers authority, and regional occupational center or program that provides pupil transportation. Specifies that the provision of this transportation data to the department shall be voluntary on the part of these entities. Requires the data requested to include the following: (1) revenues received for transportation purposes; (2) number of buses; (3) ridership of all pupils; (4) ridership of pupils with an individualized education program; (5) ridership of pupils who are eligible for free or reduced-price meals; (6) number of miles driven; (7) approved costs; (8) cost per mile; and (9) cost per pupil. Requires the department to annually post the data received on its Internet Web site.	4/8/15	Vetoed by the Governor	
SB 502 (Leno) BART: Purchase and Delivery of Electricity	Upon request by the Bay Area Rapid Transit District (BART), requires any electrical corporation that owns and operates transmission and distribution facilities that deliver electricity at one or more locations to the BART system to use the same facilities to delivery electricity generated by an eligible renewable energy resource without discrimination or delay.	4/8/15	Signed into Law: Chapter #146	

State Senate Bills	Subject	Last Amended	Status	VTA Position
SB 508 (Beall) Transportation Development Act and State Transit Assistance Program Funding	For purposes of determining eligibility for Transportation Development Act (TDA) funding, deletes the requirement for public transit agencies to maintain higher farebox recovery requirements based on FY 1979. Excludes from the definition of “operator cost” used to determine compliance with required TDA farebox recovery ratios the principal and interest payments on capital projects funded with certificates of participation, as well as the start-up costs for new services for a period of not more than two years. In addition, excludes cost increases beyond the change in the Consumer Price Index for all of the following: (1) fuel; (2) alternative fuel programs; (3) power, including electricity; (4) insurance premiums and payments in settlement of claims arising out of a public transit agency’s liability; and (5) federal and state mandates. Broadens the definition of “local funds” that could be used to supplement fare revenues when calculating the farebox recovery ratio for purposes of TDA to include any non-federal or non-state grant funds or other revenues generated by, earned by or distributed to a public transit agency. Clarifies that TDA Article 3 funds may be used for both bicycle and pedestrian safety education programs. Beginning July 1, 2016, rather than making a public transit agency ineligible to receive State Transit Assistance Program (STA) funding for operations for an entire year for failing to meet the required efficiency standard, instead reduces the agency’s operating allocation by a specified percentage based on the percentage amount that the agency failed to meet the standard, and requires these funds to be used for capital purposes.	8/20/15	Governor’s Office	Support
SB 513 (Beall) Carl Moyer Program	Makes a number of changes to the Carl Moyer Memorial Air Quality Standards Attainment Program. Authorizes any local air quality management and air pollution control district, regardless of its state attainment designation, to levy a motor vehicle registration fee of up to \$6 pursuant to the Carl Moyer Program. Authorizes the revenues from this fee to be used for the attainment or maintenance of state or federal ambient air quality standards, the reduction of toxic air contaminant emissions from motor vehicles, and alternative fuel and electric infrastructure projects. Increases the amount of fee revenues that an air district can use for administrative costs. Requires the California Air Resources Board (CARB) to establish cost-effectiveness values for projects funded under the Carl Moyer Program, taking into consideration the following factors: (1) the cost of emission control technologies; and (2) the cost-effectiveness values for NOx, particulate matter or reactive organic gases for any adopted rule or control measure in any air district’s approved state implementation plan, or rule adopted by CARB. Specifies that funds from federal, state and local programs or other public sources to be used for a project shall not be factored into the cost-effectiveness value calculation for that project. Specifies that project grants shall not be made to projects that exceed the cost-effectiveness values. Allows CARB to adjust the values of the maximum grant award criteria to improve the ability of the Carl Moyer Program to achieve its goals. Authorizes CARB to reserve up to 10 percent of program funds available each year to directly fund any project that is a covered source, as defined. Specifies that any Carl Moyer Program funds not liquidated by an air district by June 30 of the fourth calendar year following the date that CARB reserved the money for that district shall be returned to CARB within 90 days for future allocation. Requires CARB to revise the project grant criteria and guidelines pursuant to the changes proposed in this bill by July 1, 2017.	8/17/15	Assembly Floor	

State Senate Bills	Subject	Last Amended	Status	VTA Position
SB 516 (Fuller) Service Authority for Freeway Emergencies	Clarifies that a Service Authority for Freeway Emergencies (SAFE) shall determine how any funding it receives will be used for implementing, maintaining and operating a motorist aid system. Allows a SAFE to expend its funds for any of the following: (1) call boxes; (2) changeable message signs; (3) lighting for call boxes; (4) support for traffic operations centers; (5) contracting with tow truck operators to remove disabled vehicles from the traveled portion of a freeway right-of-way; (6) traveler information systems, intelligent transportation system architecture and infrastructure, and other transportation demand management services; and (7) safety-related hazard and obstruction removal. Requires a SAFE to submit any plan to remove call boxes from state highway routes within its jurisdiction to Caltrans and the California Highway Patrol (CHP) for review and approval.	8/24/15	Governor's Office	
SB 530 (Pan) Pedicabs	Expands the definition of "pedicabs" to include a four-wheeled device that: (1) is primarily or exclusively pedal-powered; (2) has a seating capacity for eight or more passengers; (3) cannot travel in excess of 15 miles per hour (mph); and (4) is being used for transporting passengers for hire. For pedicabs meeting this definition, requires the operator to: (1) be at least 21 years of age, with a valid California driver's license; and (2) be able to establish financial responsibility at all times. In addition, requires the pedicab to: (1) have a seating capacity for not more than 15 passengers; (2) be authorized by local ordinance or resolution to operate within the applicable local jurisdiction; and (3) be equipped with seat belts for all passengers, seat backs, brakes, reflectors, headlights, and grab rails. If alcoholic beverages are consumed on board the pedicab, requires all of the following: (1) the on-board consumption of alcoholic beverages to be authorized by a local ordinance or resolution; (2) the presence of an on-board safety monitor who is 21 years of age or older; (3) both the operator and the safety monitor to have completed either the Licensee Education on Alcohol and Drugs (LEAD) Program implemented by the Department of Alcoholic Beverage Control, or a training course utilizing the curriculum components recommended by the Responsible Beverage Service Advisory Board; (4) all passengers to be 21 years of age or older; (5) the alcoholic beverages to be supplied only by the passengers of the pedicab in enclosed, sealed and unopened containers prior to their consumption on board the pedicab; and (6) the alcoholic beverages to be consumed by a passenger only while he or she is physically on board and within the pedicab.	7/9/15	Assembly Floor	
SB 564 (Cannella) Traffic Violations: School Zones	Adds \$35 to the base fine for certain traffic violations that occur: (1) when passing a school building or grounds contiguous to a highway; or (2) when passing any school grounds not separated from the highway by a fence, gate or other physical barrier while in use by children. Requires the revenues from these additional fines to be deposited in the State Transportation Fund for school zone safety projects in the Active Transportation Program.	As Introduced	Assembly Transportation Committee	
SB 578 (Block) Income and Corporate Tax Credit for Electric Vehicle Charging Stations	For taxable years beginning on or after January 1, 2016, allows a tax credit in an amount equal to 30 percent of the cost of purchasing Level 2 or direct current fast charger electric vehicle charging stations to be used in the trade or business of the taxpayer. Provides that this tax credit may not exceed \$30,000 per taxable year.	4/13/15	Senate Appropriations Committee	

State Senate Bills	Subject	Last Amended	Status	VTA Position
SB 599 (Mendoza) State Agencies: Public Transit Service Contracts	Requires a state agency to give a 10 percent preference to any bidder on a contract to provide public transit services who agrees to retain employees of the prior contractor or subcontractor for a period of not less than 90 days.	As Introduced	Governor's Office	
SB 627 (Galgiani) Commuting Miles Tax Credit	For taxable years beginning on or after January 1, 2015, allows a tax credit in an amount computed by multiplying an unspecified dollar figure by the total number of a taxpayer's commuting miles.	As Introduced	Senate Governance & Finance Committee	
SB 698 (Cannella) Cap-and-Trade: School Zone Safety Projects	Requires an unspecified amount of cap-and-trade auction proceeds from the Greenhouse Gas Reduction Fund to be continuously appropriated to the State Highway Account for purposes of funding school zone safety projects under the state's Active Transportation Program.	As Introduced	Senate Environmental Quality Committee	
SB 706 (Pavley) Cap-and-Trade: Alternative Fuels	Allows cap-and-trade auction proceeds deposited into the Greenhouse Gas Reduction Fund to be used to encourage the in-state production of alternative fuels with low-carbon intensity from new and existing facilities using sustainable feedstocks.	4/6/15	Senate Appropriations Committee	
SB 719 (E. Hernandez) Caltrans: Motor Vehicle Technologies Testing	Authorizes Caltrans, in coordination with the California Highway Patrol (CHP), to conduct testing of technologies that enable drivers to safely operate motor vehicles with less than 100 feet between each vehicle or combination of vehicles. Requires Caltrans to report its findings from such testing to the Legislature by July 1, 2017.	4/21/15	Signed into Law: Chapter #163	
SB 757 (Wieckowski) South Bay Area Public Transit Service	States the intent of the Legislature to enact a bill to do the following: (1) require the Alameda County Transportation Commission to explore the feasibility of a multimodal station in the city of Fremont at a location that can be served by both Bay Area Rapid Transit District (BART) and Altamont Commuter Express (ACE) trains; and (2) require the Santa Clara Valley Transportation Authority (VTA) to explore expansion of light rail service to Levi's Stadium in the city of Santa Clara.	As Introduced	Senate Rules Committee	

State Senate Bills	Subject	Last Amended	Status	VTA Position
SB 767 (de Leon) LA Metro: Local Transportation Sales Taxes	In addition to any other tax that it is authorized to impose or has imposed, allows the Los Angeles County Metropolitan Transportation Authority (LA Metro) to impose a transactions and use tax for a period to be determined by the authority that would be applicable in the incorporated and unincorporated areas of Los Angeles County. Specifies that the rate of the tax authorized by this bill, when combined with the rate of the tax authorized by voter approval of Measure R in 2008 during any period when Measure R is in effect, and upon the expiration of Measure R, shall not exceed 1 percent. Requires the ordinance imposing the tax to contain the following: (1) an expenditure plan that lists the transportation projects and programs to be funded from net revenues from the tax; (2) a provision limiting LA Metro's costs of administering the ordinance and the net revenues from the tax to 1.5 percent of the total tax revenues; (3) a requirement that the net revenues from the tax, defined to mean the total tax revenues less any refunds, costs of administration by the state Board of Equalization and LA Metro's administrative costs, be used to fund the transportation projects and programs identified in the expenditure plan; and (4) the rate of the tax. For each project and program included in the expenditure plan, requires all of the following: (1) the most recent cost estimate; (2) the identification of the accelerated cost, if applicable; (3) the approximate schedule during which LA Metro anticipates funds will be available; and (4) the expected completion date within a three-year range. Provides that the ordinance shall become operative if approved by a two-thirds vote of the electorate in Los Angeles County. Allows LA Metro to incur bonded indebtedness payable from the net revenues of the tax.	7/16/15	Assembly Floor	
SB 773 (Allen) Vehicle Registration Fraud Study	Requests the University of California to conduct a study on motor vehicle registration fraud and failure to register a motor vehicle. If conducted, requires the study to include all of the following: (1) quantification of the magnitude of the problem; (2) the strategies being used by motorists to commit motor vehicle registration fraud; (3) the reasons for the behaviors of motorists who commit motor vehicle registration fraud or who fail to register their motor vehicles; (4) the costs to the state and local governments in lost revenues; (5) increases in air pollution; (6) other costs and consequences of these behaviors; and (7) recommended strategies for increasing compliance with registration requirements. Requires the Department of Motor Vehicles (DMV) to enter into an agreement with the University of California to share its vehicle registration information with university researchers for purposes of conducting the study. Requests the University of California to post a report regarding the study on its Internet Web site by January 1, 2017.	6/23/15	Assembly Transportation Committee	
SCA 7 (Huff) Motor Vehicle Fees and Taxes: Restrictions on Expenditures	Calls for placing before the voters an amendment to the California Constitution to prohibit the Legislature from borrowing revenues derived from fees and taxes imposed by the state on motor vehicles or their use or operations, and from using these revenues other than for state highways, local streets and roads, and fixed guideway mass transit as specified in Article 19 of the Constitution. Also prohibits these revenues from being pledged or used for the payment of principal and interest on bonds, or for other indebtedness. Requires the revenues derived from that portion of the vehicle license fee that exceeds 0.65 percent of the market value of a vehicle to be used for street and highway purposes. Prohibits the Legislature from borrowing these revenues and from using them other than as specifically permitted. Also prohibits these revenues from being pledged or used for the payment of principal and interest on bonds, or for other indebtedness.	5/28/15	Senate Transportation & Housing Committee	

State Senate Bills	Subject	Last Amended	Status	VTA Position
SBX1-1 (Beall) Transportation Funding	Proposes to generate between \$4 billion and \$5 billion per year in new revenues for transportation purposes from the following sources: (1) an increase in the gasoline excise tax of 12 cents per gallon; (2) an increase in the diesel excise tax of 22 cents per gallon; (3) a registration surcharge of \$35 per year imposed on all motor vehicles; (4) a registration surcharge of \$100 per year imposed on zero-emission vehicles; (5) repayment over the next three years of approximately \$1 billion in outstanding loans owed by the General Fund to the State Highway Account, the Motor Vehicle Fuel Account, the Highway Users Tax Account (HUTA), and the Motor Vehicle Account; and (6) a road access charge of \$35 per year imposed on all motor vehicles to be collected by the Department of Motor Vehicles (DMV) as part of the annual vehicle registration process. Indexes the gas tax and the diesel excise tax to inflation, beginning in 2019. Calls for 12 cents of the 22-cent increase in the diesel excise tax to be deposited into the Trade Corridors Improvement Fund and used for goods movement projects programmed by the California Transportation Commission (CTC). Requires the balance of the new revenues generated from the tax and fee increases to be deposited into a new Road Maintenance and Rehabilitation Account. Requires 5 percent of the funds in the Road Maintenance and Rehabilitation Account to be set aside for allocation to counties that currently do not have a local transportation sales tax, but gain voter approval for one after July 1, 2015. Requires the CTC to develop guidelines to define the specific methodology that would be used to distribute these funds to eligible counties. Requires any of the 5-percent set-aside that is not allocated to counties in a given fiscal year to be split 50/50 between the State Highway Operation and Protection Program (SHOPP) and local streets/roads. Allocates the remaining balance in the account after the 5-percent set-aside as follows: (1) 50 percent to the SHOPP; and (2) 50 percent to cities and counties for maintenance and rehabilitation work on their local roadway systems. In the latter case, equally divides the funds between cities and counties, with the cities' portion being allocated by a formula based on population, and the counties' share by a formula based on vehicle registrations and miles of maintained county roads. Requires cities and counties to use their formula shares for any of the following: (1) improvements to transportation facilities that will assist in reducing further deterioration of the existing road system; (2) to satisfy a local match requirement for federal or state funds for similar purposes; or (3) an active transportation project that is done in conjunction with a roadway maintenance, repair or rehabilitation project. Allows a city or county to spend its formula share for other priorities only if it has an average Pavement Condition Index that meets or exceeds 85. In order to remain eligible for an allocation from the Road Maintenance and Rehabilitation Account, requires cities and counties to maintain their historic commitment of local funds for street/road purposes by annually spending not less than the average of its expenditures from FY 2010, FY 2011 and FY 2012. Establishes a substantial oversight role for the CTC to ensure that the funds allocated from the Road Maintenance and Rehabilitation Account are used by Caltrans and cities/counties in the most efficient and effective manner possible. Requires Caltrans, by April 1, 2016, to submit a plan to the CTC to increase its efficiency by up to 30 percent over the subsequent three years. Requires Caltrans to use any resulting savings from this effort for state highway maintenance work or SHOPP projects.	8/25/15	Senate Appropriations Committee	Support

State Senate Bills	Subject	Last Amended	Status	VTA Position
SBX1-2 (Huff) Cap-and-Trade: State Highways and Local Roadways	Requires the Legislature to appropriate cap-and-trade auction proceeds generated from the transportation fuels sector for transportation infrastructure, including public streets and highways, but excluding high-speed rail.	As Introduced	Senate Transportation & Infrastructure Development Committee	
SBX1-3 (Vidak) High-Speed Rail: Bond Funding	Specifies that no further bonds shall be sold for high-speed rail purposes pursuant to the Safe, Reliable High-Speed Passenger Train Bond Act for the 21 st Century (Proposition 1A), except as specifically provided with respect to an existing appropriation for early improvement projects related to the Phase I blended system. Upon appropriation by the Legislature, requires the unspent proceeds received from outstanding bonds issued and sold for high-speed rail purposes prior to the effective date of the provisions of this bill to be redirected to retiring the debt incurred from the issuance and sale of those outstanding bonds. Allows the remaining unissued bonds, as of the effective date of the provisions of this bill, that were authorized for high-speed rail purposes to be issued and sold. Upon appropriation by the Legislature, requires the net proceeds from the sale of these remaining unissued bonds to be made available as follows: (1) 50 percent to Caltrans to fund repair and new construction projects on state highways and freeways; and (2) 50 percent to Caltrans to create a program to fund repair and new construction projects on local streets and roads, with each county receiving a base amount of funding, and any additional funding being allocated based on a county's population. Makes no changes to the authorization under Proposition 1A for the issuance of \$950 million in bonds for rail purposes other than high-speed rail.	8/17/15	Senate Transportation & Infrastructure Development Committee	
SBX1-4 (Beall) Transportation Funding: State Highways and Local Roadways	Declares the intent of the Legislature to enact statutory changes to establish permanent, sustainable sources of transportation funding to maintain and repair the state's highways, local roads, bridges, and other critical transportation infrastructure.	9/4/15	Assembly Floor	
SBX1-5 (Beall) Transportation Funding: Trade Corridors and Local Transportation Infrastructure	Declares the intent of the Legislature to enact a bill to establish permanent, sustainable sources of transportation funding to improve the state's key trade corridors, and support efforts by local governments to repair and improve local transportation infrastructure.	As Introduced	Assembly Desk	
SBX1-6 (Runner) Cap-and-Trade: High-Speed Rail	Prohibits the use of cap-and-trade auction proceeds for the state's high-speed rail project. Requires 65 percent of the cap-and-trade auction proceeds deposited into the Greenhouse Gas Reduction Fund to be distributed to the California Transportation Commission (CTC) for allocation to high-priority transportation projects, as determined by the commission. Requires the CTC to allocate these funds as follows: (1) 40 percent to state highway projects; (2) 40 percent to local street/road projects, equally divided between cities and counties; and (3) 20 percent to public transit projects.	As Introduced	Senate Transportation & Infrastructure Development Committee	

State Senate Bills	Subject	Last Amended	Status	VTA Position
SBX1-7 (Allen) Diesel Sales Tax	Increases the sales and use tax rate on diesel fuel by 3.5 percent. Dedicates the revenues derived from this increase to the State Transit Assistance Program (STA).	As Introduced	Senate Appropriations Committee	
SBX1-8 (Hill) Cap-and-Trade: Public Transit Funding	Increases the amount of cap-and-trade auction proceeds continuously appropriated from the Greenhouse Gas Reduction Fund to the Low Carbon Transit Operations Program from 5 percent to 10 percent, and to the Transit and Intercity Rail Capital Program from 10 percent to 20 percent.	As Introduced	Senate Appropriations Committee	
SBX1-9 (Moorlach) Caltrans: Architectural and Engineering Services	Prohibits Caltrans from using any non-recurring funds, including loan repayments, bond funds or grant funds, to pay the salaries or benefits of any permanent civil service position within the department. Beginning on July 1, 2016, requires Caltrans to contract with qualified private entities for a minimum of 15 percent of the total annual value of architectural and engineering services with respect to public works projects undertaken by the department. Increases this percentage each year to a minimum of 50 percent by July 1, 2023.	As Introduced	Senate Transportation & Infrastructure Development Committee	
SBX1-10 (Bates) State Transportation Improvement Program	Revises the process for programming and allocating the 75-percent share of federal and state funds available for regional transportation improvement programs (RTIPs). Requires the California Transportation Commission (CTC) to compute the annual county share amounts for each county for programming and allocation under the RTIPs. Requires these funds, along with an appropriate amount of capital outlay support dollars, to be appropriated annually through the Budget Act. Upon the enactment of the Budget Act, requires Caltrans to apportion the RTIP county shares for each county as block grants to the applicable regional transportation planning agency (RTPA). Requires the RTPAs to identify the transportation capital improvement projects to be funded with these dollars in their RTIPs. Requires the CTC to incorporate the RTIPs into the State Transportation Improvement Program (STIP). Eliminates the role of the CTC in programming and allocating funding for RTIP projects, but retains certain oversight roles of the commission with respect to the expenditure of these dollars. Repeals provisions in current law governing the computation of county shares over multiple fiscal years.	As Introduced	Senate Transportation & Infrastructure Development Committee	
SBX1-11 (Berryhill) CEQA: Exemption for Certain Roadway Projects	Until January 1, 2025, exempts from the California Environmental Quality Act (CEQA) a project to repair, maintain or make minor alterations to an existing local or state roadway if all of the following conditions are met: (1) the project does not cross a waterway; (2) the project involves negligible or no expansion of an existing use; (3) the site of the project does not contain wetlands or riparian areas, and does not have significant value as a wildlife habitat; (4) the project does not harm any protected species under federal or state law, or under any local ordinances; (5) the project does not impact cultural resources; and (6) the roadway does not affect scenic resources.	As Introduced	Senate Transportation & Infrastructure Development Committee	

State Senate Bills	Subject	Last Amended	Status	VTA Position
SBX1-12 (Runner) California Transportation Commission	Excludes the California Transportation Commission (CTC) from the California State Transportation Agency (CalSTA) and, instead, establishes the commission as a separate entity in state government to act in an independent oversight role. Requires Caltrans to submit its proposed program of projects for the State Highway Operation and Protection Program (SHOPP) to the CTC for review by January 31 of each even-numbered year. Requires Caltrans to program capital outlay support resources for each project included in the SHOPP. Requires Caltrans to provide the CTC with detailed information for all programmed SHOPP projects, including cost, scope and schedule. Specifies that the CTC is not required to approve the SHOPP in its entirety, as submitted by Caltrans, and may approve or reject individual SHOPP projects programmed by the department. Requires Caltrans to submit to the CTC for approval any changes in a programmed SHOPP project's cost, scope or schedule.	8/20/15	Senate Appropriations Committee	
SBX1-13 (Vidak) Office of the Transportation Inspector General	Creates the Office of the Transportation Inspector as an independent state government entity to ensure that Caltrans; the California High-Speed Rail Authority; and all other state agencies expending state transportation funds are operating efficiently, effectively, and in compliance with applicable federal and state laws. Requires the Governor to appoint a transportation inspector general, subject to confirmation by the Senate, to a six-year term. Provides that the transportation inspector general cannot be removed from office during that term, except for good cause. Requires the transportation inspector general to review policies, practices and procedures, and to conduct audits and investigations of activities involving state transportation funds in consultation with all affected state agencies. Specifically, requires the transportation inspector general to do all of the following: (1) examine the operating practices of Caltrans, the High-Speed Rail Authority and all other state agencies expending state transportation funds to identify fraud and waste, opportunities for efficiencies, and opportunities to improve the data used to determine appropriate project resource allocations; (2) identify best practices in the delivery of transportation projects, and develop policies or recommend proposed legislation enabling state agencies to adopt these practices when practicable; (3) provide objective analysis of, and when possible, offer solutions to, concerns raised by the public or generated within agencies involving the state's transportation infrastructure and project delivery methods; (4) conduct, supervise and coordinate audits and investigations relating to the programs and operations of all state transportation agencies with state-funded transportation projects; and (5) recommend policies promoting economy and efficiency in the administration of programs and operations of all state transportation agencies with state-funded transportation projects. Prohibits the Office of the Transportation Inspector General from conducting any audit or investigation that would be redundant to or concurrent with any audit or investigation of the same matter.	As Introduced	Senate Appropriations Committee	
SBX1-14 (Cannella) Public-Private Partnerships	Extends existing statutory authority for Caltrans and regional transportation agencies, including the Santa Clara Valley Transportation Authority (VTA), to utilize public-private partnerships for transportation infrastructure projects indefinitely.	As Introduced	Senate Transportation & Infrastructure Development Committee	Support

State Senate Bills	Subject	Last Amended	Status	VTA Position
SCAX1-1 (Huff) Motor Vehicle Fees and Taxes: Restrictions on Expenditures	Calls for placing before the voters an amendment to the California Constitution to prohibit the Legislature from borrowing revenues derived from fees and taxes imposed by the state on motor vehicles or their use or operations, and from using these revenues other than for state highways, local streets and roads, and fixed guideway mass transit as specified in Article 19 of the Constitution. Also prohibits these revenues from being pledged or used for the payment of principal and interest on bonds, or for other indebtedness. Requires the revenues derived from that portion of the vehicle license fee that exceeds 0.65 percent of the market value of a vehicle to be used for street and highway purposes. Prohibits the Legislature from borrowing these revenues and from using them other than as specifically permitted. Also prohibits these revenues from being pledged or used for the payment of principal and interest on bonds, or for other indebtedness.	As Introduced	Senate Transportation & Infrastructure Development Committee	



Date: September 2, 2015
 Current Meeting: October 1, 2015
 Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
 Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Chief Financial Officer, Raj Srinath

SUBJECT: Monthly Investment Report for July 2015

FOR INFORMATION ONLY

BACKGROUND:

The investment activities of the Santa Clara Valley Transportation Authority are in compliance with the Investment of Non-Trust Held Funds Investment Policy, the VTA Retirees' Other Post Employment Benefits Trust Investment Policy and the ATU, Local 265 Pension Investment Policy.

DISCUSSION:

Economic Watch

Real gross domestic product (GDP) increased 3.7% in the second quarter of 2015 at a seasonally adjusted annual rate, according to the "second" estimate released by the Bureau of Economic Analysis.

Headline consumer prices, as measured by the consumer price index (CPI), increased 0.20% year over year as of July 2015 on a seasonally adjusted basis. Core CPI, which excludes volatile food and energy prices increased at a rate of 1.80% year over year as of July 2015 on a seasonally adjusted basis. The Federal Reserve continues to target an inflation rate of 2.0%.

The unemployment rate in the San Jose-Sunnyvale-Santa Clara MSA was 4.3% in July 2015, up from a revised 4.0% in June 2015, and below the year-ago estimate of 5.7%. This compares with an unadjusted unemployment rate of 6.5% for California and 5.6% for the nation during the same period.

Market Watch

The S&P 500 Index returned 2.10% in July 2015. Large cap stocks returned 1.93% and small cap stocks returned -1.16%. Within the large cap space, growth stocks outperformed value stocks, returning 3.39% and 0.44% respectively. The top-performing sectors were consumer staples, consumer discretionary and financial services. The worst-performing sectors were producer durables, materials/processing and energy.

The Barclays Aggregate index returned 0.70% in July 2015. The treasury sector returned 0.83%, and the government related sector returned 0.45% for the month. The investment grade corporate bond sector returned 0.67% for the month.

VTA Enterprise Funds

VTA Enterprise Funds are invested in portfolios managed by Payden & Rygel and in the LAIF investment account or an interest bearing checking account. Investment performance for the Payden & Rygel managed accounts is included in the table below.

The Payden & Rygel composite portfolio outperformed its policy benchmark by 0.01% in the current month and by 0.09% calendar year-to-date. The current yield for the Payden long-term portfolio is 1.37%, the mid-term portfolio is 0.91%, and the short-term portfolio is 0.56%.

The current yield for funds invested in LAIF is 0.32% and VTA's checking accounts is 0.00%.

Market performance for each Payden & Rygel account is summarized in the following table:

Investment Performance as of July 2015									
Asset Class	Fund Manager	July	3 Mo	Y-T-D	1 Yr	3 Yr	5 Yr	10 Yr	I-T-D
Long-Term Fixed Income	Payden & Rygel	0.40%	0.00%	1.20%	2.25%	0.96%	2.15%	3.79%	4.32%
<i>Barclays Cap US Govt. Intermediate Index</i>		<i>0.40%</i>	<i>0.06%</i>	<i>1.22%</i>	<i>2.44%</i>	<i>0.84%</i>	<i>2.01%</i>	<i>3.79%</i>	<i>4.29%</i>
Mid-Term Fixed Income ¹	Payden & Rygel	0.07%	0.13%	0.76%	1.05%	0.76%	0.98%	-	1.48%
<i>Merrill Lynch 1 to 3 Year Treasury Index</i>		<i>0.05%</i>	<i>0.15%</i>	<i>0.72%</i>	<i>1.01%</i>	<i>0.59%</i>	<i>0.78%</i>	-	<i>1.10%</i>
Short-Term Fixed Income ²	Payden & Rygel	0.03%	0.07%	0.32%	0.40%	0.38%	0.45%	1.87%	1.80%
<i>iMoneynet Money Market Index</i>		<i>0.00%</i>	<i>0.00%</i>	<i>0.00%</i>	<i>0.00 %</i>	<i>0.02%</i>	<i>0.03%</i>	<i>1.43%</i>	<i>1.33%</i>
Composite Portfolio Returns		0.14%	0.08%	0.77%	1.21%	0.69%	1.38%	2.81%	3.66%
Policy Benchmark Returns		0.13%	0.09%	0.68%	1.14%	0.49%	1.15%	2.60%	3.51%

¹ Implemented February 11, 2009

² Implemented February 14, 2003

VTA Retirees' Other Post Employment Benefits (OPEB) Trust

The VTA Retirees' OPEB Trust Investment Policy requires the following asset allocation:

<u>Asset Allocation</u>	<u>Range</u>	<u>Target</u>	<u>Actual</u>
Domestic Fixed Income	35-70%	48%	38%
Domestic Large Cap Index	25-60%	50%	62%
Cash	0-5%	2%	0%

The Retirees' OPEB composite portfolio outperformed its policy benchmark by 0.04% in the current month, and by 0.37% calendar year-to-date. The current yield for the fixed income portfolio is 4.10%.

Market performance for each money manager is summarized in the following table:

Investment Performance as of July 2015									
Asset Class	Fund Manager	July	3 Mo	Y-T-D	1 Yr	3 Yr	5 Yr	10 Yr	I-T-D
Fixed Income	Dodge & Cox	0.37%	-0.67%	0.61%	2.16%	2.84%	4.06%	5.40%	6.13%
<i>Barclays Cap US Aggregate Bond Index</i>		<i>0.70%</i>	<i>-0.64%</i>	<i>0.60%</i>	<i>2.81%</i>	<i>1.60%</i>	<i>3.28%</i>	<i>4.61%</i>	<i>5.52%</i>
Large Cap Index	State Street	2.09%	1.41%	3.33%	11.18%	17.52%	16.19%	7.74%	4.59%
<i>S&P 500 Index</i>		<i>2.10%</i>	<i>1.41%</i>	<i>3.36%</i>	<i>11.22%</i>	<i>17.59%</i>	<i>16.25%</i>	<i>7.72%</i>	<i>4.46%</i>
Composite Portfolio Returns		1.44%	0.63%	2.44%	7.85%	11.72%	11.55%	7.49%	6.63%
<i>Policy Benchmark Returns</i>		<i>1.40%</i>	<i>0.39%</i>	<i>2.07%</i>	<i>7.06%</i>	<i>9.43%</i>	<i>9.80%</i>	<i>6.46%</i>	<i>5.36%</i>

DODGE & COX - The Fixed Income portfolio manager underperformed its benchmark in July 2015 by 0.33%, but outperformed its policy benchmark by 0.01% calendar year-to-date. The main contributors to relative performance were the portfolio's shorter relative duration and an overweight to corporate bonds.

A 7.00% rate of return assumption is used in the annual actuarial analysis for the Retirees' OPEB. The results of the actuarial analysis determine VTA's annual contribution rates. Any difference between actual investment returns and the 7.00% assumed annual return is recognized in the same year. The annual returns for the Retirees' OPEB portfolio have been equivalent to or exceeded the 7.00% assumed rate of return in 8 out of 14 years.

Historic Portfolio Performance for the last six calendar years:

Year	Performance	Year	Performance
2009	22.2%	2012	12.4%
2010	12.5%	2013	18.9%
2011	4.0%	2014	10.8%

SCVTA-ATU, Local 265 Pension Plan Assets

It is the policy of the SCVTA-ATU Board of Pensions to have a well-managed investment program that provides for the financial needs of the pension plan and allows the investments to be appropriately diversified and prudently invested to protect the safety of the principal while maintaining a reasonable return. Assets are invested within the following investment guidelines:

<u>Asset Allocation</u>	<u>Range</u>	<u>Target</u>	<u>Actual</u>
Domestic Fixed Income	28-38%	33%	31%
Domestic Large-Cap Value	12-22%	17%	16%
Domestic Large-Cap Index	8-18%	13%	13%
Domestic Small-Cap Value	2-12%	7%	7%
Int'l Equity Developed Markets	9-19%	14%	14%
Int'l Equity Emerging Markets	2-10%	5%	4%
US Core Real Estate	5-15%	10%	10%
Cash	0-5%	1%	5%

The SCVTA-ATU Pension Plan composite portfolio outperformed its policy benchmark in July 2015 by 0.27%, and by 1.00% calendar year-to-date. The current yield of the Dodge & Cox Fixed Income portfolio is 4.30%.

Market performance for each money manager is summarized in the following table:

Investment Performance as of July 2015									
Asset Class	Fund Manager	July	3 Mo	Y-T-D	1 Yr	3 Yr	5 Yr	10 Yr	I-T-D
Fixed Income	Dodge & Cox	0.42%	-0.82%	0.77%	2.41%	2.91%	4.08%	5.44%	6.41%
<i>Barclays Cap US Aggregate Bond Index</i>		0.70%	-0.64%	0.60%	2.81%	1.60%	3.28%	4.61%	5.08%
Large-Cap Value Stocks	Boston Partners	0.87%	0.48%	1.33%	8.47%	18.89%	16.58%	9.32%	9.67%
<i>Russell 1000 Value Index</i>		0.44%	-0.39%	-0.19%	6.40%	17.12%	15.08%	6.76%	6.70%
Large-Cap Index	State Street	2.09%	1.41%	3.33%	11.18%	17.52%	16.19%	7.74%	6.50%
<i>S&P 500 Index</i>		2.10%	1.41%	3.36%	11.22%	17.59%	16.25%	7.72%	6.39%
Small-Cap Value Stocks	Wedge ⁴	-2.30%	0.00%	2.27%	9.36%	18.94%	16.02%	6.27%	10.13%
<i>Russell 2000 Value Index</i>		-2.76%	-1.83%	-2.02%	4.31%	14.81%	12.60%	5.98%	9.41%
Int'l Equity Dev. Markets Growth	MFS ⁵	1.96%	-0.86%	8.30%	2.54%	10.18%	8.74%	-	3.40%
<i>MSCI AC World ex-US Growth Index</i>		0.26%	-3.41%	5.67%	-0.36%	9.58%	6.82%	-	0.34%
US Core Real Estate	UBS ⁶		2.92%	5.99%	12.68%	10.97%	12.20%	-	12.20%
<i>NCREIF NFI-ODCE</i>			3.82%	7.33%	14.43%	13.12%	14.41%	-	14.41%
Emerging Market	ROBECO E. M. ⁷	-7.68%	-14.06%	-5.57%	-13.86%	0.44%			-1.80%
<i>MCSI World Emerging Market</i>		-6.93%	-12.98%	-4.18%	-13.37%	0.60%			-1.25%
Composite Portfolio Returns ⁸		0.35%	-0.58%	2.76%	5.66%	10.86%	10.57%	7.99%	8.35%
<i>Policy Benchmark Returns</i>		0.08%	-1.12%	1.76%	4.50%	9.44%	9.17%	6.03%	5.96%

⁴ Funded April 1, 2009. Prior manager was Brandywine with the same benchmark.

⁵ Funded December 14, 2007. Prior managers were Putnam and Fidelity with MSCI EAFE as their benchmark.

⁶ Initially funded July 1, 2010. UBS Realty Investors LLC with NCREIF NFI-ODCE as their benchmark. Performance report 45 days after quarter ended.

⁷ Initially funded December 1, 2010

⁸ Investment performances by prior managers are included in composite returns and historical policy benchmark returns.

DODGE & COX - The Fixed Income portfolio manager underperformed its benchmark in July 2015 by 0.28%, but outperformed its policy benchmark by 0.17% calendar year-to-date. The main contributors to relative performance were the portfolio's shorter relative duration and an overweight to corporate bonds.

BOSTON PARTNERS - The Domestic Large Cap Value Equity manager outperformed its policy benchmark in July 2015 by 0.43%, and by 1.52% calendar year-to-date. Stock selection in the capital goods sector was the largest contributor relative performance. An underweight to the energy sector also contributed to relative outperformance.

WEDGE - The Domestic Small Cap Value Equity manager outperformed its policy benchmark in July 2015 by 0.46%, and by 4.29% calendar year-to-date. Performance was driven by an overweight position and stock selection in the consumer discretionary and healthcare sectors and an underweight position to the utilities sector.

MFS - The International Equity manager outperformed its policy benchmark in July 2015 by 1.70%, and by 2.63% calendar year-to-date. An overweight position in consumer staples and industrial goods & services contributed to the relative outperformance for the month.

ROBECO - The Emerging Markets Equity manager underperformed its policy benchmark in July 2015 by 0.75%, and by 1.39% calendar year-to-date. An overweight to China was the largest detractor to relative performance. Stock selection in Brazil, India and Indonesia were also detractors from relative performance.

A 7.50% rate of return assumption is used in the annual actuarial analysis for the ATU Pension Plan. The results of the actuarial analysis determine VTA's annual contribution rates. The annual returns for the ATU Pension Plan portfolio have been equivalent to or exceeded the 7.50% assumed rate of return 7 out of 14 years.

Historic Portfolio Performance (calendar year) for the last six calendar years:

Year	Performance	Year	Performance
2009	25.7%	2012	14.5%
2010	14.0%	2013	16.5%
2011	1.7%	2014	7.2%

ATU Spousal Medical Trust Fund, Dental, and Vision Plan

Asset allocation for the ATU Spousal Medical Trust Fund (including funds for dental and vision plans) is provided for in the SCVTA-ATU Pension Plan Investment Policy.

<u>Asset Allocation</u>	<u>Range</u>	<u>Target</u>	<u>Actual</u>
Domestic Fixed Income	30-50%	38%	37%
Domestic Large Cap Index	50-70%	60%	62%
Cash	0-5%	2%	1%

The ATU Spousal Medical Trust Fund composite portfolio underperformed its policy benchmark in the current month by 0.12%, but outperformed its policy benchmark by 0.02% calendar year-to-date. The current yield for the fixed income portfolio is 4.30%

Market performance for each money manager is summarized in the following table:

Investment Performance as of July 2015									
Asset Class	Fund Manager	July	3 Mo	Y-T-D	1 Yr	3 Yr	5 Yr	10 Yr	I-T-D
Fixed Income	Dodge & Cox	0.29%	-0.91%	0.38%	1.49%	2.80%	4.14%	5.19%	5.04%
<i>Barclays Cap US Aggregate Bond Index</i>		<i>0.70%</i>	<i>-0.64%</i>	<i>0.60%</i>	<i>2.81%</i>	<i>1.60%</i>	<i>3.28%</i>	<i>4.61%</i>	<i>4.48%</i>
Large-Cap Index	State Street	2.09%	1.41%	3.33%	11.18%	17.52%	16.19%	7.74%	8.32%
<i>S&P 500 Index</i>		<i>2.10%</i>	<i>1.41%</i>	<i>3.36%</i>	<i>11.22%</i>	<i>17.59%</i>	<i>16.25%</i>	<i>7.72%</i>	<i>8.31%</i>
Composite Portfolio Returns		1.42%	0.55%	2.37%	7.58%	12.04%	11.76%	7.52%	7.69%
<i>Policy Benchmark Returns</i>		<i>1.54%</i>	<i>0.59%</i>	<i>2.35%</i>	<i>7.90%</i>	<i>11.04%</i>	<i>11.07%</i>	<i>6.74%</i>	<i>7.02%</i>

DODGE & COX - The Fixed Income portfolio manager underperformed its benchmark in July 2015 by 0.41%, and by 0.22% calendar year-to-date. The main contributors to relative performance were the portfolio's shorter relative duration and an overweight to corporate bonds.

Other Data

The valuation of VTA's securities is provided by Interactive Data Corporation (IDC), Merrill Lynch Securities Pricing Service and Bloomberg Generic Pricing Service. These firms are the leading providers of global securities data. They offer the largest information databases with current and historical prices on securities traded in all major markets.

This report complies with VTA's adopted investment policies. Based on budgeted revenues and expenditures as well as actual transfers to/from reserves, there are sufficient funds available to meet expenditure requirements for the six months ending January 31, 2016.

Prepared By: Sean Bill, Investment Program Manager
Memo No. 4862

VTA INVESTMENT COMPOSITE PORTFOLIO PERFORMANCE.

PER GENERAL LEDGER BALANCE - SETTLEMENT DATE

FOR THE MONTH OF JULY 2015

SUMMARY: JULY 31, 2015

<u>Description</u>	(1) <u>Jun-15</u> <u>Book Value</u> <u>/Cost</u>	<u>Jul-15</u> <u>Book Value</u> <u>/Cost</u>	<u>Fiscal 16</u> <u>Year-to-Date</u> <u>July 15 Realized</u> <u>Earnings - \$</u>	<u>Change for the Month</u> <u>Realized</u> <u>Earnings - \$</u>
VTA FUNDS				
1 - Fixed Income - Long-Term Investment Pool	276,928,795	276,448,563	-267,626	-267,626
2 - Fixed Income - Mid-Term Investment Pool	562,660,933	562,492,995	-102,210	-102,210
3 - Fixed Income - Short-Term Investment Pool	261,233,909	261,160,582	-45,688	-45,688
4 - Fixed Income - Collateral	2,633,474	2,633,495	22	22
5 - VTA Bond Funds with Fiscal Agent (2)	67,318,608	62,338,438	2,242	2,242
6 - Funds with LAIF Investment Pool	50,000,000	22,000,000	11,575	11,575
7 - Funds with Union Bank-Congestion Management	6,780,801	6,835,042	646	646
8 - Funds with Union Bank-Measure B	7,573,593	7,600,540	694	694
9 - Funds with Union Bank Pooled DDA account	54,114,642	24,031,674	0	0
Total VTA Funds	1,289,244,755	1,225,541,329	-400,345	-400,345
RETIREEES' OPEB FUNDS				
1 - Retirees' OPEB -Fixed Income	102,171,573	102,661,385	398,362	398,362
2 - Retirees' OPEB -State Street - Index	94,302,619	94,302,619	0	0
Total Retirees' OPEB Funds	196,474,192	196,964,004	398,362	398,362
ATU PENSION FUNDS				
1 - VTA/ATU Pension Fund -Fixed Income	155,139,057	156,243,246	675,541	675,541
2 - VTA/ATU Pension Fund -Stock Large Cap Value - BOSTON	66,278,410	67,439,994	923,248	923,248
3 - VTA/ATU Pension Fund -State Street - Index	31,782,135	31,782,135	0	0
4 - VTA/ATU Pension Fund -Stock Small Cap Value - WEDGE	23,936,452	24,450,596	507,799	507,799
5 - VTA/ATU Pension Fund -Int'l - Equity Growth - MFS	50,574,856	50,574,856	0	0
6 - VTA/ATU Pension Fund -Emerging Markets - ROBECO (3)	23,500,000	23,500,000	0	0
7 - VTA/ATU Pension Fund -US Core Real Estate - UBS (4)	35,000,000	35,000,000	0	0
Total ATU Pension Funds	386,210,910	388,990,827	2,106,588	2,106,588
ATU SPOUSAL MEDICAL PLAN FUNDS				
1 - ATU Spousal Med Fund -Dodge & Cox - Index	5,927,234	5,927,234	0	0
2 - ATU Spousal Med Fund -State Street - Index	7,607,187	7,607,187	0	0
Total ATU Spousal Plan Funds	13,534,421	13,534,421	0	0
Total Investments	1,885,464,278	1,825,030,581	2,104,605	2,104,605

Legend:

- (1) Total includes contributions / withdrawals made during current month.
- (2) Bonds Reserves and/or Debt Service Funds
- (3) Initial funding 12/1/2010
- (4) initial funding 7/1/2010

VTA INVESTMENT COMPOSITE PORTFOLIO PERFORMANCE

MONEY MANAGERS' TOTAL MARKET RETURN - TRADE DATE

FOR THE MONTH OF JULY 2015

SUMMARY: July 31, 2015

<u>Description</u>	<u>Total Market Value</u>		<u>July Total Market Return</u>		<u>Total Market Return</u>	
	<u>(1)</u> <u>Prior</u> <u>Month</u>	<u>Current</u> <u>Month</u>	<u>\$Unrealized</u> <u>Gain/Loss</u>	<u>%Unrealized</u> <u>Gain/Loss</u>	<u>VTA</u> <u>Calendar</u> <u>YTD</u>	<u>Benchmark</u> <u>Calendar</u> <u>YTD</u>
1 - Fixed Income Long-Term Investment Pool	276,413,773	277,517,421	1,103,648	0.40%	1.20%	1.22%
1 - Fixed Income Mid-Term Investment Pool	563,299,092	563,674,936	375,844	0.07%	0.76%	0.72%
2 - Fixed Income Short-Term Investment Pool	261,255,638	261,330,070	74,432	0.03%	0.32%	0.00%
3 - Fixed Income Collateral Investment Pool (3)	2,633,451	2,633,495				
4 - VTA Bond Funds with Fiscal Agents (2)	67,318,608	62,338,438				
5 - Funds with LAIF Investment Pool	50,000,000	22,000,000				
6 - Funds with Union Bank-Congestion Management	6,780,801	6,835,042				
7 - Funds with Union Bank-Measure B	7,573,593	7,600,540				
8 - Funds with Union Bank DDA account	54,114,642	24,031,674				
Total VTA Funds	1,289,389,598	1,227,961,616				
1 - Retirees' OPEB - Fixed Income	105,602,124	106,000,318	398,194	0.37%	0.61%	0.60%
2 - Retirees' OPEB - State Street - Index	169,105,114	172,646,398	3,541,284	2.09%	3.33%	3.36%
Total Retirees' OPEB Funds	274,707,238	278,646,716				
1 - VTA/ATU Pension Fund-Fixed Income	160,288,932	160,989,087	700,155	0.42%	0.77%	0.60%
2 - VTA/ATU Pension Fund-Stock Large Cap Value	83,357,267	84,078,747	721,480	0.87%	1.33%	-0.19%
3 - VTA/ATU Pension Fund-State Street - Index	63,310,394	64,636,197	1,325,803	2.09%	3.33%	3.36%
4 - VTA/ATU Pension Fund-Stock Small Cap Value	34,544,177	33,748,712	(795,465)	-2.30%	2.27%	-2.02%
5 - VTA/ATU Pension Fund- Int'l - Equity Growth	70,243,198	71,618,065	1,374,867	1.96%	8.30%	5.67%
6 - VTA/ATU Pension Fund- Emerging Markets (4)	23,681,289	21,837,781	(1,843,508)	-7.68%	-5.57%	-4.18%
7 - VTA/ATU Pension Fund- US Core Real Estate (5)	53,537,936	53,537,936				
Total Pension Fund	488,963,193	490,446,525				
1 - ATU Spousal Med Fund - Dodge & Cox - Index	8,310,587	8,335,030	24,443	0.29%	0.38%	0.60%
2 - ATU Spousal Med Fund-State Street - Index	13,812,550	14,101,803	289,253	2.09%	3.33%	3.36%
Total ATU Spousal Funds	22,123,137	22,436,833				
 Total Investments	 2,075,183,166	 2,019,491,690				

Legend:

- (1) Total includes contributions / withdrawals made during current month.
- (2) Bonds Reserves for Debt Service Funds and Measure A Project Funds. During July 2015 \$9,610,394.15 was drawn from 2010 project fund for Measure A Projects.
- (3) Funded 7/23/2012 \$202,149.96 and \$2,840,114.82 on 7/15/2013; withdraw \$414,890.44 on 8/8/2014
- (4) Initial funded December 1, 2010 - Performance reported quarterly.
- (5) Initial funded July 1, 2010 - Performance reported quarterly.



Date: September 24, 2015
 Current Meeting: October 1, 2015
 Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
 Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Director of Planning and Program Development, John Ristow

SUBJECT: Update on iTEAM Activities

FOR INFORMATION ONLY

BACKGROUND:

Caltrans and VTA executed a Master Agreement in the fall of 2013, setting in place the details of the Innovative Delivery Team Program (iTEAM). The iTEAM is intended to demonstrate a new business model for the cooperative delivery of transportation projects, operations of State highways, and federal aid funding of local streets within Santa Clara County. The iTEAM incorporates new positions, new decision-making responsibilities, improved processes, and the testing and use of new technologies and training. The Master Agreement empowers iTEAM through the Executive Steering Committee (ESC) comprised of executive level staff from Caltrans and VTA to ensure the intent of the program is followed.

The iTEAM currently supports three focus areas:

- (1) Capital Program and Project Delivery;
- (2) Traffic Operations; and
- (3) Local Assistance.

DISCUSSION:

Although iTEAM staff have only been active in all three focus areas since early 2014, significant improvements in all three focus areas have already been achieved. Measureable accomplishments, such as the number of trainings held in Santa Clara County for the staff of VTA's Member Agencies, which are the 15 cities in the county and the County of Santa Clara, to less quantifiable improvements such as expedited project processing due to the ability to discuss issues face-to-face more frequently with Caltrans staff, have been realized.

Perhaps the greatest result of the development of the iTEAM has been the increased, productive, formal and informal communications between VTA/Member Agencies and Caltrans. Formal

communications include regularly scheduled meetings at all levels. The ESC meets quarterly, giving opportunities to introduce, discuss and resolve higher-level issues. As the Master Agreement dictates, the ESC is empowered to make decisions to promote the objectives of the iTEAM, with key decision-makers participating in these meetings.

Monthly coordination meetings are held for Project Development, Environmental and Construction, as well as for Traffic Operations, which include Deputy Directors from both Caltrans and VTA. Much like the ESC meetings, the issues at hand are able to be discussed with all parties and steps for resolution identified, with the ultimate achievement being to achieve resolution. With Caltrans iTEAM staff located in Santa Clara County, impromptu meetings are also invaluable in the continued progress for projects.

Caltrans iTEAM staff on site at VTA at least two days a week. Their presence in Santa Clara County has allowed for more frequent interactions with VTA and Member Agency staff and has also allowed Caltrans staff to more regularly participate in more project meetings. Caltrans iTEAM staff have also been a conduit for Member Agencies to gain access to other Caltrans' departments or staff more expeditiously. Outreach to Member Agencies is ongoing and has included participation in VTA's Technical Advisory Committee (TAC), TAC working group meetings, holding office hours specifically for Member Agency staff/items and coordination of multiple trainings in Santa Clara County for Member Agency staff.

For example, as a result of Caltrans iTEAM's local presence and increased communication with Member Agency staff, the Traffic Operations Engineer, working with the City of Gilroy, was able to coordinate with the California Highway Patrol for a long range facility plan for US 101 truck scales in Gilroy. Member Agency staff have also worked with Caltrans iTEAM staff regarding public inquiries and/or complaints. Caltrans iTEAM staff consequently have been able to either address the public issues or forward them to the appropriate Caltrans staff. Intangibles, such as knowing who to contact, have been a great benefit of having better communication and more access to Caltrans through iTEAM staff. Attachment A is a complete list of iTEAM successes.

VTA and Caltrans have executed an agreement to continue the iTEAM program for Fiscal Years 16 and 17. Formal communications will remain in place, and both parties intend to continue to build upon the successes to date.

Initiatives for Fiscal Years 16 and 17

In addition to ongoing activities, each Focus Area has developed initiatives that will be worked on for the next two fiscal years. The new initiatives are:

Local Assistance

- Conduct at least two trainings and one workshop per fiscal year; training topics will be based on local needs.
- Continue to work as Caltrans iTEAM Local Assistance Liaison and as the local assistance engineer for the County of Santa Clara.

- Investigate the possibility of conducting a single environmental document for similar projects from multiple local agencies with one local agency as lead agency and participation by others (e.g., for pavement rehabilitation projects by local agencies).
- Study, investigate and make recommendations to local agencies for streamlining the Right of Way closeout process.

Capital Program and Project Delivery

- Test new approaches for reduction of project delivery timelines and improve efficiency of all project development phases with the following projects to test new approaches:
 - PID (Project Initiation Document) Phase Project - US 101/4th Street/Zanker Road Improvements
 - PA/ED (Project Approval and Environmental Document) Phase Project - Mathilda Avenue at SR 237 and US 101 Improvements
 - Design Phase Project - Express Lanes Phases 3 and 4
- Assess the steps that can be taken to improve communication.
- Assist in coordinating efforts related to highway maintenance.

Traffic Operations

- Expand Caltrans iTEAM Traffic Operations Engineering role to include more focus on available technology on all capital projects in Santa Clara County.
- Implement office hours for Caltrans Traffic Operations/Technology Engineer for Member Agency staff to consult on items related to the State highway system.
- Implement an enhanced ramp metering and traffic operations system development, tracking and monitoring system.
- Expand Caltrans iTEAM Traffic Operations/Technology Engineer role for more active participation on deployment of new technology applications.

As the iTEAM embarks on its next two-year program, outreach to Member Agencies will continue to be enhanced and expanded; and it is expected that coordination with Member Agencies will increase. As discussed previously, successes achieved at the onset of the iTEAM will be built upon, and new initiatives will include additional measurable criteria to ensure the continued success of the iTEAM.

ADVISORY COMMITTEE COMMENTS/DISCUSSION:

The Technical Advisory Committee received this item at their September 10, 2015 meeting. Members thanked the iTEAM for work performed in conjunction with their city staff on past efforts.

The Policy Advisory Committee received this item at their September 10, 2015 meeting.

STANDING COMMITTEE COMMENTS/DISCUSSION:

The Congestion Management Program & Planning Committee deferred this item to the October 15, 2015 meeting.

Prepared By: Jane Shinn
Memo No. 5083

iTEAM Accomplishments

Local Assistance Engineer: Spring 2014 – Summer 2015

- Staff in-house 2x/week beginning Spring 2014
- Attends CIP subgroup meetings
- Coordinated five trainings for Member Agency staff
 - E-76 Process: 09.24.14
 - Quality Assurance Program: 10.22.14
 - Risk-based Invoicing: 11.20.15
 - Architects & Engineers Consultation Selection: 02.03.15
 - Encroachment Permitting: 03.19.15
 - Pending
 - Resident Engineering Academy Tentatively Scheduled for June 2015 in San Jose
 - Environmental
- Process E-76 (Authorization/Agreement Summary)
- Check and process invoices
- Assume roll of CT SCL Local Assistance representative
- Consultations with Member Agency Staff Spring 2014 – Feb 2015
 - E-76 issues; invoice issues; project closeout questions; project list issues, etc.
 - San Jose
 - Campbell
 - Los Gatos
 - County Roads & Airports
 - Los Altos
 - Saratoga
 - Gilroy
 - Palo Alto
 - Sunnyvale
 - Santa Clara County
 - Santa Clara County Public Health
 - Milpitas
 - VTA
- Assumed roll of Area Engineer for Santa Clara County Roads & Airports during Feb 2015.

Traffic Operations Engineer: Spring 2014 – Summer 2015

- Staff in-house 2x/week beginning Spring 2014
- Able to discuss issues face-to-face
 - Collaborate to understand & justify result
 - Able to come to conclusion accepted by all parties

- Able to analyze approach and language
- Consultations with Member Agency staff
 - Milpitas; San Jose; Santa Clara; Gilroy; Sunnyvale; VTA
 - Requirements for encroachment permits
 - Sign installation requests
 - Coordination with CHP
 - Coordination with Caltrans/Caltrans Maintenance
 - Assist Member Agency staff address inquiries from public
 - Investigate feasibilities of projects/investigate historical traffic data for projects
 - Coordinate traffic management for LEVI's stadium
 - Improvement of Express Lanes access – Pilot Project
 - Coordination for ramp metering operations and adjustment

Regional Project Manager: Spring 2014 – Summer 2015

- Staff in-house 2x/week
 - Able to coordinate meetings with RPM in San Jose
 - Provides responses to project delivery questions
 - Follows up with appropriate Caltrans staff in District 4 and Sacramento
 - Follows up on cooperative agreements process and status.
 - Meets on a monthly basis with VTA management staff for coordination and project delivery issues. Monthly meetings include
 - Environmental status
 - Construction status
 - Project Management status (PLT)
 - Traffic Operation and Maintenance
 - Attending some VTA in house meeting including to provide CT perspective
 - Express Lanes Management Meetings
 - 237 Phase 1.5 Pilot project Meeting
 - Facilitates project delivery process through Caltrans functional units for VTA, county, and city projects.
 - Coordinate with other regional agencies
 - Coordinate maintenance activities with the express lane
 - Assist in the preparations of the regional 3 year Project Initiation Documents
 - Assist in the preparations of the 3 years Workplan.
 - Follow up on various encroachment permits projects
 - Resolve non-projects inquires and items
 - Available and meeting with various Santa Clara County Cities staff to discuss upcoming projects, items of interests and provide direction
 - Resolve issues and questions pertaining to invoices and provide justifications
 - Coordinate some training and workshop opportunities for Cities and VTA
 - Attending TAC meeting for keep informed
 - Coordinate and facilitate focus technical and maintenance meetings

iTEAM General

- Improved communication
- ESC quarterly meetings – able to discuss higher-level issues
- Have identified test projects for improving processes within each phase
 - 101/4th St./Zanker IC – Project Initiation Document
 - SR 237/US101/Mathilda Ave. Improvements – Project Approval/Environmental Document
 - Environmental Document process improvements identified
 - Sharepoint Collaboration site nearly completed
 - Express Lanes Phases 3 & 4 – Design
- Expediting Project Closeout – tracking table has been developed. Staff systematically proceeding through table
- Litter & Graffiti – Undergoing data collection effort for Santa Clara County.
- Near completion of iTEAM web page within VTA.org – will house all training materials & videos, if available, for Member Agency staff
- Monthly Deputy Level Traffic Operations/Technology Coordination Meetings in place



Date: September 24, 2015
 Current Meeting: October 1, 2015
 Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
 Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Director of Planning and Program Development, John Ristow

SUBJECT: Programmed Project Monitoring - Quarterly Report

FOR INFORMATION ONLY

Every quarter, the Programmed Projects Quarterly Monitoring Report is presented to the Technical Advisory Committee (TAC), Policy Advisory Committee (PAC) and the VTA Board of Directors. The purpose of the report is to assist the VTA Board, committees, staff and project sponsors in tracking progress of projects funded through programming actions of the VTA Board. Additionally, the report helps to ensure implementing agencies comply with Metropolitan Transportation Commission's Regional Project Funding Delivery Policy and do not lose any funds due to missing a federal or state funding deadline.

The Programmed Projects Quarterly Monitoring Report for April-June 2015 is attached for review. This report provides the latest status on discretionary funded projects. A project summary sheet highlighting status of projects with funds expiring in Fiscal Year 2015/16 is also attached. The project summary sheet identifies projects in three categories:

- Red: Projects at the risk of losing funds due to delivery difficulties.
- Yellow: Projects that need extra attention or will risk running into difficulties.
- Green: Projects are progressing smoothly.

This quarter all 2015/16 projects are progressing smoothly.

The next Programmed Projects Quarterly Monitoring Report will cover the period July - September 2015.

ADVISORY COMMITTEE DISCUSSION/RECOMMENDATION:

The Technical Advisory Committee considered this item as part of its September 10, 2015 Consent Agenda.

The Policy Advisory Committee considered this item as part of its September 10, 2015 Consent Agenda.

STANDING COMMITTEE DISCUSSION/RECOMMENDATION:

The Congestion Management Program and Planning Committee reviewed this item as part of its September 17, 2015, consent agenda.

Prepared By: Bill Hough
Memo No. 5143

Attachment A: April-June 2015 Progress Summary Sheet

Red = Project at risk of losing funds due to delivery difficulties.

Yellow = Project may need extra attention or will risk running into difficulties.

Green = Project is progressing smoothly.

Sponsor	Project Title	Project #	Federal/State Funds for 2015/16	Status			Comments
				Green	Yellow	Red	
Gilroy	New Ronan Channel and Lions Creek Trail	SCL110032	\$1,034,000	●			finish plan and specifications by September.
Los Altos	Road Preservation on Grant Road	SCL130023	\$312,000	●			End PE September 2015.
Morgan Hill	Monterey Road Preservation	SCL130043	\$1,379,000	●			End design September 2015.
Mountain View	Castro Street Complete Streets	SCL130015	\$840,000	●			City expecting NEPA Clearance by Early October 2015.
Mountain View	Various Road Preservation & Bike lanes	SCL130018	\$1,166,000	●			City expecting NEPA Clearance by early October 2015.
San Jose	Downtown San Jose Bike Lanes and De-Couplet	SCL090004	\$1,500,000	●			Field review 9/2015.
San Jose	Citywide Bikeway Program	SCL130004	\$1,150,000	●			End design November 2015.
San Jose	St. Johns Bikeway and Pedestrian Improvements	SCL130011	\$1,185,000	●			End PE 11/2015.
San Jose	East San Jose Bikeways	SCL130016	\$2,000,000	●			End design 11/2015.
San Jose	San Jose Smart Intersections Program	SCL130036	\$789,200	●			End design 10/2015.
Sunnyvale	Duane Avenue Roadway Preservation	SCL130033	\$1,296,000	●			Under construction.

Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		City of Campbell	Project Title:		Campbell Avenue Portals Bike/Ped Improvements				
1 of 3	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL110028	Widen north and south sides to include a bicycle lane; install new sidewalk; replace existing abutment walls with new retaining and wing walls.			Programmed Year	Start mm/yyyy	End mm/yyyy		
	Fund Source				CMAQ \$4,142 Local \$588	Field Review			
	ENV		\$0				complete		
	Design	\$530	2011			complete			
Manager Name	Fred Ho	ROW	\$0						
Phone/Fax		408-866-2156	Construction	\$4,200	2014	10/2014	10/2015	Funding Deadline	awarded
E-Mail		fredh@cityofcampbell.com	Total	\$4,730	E-76 Const (sub/app)	2/2014	4/2014	Last Updated	8/6/2015
					Last Invoice (sub/app)	8/2015			

Sponsor:		City of Campbell	Project Title:		Hacienda Ave Streetscape and Bicycle Improvements					
2 of 3	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments		
	SCL110116	In Campbell: On Hacienda Avenue between Winchester Boulevard and Virginia Avenue: Construct bike lanes, on-street parking, accessibility ramps, etc.			Programmed Year	Start mm/yyyy	End mm/yyyy			
	Fund Source				Under construction.					
	Local- \$136 STIP-TE \$544					Field Review				
						ENV	\$0	2012	5/2012	7/2012
					Design	\$0		5/2012	12/2013	
Manager Name		Fredrick Ho	ROW	\$0		N.A.	N.A.			
Phone/Fax		408-866-2156	Construction	\$680	2014	8/2014	10/2015	Funding Deadline	awarded	
E-Mail		fredh@cityofcampbell.com	Total	\$680	E-76 Const (sub/app)	2/2014	4/2014	Last Updated	8/6/2015	
					Last Invoice (sub/app)	8/2015				



Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		City of Campbell	Project Title:		Virginia Avenue Sidewalks				
3 of 3	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL130017	On Virginia Avenue between Budd Avenue and Hacienda Avenue, add pedestrian sidewalks, curb, gutter, and curb ramps.			Programmed Year	Start mm/yyyy	End mm/yyyy		
	Fund Source								
	CMAQ \$708 Local \$92				Field Review	2014	8/2014	8/2014	
					ENV	2014	8/2014	10/2014	
	Design	2014	8/2014	12/2014					
Manager Name		Fred Ho	ROW	\$0	N.A.	N.A.	N.A.		
Phone/Fax		408-866-2156	Construction	\$708	2015	6/2015	3/2016	Funding Deadline	obligated
E-Mail		fredh@cityofcampbell.com	Total	\$800	E-76 Const (sub/app)	2/2015	4/2015	Last Updated	8/6/2015
					Last Invoice (sub/app)	8/2015			

Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		City of Gilroy	Project Title:		New Ronan Channel and Lions Creek Trail-BEP G02					
1 of 2	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments		
	SCL110032	Project will convert existing unpaved creek-side maintenance road closed to the public to a multi-use public trail along the New Ronan Channel.			Programmed Year	Start mm/yyyy	End mm/yyyy			
Fund Source			Field Review				10/2010	City at 100% plan and specifications review process.		
CMAQ \$1,706 Local \$223			ENV	\$760	2011	10/2011	7/2015			
			Design	\$0		5/2015	8/2015			
Manager Name			Henry Servin/Laura Ley	ROW	\$0					
Phone/Fax		408-846-0451	Construction	\$1,169	2016	6/2016	12/2016	Funding Deadline	11/1/2015	
E-Mail		Henry.Servin@cityofgilroy.org	Total	\$1,929	E-76 Const (sub/app)	11/2015	2/2016	Last Updated	8/20/2015	
					Last Invoice (sub/app)	12/10/14	7/30/2014			

Sponsor:		City of Gilroy	Project Title:		Eigleberry Street Resurfacing						
2 of 2	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments			
	SCL130025	In Gilroy: resurface roadway on Eigleberry St between 1st and 10th. Provide complete streets treatment including bike lanes-OBAG guarantee funds.			Programmed Year	Start mm/yyyy	End mm/yyyy				
	Fund Source				Field Review		2/2014	2/2014	CON E76 issued May 29, 2014. Construction NTP 5/15/2015.		
	CMAQ \$808 Local \$239					ENV	\$239	2013		2/2014	2/2014
						Design	\$0				
Manager Name		Henry Servin/Jay Yu	ROW	\$0							
Phone/Fax	408-846-0451	Construction	\$808	2015	5/2015	8/2015	Funding Deadline	obligated			
E-Mail	henry.servin@ci.gilroy.ca.us	Total	\$1,047	E-76 Const (sub/app)	5/2011	11/2014	Last Updated	8/11/2015			
				Last Invoice (sub/app)	12/10/2014	5/2015					



Programmed Projects Quarterly Monitoring Report

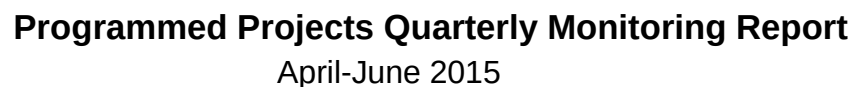
April-June 2015

Sponsor:		City of Los Altos	Project Title:		Road Preservation on Grant Road				
1 of 1	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL130023	In Los Altos: Resurface Grant Road from Grant to Homestead and improve ADA ramps per current requirements.			Programmed Year	Start mm/yyyy	End mm/yyyy	End PE September 2015.	
	Fund Source		Field Review			6/2015	6/2015		
	Local \$76 STP \$312		ENV	\$0		6/2015	9/2015		
			Design	\$35	2013	8/2013	9/2015		
Manager Name		Cedric Novenario	ROW	\$0					
Phone/Fax		650-947-2626	Construction	\$353	2016	3/2016	9/2016	Funding Deadline	11/1/2015
E-Mail		cnovenario@losaltosca.gov	Total	\$388	E-76 Const (sub/app)	8/2015	10/2015	Last Updated	8/16/2015
					Last Invoice (sub/app)				

Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		City of Milpitas	Project Title:		Milpitas Various Streets and Roads Preservation				
1 of 1	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL130035	In City of Milpitas at various locations, repair failed AC pavement, road resurfacing, construct ADA curb ramps, repair sidewalks and curbs, and install signing and pavement striping.	Field Review		Programmed Year	Start mm/yyyy	End mm/yyyy	Under construction.	
	Fund Source					2/18/2014	2/18/2014		
	Local \$873 STP \$1652				2014	1/28/2014	5/8/2014		
					2014	1/28/2014	3/25/2014		
Manager Name		Steve Chan	ROW	\$5		N.A.	N.A.		
Phone/Fax		408-586-3324	Construction	\$2,465	2015	7/2015	10/2015	Funding Deadline	awarded
E-Mail		schan@ci.milpitas.ca.gov	Total	\$2,525	E-76 Const (sub/app)	1/2015	4/2015	Last Updated	8/26/2015
					Last Invoice (sub/app)	9/2015			



6.17.b



Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		City of Mountain View	Project Title:		Castro Street Complete Streets				
1 of 3	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL130015	Implement complete street and "road diet" on Castro Street between El Camino Real and Miramonte Avenue.			Programmed Year	Start mm/yyyy	End mm/yyyy		
	Fund Source		CMAQ \$840 Local \$110			01/2015			
				Field Review					
				ENV	\$15	2015	12/2014	10/2015	
		Design	\$95	2015	8/2014	12/2015			
Manager Name		Sayed Fakhry	ROW	\$0					
Phone/Fax		650-903-6511	Construction	\$840	2016	6/2016	12/2016	Funding Deadline	11/1/2015
E-Mail		sayed.fakhry@mountainview.gov	Total	\$950	E-76 Const (sub/app)	12/2015	3/2016	Last Updated	8/5/2015
		Last Invoice (sub/app)							

Sponsor:		City of Mountain View	Project Title:		Various Road Preservation & Bike lanes					
2 of 3	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments		
	SCL130018	In Mountain View: resurface Rengstorff/Old Middlefield/Charleston Roads.			Programmed Year	Start mm/yyyy	End mm/yyyy			
	Fund Source									
	Local \$412 STP \$1,166				Field Review					12/2014
					ENV	\$0				10/2014	10/2015
		Design	\$257	2014	10/2013	11/2015				
Manager Name		Quan Tran	ROW	\$0						
Phone/Fax		650-903-6311	Construction	\$1,318	2016	7/2016	12/2016	Funding Deadline	11/1/2015	
E-Mail		quan.tran@mountainview.gov	Total	\$1,575	E-76 Const (sub/app)	9/2015	12/2015	Last Updated	8/5/2015	
					Last Invoice (sub/app)					



Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		City of Mountain View	Project Title:		Mountain View Non-Infrastructure SRTS				
3 of 3	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL130019	Non-infrastructure Safe Routes to School educational program.			Programmed Year	Start mm/yyyy	End mm/yyyy		
	Fund Source		CMAQ \$500 Local \$65	Field Review				First invoice submitted 7/8/2015.	
	ENV			\$0					
	Design			\$0					
Manager Name		Dennis Drennan	ROW	\$0					
Phone/Fax		650-903-6633	Construction	\$565	2014	2/2015	1/2018	Funding Deadline	awarded
E-Mail		dennis.drennan@mountainview.gov	Total	\$565	E-76 Const (sub/app)	2/2014	4/2014	Last Updated	8/3/2015
					Last Invoice (sub/app)	7/8/2015			

Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		City of Palo Alto	Project Title:		Palo Alto Safe Routes to School				
1 of 4	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL110054	Safe Routes to School Program for all public schools in the city including walking/biking maps, education, and encouragement events.	Field Review		Programmed Year	Start mm/yyyy	End mm/yyyy		
	Fund Source								
	CMAQ \$528 Local \$132								
	Manager Name	Sylvia Star-Lack							
Phone/Fax		650-329-2156	Construction	\$660	2011	2/2012	6/2015	Funding Deadline	awarded
E-Mail		Sylvia.Star-Lack@CityofPaloAlto.org	Total	\$660	E-76 Const (sub/app)			Last Updated	11/14/2014
					Last Invoice (sub/app)				

Sponsor:		City of Palo Alto	Project Title:		Arastradero Road Schoolscape/Multiuse Trail				
2 of 4	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL130034	Reconstruct the sidewalk along the south side of Arastradero Road between the Hetch Hetchy Los Altos Pathway and Miranda Avenue to a multiuse trail.	Field Review		Programmed Year	Start mm/yyyy	End mm/yyyy		
	Fund Source								
	CMAQ \$1,000 Local \$502								
	Manager Name	Holly Boyd							
Phone/Fax		650-329-2612	Construction	\$1,306	2017	4/2017	12/2017	Funding Deadline	11/1/2016
E-Mail		holly.boyd@cityofpaloalto.org	Total	\$1,502	E-76 Const (sub/app)	10/2016	1/2017	Last Updated	8/24/2015
					Last Invoice (sub/app)				

Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		City of Palo Alto	Project Title:		Adobe Creek/ Highway 101 Bicycle Pedestrian Bridge					
3 of 4	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments		
	SCL130041	In Palo Alto, provide a year round ped crossing of Highway 101 to replace the existing Lefkowitz tunnel, which is a seasonal underpass subject to repeated and unanticipated closures that limit its use to less than half the year.			Programmed Year	Start mm/yyyy	End mm/yyyy			
	Fund Source				CON funding moved to 2017.					
	Local \$5,150 STIP 4,350				Field Review					
					ENV	\$1,500	2015	1/2013	1/2016	
					Design	\$0	2016	4/2015	9/2016	
Manager Name		Elizabeth Ames	ROW	\$0	2016					
Phone/Fax		650-329-2502	Construction	\$8,000	2017	4/2017	1/2019	Funding Deadline	11/1/2016	
E-Mail		elizabeth.ames@cityofpaloalto.org	Total	\$9,500	E-76 Const (sub/app)	11/2016	2/2017	Last Updated	6/17/2015	
					Last Invoice (sub/app)					

Sponsor:		City of Palo Alto	Project Title:		Various Street Resurfacing & Streetscape						
4 of 4	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments			
	SCL130042	Street resurfacing for various streets in Palo Alto.			Programmed Year	Start mm/yyyy	End mm/yyyy				
	Fund Source		Local \$135 STP \$956	Field Review			9/2014				
				ENV	\$10	2014	10/2014	1/2015			
				Design	\$0						
Manager Name		Holly Boyd	ROW	\$0				Reclassification of streets completed in July 2015. Expect E76 in September 2015. Moving CON funds to 2016/17.			
Phone/Fax		650-329-2612	Construction	\$1,081	2017	12/2015	4/2016			Funding Deadline	11/1/2016
E-Mail		holly.boyd@cityofpaloalto.org	Total	\$1,091	E-76 Const (sub/app)	8/2015	9/2015			Last Updated	8/24/2015
					Last Invoice (sub/app)						

Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		City of San Jose	Project Title:		Almaden Expressway Pedestrian Bridge					
1 of 20	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments		
	SCL050039	Almaden Expressway, near Coleman Rd; Construct a 360 ft. Ped Bridge over Almaden Expressway to connect nearby trails and to the Almaden Light Rail Station.			Programmed Year	Start mm/yyyy	End mm/yyyy			
	Fund Source									
	Earmark \$496									
Manager Name		Yves Zsutty	ROW	\$0						
Phone/Fax		(408) 793-5561	Construction	\$9,000				Funding Deadline	no expiration	
E-Mail		yves.zsutty@sanjoseca.gov	Total	\$9,352	E-76 Const (sub/app)			4/17/2012	Last Updated	8/19/2015
					Last Invoice (sub/app)	5/2013				

Sponsor:		City of San Jose	Project Title:		Silicon Valley TIMC				
2 of 20	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL050079	Transportation Incident Management Center: Implement subregional hub for traffic management activities including arterial traffic, incident management, traveler information and emergency incident management center. HPP #2017			Programmed Year	Start mm/yyyy	End mm/yyyy		
	Fund Source		Field Review						
	Earmark \$6,039 Local \$1,511			ENV	\$4,023				
				Design	\$0			complete	
Manager Name		Ken Salvail	ROW	\$0					
Phone/Fax		(408) 975-3705	Construction	\$3,528		1/2014	6/2015	Funding Deadline	awarded
E-Mail		ken.salvail@sanjoseca.gov	Total	\$7,551	E-76 Const (sub/app)		3/2013	Last Updated	8/19/2015
		Last Invoice (sub/app)			6/22/2015				

Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		City of San Jose	Project Title:		Bay Trail Reach 9 & 9B				
3 of 20	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL050082	Preparation of CON and ENV documents for 1.2 miles of trail, a pedestrian bridge, and underpass with safety and enhancement improvements.			Programmed Year	Start mm/yyyy	End mm/yyyy		
	Fund Source								
	Earmark \$675 Local \$7,863		Field Review				NEPA completed for both reaches. Reach 9 (1.1-mile) trail is designed to the 95% stage. ·Reach 9B (Ped Bridge) is designed to the 35% stage. Continuing to seek large grants and funding opportunities. Working with private developer adjacent to project site to insure no future obstructions.		
			ENV	\$815	06/07			complete	
	Design	\$0	08/09	3/2008	12/2013				
Manager Name	Yves Zsutty	ROW	\$63	08/09					
Phone/Fax	(408) 793-5561	Construction	\$7,660	13/14				Funding Deadline	no expiration
E-Mail	yves.zsutty@sanjoseca.gov	Total	\$8,538	E-76 Const (sub/app)			Last Updated	8/19/2015	
				Last Invoice (sub/app)	8/2010				

Sponsor:		City of San Jose	Project Title:		Coyote Creek Trail				
4 of 20	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL050083	Master Plan, design of 9.8 miles transportation trail, including safety and improvements between SR 237 and Story Rd.			Programmed Year	Start mm/yyyy	End mm/yyyy		
	Fund Source		Field Review						
	Earmark \$3,674 Local \$5,095 RTP-LRP \$6,000		ENV	\$572	08/09		complete		
			Design	\$1,077	08/09	9/2008			
Manager Name		Yves Zsutty	ROW	\$0					
Phone/Fax		(408) 793-5561	Construction	\$13,120	13/14			Funding Deadline	No expiration
E-Mail		yves.zsutty@sanjoseca.gov	Total	\$14,769	E-76 Const (sub/app)		4/10/2012 <th rowspan="2">Last Updated</th> <th rowspan="2">8/19/2015</th>	Last Updated	8/19/2015
		Last Invoice (sub/app)			3/2015				

Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		City of San Jose	Project Title:		Downtown San Jose Bike Lanes and De-couplet			
5 of 20	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments
	SCL090004	In San Jose: Almaden/Vine couplet conversion			Programmed Year	Start mm/yyyy	End mm/yyyy	In progress.
	Fund Source		Field Review				9/2015	
	CMAQ \$1,500 Dev Fees \$18,000 Local \$315		ENV	\$1,815	2016	1/2016	9/2016	
			Design	\$0		1/2016	1/2017	
Manager Name		John Raaymakers	ROW	\$5,000	2018			
Phone/Fax		408-975-3297	Construction	\$13,000	2020			Funding Deadline 11/1/2015 [PE]
E-Mail		john.raaymakers@sanjoseca.gov	Total	\$19,815	E-76 Const (sub/app)	11/2015	12/2015	Last Updated 8/18/2015
					Last Invoice (sub/app)			

Sponsor:		City of San Jose	Project Title:		Los Gatos Creek Reach 5 Bridge Crossings			
6 of 20	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments
	SCL110029	Develop construction drawings for trail improvements			Programmed Year	Start mm/yyyy	End mm/yyyy	Amending and increasing value of trail design contract to address significant changes due to Caltrain bridge design. Continuing efforts to collaborate with Caltrain. A final design approach/CON funding source has yet to be defined.
	Fund Source		Field Review					
	CMAQ \$1,200 Local \$350 RTP-LRP \$3,000		ENV	\$1,450	2011	3/2011	6/2013	
			Design	\$0			TBD	
Manager Name		Yves Zsutty	ROW	\$100	2013		TBD	
Phone/Fax		408-793-5561	Construction	\$3,000	2015		TBD	Funding Deadline CMAQ PE obligated
E-Mail		yves.zsutty@sanjoseca.gov	Total	\$4,550	E-76 Const (sub/app)		2/23/2012	Last Updated 8/19/2015
					Last Invoice (sub/app)	7/2015		

Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		City of San Jose	Project Title:		San Carlos Multimodal Phase 2				
7 of 20	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL110034	Pedestrian-oriented improvements along the south side of San Carlos Street between Second Street and Market Street.			Programmed Year	Start mm/yyyy	End mm/yyyy	Under construction.	
	Fund Source		Field Review						
	CMAQ \$50 Local \$628 STP \$2,024		ENV	\$359	2011				
			Design	\$0					
Manager Name		John Raaymakers	ROW	\$0					
Phone/Fax		408-975-3297	Construction	\$2,343	2013	4/2015	2/2016	Funding Deadline	awarded
E-Mail		john.raaymakers@sanjoseca.gov	Total	\$2,702	E-76 Const (sub/app)	6/2013	10/2013	Last Updated	8/18/2015
					Last Invoice (sub/app)	2/23/2015			

Sponsor:		City of San Jose	Project Title:		Walk N Roll - Safe Access				
8 of 20	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL110057	Encourage and promote pedestrian and bicycle safety along SRTS by installing low cost enhancements.			Programmed Year	Start mm/yyyy	End mm/yyyy	Project was split into two obligations: 1. Leigh & Dry Creek obligated on 6/28/2013. 2. WNR improvements obligated on 8/20/2014.	
	Fund Source		Field Review						
	CMAQ \$568 Local \$85		ENV	\$97	2011				
			Design	\$0					
Manager Name		Devin Gianchandani	ROW	\$0					
Phone/Fax		(408) 975-3254	Construction	\$556	2013	6/2014	6/2015	Funding Deadline	obligated
E-Mail		devin.gianchandani@sanjoseca.gov	Total	\$653	E-76 Const (sub/app)	2/2015	4/2015	Last Updated	8/19/2015
					Last Invoice (sub/app)	7/2015			

Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		City of San Jose	Project Title:		Park Avenue Multi-Modal Improvements					
9 of 20	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments		
	SCL110117	In San Jose: Improve pedestrian and bicycle facilities along Park Avenue between Hedding and Montgomery Streets.			Programmed Year	Start mm/yyyy	End mm/yyyy			
	Fund Source						completed			
	Local \$364 STIP-TE \$1,456									
Manager Name		John Raaymakers	Field Review							
			ENV	\$137	2012/13					
			Design	\$69	2013	4/2014	6/2015			
ROW				\$31	2013					
Phone/Fax		408-975-3297	Construction	\$1,583	2015	10/2015	6/2016	Funding Deadline	obligated	
E-Mail		john.raaymakers@sanjoseca.gov	Total	\$1,820	E-76 Const (sub/app)	2/2015	4/2015	Last Updated	8/18/2015	
					Last Invoice (sub/app)					

Sponsor:		City of San Jose	Project Title:		St. John Street Multi-Modal Improvements - Phase 1					
10 of 20	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments		
	SCL110118	In San Jose: Improve bicycle and pedestrian facilities along St John Street between North Market Street and North Almaden Boulevard.			Programmed Year	Start mm/yyyy	End mm/yyyy			
	Fund Source				Working on ENV clearance and design. @85%.					
	Local \$376 STIP-TE 1,500									
Manager Name		John Raaymakers	ROW	\$0	2013					
Phone/Fax		408-975-3297	Construction	\$1,713	2017	12/2016	9/2017	Funding Deadline	2/28/2017	
E-Mail		john.raaymakers@sanjoseca.gov	Total	\$1,876	E-76 Const (sub/app)	6/2016	7/2016	Last Updated	8/25/2015	
					Last Invoice (sub/app)					

Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		City of San Jose	Project Title:		San Jose Citywide Bikeway Program					
11 of 20	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments		
	SCL130004	Fills existing bicycle gaps on a total of 43 segments citywide .			Programmed Year	Start mm/yyyy	End mm/yyyy			
	Fund Source				Field Review		3/2014	3/2014		
	CMAQ \$1,150 Local \$306					ENV	\$120	2014		
						Design	\$0	2015	7/2015	11/2015
Manager Name		John Brazil	ROW	\$37	2014			PES submitted. Starting design. CON moved to FY2017.		
Phone/Fax		408-975-3206	Construction	\$1,299	2017	4/2017	10/2017		Funding Deadline	11/1/2016
E-Mail		john.brazil@sanjoseca.gov	Total	\$1,456	E-76 Const (sub/app)	11/2016	12/2016		Last Updated	8/19/2015
					Last Invoice (sub/app)					

Sponsor:		City of San Jose	Project Title:		San Jose Citywide Pavement Management Program					
12 of 20	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments		
	SCL130005	Rehabilitate and resurface approx. 24 miles of arterial streets.			Programmed Year	Start mm/yyyy	End mm/yyyy			
	Fund Source		Field Review			8/2014				
	Local \$1,572 STP \$11,531		ENV	\$0	2014	3/2014	6/2014			
			Design	\$596	2014	3/2014	4/2015			
Manager Name		Noe Veloso	ROW	\$0						
Phone/Fax		408-794-1986	Construction	\$12,507	2015	7/2015	12/2015	Funding Deadline	obligated (AC)	
E-Mail		noe.veloso@sanjoseca.gov	Total	\$13,103	E-76 Const (sub/app)	2/2015	5/2015	Last Updated	8/18/2015	
					Last Invoice (sub/app)	5/2015				

Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		City of San Jose	Project Title:		San Jose Citywide SRTS Program				
13 of 20	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL130006	Implement walking route improvements around schools.			Programmed Year	Start mm/yyyy	End mm/yyyy	PE obligated-CON moved to 2017.	
	Fund Source		Field Review						
	CMAQ \$1,150 Local \$157		ENV	\$173	2014	1/2016	10/2016		
			Design	\$0		7/2015	6/2016		
Manager Name		Devin Gianchandani	ROW	\$0					
Phone/Fax		408-975-3254	Construction	\$1,133	2017	1/2017	6/2018	Funding Deadline	11/1/2016
E-Mail		devin.gianchandani@sanjoseca.gov	Total	\$1,306	E-76 Const (sub/app)	11/1/2016	12/1/2016	Last Updated	8/19/2015
					Last Invoice (sub/app)	2/15/2015			

Sponsor:		City of San Jose	Project Title:		Jackson Ave Bicycle and Pedestrian Improvements				
14 of 20	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL130007	Construct pedestrian safety and transit access enhancements along Jackson Avenue.			Programmed Year	Start mm/yyyy	End mm/yyyy	Obligated 4/16/2015. Will advertise 10/2015.	
	Fund Source		Field Review				complete		
	CMAQ \$1,500 Local \$399		ENV	\$95	2014				
			Design	\$570	2014	6/2014	6/2015		
Manager Name		John Raaymakers	ROW	\$95	2014				
Phone/Fax		408-975-3297	Construction	\$1,139	2015	10/2015	6/2016	Funding Deadline	obligated
E-Mail		john.raaymakers@sanjoseca.gov	Total	\$1,899	E-76 Const (sub/app)	2/2015	4/2015	Last Updated	8/18/2015
					Last Invoice (sub/app)	7/31/2015			

Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		City of San Jose	Project Title:		San Jose Walk N' Roll Phase 2				
15 of 20	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL130008	Non-infrastructure SRTS project			Programmed Year	Start mm/yyyy	End mm/yyyy	CON obligated 05/28/2014.	
	Fund Source		Field Review						
	CMAQ \$1,000 Toll Credit \$115		ENV	\$0					
			Design	\$0					
Manager Name		Anna Le	ROW	\$0					
Phone/Fax		408-975-3226	Construction	\$1,115	2014	6/2014	6/2017	Funding Deadline	obligated
E-Mail		anna.le@sanjoseca.gov	Total	\$1,115	E-76 Const (sub/app)	2/28/2014	5/28/2014	Last Updated	8/18/2015
					Last Invoice (sub/app)	2/25/2015			

Sponsor:		City of San Jose	Project Title:		San Jose Pedestrian Oriented Traffic Safety Signals				
16 of 20	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL130010	Traffic signal controlled crossings will be implemented at 6 key intersections.			Programmed Year	Start mm/yyyy	End mm/yyyy	2015 CON funds obligated 5/1/2015. Remaining 800,000 CON funds in 2017.	
	Fund Source		Field Review						
	CMAQ \$3,000 Local \$798		ENV	\$1,899	2014	2/2014	7/2014		
			Design	\$0	2014	4/2014	6/2014		
Manager Name		Ken Jung	ROW	\$0					
Phone/Fax		408-975-3262	Construction	\$1,899	2015/17	1/2015	12/2017	Funding Deadline	11/1/2016
E-Mail		ken.jung@sanjoseca.gov	Total	\$3,798	E-76 Const (sub/app)	11/2016	2/2017	Last Updated	8/18/2015
					Last Invoice (sub/app)	6/23/2015			

Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		City of San Jose	Project Title:		St. John Street Bikeway and Pedestrian Improvements						
17 of 20	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments			
	SCL130011	In San Jose: fill bikeway and sidewalk gaps on St. John Street.			Programmed Year	Start mm/yyyy	End mm/yyyy				
	Fund Source		CMAQ \$1,185 Local \$315	Field Review			2/2014	Working on ENV clearance; design-95% complete.			
					ENV	\$240	2014				
					Design	\$0	2014				11/2015
Manager Name		John Raaymakers	ROW	\$75	2014						
Phone/Fax		408-975-3297	Construction	\$1,185	2017	9/2016	6/2017	Funding Deadline	11/1/2015		
E-Mail		john.raaymakers@sanjoseca.gov	Total	\$1,500	E-76 Const (sub/app)	11/2015	12/2015	Last Updated <td rowspan="2">5/18/2015</td>	5/18/2015		
					Last Invoice (sub/app)						

Sponsor:		City of San Jose	Project Title:		The Alameda Grand Blvd Phase 2				
18 of 20	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL130012	Extends work on The Alameda that enhances pedestrian and vehicle safety in accordance with the Grand Boulevard Initiative.			Programmed Year	Start mm/yyyy	End mm/yyyy		
	Fund Source							Obligated 4/6/2015. Will advertise 9/2015.	
	CMAQ \$3,150 Local \$1,280				Field Review				complete
					ENV	\$831	2014		
	Design	\$0	2014	4/2014	6/2015				
Manager Name		John Raaymakers	ROW	\$40	2014				
Phone/Fax		408-975-3297	Construction	\$3,559	2015	12/2015	10/2016	Funding Deadline	obligated
E-Mail		john.raaymakers@sanjoseca.gov	Total	\$4,430	E-76 Const (sub/app)	2/2015	4/2015	Last Updated	8/18/2015
					Last Invoice (sub/app)				

Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		City of San Jose	Project Title:		East San Jose Bikeways				
19 of 20	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL130016	Make improvements to the bikeway network including the installation of new bikeways, traffic calming features, public bike racks, bike-friendly signal detection and pavement markings.	Field Review		Programmed Year	Start mm/yyyy	End mm/yyyy	CON moved to 2017.	
	Fund Source						3/2014		
	CMAQ \$2,000 Local \$532				ENV	\$75	2014		
					Design	\$382	2014	7/2015	11/2015
Manager Name		John Brazil	ROW	\$75	2014				
Phone/Fax		408-975-3206	Construction	\$2,000	2017	4/2017	10/2017	Funding Deadline	11/1/2016
E-Mail		john.brazil@sanjoseca.gov	Total	\$2,532	E-76 Const (sub/app)	11/2016	12/2016	Last Updated	8/19/2015
					Last Invoice (sub/app)				

Sponsor:		City of San Jose	Project Title:		San Jose Smart Intersections Program				
20 of 20	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL130036	Upgrade traffic signal controls at 35 intersections along six miles of Tully Road and Saratoga Avenue.	Field Review		Programmed Year	Start mm/yyyy	End mm/yyyy	in design. PE obligated 2/17/2015.	
	Fund Source						8/2015		
	CMAQ \$1,150 Local \$157				ENV	\$0			
					Design	\$410	2015	2/2015	10/2015
Manager Name		Ho Nguyen	ROW	\$0					
Phone/Fax		408-975-3254	Construction	\$897	2016			Funding Deadline	11/1/2015
E-Mail		ho.nguyen@sanjoseca.gov	Total	\$1,307	E-76 Const (sub/app)	11/1/2015	12/1/2015	Last Updated	6/10/2015
					Last Invoice (sub/app)				



Programmed Projects Quarterly Monitoring Report April-June 2015

Sponsor:		City of Santa Clara	Project Title:		Santa Clara Non-Infrastructure SR2S Phase 2				
1 of 1	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL130039	Develop and implement a comprehensive education and outreach program to promote safe walking, biking and carpooling to and from school for 12 Santa Clara schools.	Field Review		Programmed Year	Start mm/yyyy	End mm/yyyy	In progress.	
	Fund Source						complete		
	CMAQ \$500 Toll Credits \$57								
Manager Name		Marshall Johnson	ROW	\$0					
Phone/Fax		408-615-3023	Construction	\$557	2014	2014	2015	Funding Deadline	obligated
E-Mail		mjohnson@santaclaraca.gov	Total	\$557	E-76 Const (sub/app)	2/2014	4/2014	Last Updated	7/30/2015
					Last Invoice (sub/app)	5/2015	5/2015		

Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		City of Saratoga	Project Title:		Highway 9 Safety Improvements (BEP Project)				
1 of 3	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL070050	Construct bike/ped safety improvements on SR9 in Saratoga.			Programmed Year	Start mm/yyyy	End mm/yyyy	To be constructed in two phases: First phase project completed and closed. Phase 2 (HSIP-T4) Caltrans encroachment permit issued. E76 CON application in progress.	
	Fund Source		Field Review						
	CMAQ \$462 HSIP-T3 \$900 HSIP-T4 \$900 Local \$364		ENV	\$522	2008/09		complete		
			Design	\$0					
Manager Name		Iveta Harvancik	ROW	\$0					
Phone/Fax		408-868-1274	Construction	\$2,104	2008/09	9/2015	6/2016	Funding Deadline	awarded
E-Mail		iharvancik@saratoga.ca.us	Total	\$2,626	E-76 Const (sub/app)		6/2015 (HSIP-T4)	Last Updated	5/15/2015
					Last Invoice (sub/app)	11/2014			

Sponsor:		City of Saratoga	Project Title:		Prospect Road Complete Streets				
2 of 3	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL130026	Traffic calming on Prospect Road between Saratoga/Sunnyvale Rd and Lawrence Expressway and on Saratoga Ave between Highway 85 to the City Limits to the north.			Programmed Year	Start mm/yyyy	End mm/yyyy	Submitted TIP amendment to move CON to 2017.	
	Fund Source		Field Review				4/2014		
	CMAQ \$4,205 Local \$560		ENV	\$260	2014	1/2015	11/2015		
			Design	\$0		1/2015	11/2015		
Manager Name		Macedonio Nunez	ROW	\$5	2014	2/2016	6/2016		
Phone/Fax		408-868-1218	Construction	\$4,500	2017	4/2017	12/2017	Funding Deadline	11/1/2016
E-Mail		mnunez@saratoga.ca.us	Total	\$4,765	E-76 Const (sub/app)	2/2016	4/2016	Last Updated	8/14/2015
					Last Invoice (sub/app)				

Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		City of Saratoga	Project Title:		Saratoga Village Sidewalk Rehabilitation				
3 of 3	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL130027	Sidewalk rehabilitation along Big Basin Way between 6th street and Hwy 9.			Programmed Year	Start mm/yyyy	End mm/yyyy		
	Fund Source				CMAQ \$162 Local \$40	Field Review			4/2014	Moving CON funding to 2017.
	ENV		\$19			6/2015	8/2015		
	Design		\$0	2014		4/2015	9/2015		
Manager Name		Macedonio Nunez	ROW	\$0	2014	8/2015	10/2015		
Phone/Fax		408-868-1218	Construction	\$183	2017	05/2016	11/2016	Funding Deadline	11/1/2015
E-Mail		mnunez@saratoga.ca.us	Total	\$202	E-76 Const (sub/app)	10/2015	11/2015	Last Updated	8/14/2015
					Last Invoice (sub/app)				

Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		City of Sunnyvale	Project Title:		Sunnyvale/Saratoga Road Bike/Ped Safety Enhancements						
1 of 6	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments			
	SCL130028	On Sunnyvale-Saratoga Road, install pedestrian signal and modify intersection to eliminate free right turns and reduce crosswalk length.			Programmed Year	Start mm/yyyy	End mm/yyyy				
	Fund Source				CMAQ \$162 Local \$21	Field Review			Project scope revision in progress.		
						ENV	\$90	2015		6/2015	11/2015
						Design	\$0			6/2015	11/2015
Manager Name		Nasser Fakh	ROW	\$0							
Phone/Fax		408-730-7617/408-730-7619	Construction	\$524	2016	3/2016	9/2016	Funding Deadline	11/1/2016		
E-Mail		nfakh@sunnyvale.ca.gov	Total	\$614	E-76 Const (sub/app)	11/2015	2/2016	Last Updated	8/11/2015		
Last Invoice (sub/app)											

Sponsor:		City of Sunnyvale	Project Title:		Fair Oaks Avenue Bikeway and Streetscape						
2 of 6	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments			
	SCL130029	In Sunnyvale: On three separate section of Fair Oaks Avenue, construct bike lanes and associated medians.			Programmed Year	Start mm/yyyy	End mm/yyyy				
	Fund Source				CMAQ \$956 Local \$254	Field Review			3/2015	Project scope revision in process.	
						ENV	\$0	2015			
						Design	\$174	2015	2/2015		5/2016
Manager Name		Nasser Fakh		ROW	\$0						
Phone/Fax		408-730-7617/408-730-7619		Construction	\$1,036	2017	7/2016	10/2016	Funding Deadline		11/1/2016
E-Mail		nfakh@sunnyvale.ca.gov		Total	\$1,210	E-76 Const (sub/app)	6/2016	2/2017	Last Updated	8/11/2015	
						Last Invoice (sub/app)					

Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		City of Sunnyvale	Project Title:		Maude Avenue Bikeway and Streetscape				
3 of 6	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL130030	In Sunnyvale, on Maude Avenue between Mathilda Avenue and Fair Oaks Avenue, install medians, modify roadway geometry and stripe bike lanes.			Programmed Year	Start mm/yyyy	End mm/yyyy		
	Fund Source		CMAQ \$695 Local \$135	Field Review			1/2016	Preliminary traffic studies performed. Project scoping and advertising for consultants are pending.	
				ENV	\$135	2015	12/2015		8/2016
				Design	\$0		12/2015		8/2016
Manager Name	Nasser Fakh	ROW	\$0						
Phone/Fax	408-730-7617/408-730-7619	Construction	\$695	2017	2/2017	9/2017	Funding Deadline		11/1/2016
E-Mail	nfakh@sunnyvale.ca.gov	Total	\$830	E-76 Const (sub/app)	9/2016	1/2017	Last Updated	8/11/2015	
				Last Invoice (sub/app)					

Sponsor:		City of Sunnyvale	Project Title:		Sunnyvale East and West Channel Multi-Use Trails				
4 of 6	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL130031	In Sunnyvale, construct multi-use paved trails on four segments of drainage channels.			Programmed Year	Start mm/yyyy	End mm/yyyy		
	Fund Source				CMAQ \$3,440 Local \$1,305			7/2015	This project will be constructed as part of the Santa Clara Valley Water District flood control project. Design is in progress.
	Field Review								
	ENV		\$400			1/2013	7/2014		
	Design	\$0		1/2012	4/2016				
Manager Name	Nasser Fakh	ROW	\$0						
Phone/Fax	408-730-7617/408-730-7619	Construction	\$4,345	2017	4/2016	12/2017	Funding Deadline	11/1/2016	
E-Mail	nfakh@sunnyvale.ca.gov <td rowspan="2">Total</td> <td rowspan="2">\$4,745</td> <th>E-76 Const (sub/app)</th> <td>11/2015</td> <td>2/2016</td> <th rowspan="2">Last Updated</th> <td rowspan="2">8/11/2015</td>	Total	\$4,745	E-76 Const (sub/app)	11/2015	2/2016	Last Updated	8/11/2015	
				Last Invoice (sub/app)					

Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		City of Sunnyvale	Project Title:		Sunnyvale SRTS Ped Infrastructure Improvements				
5 of 6	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL130032	In Sunnyvale: Construct sidewalks, bulb-outs, and curb ramps; install in-pavement crosswalk lights, signs, and pavement markings; upgrade (reduce) corner radius.			Programmed Year	Start mm/yyyy	End mm/yyyy	Design consultant contract awarded in August 2015.	
	Fund Source		Field Review				8/2012		
	CMAQ \$1569 Local \$331		ENV	\$331	2014	6/2015			
			Design	\$0		8/2015	12/2016		
Manager Name		Nasser Fakh	ROW	\$0					
Phone/Fax		408-730-7617/408-730-7619	Construction	\$1,569	2017	1/2016	3/2016	Funding Deadline	11/1/2016
E-Mail		nfakh@sunnyvale.ca.gov	Total	\$1,900	E-76 Const (sub/app)	1/2016	3/2016	Last Updated	8/11/2015
					Last Invoice (sub/app)				

Sponsor:		City of Sunnyvale	Project Title:		Duane Avenue Roadway Preservation				
6 of 6	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL130033	In Sunnyvale, rehabilitate Duane Avenue pavement, curb and gutter between San Juan Avenue and Stewart Drive.			Programmed Year	Start mm/yyyy	End mm/yyyy	Under Construction.	
	Fund Source		Field Review						
	Local \$223 STP \$1,576		ENV	\$335	2014	10/2014	4/2015		
			Design	\$0		10/2014	7/2015		
Manager Name		Nasser Fakh	ROW	\$0					
Phone/Fax		408-730-7617/408-730-7619	Construction	\$1,464	2016	11/2015	7/2016	Funding Deadline	awarded
E-Mail		nfakh@sunnyvale.ca.gov	Total	\$1,799	E-76 Const (sub/app)	8/2015	10/2015	Last Updated	6/11/2015
					Last Invoice (sub/app)				



Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		County of Santa Clara	Project Title:		East San Jose Pedestrian Improvements				
1 of 4	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL110121	Fill in sidewalk gaps and provide ADA enhancements within existing rights-of-way on various roads.			Programmed Year	Start mm/yyyy	End mm/yyyy		
	Fund Source		Field Review				3/2013		
	Local \$532 STP \$2,128		ENV	\$0		7/2013	8/2015		
Manager Name		Sadegh Sadeghi/Dawn Cameron	Design	\$210	2013	2/2013	8/2015		
Phone/Fax		408-494-1335/408-573-2465	ROW	\$0		8/2015	10/2015		
E-Mail		sadegh.sadeghi@dawn.cameron@rda.sccgov.org	Construction	\$2,340	2017	2/2016	9/2017	Funding Deadline	11/1/2016
			Total	\$2,550	E-76 Const (sub/app)	3/2/2015		Last Updated	8/28/2015
					Last Invoice (sub/app)	7/9/1015			

Sponsor:		County of Santa Clara	Project Title:		Santa Clara County Non Infrastructure SRTS Program				
2 of 4	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL130021	Non-infrastructure SRTS education and encouragement services for schools.			Programmed Year	Start mm/yyyy	End mm/yyyy		
	Fund Source		Field Review			4/2014			
	CMAQ \$838 Local \$08		ENV	\$0		N.A.			
Manager Name		Bonnie Broderick	Design	\$0		N.A.			
Phone/Fax		(408) 793-2700	ROW	\$0		N.A.			
E-Mail		Bonnie.Broderick@phd.sccgov.org	Construction	\$946	2014	7/2015	6/2017	Funding Deadline	obligated
			Total	\$946	E-76 Const (sub/app)	7/10/14	8/21/14	Last Updated	5/15/2015
					Last Invoice (sub/app)				

Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		County of Santa Clara	Project Title:		San Tomas Aquino Spur Trail Multi-Use Trail Phase 2					
3 of 4	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments		
	SCL130022	Construct an extension of the San Tomas Aquino Spur Trail (a Class I bicycle/pedestrian trail) on the west side of San Tomas Expressway from SR 82 (El Camino Real) to Homestead Road.			Programmed Year	Start mm/yyyy	End mm/yyyy			
	Fund Source			CMAQ \$1,884 Local \$1,760 TAP \$1,350	Field Review		9/2013		Obligated 2/17/2015. Program supplement executed. Final plans being prepared.	
	Manager Name				ENV	\$400	2013	8/2013		12/2014
					Design	\$0		1/2012		3/2014
Phone/Fax		408-573-2465/408-573-2490	Construction	\$4,994	2015	10/2015	6/2016	Funding Deadline		obligated
E-Mail	dawn.cameron/craig.petersen@rda.sccgov.org	Total	\$5,394	E-76 Const (sub/app)	2/2015	5/1/2015	Last Updated	5/15/2015		
				Last Invoice (sub/app)		10/16/2014				

Sponsor:		County of Santa Clara	Project Title:		Capitol Expressway ITS and Bike/Ped Improvements				
4 of 4	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL130037	In San Jose: Install Intelligent Transportation System infrastructure, fill in sidewalk gaps, install pedestrian sensors and bike detection at all intersections and implement traffic responsive and adaptive signal timing.			Programmed Year	Start mm/yyyy	End mm/yyyy		
	Fund Source	CMAQ \$6,085 Local \$1,899 STP \$1,650	Field Review				12/2013	NEPA clearance is expected in December 2015. TIP amendment submitted to move funds to 2017.	
			ENV	\$0		5/2014	12/2015		
	Design		\$1,434	2014	3/2014	12/2015			
Manager Name	Dawn Cameron/Bill Yeung	ROW	\$0		12/2015				
Phone/Fax	408-573-2465/408-494-1309	Construction	\$8,200	2017	6/2016	12/2017	Funding Deadline	11/1/2016	
E-Mail	dawn.cameron/bill.yeung@rda.sccgov.org	Total	\$9,634	E-76 Const (sub/app)	11/2015	2/2016	Last Updated	6/24/2015	
				Last Invoice (sub/app)		1/23/2015			



Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		Town of Los Gatos	Project Title:		Hillside Road Preservation				
1 of 1	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL130014	Base repairs and resurfacing on Shannon Road from Los Gatos Blvd to Hicks Road.			Programmed Year	Start mm/yyyy	End mm/yyyy	Under construction.	
	Fund Source		Field Review		2013	7/2014	7/2014		
	Local \$18 STP \$139		ENV	\$18	2013	7/2014	11/2014		
			Design	\$0	2013	8/2014	12/2014		
Manager Name		Lisa Petersen	ROW	\$0	N.A.				
Phone/Fax		408-399-5773/408-354-8529	Construction	\$139	2015	5/2015	9/2015	Funding Deadline	awarded
E-Mail		lpetersen@losgatosca.gov	Total	\$157	E-76 Const (sub/app)	2/2015	4/2015	Last Updated	8/25/2015
					Last Invoice (sub/app)	8/2015	8/2015		



Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		VTA	Project Title:		Route 152 New Alignment				
1 of 8	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL090016	Route 152 new alignment from Rte 101 to Rte 156. Realign highway and evaluate route management strategies, including potential roadway pricing. Also includes SR152 "trade corridor" study from 101 to I-5.			Programmed Year	Start mm/yyyy	End mm/yyyy		
	Fund Source		Field Review						
	IIP \$5 Local \$5.15 STP \$2.86		ENV	\$13	2008/09	2008	3/2018		
			Design	\$0					
Manager Name		Gene Gonzalo	ROW	\$0					
Phone/Fax		408-952-4236	Construction	\$0				Funding Deadline	
E-Mail		gene.gonzalo@vta.org	Total	\$13	E-76 Const (sub/app)			Last Updated	8/10/2015
					Last Invoice (sub/app)				

Sponsor:		VTA	Project Title:		SR 85 Express Lanes				
2 of 8	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL090030	Implement roadway pricing on SR 85 carpool lanes.			Programmed Year	Start mm/yyyy	End mm/yyyy		
	Fund Source		Field Review						
	ARRA \$3,300,000 Earmark \$1,500,000 Local \$2,000,000 RTP-LRP \$163,200,000		ENV	\$4,800	2013	7/2009	4/2015		
			Design	\$19,000					
Manager Name		Maren Schram	ROW	\$500					
Phone/Fax		408-952-4214	Construction	\$145,700				Funding Deadline	PE: 6/30/2018
E-Mail		maren.schram@vta.org	Total	\$170,000	E-76 Const (sub/app)			Last Updated	8/20/2015
					Last Invoice (sub/app)	3/20/2015	5/1/2015		



Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		VTA	Project Title:		Regional Planning Activities and PPM - Santa Clara				
3 of 8	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL090035	Santa Clara: Regional Planning Activities and Planning, Programming and Monitoring			Programmed Year	Start mm/yyyy	End mm/yyyy		
	Fund Source								
	Local \$148 STIP \$3,944 STP \$1,145				Field Review				
					ENV	\$5,237	14/15-18/19		
	Design	\$0							
Manager Name		Amin Surani	ROW	\$0					
Phone/Fax		408-546-7989	Construction	\$0				Funding Deadline	
E-Mail		amin.surani@vta.org	Total	\$5,237	E-76 Const (sub/app)			Last Updated	1/6/2015
		Last Invoice (sub/app)							

Sponsor:		VTA	Project Title:		US 101 Express Lanes						
4 of 8	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments			
	SCL110002	Implement roadway pricing on US 101 carpool lanes			Programmed Year	Start mm/yyyy	End mm/yyyy				
	Fund Source				Field Review						
	VTA LPR \$8,480				ENV	\$8,480	2010			11/2010	9/2015
					Design	\$0					
Manager Name		Lam Trinh	ROW	\$0							
Phone/Fax		408-952-4217	Construction	\$0				Funding Deadline			
E-Mail		lam.trinh@vta.org	Total	\$8,480	E-76 Const (sub/app)	N.A.		Last Updated	8/10/2015		
		Last Invoice (sub/app)			N.A.	N.A.					

Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		VTA	Project Title:		SR 237 Express Lanes: Zanker Rd to Mathilda Ave				
5 of 8	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL110008	Implement roadway pricing on SR 237 carpool lane; extending the Express Lanes on SR 237 to Mathilda Avenue	Field Review		Programmed Year	Start mm/yyyy	End mm/yyyy		
	Fund Source								
	Local \$7,564 RTP-LRP \$10,903 Sunnyvale \$1,739 VPPP \$1,600								
	Manager Name								
	Phone/Fax	(408) 952-4217	Construction	\$10,903	2015	8/2016	8/2017	Funding Deadline	
	E-Mail	lam.trinh@vta.org	Total	\$21,806	E-76 Const (sub/app)			Last Updated	8/10/2015
					Last Invoice (sub/app)				

Sponsor:		VTA	Project Title:		I-680 Soundwalls - Capitol Expwy to Mueller Ave				
6 of 8	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments	
	SCL150001	Construct sound walls on I-680 between Capitol Expressway and Mueller Avenue.	Field Review		Programmed Year	Start mm/yyyy	End mm/yyyy		
	Fund Source								
	STIP \$4,456								
	Manager Name								
	Phone/Fax	408-952-4283	Construction	\$3,859	2019	9/2017	8/2018	Funding Deadline	11/1/2018
	E-Mail	brian.pantaleon@vta.org	Total	\$4,456	E-76 Const (sub/app)			Last Updated	7/30/2015
					Last Invoice (sub/app)				



Programmed Projects Quarterly Monitoring Report

April-June 2015

Sponsor:		VTA	Project Title:		Central and South County Bicycle Plan			
7 of 8	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments
	SCL150004	Phased update to the Santa Clara Countywide Bicycle Plan. The update will focus on disadvantaged communities in Santa Clara County, including downtown San Jose, East San Jose, northern Santa Clara, and Gilroy.			Programmed Year	Start mm/yyyy	End mm/yyyy	
	Fund Source		Field Review					
	ATP \$443 Local \$58		ENV	\$0				
			Design	\$0				
Manager Name		Lauren Ledbetter	ROW	\$0				
Phone/Fax		408-321-5716	Construction	\$501	2015	10/2015	2016	Funding Deadline obligated
E-Mail		lauren.ledbetter@vta.org	Total	\$501	E-76 Const (sub/app)			Last Updated 8/7/2015
					Last Invoice (sub/app)			

Sponsor:		VTA	Project Title:		I-280/Winchester Study			
8 of 8	Project No	Project Description	Project Milestone	Funds (\$000)	Schedule			Comments
	SCL150014	Conduct planning activities to identify and evaluate improvements in the vicinity of the I-280/Winchester Boulevard interchange.			Programmed Year	Start mm/yyyy	End mm/yyyy	
	Fund Source		Field Review					
	Local \$500 STP \$500		ENV	\$1,000	2017	2/2016	6/2017	
			Design	\$0				
Manager Name		Sajeeni DeAlwis-Mima	ROW	\$0				
Phone/Fax		408-952-4175	Construction	\$0				Funding Deadline 11/1/2016
E-Mail		Sajeeni.DeAlwis-Mima@vta.org	Total	\$1,000	E-76 Const (sub/app)			Last Updated 7/30/2015
					Last Invoice (sub/app)			

Programmed Projects Quarterly Monitoring Report

Attachment C

List of Acronyms

ABAG -Association of Bay Area Governments	NOP -Notice of Preparation
ABC -Across Barrier Connections	NPDES- National Pollution Discharge Elimination System
AC -Asphalt Concrete	PCC -Portland Concrete Cement
ACE -Altamont Commuter Express	PDR -Planned Development Rezoning
ADA-Americans with Disabilities Act	PE -Preliminary Engineering
ARRA-American Recovery and Reinvestment Act	PTG- VTA Pedestrian Technical Guidelines
BART -Bay Area Rapid Transit	PUC-Public Utilities Commission
BEP-Bicycle Expenditure Program	PUD -Planned Urban Development
BRT- Bus Rapid Transit	R&D -Research & Development
BTG - VTA Bicycle Technical Guidelines	RFP-Request for Proposals
CDT - VTA Community Design & Transportation	ROW -Right-Of-Way
CEQA-California Environmental Quality Act	RTP/LRP-Long Range Undefined Funds
CIP-Capital Improvement Program	SCVWD -Santa Clara Valley Water District
CMAQ-Congestion Mitigation and Air Quality Improvement Program	SF -Square Foot
CMIA-Corridor Mobility Improvement Account	SHOPP-State Highway Operation and Protection Program
CMP -Congestion Management Program	SPA- Specific Plan Amendment
CTC-California Transportation Commission	STIP-State Transportation Improvement Program
CUP-Conditional Use Permit	STP-Surface Transportation Program
CWC -Citizen Watchdog Committee	SVRT -Silicon Valley Rapid Transit
DASH - San Jose Downtown Area Shuttle	SVRTC- Silicon Valley Rapid Transit Corridor
DEIR -Draft Environmental Impact Report	SWPPP -Storm Water Pollution Prevention Program
DU/AC -Dwelling Units Per Acre	TDM -Transportation Demand Management
E76-Formally called "Authorization to Proceed"	TE-Transportation Enhancements
EIR -Environmental Impact Report	TFCA – Transportation Fund for Clean Air
EIS-Environmental Impact Statement	TIA -Transportation Impact Analysis
ER -Environmental Review	TOD -Transit-Oriented Development
ETS-Electronic Toll System	UPRR- Union Pacific Railroad
FAR- Floor Area Ratio	VPPP-Value Pricing Pilot Program
FEIR -Final Environmental Impact Report	
GPA -General Plan Amendment	
HBRR- Highway Bridge Replacement and Rehabilitation	
HOV -High-Occupancy Vehicle	
HPP-High Priority Project	
HSR -High-Speed Rail	
IS -Initial Study	
ITS -Intelligent Transportation System	
LPR-Local Program Reserve	
LRT -Light Rail Transit	
LU/TD -Land Use/Transportation Diagram	
MND -Mitigated Negative Declaration	
MTC -Metropolitan Transportation Commission	
ND -Negative Declaration	
NEPA-National Environmental Policy Act	
NOI -Notice of Intent	



Date: September 17, 2015
 Current Meeting: October 1, 2015
 Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
 Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Director of Planning and Program Development, John Ristow

SUBJECT: SR 237 Express Lanes FY 2015 Annual Report

FOR INFORMATION ONLY

BACKGROUND:

In Fiscal Year 2015 (FY 2015), the SR 237 Express Lanes exceeded the performance standard of operating at a minimum speed of 45 miles per hour (mph) for about 92 percent of the express lanes operating hours. Traffic volumes served by SR 237 Express Lanes in FY 2015 was 56,000 vehicles greater than FY 2014. The SR 237 Express Lanes have served over 1.9 million toll paying customers with about 200,000 vehicle hours of travel time savings gained within the corridor while generating about \$3.6 million in gross toll revenues since the express lanes opened for tolling in 2012.

The Santa Clara Valley Transportation Authority (VTA) Board of Directors approved the Silicon Valley Express Lanes Program (Program) at the December 2008 Board meeting. The purpose of the Program is to provide congestion relief through the implementation of a roadway pricing system that allows for the use of unused capacity in highway carpool lanes. This is accomplished by allowing solo commuters to use the available capacity in the carpool lanes for a fee. The fee changes dynamically in response to existing congestion levels and the available capacity in the express lanes. Implementation of roadway pricing is also part of the Bay Area Regional Transportation Plan update that was approved by the Metropolitan Transportation Commission (MTC) on July 18, 2013.

The Program has been undertaken to provide long-term mobility benefits and to provide another funding stream for transportation improvements. Specifically, the primary objectives of the Program are as follows:

1. Provide congestion relief through more effective use of existing roadways;
2. Provide commuters with a new mobility option; and
3. Provide a new funding source for transportation improvements including public transit.

DISCUSSION:

The SR 237/I-880 Express Connectors project that converted the carpool lane connector ramps at the SR 237/I-880 interchange to express lanes operations (Attachment A) was the first phase of the overall Program as well as for express lanes on SR 237. The next phase of the Program involves converting the remainder of existing carpool lanes on SR 237 west of the existing express lanes to express lanes as well. This effort has been environmentally cleared and is in the design phase with a planned opening in 2017.

Summary of SR 237 Express Lanes Update for Fiscal Year 2015

This update reflects the third full fiscal year (Fiscal Year 2015: July 1, 2014 to June 30, 2015) of operation for the SR 237 Express Lanes. The SR 237 Express Lanes have served over 1.9 million toll paying customers (about 20 percent of the just over 9.5 million customers that have used the express lanes since inception). About 200,000 vehicle hours of travel time savings have been gained in the corridor while generating about \$3.6 million in gross toll revenues since the express lanes opened for tolling on March 20, 2012.

In Fiscal Year 2015 (FY 2015), the SR 237 Express Lanes exceeded the performance standard of operating at a minimum speed of 45 miles per hour (mph) for about 92 percent of the express lanes operating hours. Traffic volumes served by SR 237 Express Lanes during FY 2015 was over three million vehicles including both carpoolers (also referred to as high occupancy vehicles or HOVs) and solo drivers (also referred to as single occupant vehicles or SOVs). This is an increase of over 56,000 vehicles over FY 2014. The HOV/non-tolled traffic grew by about 140,000 vehicles (six percent) while the amount of SOV traffic decreased by about 83,000 (14 percent). The increase in HOV/non-tolled traffic is attributable to the growth in clean air vehicles (CAVs) that are allowed to use express lanes with a qualified decal sticker. Periodic spot counts counted by VTA staff within the SR 237 Express Lanes limits indicate that about 25 percent of the total traffic volume may consist of CAVs.

In FY 2015, the growth in traffic volume and congestion also resulted in an increase in toll rates, up to six dollars in the corridor. Despite the increase in traffic usage levels, the SR 237 Express Lanes managed to provide travel time savings in the corridor of up to 14 minutes in the westbound direction during the morning commute period and up to seven minutes in the eastbound direction during the evening commute peak. As a result, the SR 237 Express Lanes continue to consistently draw both repeat users and first time users with this use averaging about 9,500 and 3,000 per month respectively. The result is a net revenue projection of about \$300,000.

The express lanes operate on Monday through Friday, from 5:00 am to 10:00 am in the westbound direction, from 5:00 am to 9:00 am for the eastbound direction, and from 3:00 pm to 7:00 pm for both directions in the evening commute. This includes public holidays that occur on weekdays. At all other times and on weekends, the lane is "OPEN TO ALL."

A six-month period pilot project rolling back the double white lines from First Street to Zanker Road in the westbound direction of SR 237 was implemented on June 24, 2015. This project allows carpoolers traveling from Calaveras Boulevard to access the express lanes earlier by about three-quarters of a mile. This striping modification was implemented in partnership amongst several agencies including the California Department of Transportation (Caltrans), California Highway Patrol (CHP), City of Milpitas and VTA. The results of this implementation will be included in the FY 2016 SR 237 Express Lanes update.

Express Lanes Operations

The SR 237 Express Lanes operated at or above the minimum required 45 mph performance standard for about 92 percent of the express lanes hours of operation. During the remaining eight percent of the express lanes hours of operation, the facility operated as a HOV facility available only to vehicles meeting the carpool vehicle criteria.

The average express lanes travel speed on SR 237 in the westbound direction (Figure 1) varied between 44 and 70 mph with minimum travel speeds at about 44 mph between 8:00 a.m. and 10:00 a.m. and between 60 mph and 70 mph between 3:00 p.m. and 7:00 p.m. The average express lanes travel speed on SR 237 in the eastbound direction (Figure 2) was about 70 mph during the morning commute period with speeds dropping to between 50 mph and 55 mph between 5:00 p.m. and 7:00 p.m. The average speeds are derived from the sensors located along SR 237 and it consists of data from 36 representative dates from throughout the year. The data was collected between Tuesday through Thursday and on days with no traffic incident or inclement weather condition.

Figure 1: FY 2015 SR 237 Express Lanes - Average Corridor Speed (Westbound)

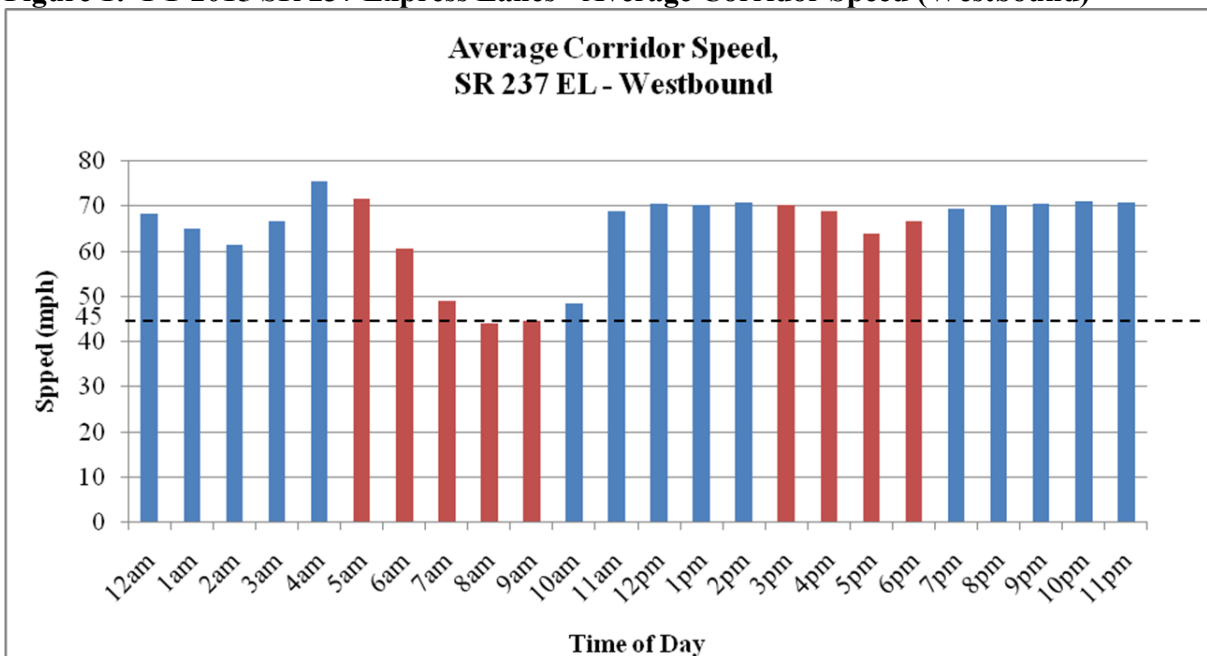
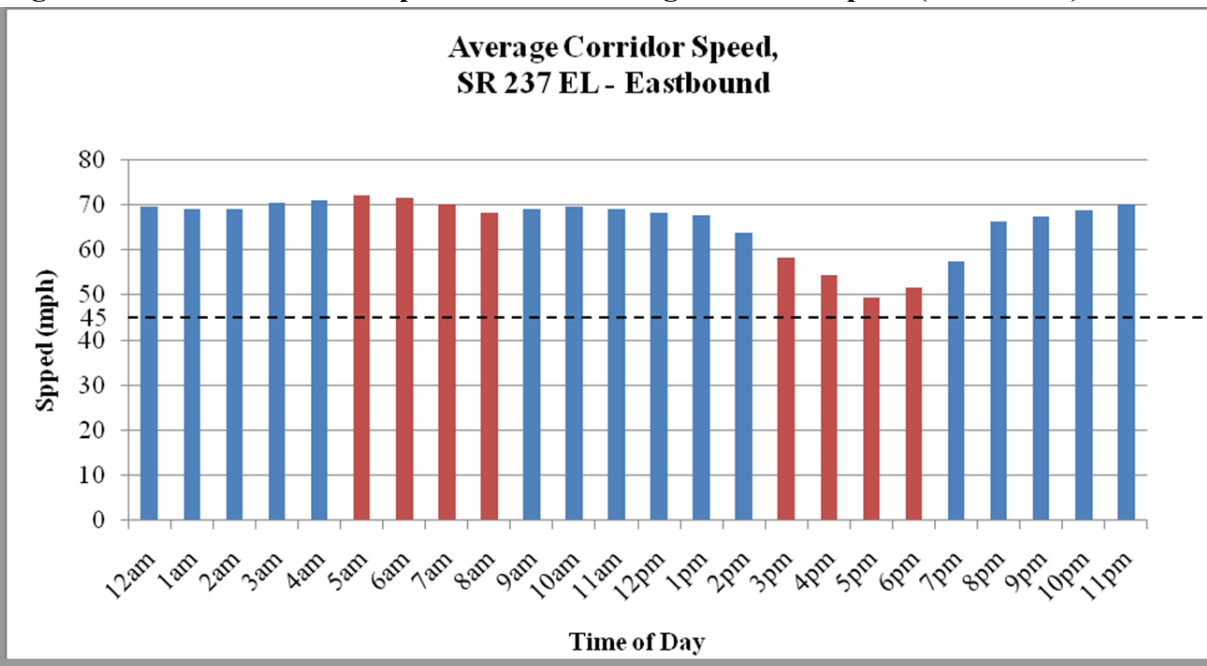


Figure 2: FY 2015 SR 237 Express Lanes - Average Corridor Speed (Eastbound)

HOV ONLY operations on the SR 237 Express Lanes occur when the average corridor speed falls below the 45 mph standard during the express lanes hours of operation. This accounted for about eight percent of the express lanes hours of operation. Only eligible vehicles meeting the carpool vehicle criteria (including CAVs) may use express lanes during this time period. During FY 2015, HOV ONLY operations amounted to a total of about 360 hours (300 hours in the eastbound evening commute period and 60 hours in westbound morning commute period) that equates to an average of about one hour per day. This results in an estimated 45,000 toll vehicles not being able to use the express lanes facility due to the HOV ONLY restrictions.

In general, the eastbound PM peak period experiences HOV ONLY restriction due to recurring downstream congestion on I-880 that occurs north of the Santa Clara County limits (north of Dixon Landing Road). Similarly, in the westbound direction, the HOV ONLY restriction occurs due to downstream congestion from US 101 and low speeds between I-880 and Zanker Road.

Travel time savings along the SR 237 Express Lanes for the solo toll paying traffic can be up to about 14 minutes (between Dixon Landing Road and Great America Parkway) in the westbound morning commute direction and up to seven minutes in the eastbound evening commute direction. The evening commute travel time savings are significantly affected by downstream congestion beyond the SR 237 Express Lanes limits. About 200,000 vehicle hours of travel time savings have been gained in the entire corridor since opening to tolling operations. In addition, the SR 237 Express Lanes has served over 1.9 million toll paying vehicles that chose to use the facility to obtain the travel time reliability.

Figure 3: Southbound I-880 to Westbound SR 237 AM peak period Travel Time - (Dixon Landing Road to North 1st Street)

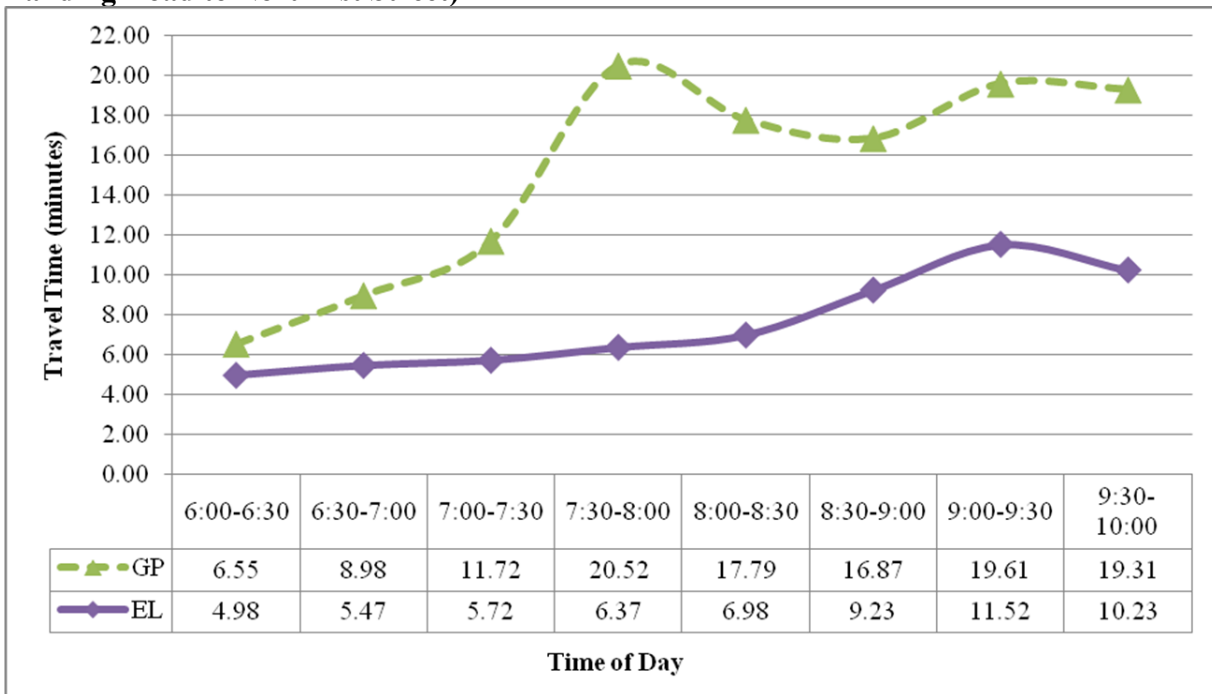
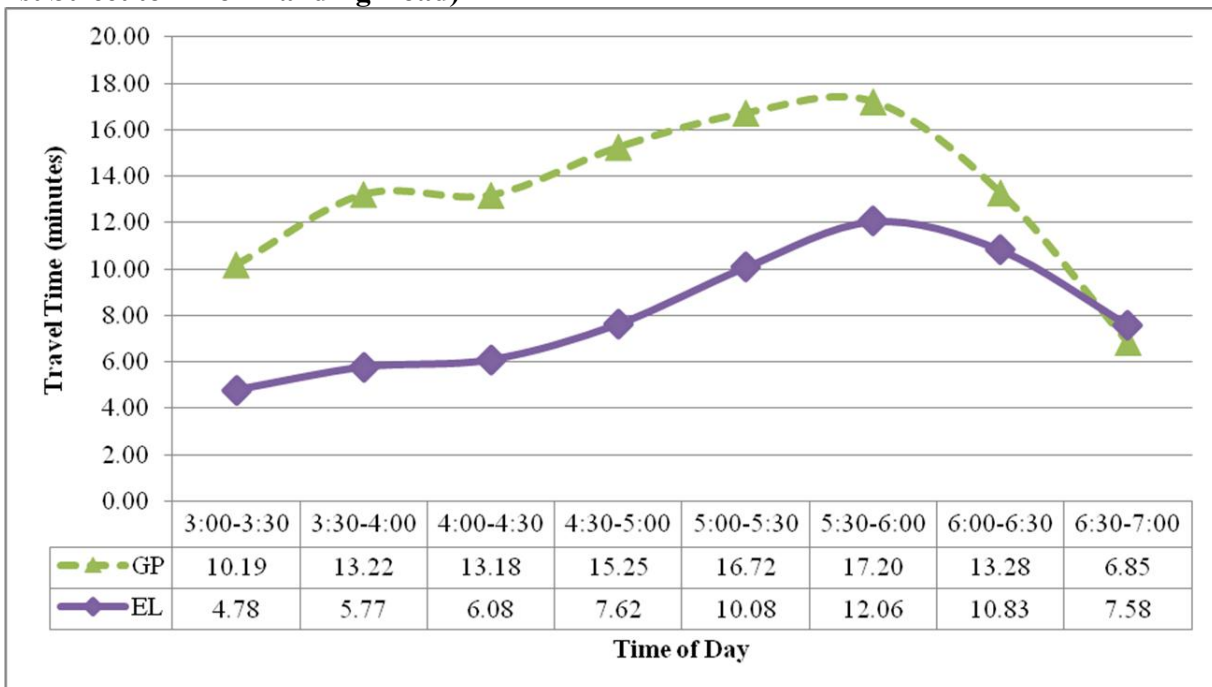


Figure 4: Eastbound SR 237 to Northbound I-880 PM peak period Travel Time - (North 1st Street to Dixon Landing Road)



During FY 2015, the SR 237 Express Lanes served a total of over three million vehicles including both carpoolers (HOV) and solo drivers (SOV). Over 525,000 (about 17 percent) of the total express lanes traffic chose to pay a fee to use the express lane to benefit their travel (Table 1). The average daily traffic for FY 2015 was about 11,700 vehicles consisting of about 9,700 non-tolled vehicles and 2,000 tolled vehicles. The majority of the tolled vehicles (68 percent) are commuting in the westbound direction on SR 237 from I-880 (Table 2).

Table 1: FY 2015 SR 237 Express Lanes - Traffic Usage by Quarter

FY 2015	Quarter 1 (July - Sep.)	Quarter 2 (Oct. - Dec.)	Quarter 3 (Jan. - Mar.)	Quarter 4 (Apr. - June)	Total
# Tolling Days	66	66	64	64	260
SOV /Toll	144,763	119,953	130,635	129,828	525,179
HOV /Non-Toll	634,809	602,072	627,415	666,879	2,531,175
Avg. SOV /Day	2,193	1,819	2,041	2,029	2,020
Avg. HOV /Day	9,618	9,122	9,803	10,420	9,735

SOV = Single Occupant Vehicle

HOV = High Occupancy Vehicle

Table 2: FY 2015 SR 237 Express Lanes - Traffic Usage by Direction (SOV Users)

Tolled Vehicles				
Direction	AM	PM	Total	Percentage
Eastbound	21,610	145,381	166,991	32%
Westbound	298,319	59,869	358,188	68%
Total	319,929	205,250	525,179	

The main enforcement related topic is motorists' crossing of the double white lines. The majority of the double white line crossings occurs between McCarthy Boulevard and Zanker Road during the peak commute period in the westbound direction of SR 237 as shown in Figures 5 and 6. Working with the CHP, focused enforcement activities on a periodic basis have taken place. Figure 7 highlights that the primary citation issued has been for carpool lane violations, amounting to about 80 percent of all citations (almost 500 total citations in FY 2015).

Figure 5: FY 2015 SR 237 Express Lanes Westbound Average Double White Line Crossing Violators between McCarthy Blvd. and Zanker Road

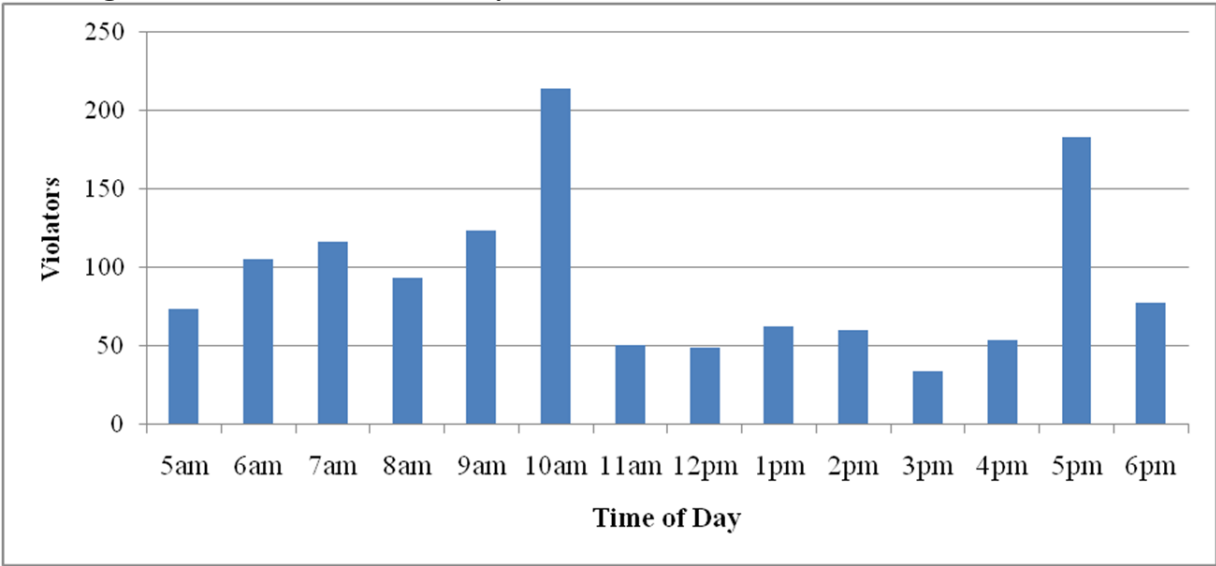


Figure 6: FY 2015 SR 237 Express Lanes Eastbound Average Double White Line Crossing Violators between McCarthy Blvd. and Zanker Road

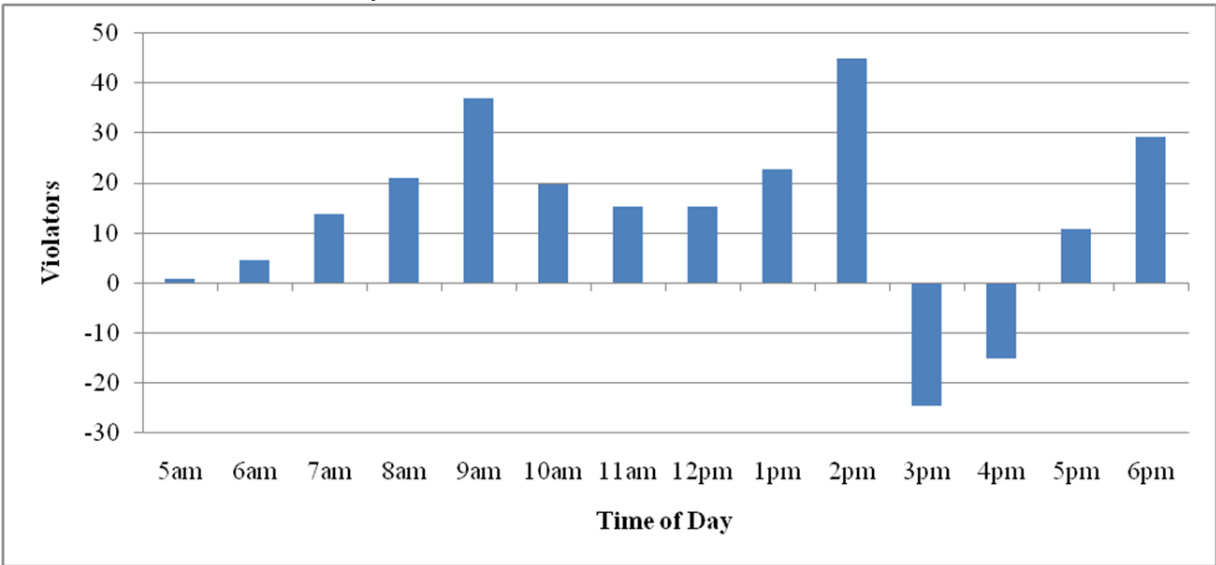
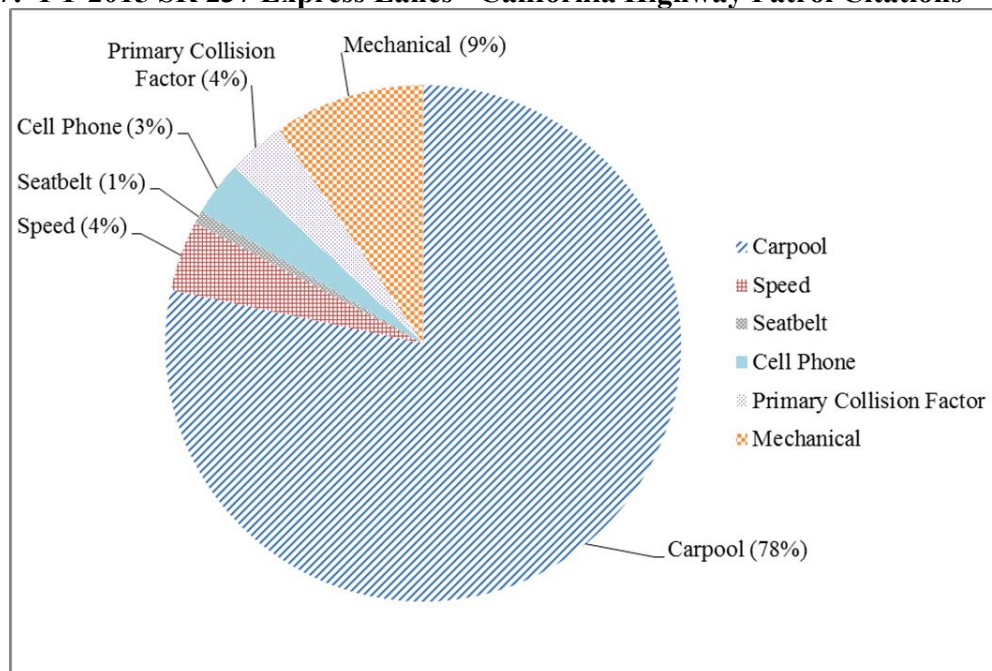


Figure 7: FY 2015 SR 237 Express Lanes - California Highway Patrol Citations



No major traffic incidents occurred during FY 2015 that required closure of express lanes .

VTA staff worked with the Bay Area Toll Authority (BATA) and maintained uninterrupted toll transactions during BATA's back-office system upgrade.

In October 2014, a short segment of about 1,000 feet along westbound SR 237 between McCarthy Boulevard and Zanker Road interchange was repaved by Caltrans. The repaving project overlaid asphalt on top of the double white lines separating the express lane and the adjacent general purpose (GP) lane with the restriping completed in December 2014.

The bi-annual maintenance for the corridor was undertaken in September 2014 and March 2015. This is a scheduled two-night preventive maintenance activity in addition to the weekly and monthly preventive maintenance. This maintenance activity consisted of field inspection of toll system equipment including the pricing sign, CCTV cameras, tolling equipment, pavement sensors, communication equipment and gantry poles. Other maintenance activities included the following:

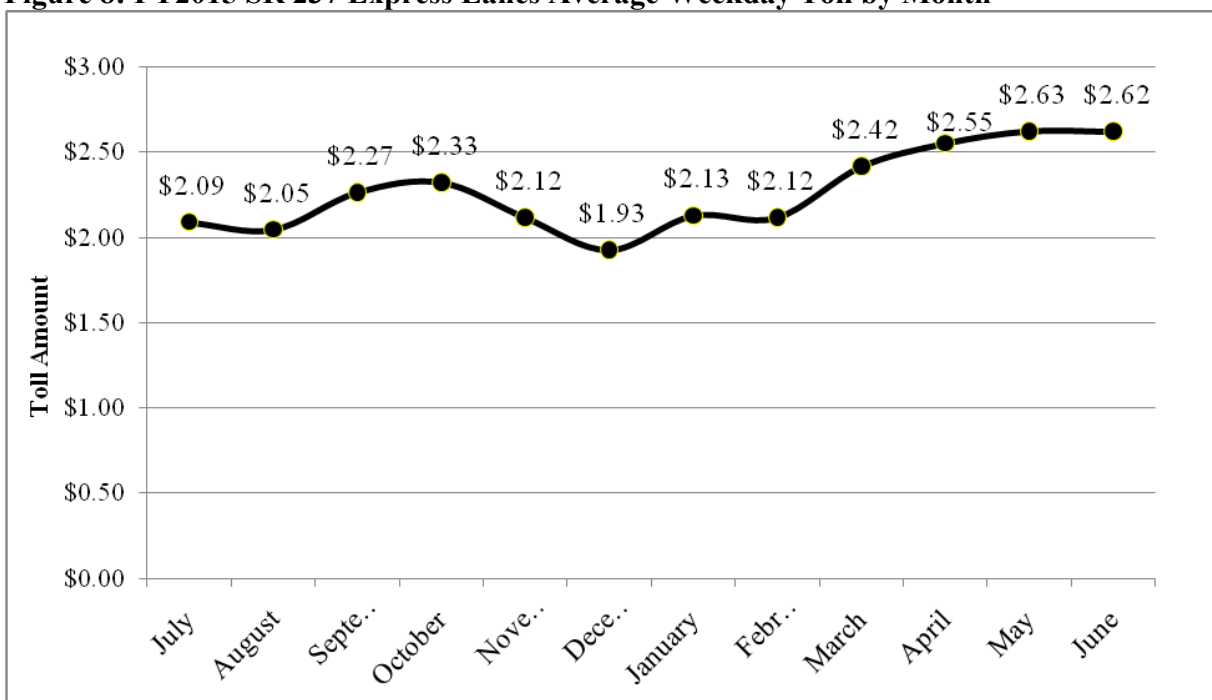
- November 2014 - Power generator was deployed at the toll zone site for the afternoon tolling period due to Pacific Gas & Electric (PG&E) maintenance activity along I-880.
- January 2015 – A new vehicle detector sensor was replaced near the First Street off-ramp in the SR 237 westbound direction.
- February 2015 - Replaced failed Automatic Vehicle Identification (AVI) reader and the laser for the southbound toll zone.

- March 2015 – Power outage affected the electronic toll system but tolling operation continued without interruption using back-up historical toll rates

Toll Rates

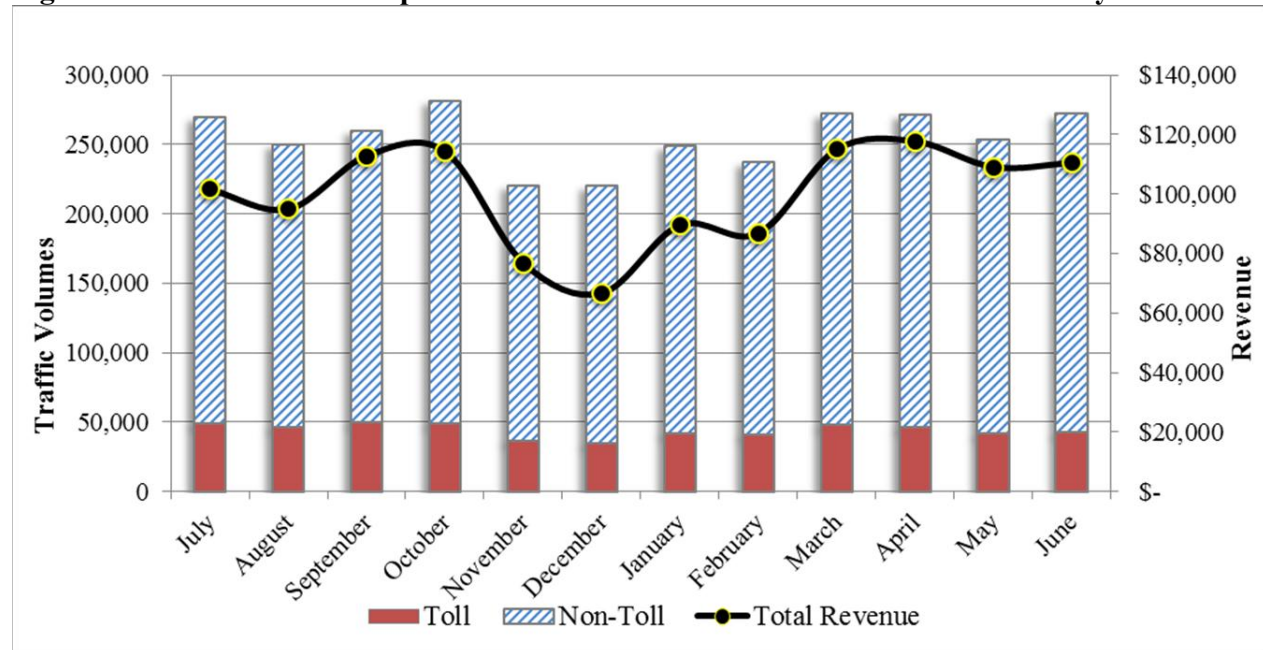
Since opening of SR 237 Express Lanes in March 2012, the corridor has experienced a consistent increase in traffic volumes over the last three years. Consistent with the increased traffic usage, the average toll rate in the corridor has increased. The average toll rate for FY 2015 was \$2.28 compared to \$2.01 for FY 2014. Figure 8 shows the average toll rate by month for FY 2015. The maximum toll rate in the corridor for FY 2015 was six dollars.

Figure 8: FY2015 SR 237 Express Lanes Average Weekday Toll by Month



Toll Revenues and Expenses

The SR 237 Express Lanes have been well utilized and have generated toll revenues that have exceeded projections. Figure 9 shows the total traffic volume on express lanes and revenues by month. Figure 9 also illustrates the continued increase in toll revenues with seasonal dips including holidays. The average toll revenue per month for FY 2015 is about \$99,700. This translates to average revenue of about \$4,600 per day. The month of December was the lowest revenue month at about \$66,700 while April was the highest at \$117,700.

Figure 9: FY 2015 SR 237 Express Lanes - Total Traffic Volumes and Revenues by Month

The toll revenues generated for FY 2015 exceeded projections (Table 3) while the total expenses incurred were close to projections. Overall, the SR 237 Express Lanes resulted in positive net revenue over expenses of about \$300,000.

Table 3: FY 2015 SR 237 Express Lanes - Comparison of Revenues and Expenses

Category	FY14 Projection		FY14 Actual		FY15 Projection		FY15 Actual ¹	
Toll Revenues	\$	920,000	\$	1,222,000	\$	1,000,000	\$	1,157,000
Investment earnings	\$	9,000	\$	19,000	\$	10,000	\$	17,000
Total Revenue	\$	929,000	\$	1,241,000	\$	1,010,000	\$	1,175,000
Professional and Special Services	\$	535,000	\$	541,000	\$	572,000	\$	633,000
Other services	\$	10,000	\$	1,000	\$	10,000	\$	0
Utilities	\$	2,000	\$	2,000	\$	2,000	\$	2,000
VTa Staff Services	\$	370,000	\$	270,000	\$	400,000	\$	217,000
Total Expense	\$	917,000	\$	814,000	\$	983,000	\$	852,000
Revenues Over (Under) Expenses	\$	12,000	\$	427,000	\$	27,000	\$	322,000

1- Preliminary unaudited number as of August 7, 2015. Final audited number may vary. Numbers may not add due to rounding.

ADVISORY COMMITTEE DISCUSSION/RECOMMENDATION:

The Citizen Advisory Committee (CAC) heard this item as part of its consent item on September 9, 2015.

The Technical Advisory Committee (TAC) and the Policy Advisory Committee (PAC) heard this

item as part of its consent item on September 10, 2015.

STANDING COMMITTEE DISCUSSION/RECOMMENDATION:

The Congestion Management Planning and Programming Committee (CMPP) heard this item on September 17, 2015. Member Esteves requested clarification on certain figures and tables in the report related to revenue projections and operating characteristics. Staff agreed to provide additional clarification on two of the figures in the report.

Prepared By: Murali Ramanujam and Arshad Syed
Memo No. 5165

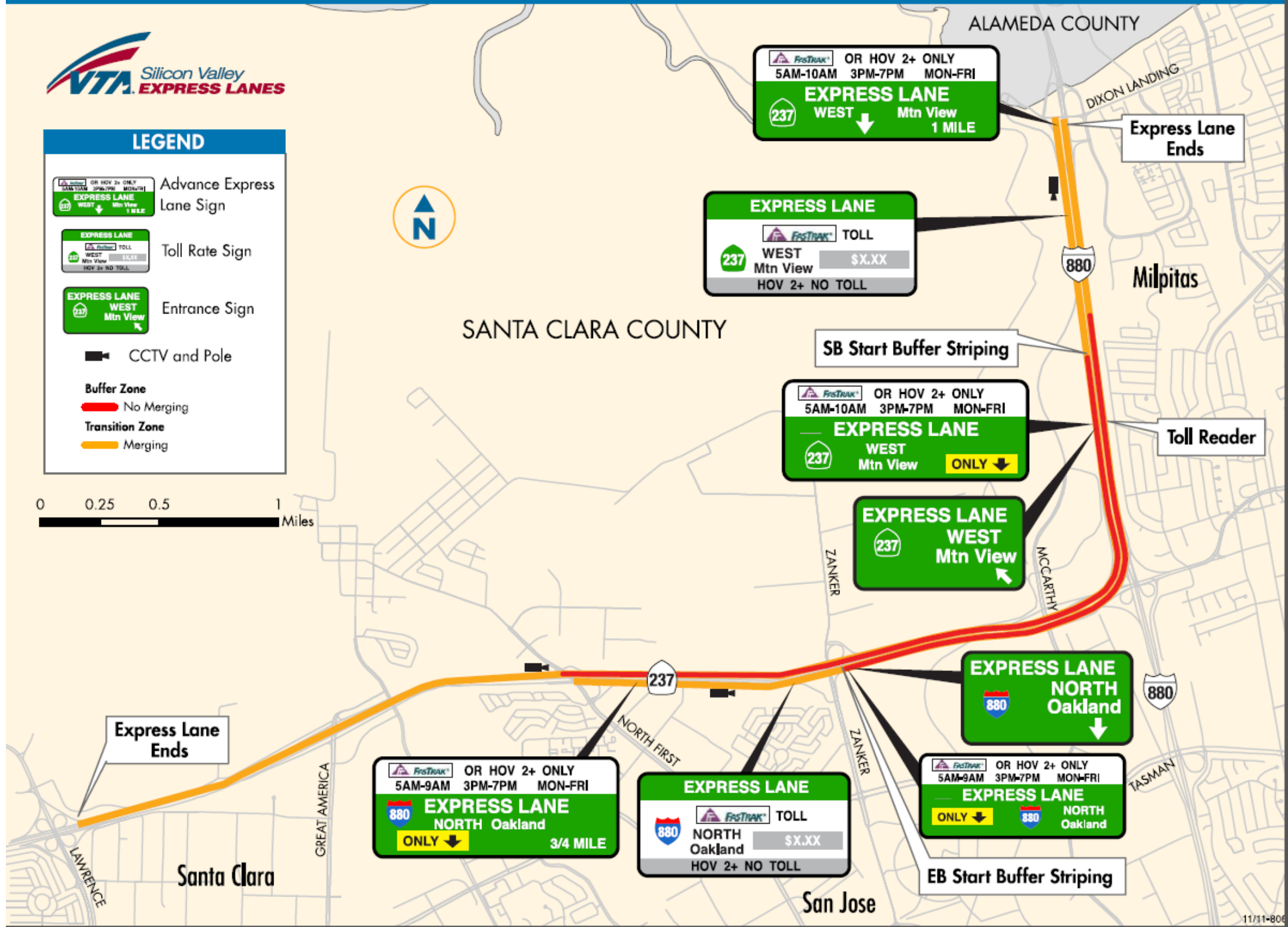
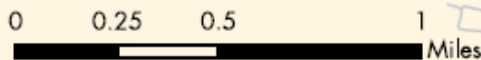
ATTACHMENT A- SR 237 EXPRESS LANES

6.18.a



LEGEND

- Advance Express Lane Sign
- Toll Rate Sign
- Entrance Sign
- CCTV and Pole
- Buffer Zone**
 - No Merging
 - Merging



11/11-806



Date: September 24, 2015
 Current Meeting: October 1, 2015
 Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
 Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Director of Planning and Program Development, John Ristow

SUBJECT: Dynamic Transit Service Pilot Program Implementation

FOR INFORMATION ONLY

BACKGROUND:

VTA is launching a new, innovative, Dynamic Transit Service Pilot program in fall 2015. The first proposed pilot will provide dynamic and flexible transit service within a predetermined zone to fill in gaps in the existing transit network and provide first/last mile connectivity. This innovative pilot will serve as a demonstration project to test the functionality of a dynamic dispatch and routing software, and to provide proof-of-concept for new dynamic transit service models.

VTA staff first introduced the Dynamic Transit Pilot Program to the Advisory Committees in June 2015. In August 2015, staff provided a status update on the development of the pilot program to the committees and Board of Directors. This month, staff will present final details of the implementation plan and service design in a PowerPoint presentation to the committees and Board of Directors.

DISCUSSION:

VTA has identified key implementation steps necessary to launch, operate and evaluate the Dynamic Transit Pilot Program. The details of the service plan are summarized below:

Proposed Service Area

VTA's travel and market pattern analysis identified "Tasman Zone," an area roughly bounded by SR 237, Montague Expressway, Coyote Creek and Guadalupe River as a promising market for Pilot 1 implementation (see Attachment 1). The proposed service area is approximately 3.3 square miles with significant potential demand due to rail connections, a variety of trip patterns, and mix of trip generators, which includes high-density housing and major employment centers such as Cisco, Cadence, Nortech business park and the new Samsung headquarters.

Implementation

The following details of the service design are in still in the process of being finalized and may be revised prior to implementation:

User experience: VTA has contracted with a software vendor to provide the front and back end of the service. The service's entire trip making process will be designed with the customer in mind, leveraging technology to automate and consolidate trip requests, booking, confirmation, and payment processes. Riders will use their computer or smartphone for the process, with telephone operator as backup. The service model will allow for both advance reservation and on-demand trip requests in order to "batch" riders and provide an optimal window for pick-up times.

Service span: The proposed service span is Monday through Friday from 5:30 AM to 8:30 PM, providing short distance trips throughout the Tasman zone.

Fare structure: VTA will test a range of \$2-\$5 to determine the appropriate fare structure to implement with flexibility to test various price points throughout the pilot based on changes in service design or market demand.

Fare payment: The new pilot service will use a cashless, account-based payment system which will require customers to add a credit or debit card to a user account prior to first-time use. Payments will be automatically deducted from the account upon each trip ensuring payment is collected for "no shows." Additionally, VTA is working with the Metropolitan Transportation Commission (MTC) to configure Clipper as a fare payment option in the future.

As staff continues to finalize the details of the service plan, the following implementation priorities will be key in designing a successful dynamic transit service:

- **Ease of use is key for passengers.** Dynamic service is attractive because it is flexible and responsive. Staff will ensure that the dynamic nature of this new service will be easy for passengers to use.
- **Distinctive branding.** Staff will develop a distinct brand that will communicate the unique nature of this service.
- **Track real-time performance metrics.** To be iterative, staff will track metrics to be able to make adjustments and improvements to the service. Staff will be using Key Performance Indicators (KPIs) and data collected by the software to ensure the service is optimized to meet ridership goals.
- **Flexibility and iteration.** Every aspect of the service will be monitored and considered for continual adjustment throughout the pilot including the size and location of the implementation zone, service model, number and type of vehicles, marketing strategy, and fare structure.

Partnership Building

VTA will explore strategies to subsidize operating costs and future expansion of the pilot by pursuing available funding grants and public-private partnership opportunities. Currently, VTA and the City of Sunnyvale are exploring opportunities to implement "Peery Parks Ride," a future

phase of the dynamic transit service pilot program. The concept is to apply new service models in Sunnyvale's Peery Park, an office development with aggressive trip reduction targets and a prime candidate for an innovative alternative commute solution.

Evaluation and Expansion of the Pilot Program

Many of the ridership strategies will be tested through the Dynamic Transit Pilot Program, with an initial period of 6-12 months. Evaluation of the pilot(s) will use key performance metrics such as effectiveness in increasing ridership, accessing new markets or improving existing markets, and cost effectiveness measured by fare revenue and cost per hour/mile.

The following is a list of considerations to determine where and how to expand the program:

- Expand existing pilot service area to include additional Caltrain and light rail stations, new BART stations, business parks and/or underserved transit areas in order of most employment/residential density
- Expand to new geographic locations in the County with service gaps
- Expand to gain a larger share of the long-distance commute market especially along the most congested corridors

Next Steps

Service and implementation planning for future pilots may begin after the first pilot has been implemented, as part of a larger program effort to implement several new dynamic transit service solutions throughout Santa Clara County.

September 2015: Vehicles ready, software and system testing, operators training, field testing

September-October 2015: VTA Committees and Board of Directors meeting

October 2015: Launch pilot service

ADVISORY COMMITTEE DISCUSSION /RECOMMENDATION:

The Citizens Advisory Committee (CAC) received this information item at the September 9, 2015 meeting. Members of the Committee inquired about the length of the pilot period and the ability to request trips in advance. Staff responded that the first pilot will operate for 6-12 months and the advanced reservation feature is an option that will hopefully be available in time for launch.

The Technical Advisory Committee (TAC) received this information item at the September 10, 2015 meeting. Members of the Committee made the following comments: 1) inquired about additional fare for transfers to/from LRT; 2) duration of the pilot; 3) potential pilot along north-south corridor in Santa Clara region; 4) peak period pricing and hours; and 5) service area beyond east of Cisco. Staff confirmed that customers will have to pay an additional fare to transfer to/from LRT to VTA Flex; the pilot will be tested for a minimum of 6-12 months; north-south connectivity was studied as part of the North Central County Bus Improvement Plan but may be looked at again through this pilot effort; peak period pricing and hours may be adjusted during the pilot; and the service area was defined based on the number of vehicles available and may be expanded later based on demand.

The Policy Advisory Committee (PAC) received this information item at the September 10, 2015

meeting. A Committee Member asked about the frequency of the vehicles coming back to the same stop and staff responded that vehicles are routed dynamically based on trip requests.

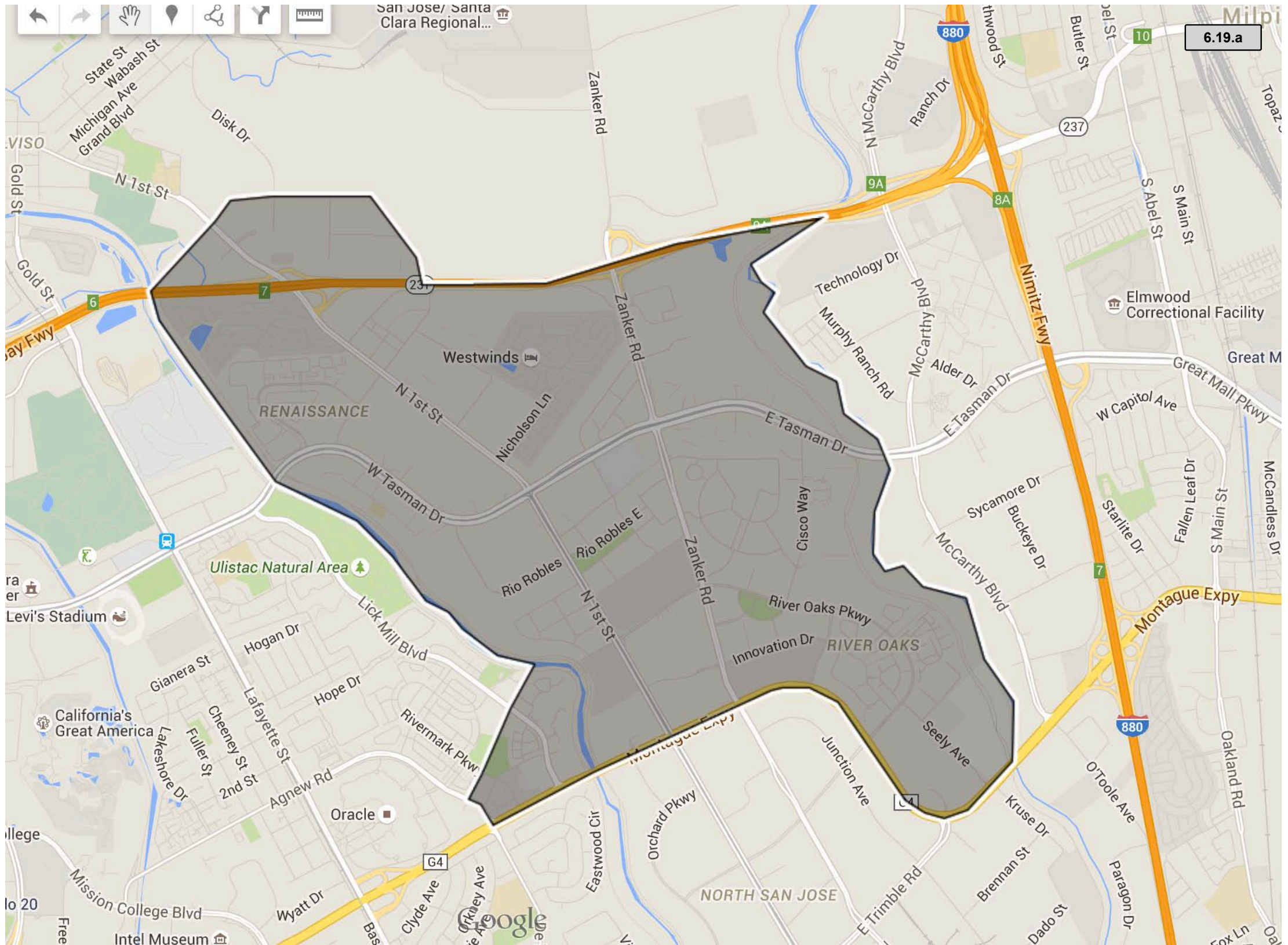
The Transit Planning & Operations Committee (TP&O) received this information item at the September 16, 2015 meeting. Members of the Committee expressed enthusiasm for the pilot project and made the following comments: 1) asked how the Flex Stops were located and how the number of Flex Stops will impact pickup times; 2) asked if first/last mile is the target market, but also should consider serving the point-to-point travel market, which could be a significant opportunity; 3) appreciated the comparison information to other Transportation Network Companies but asked if staff can provide comparison information to other shuttle services such as MVgo; 4) emphasized the importance of partnering with area employers and developments; 5) asked if we have expected performance numbers and how we'll monitor performance and usage; 6) suggested having the vehicle livery incorporate more than just the name "Flex" in order to inform people what it is and how to use it; 7) asked if the app can use GPS location of the rider's device to pre-populate the starting location; 8) asked if the app can also offer suggestions on the regular VTA service (for requests outside of the Flex service span, for example); 9) expressed concern over not being able to meet rider requests and rejecting trips; 10) asked if we can monitor whether how the service impacts ridership on the rest of our network; and 11) asked when the committee will get a report on the service's performance following implementation.

Staff provided the following responses: 1) Flex Stops have been placed at major destinations in the area, and they were placed carefully so that there weren't too many stops to slow down service but also enough so that most users will have a 5-minute walk or less to a Flex Stop; 2) first/last mile connection to the VTA network is the primary market but the Tasman zone offers a variety of trip types and we will be monitoring usage to learn what types of trips riders are using the service to make; 3) staff will do a comparison to shuttle services; 4) indeed, partnering with local employers and developments is very important to the project and we have begun an extensive marketing effort to engage partners; 5) VTA staff will have access to real-time performance statistics and will be monitoring against project measures of success; 6) the final vehicle livery will indeed include more information such as the app to download and the service website; 7) the Flex app can suggest a nearby Flex Stop based on the user's current location; 8) staff is investigating the potential future integration of the app with the rest of the VTA network but will look into ways the app can refer riders to the VTA network if Flex isn't able to meet their needs; 9) while the service may not be able to meet all rider needs due to resource limitations, staff is already considering ways to increase resources (such as additional vehicles) if necessary in order to serve the greatest number of rider requests possible; 10) VTA staff will monitor the service's impact on VTA's fixed route ridership; and 11) VTA staff will report back to the committee after a month and will provide reports thereafter upon the committee's request.

STANDING COMMITTEE DISCUSSION /RECOMMENDATION:

The Congestion Management Program & Planning Committee decided to defer this item to the October 15, 2015 meeting.

Prepared By: Aiko Cuenco
Memo No. 5160





Date: September 16, 2015
 Current Meeting: October 1, 2015
 Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
 Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Chief Operating Officer, **Inez Evans**

SUBJECT: Transit Service Changes - October 2015

FOR INFORMATION ONLY

BACKGROUND:

VTA implements transit service changes on a quarterly basis in January, April, July and October. Major changes are typically planned for January and July, while minor changes are implemented in April and October. Proposed “major” service changes must be submitted to the VTA Board of Directors for review and approval. For Title VI compliance purposes, all “major” service changes also require that VTA staff perform a Service Equity Analysis.

The following modifications are considered “major” service changes as adopted by the VTA Board of Directors.

- Establishment of a new transit line or service.
- Elimination of a transit line or service.
- Route change that impacts 25 percent or more of a line’s route miles.
- Span of service or frequency changes affecting 25 percent or more of a line’s revenue vehicle hours.
- Series of changes on a single route which are included in the two-year Transit Service Plan and cumulatively meet any of the above criteria.
- Proposed changes that are anticipated to be controversial with a particular community or interested parties based on public feedback.
- System-wide change concurrently affecting five percent or more of the total system revenue hours.

Service change proposals that do not meet the criteria for “major” service changes are handled at the staff level and are still subject to an appropriate level of public and community review and comment.

DISCUSSION:

The following transit service changes will take effect on Monday, October 12, 2015, and were approved by the VTA Board of Directors in May 2015 as part of the two year FY16-FY17 Transit Service Plan. The Transit Service Plan also included the required Title VI Service Equity Analysis. The service changes for October are all considered minor in nature and are mainly to revise schedules, connections and running times.

Community Bus Line 37 (West Valley College-Capitol LRT Station): Minor schedule changes will be made.

Community Bus Line 45 (Alum Rock Transit Center-Penitencia Creek Transit Center): Minor schedule changes will be made.

Community Bus Line 48 (Los Gatos-Winchester Transit Center): On weekdays, afternoon schedule changes will be made due to a change in school hours at Los Gatos High School.

Community Bus Line 49 (Los Gatos-Winchester Transit Center): On weekdays, afternoon schedule changes will be made due to a change in school hours at Los Gatos High School.

Line 51 (De Anza College-Moffett Field/Ames Center): Minor schedule changes will be made in the northbound direction.

Line 53 (West Valley College-Sunnyvale Transit Center): Minor schedule changes will be made.

Express Line 101 (Camden & Highway 85-Palo Alto): Minor schedule changes will be made.

Express Line 102 (South San Jose-Palo Alto): Due to passenger requests, the first southbound afternoon trip will be moved 10 minutes earlier to start at Hansen & Page Mill at 3:15 p.m. Minor schedule changes will be made to the other afternoon trips.

Express Line 104 (Penitencia Creek Transit Center-Palo Alto): Minor schedule changes will be made. The 6:39 a.m. westbound trip will start at 6:33 a.m. due to increasing traffic congestion.

Express Line 120 (Fremont BART-Lockheed Martin/Moffett Park-Shoreline): Minor schedule changes will be made.

Express Line 121 (Gilroy-Lockheed Martin/Moffett Park): Minor schedule changes will be made. Most morning northbound trips will start earlier due to increasing traffic congestion.

Limited Stop Line 304 (South San Jose-Sunnyvale Transit Center): Minor schedule changes will be made.

STANDING COMMITTEE DISCUSSION/RECOMMENDATION:

The Transit Planning and Operations (TP&O) committee reviewed this item at its September 16, 2015 meeting. The Committee acting as a Committee of the Whole endorsed the item and recommended placing it on the Board of Directors' Consent Agenda for October 1, 2015.

Prepared By: Jim Unites
Memo No. 4785



Date:	October 1, 2015
Current Meeting:	October 1, 2015
Board Meeting:	October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Director of Business Services, Alberto Lara

SUBJECT: Approval of the Labor Agreement between Santa Clara Valley Transportation Authority and Amalgamated Transit Union (ATU), Local 265

Policy-Related Action: Yes

Government Code Section 84308 Applies: No

ACTION ITEM

RECOMMENDATION:

Authorize the General Manager to approve and formally adopt a successor labor agreement negotiated between the Santa Clara Valley Transportation Authority (VTA) and Amalgamated Transit Union (ATU), Local 265 and amend the FY 2016 and FY 2017 VTA Transit Fund Operating Budgets by \$1,400,000 and \$4,000,000, respectively.

BACKGROUND:

The collective bargaining agreement between VTA and ATU expired on February 1, 2015. Contract negotiations with ATU have concluded with a tentative successor agreement reached on Monday, September 14, 2015. ATU membership ratification of the negotiated agreement occurred on Wednesday, September 23, 2015.

DISCUSSION:

The following is a summary of significant negotiated changes:

- The term of the agreement is October 1, 2015 through September 30, 2018.
- Upon Board approval, employees shall receive a 4.0% wage increase on October 1, 2015; a 3.05% net wage increase in the second (2) year October 2016; and a 3.30% net wage increase in the third (3) year of the agreement in October 2017.
- In October 2016, ATU employees will contribute .95% to Santa Clara Valley

Transportation Authority and Amalgamated Transit Union local 265 Pension Plan; and in October 2017, the contribution by employees shall increase to 1.90% of payroll.

- On January 1, 2016, VTA will offer CalPERS Medical to all ATU employees and retirees. VTA will contribute up to \$100 per month above the Kaiser Bay Area Family rate for all employees who choose medical plans other than the Kaiser plan; VTA will contribute for eligible in-state retirees up to \$100 per month above the Kaiser Bay Area Single Party Rate; VTA will contribute for eligible out-of-state retirees up to \$100 per month above the Kaiser out-of-state Single Party rate, regardless of Medicare status. Employees and Retirees will pay the excess above the Kaiser Bay Area rate.

On January 1, 2017, VTA will contribute \$200 per year into a Flexible Spending Account for the term of the agreement to each active ATU member if doctor services and/or prescription co-pays increase more than the 2016 printed rates outlined in the CalPERS Health Plan Benefit Comparison sheet.

ALTERNATIVES:

The Board may instruct staff to return to the negotiation table and continue negotiations.

FISCAL IMPACT:

For the contract period October 1, 2015 to September 30, 2018, this Agreement is projected to increase the labor costs for ATU represented employees by \$41.9 million. The increased labor costs of \$41.9 million are partially offset by savings of \$20.7 million from a combination of transition to CalPERS health plan and employee contributions to pensions, resulting in a net increase of \$21.2 million in labor cost. This action will add \$1.4 million and \$4.0 million to the FY 2016 & FY 2017 VTA Transit Fund Operating Budgets, respectively to allow for the net increase in expenditures. The net increase in labor costs will be funded from reserves to the extent that they cannot be offset by additional revenues or lower than anticipated expenditures in other areas.

The remaining \$15.8 million of the estimated net increase in labor costs for the three year contract period will be addressed as part of the FY 2018 and FY 2019 budget process.

Prepared by: Rudolph C. Medina
Memo No. 5228



Date: September 16, 2015

Current Meeting: October 1, 2015

Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Director of Business Services, Alberto Lara

SUBJECT: Approval of CalPERS Medical Resolutions for ATU, Local 265

Policy-Related Action: Yes

Government Code Section 84308 Applies: No

Resolution

ACTION ITEM

RECOMMENDATION:

Adopt the following Resolutions approving CalPERS Medical for employees and retirees represented by ATU, Local 265, effective January 1, 2016.

1. ATU Resolution - New Non-PERS Group PEMHCA Minimum Equal Contribution.
2. ATU Survivor Resolution - for Survivors of ATU retiree.

BACKGROUND:

VTA currently contracts with Kaiser, Valley Health Plan, and United Health Care Medicare Supplement plans for ATU represented employees and retirees. These contracts expire December 31, 2015. Adoption of the ATU Resolutions enters VTA into a contract with CalPERS to provide medical benefits for ATU employees and retirees, effective January 1, 2016.

Under the Public Employees Medical and Hospital Care Act (PEMHCA) which governs CalPERS Medical, employers must pay a Minimum Equal Contribution (MEC) for every employee, retiree, and survivor.

The following agreement to convert to CalPERS Medical was reached with ATU. VTA will contribute up to the:

- Kaiser Bay Area Family rate for active ATU employees, or up to \$100 above the Kaiser

- family premium for those ATU employees who choose a higher cost plan.
- Kaiser Bay Area Single rate for ATU retirees living in California, or up to \$100 above the Kaiser Bay Area Single rate for ATU retirees living in California who choose a higher cost plan.
- Kaiser Single Out-of-State rate for ATU retirees living outside California, or up to \$100 above the Kaiser Single Out-of-State rate for those ATU retirees who choose a higher cost plan.

VTA is required to submit an optional Survivor Resolution for survivors of retirees who retired prior to 1/1/16 who do not receive an ATU pension to make them eligible for medical coverage. VTA will pay the minimum equal contribution required under the Public Employees Medical and Hospital Care Act (PEMHCA) for survivors.

DISCUSSION:

VTA has experienced significant rate increases over the past few years. The increases led to the loss of an HMO and PPO plan due to decreased enrollment. Other health plan providers, such as Blue Cross, Anthem Blue Cross, CIGNA, Health Net, and Aetna, declined to offer quotes to VTA based on our small population, demographics, and a high Kaiser enrollment (70%).

ATU began discussions with VTA in 2013 regarding medical plan offerings which provide more options and a larger community risk pool. CalPERS offers 7 HMO plans and 3 PPO plans, with coverage in every state and every country. CalPERS covers 1,200 public agencies and schools and has 1.5 million members.

ALTERNATIVES:

An alternative would be to maintain ATU employees and retirees on existing medical plan contracts with Kaiser, Valley Health Plan, and UHC Medicare.

FISCAL IMPACT:

The conversion will result in \$1.0 million in annual savings in ATU employee premiums (using 2015 rates), based on the greater bargaining power of CalPERS Medical to offer lower premiums and three-tier rates.

An OPEB actuarial evaluation presented at the August 6, 2015 Board showed that the shift to CalPERS Medical for ATU produced a \$29.4 million reduction in the Actuarial Accrued Liability, on a GASB basis, and a \$5.872 million reduction in the Annual Required Contribution (ARC) on a cash basis, where VTA contributes up to the Kaiser rate.

VTA negotiated an additional contribution of \$100 for ATU members who enroll in non-Kaiser plans, which increased the ARC by \$200K, reducing the Annual Required Contribution (ARC) for ATU to \$5.672 million, on a cash basis.

The combined savings of \$5.672 million reduction in the ARC, and \$1.0 million savings resulting from lower employee premiums equals a \$6.672 million in savings.

This savings will be offset by the annual CalPERS administrative fee (.0033 of total premium), and the addition of one Human Resources Analyst position to staff the program. The PERS

administrative fee is estimated at approximately \$102,000 per year. The cost of adding a Human Resources Analyst is \$149,000 with benefits, resulting in cost offsets of approximately \$251,000.

The net result to VTA is a total savings of \$6.42 million annually when ATU employees and retirees move to CalPERS Medical.

Prepared by: Sylvester Fadal
Memo No. 5214

RESOLUTION NO. Number
ELECTING TO BE SUBJECT TO THE PUBLIC EMPLOYEES' MEDICAL AND HOSPITAL CARE ACT
AT AN EQUAL AMOUNT FOR EMPLOYEES AND ANNUITANTS
WITH RESPECT TO A RECOGNIZED EMPLOYEE ORGANIZATION

- WHEREAS, (1) A contracting agency meeting the eligibility requirements set forth in Government Code Section 22920, may obtain health benefit plan(s), as defined under Government Code Section 22777, by submitting a resolution to the Board of Administration of the California Public Employees' Retirement System (the "Board"), and upon approval of such resolution by the Board, become subject to the Public Employees' Medical and Hospital Care Act (the "Act"); and
- WHEREAS, (2) **Santa Clara Valley Transportation Authority** is a contracting agency eligible to be subject to the Act under Government Code Section 22920; and
- WHEREAS, (3) Government Code Section 22892(a) provides that a contracting agency subject to Act shall fix the amount of the employer contribution by resolution; and
- WHEREAS, (4) Government Code Section 22892(b) provides that the employer contribution shall be an equal amount for both employees and annuitants, but may not be less than the amount prescribed by Section 22892(b) of the Act; and
- WHEREAS, (5) **Santa Clara Valley Transportation Authority** desires to obtain for its employees and annuitants who are members of **NonPERS Amalgamated Transit Union (ATU), Local 265 (Medical Group 703)** the benefit of the Act and to accept the liabilities and obligations of an employer under the Act; now, therefore, be it
- RESOLVED, (a) **Santa Clara Valley Transportation Authority** elects to be subject to the provisions of the Act; and be it further
- RESOLVED, (b) That the employer contribution for each employee or annuitant shall be the amount necessary to pay the full cost of his/her enrollment, including the enrollment of family members, in a health benefits plan or plans up to a maximum of the **PEMHCA Minimum** per month, plus administrative fees and Contingency Reserve Fund assessments; and be it further
- RESOLVED, (c) **Santa Clara Valley Transportation Authority** has fully complied with any and all applicable provisions of Government Code Section 7507 in electing the benefits set forth above; and be it further
- RESOLVED, (d) That the participation of the employees and annuitants of **Santa Clara Valley Transportation Authority** shall be subject to determination of its status as an "agency or instrumentality of the state or political subdivision of a State" that is eligible to participate in a governmental plan within the meaning of Section 414(d) of the Internal Revenue Code, upon publication of final Regulations pursuant to such Section. If it is determined that **Santa Clara Valley Transportation Authority** would not qualify as an agency or instrumentality of the state or political subdivision of a State under such final

Regulations, CalPERS may be obligated, and reserves the right to terminate the health coverage of all participants of the employer.

- RESOLVED, (e) That the executive body appoint and direct, and it does hereby appoint and direct, Nuria Fernandez, General Manager to file with the Board a verified copy of this resolution, and to perform on behalf of **Santa Clara Valley Transportation Authority** all functions required of it under the Act; and be it further
- RESOLVED, (f) That coverage under the Act be effective on **January 1, 2016.**

Adopted at a regular meeting of the Santa Clara Valley Transportation Authority at 3331 North 1st Street, BLDG B1, San Jose, CA 95134-1927, this 1st day of October, 2015.

Signed: _____
Perry Woodward, Chairperson, VTA Board of Directors

Attest: _____
Elaine Baltao, Board Secretary

INSTRUCTIONS

This resolution form is the approved form designated by the California Public Employees' Retirement System (CalPERS). It should be used by a contracting agency for the purpose of electing to be subject to Public Employees' Medical and Hospital Care Act (PEMHCA) and to fix the monthly employer health contribution for employees and annuitants in accordance with Government Code Section 22892.

If the resolution is filed **on or before the tenth day of any month, it will be effective on the first of the following month** (date stamped as received by CalPERS; See address below).

- WHEREAS, (2) should be completed with full name of the contracting agency.
- WHEREAS, (5) should be completed with full name of the contracting agency and recognized employee organization.
- RESOLVED, (a) should be completed with full name of the contracting agency.
- RESOLVED, (b) should be completed to specify medical groups and the amount of the employer contribution toward the cost of enrollment for active employees and annuitants. The amount specified must be an amount equal to or greater than that prescribed by Section 22892(b).
- Commencing January 1, 2009, the employer contribution shall be adjusted annually by the Board to reflect any change in the medical component of the Consumer Price Index, and shall be rounded to the nearest dollar.
- RESOLVED, (c) should be completed with full name of the contracting agency.
- RESOLVED, (d) should be completed with full name of the contracting agency.
- RESOLVED, (e) requests the position title of the individual who handles the PEMHCA resolution for the contracting agency.
- RESOLVED, (e) should be completed with full name of the contracting agency.
- RESOLVED, (f) should be completed with the date the coverage is to become effective.

Because resolutions serve as a legally binding document, we require the original resolution, certified copy with original signatures, or a copy of the resolution with the agency's raised seal.

For resolution processing, deliver to the following:

Overnight Mail Service

California Public Employees' Retirement System
Health Contracts Unit
400 Q Street
Sacramento, CA 95811-6210

Regular Mail

California Public Employees' Retirement System
Health Contracts Unit
PO BOX 942714
Sacramento, CA 94229-2714

The certification shown following the resolution is to be completed by those individuals authorized to sign for the contracting agency in legal actions and is to include the name of the executive body; i.e. Board of Directors, Board of Trustees, etc., the location and the date of signing.

RESOLUTION NO. Number
ELECTING TO BE SUBJECT TO SECTION 22819.1
FOR FAMILY MEMBERS OF A DECEASED ANNUITANT WITHOUT A WARRANT
UNDER THE PUBLIC EMPLOYEES' MEDICAL AND HOSPITAL CARE ACT
WITH RESPECT TO A RECOGNIZED EMPLOYEE ORGANIZATION

- WHEREAS, (1) A contracting agency meeting the eligibility requirements set forth in Government Code Section 22920, may obtain health benefit plan(s), as defined under Government Code Section 22777, by submitting a resolution to the Board of Administration of the California Public Employees' Retirement System (the "Board"), and upon approval of such resolution by the Board, become subject to the Public Employees' Medical and Hospital Care Act (the "Act"); and
- WHEREAS, (2) **Santa Clara Valley Transportation Authority** is a contracting agency eligible to be subject to the Act under Government Code Section 22920; and
- WHEREAS, (3) Government Code Section 22819.1 permits a contracting agency subject to the Act to provide benefits to family members of a deceased annuitant who does not receive an allowance in place of the annuitant, upon proper application; now, therefore, be it
- RESOLVED, (a) **Santa Clara Valley Transportation Authority** desires to obtain for members of the **NonPERS Amalgamated Transit Union (ATU), Local 265 (Medical Group 703)** the benefit of Section 22819.1 and accepts the liabilities and obligations of a contracting agency under the Section; and be it further
- RESOLVED, (b) **Santa Clara Valley Transportation Authority** elects to be subject to the provisions of Section 22819.1 of the Government Code; and be it further
- RESOLVED, (c) That the participation of the employees and annuitants of **Santa Clara Valley Transportation Authority** shall be subject to determination of its status as an "agency or instrumentality of the state or political subdivision of a State" that is eligible to participate in a governmental plan within the meaning of Section 414(d) of the Internal Revenue Code, upon publication of final Regulations pursuant to such Section. If it is determined that **Santa Clara Valley Transportation Authority** would not qualify as an agency or instrumentality of the state or political subdivision of a State under such final Regulations, CalPERS may be obligated, and reserves the right to terminate the health coverage of all participants of the employer.
- RESOLVED, (d) That the executive body appoint and direct, and it does hereby appoint and direct, Nuria Fernandez, General Manager to file with the Board a verified copy of this resolution, and to perform on behalf of **Santa Clara Valley Transportation Authority** all functions required of it under the Act; and be it further

Adopted at a regular meeting of the Santa Clara Valley Transportation Authority at 3331 North 1st Street, BLDG B1, San Jose, CA 95134-1927, this 1st day of October, 2015.

Signed: _____
Perry Woodward, Chairperson, VTA Board of Directors

Attest: _____
Elaine Baltao, Board Secretary

INSTRUCTIONS

This resolution form is the approved form designated by the California Public Employees' Retirement System (CalPERS). It should be used by a contracting agency electing to be subject to or subject to the Public Employees' Medical and Hospital Care Act (PEMHCA) when the agency desires to provide health benefit coverage for survivors of deceased annuitants as authorized by Section 22819.1 of the Government Code.

If the resolution is filed **on or before the tenth day of any month, it will be effective on the first of the following month** (date stamped as received by CalPERS; See address below).

- WHEREAS, (2) should be completed with full name of the contracting agency.
- RESOLVED, (a) should be completed with full name of the contracting agency and recognized employee organization.
- RESOLVED, (b) should be completed with full name of the contracting agency.
- RESOLVED, (c) should be completed with full name of the contracting agency.
- RESOLVED, (d) requests the position title of the individual who handles the Public Employees' Medical and Hospital Care Act resolution for the contracting agency.
- RESOLVED, (d) should be completed with full name of the contracting agency.

Because resolutions serve as a legally binding document, we require the original resolution, certified copy with original signatures, or a copy of the resolution with the agency's raised seal.

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Health Contracts Unit
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Sacramento, CA 95811-6210

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PO BOX 942714
Sacramento, CA 94229-2714

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Date: September 16, 2015

Current Meeting: October 1, 2015

Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Director of Business Services, Alberto Lara

SUBJECT: Approval of CalPERS Medical Resolutions for AFSCME, Local 101

Policy-Related Action: Yes

Government Code Section 84308 Applies: No

Resolution

ACTION ITEM

RECOMMENDATION:

Adopt the following Resolutions approving CalPERS Medical for employees and retirees represented by AFSCME, Local 101, effective January 1, 2016.

1. AFSCME (CalPERS) Resolution.
2. AFSCME (non-CalPERS) Resolution - for AFSCME employees who do not have five years of CalPERS service time but qualify for retiree medical based on VTA/ATU pension retirement service and total VTA years of service.

BACKGROUND:

VTA contracted with CalPERS Medical for AFSCME employees and retirees, effective January 1, 2015. Resolutions for AFSCME were approved by the Board on August 28, 2014. The attached Resolutions will change VTA's contribution for Medicare retirees to match VTA's Agreement with AFSCME, effective January 1, 2016.

Under the Public Employees Medical and Hospital Care Act (PEMHCA) which governs CalPERS Medical, employers must pay a Minimum Equal Contribution (MEC) for every employee, retiree, and survivor. VTA's employer contribution is greater than the PEMHCA minimum.

DISCUSSION:

The resolutions that took effect on 1/1/15 intended to cover the employer contributions for AFSCME retirees up to the Kaiser Bay Area single rate for retirees living in California. The resolutions did not accurately represent the agreement to cover any Medicare plan at 100% (up to the Kaiser Bay Area single non-Medicare rate).

A change in CalPERS resolutions is needed so that VTA can cover retirees up to the actual cost of their Medicare premium, but no more than the Kaiser Single non-Medicare rate, as in prior years.

ALTERNATIVES:

An alternative would be to maintain the current CalPERS Employer Contribution Resolution whereby VTA does not contribute up to the Kaiser Bay Area single rate for retirees living in California on Medicare.

FISCAL IMPACT:

An OPEB valuation found that, under this change there will be a \$41,000 increase in Annual Required Contribution (ARC), on a cash basis, for AFSCME.

Prepared by: Sylvester Fadal
Memo No. 5204

RESOLUTION NO. Number
FIXING THE EMPLOYER CONTRIBUTION AT AN EQUAL AMOUNT FOR EMPLOYEES AND ANNUITANTS
UNDER THE PUBLIC EMPLOYEES' MEDICAL AND HOSPITAL CARE ACT
WITH RESPECT TO A RECOGNIZED EMPLOYEE ORGANIZATION

- WHEREAS, (1) **Santa Clara Valley Transportation Authority** is a contracting agency under Government Code Section 22920 and subject to the Public Employees' Medical and Hospital Care Act (the "Act") for participation by members of **AFSCME (Medical Group 001)**; and
- WHEREAS, (2) Government Code Section 22892(a) provides that a contracting agency subject to Act shall fix the amount of the employer contribution by resolution; and
- WHEREAS, (3) Government Code Section 22892(b) provides that the employer contribution shall be an equal amount for both employees and annuitants, but may not be less than the amount prescribed by Section 22892(b) of the Act; and
- RESOLVED, (a) That the employer contribution for each employee or annuitant shall be the amount necessary to pay the full cost of his/her enrollment, including the enrollment of family members, in a health benefits plan or plans up to a maximum of:

Type of enrollment	Monthly employer contribution
Basic (Party Rates 1-3)	Kaiser Bay Area Single Basic
Combination (Party Rates 10-12, Subscriber is Basic)	Premium (Party Rate 1)
Medicare (Party Rates 4-6)	Any Plan Single Medicare
Combination (Party Rates 7-9, Subscriber is Medicare)	Premium (Party Rate 4)

plus administrative fees and Contingency Reserve Fund assessments; and be it further

- RESOLVED, (b) **Santa Clara Valley Transportation Authority** has fully complied with any and all applicable provisions of Government Code Section 7507 in electing the benefits set forth above; and be it further
- RESOLVED, (c) That the participation of the employees and annuitants of **Santa Clara Valley Transportation Authority** shall be subject to determination of its status as an "agency or instrumentality of the state or political subdivision of a State" that is eligible to participate in a governmental plan within the meaning of Section 414(d) of the Internal Revenue Code, upon publication of final Regulations pursuant to such Section. If it is determined that **Santa Clara Valley Transportation Authority** would not qualify as an agency or instrumentality of the state or political subdivision of a State under such final Regulations, CalPERS may be obligated, and reserves the right to terminate the health coverage of all participants of the employer.
- RESOLVED, (d) That the executive body appoint and direct, and it does hereby appoint and direct, Nuria Fernandez, General Manager to file with the Board a verified copy of this resolution, and to perform on behalf of **Santa Clara Valley Transportation Authority** all functions required of it under the Act; and be it further
- RESOLVED, (e) That the employer contribution under the Act be effective on **January 1, 2016**.

Adopted at a regular meeting of the Santa Clara Valley Transportation Authority at 3331 North 1st Street, BLDG B1, San Jose, CA 95134-1927, this 1st day of October, 2015.

Signed: _____
Perry Woodward, Chairperson, VTA Board of Directors

Attest: _____
Elaine Baltao, Board Secretary

INSTRUCTIONS

This resolution form is the approved form designated by the California Public Employees' Retirement System (CalPERS). It should be used by a contracting agency subject to Public Employees' Medical and Hospital Care Act (PEMHCA) when the agency desires to change the monthly employer health contribution for employees and annuitants in accordance with Government Code Section 22892.

The resolution is **effective on the first day of the second month** following the month in which the resolution is filed (date stamped as received by CalPERS; See address below).

WHEREAS, (1) should be completed with full name of the contracting agency and recognized employee organization.

RESOLVED, (a) should be completed to specify the amount of the employer contribution toward the cost of enrollment for active employees and annuitants. The amount specified must be an amount equal to or greater than that prescribed by Section 22892(b).

Commencing January 1, 2009, the employer contribution shall be adjusted annually by the Board to reflect any change in the medical component of the Consumer Price Index, and shall be rounded to the nearest dollar.

RESOLVED, (b) should be completed with full name of the contracting agency.

RESOLVED, (c) should be completed with full name of the contracting agency.

RESOLVED, (d) requests the position title of the individual who handles the PEMHCA resolution for the contracting agency.

RESOLVED, (d) should be completed with full name of the contracting agency.

Because resolutions serve as a legally binding document, we require the original resolution, certified copy with original signatures, or a copy of the resolution with the agency's raised seal.

For resolution processing, deliver to the following:

Overnight Mail Service

California Public Employees' Retirement System
Health Contracts Unit
400 Q Street
Sacramento, CA 95811-6210

Regular Mail

California Public Employees' Retirement System
Health Contracts Unit
PO BOX 942714
Sacramento, CA 94229-2714

The certification shown following the resolution is to be completed by those individuals authorized to sign for the contracting agency in legal actions and is to include the name of the executive body; i.e. Board of Directors, Board of Trustees, etc., the location and the date of signing.

RESOLUTION NO. Number
FIXING THE EMPLOYER CONTRIBUTION AT AN EQUAL AMOUNT FOR EMPLOYEES AND ANNUITANTS
UNDER THE PUBLIC EMPLOYEES' MEDICAL AND HOSPITAL CARE ACT
WITH RESPECT TO A RECOGNIZED EMPLOYEE ORGANIZATION

- WHEREAS, (1) **Santa Clara Valley Transportation Authority** is a contracting agency under Government Code Section 22920 and subject to the Public Employees' Medical and Hospital Care Act (the "Act") for participation by members of **NonPERS AFSCME (Medical Group 701)**; and
- WHEREAS, (2) Government Code Section 22892(a) provides that a contracting agency subject to Act shall fix the amount of the employer contribution by resolution; and
- WHEREAS, (3) Government Code Section 22892(b) provides that the employer contribution shall be an equal amount for both employees and annuitants, but may not be less than the amount prescribed by Section 22892(b) of the Act; and
- RESOLVED, (a) That the employer contribution for each employee or annuitant shall be the amount necessary to pay the full cost of his/her enrollment, including the enrollment of family members, in a health benefits plan or plans up to a maximum of:

Type of enrollment	Monthly employer contribution
Basic (Party Rates 1-3)	Kaiser Bay Area Single Basic
Combination (Party Rates 10-12, Subscriber is Basic)	Premium (Party Rate 1)
Medicare (Party Rates 4-6)	Any Plan Single Medicare
Combination (Party Rates 7-9, Subscriber is Medicare)	Premium (Party Rate 4)

plus administrative fees and Contingency Reserve Fund assessments; and be it further

- RESOLVED, (b) **Santa Clara Valley Transportation Authority** has fully complied with any and all applicable provisions of Government Code Section 7507 in electing the benefits set forth above; and be it further
- RESOLVED, (c) That the participation of the employees and annuitants of **Santa Clara Valley Transportation Authority** shall be subject to determination of its status as an "agency or instrumentality of the state or political subdivision of a State" that is eligible to participate in a governmental plan within the meaning of Section 414(d) of the Internal Revenue Code, upon publication of final Regulations pursuant to such Section. If it is determined that **Santa Clara Valley Transportation Authority** would not qualify as an agency or instrumentality of the state or political subdivision of a State under such final Regulations, CalPERS may be obligated, and reserves the right to terminate the health coverage of all participants of the employer.
- RESOLVED, (d) That the executive body appoint and direct, and it does hereby appoint and direct, Nuria Fernandez, General Manager to file with the Board a verified copy of this resolution, and to perform on behalf of **Santa Clara Valley Transportation Authority** all functions required of it under the Act; and be it further
- RESOLVED, (e) That the employer contribution under the Act be effective on **January 1, 2016**.

Adopted at a regular meeting of the Santa Clara Valley Transportation Authority at 3331 North 1st Street, BLDG B1, San Jose, CA 95134-1927, this 1st day of October, 2015.

Signed: _____
Perry Woodward, Chairperson, VTA Board of Directors

Attest: _____
Elaine Baltao, Board Secretary

INSTRUCTIONS

This resolution form is the approved form designated by the California Public Employees' Retirement System (CalPERS). It should be used by a contracting agency subject to Public Employees' Medical and Hospital Care Act (PEMHCA) when the agency desires to change the monthly employer health contribution for employees and annuitants in accordance with Government Code Section 22892.

The resolution is **effective on the first day of the second month** following the month in which the resolution is filed (date stamped as received by CalPERS; See address below).

WHEREAS, (1) should be completed with full name of the contracting agency and recognized employee organization.

RESOLVED, (a) should be completed to specify the amount of the employer contribution toward the cost of enrollment for active employees and annuitants. The amount specified must be an amount equal to or greater than that prescribed by Section 22892(b).

Commencing January 1, 2009, the employer contribution shall be adjusted annually by the Board to reflect any change in the medical component of the Consumer Price Index, and shall be rounded to the nearest dollar.

RESOLVED, (b) should be completed with full name of the contracting agency.

RESOLVED, (c) should be completed with full name of the contracting agency.

RESOLVED, (d) requests the position title of the individual who handles the PEMHCA resolution for the contracting agency.

RESOLVED, (d) should be completed with full name of the contracting agency.

Because resolutions serve as a legally binding document, we require the original resolution, certified copy with original signatures, or a copy of the resolution with the agency's raised seal.

For resolution processing, deliver to the following:

Overnight Mail Service

California Public Employees' Retirement System
Health Contracts Unit
400 Q Street
Sacramento, CA 95811-6210

Regular Mail

California Public Employees' Retirement System
Health Contracts Unit
PO BOX 942714
Sacramento, CA 94229-2714

The certification shown following the resolution is to be completed by those individuals authorized to sign for the contracting agency in legal actions and is to include the name of the executive body; i.e. Board of Directors, Board of Trustees, etc., the location and the date of signing.



Date: September 28, 2015
 Current Meeting: October 1, 2015
 Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
 Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Director of Business Services, Alberto Lara

SUBJECT: Approval of CalPERS Medical Resolutions for TAEA, Local 21

Policy-Related Action: Yes

Government Code Section 84308 Applies: No

Resolution

ACTION ITEM

RECOMMENDATION:

Adopt the following Resolutions approving CalPERS Medical for employees and retirees represented by TAEA, Local 21, effective January 1, 2016.

1. TAEA (CalPERS) Resolution.
2. TAEA Survivor Resolution (CalPERS) - for Survivors of TAEA retirees.
3. TAEA (non-CalPERS) Resolution - for TAEA employees who do not have five years of CalPERS service time but qualify for retiree medical based on VTA/ATU pension retirement service and total VTA years of service.
4. TAEA Survivor resolution (non-CalPERS) - for Survivors of TAEA employees who did not have five years of CalPERS service time but qualify for retiree medical based on VTA/ATU pension retirement and total VTA years of service.

BACKGROUND:

VTA currently contracts with Kaiser, Valley Health Plan, and United Health Care Medicare Supplement plans for TAEA represented employees and retirees. These contracts expire December 31, 2015. Adoption of the TAEA Resolutions enters VTA into a contract with CalPERS to provide medical benefits for TAEA employees and retirees effective January 1, 2016.

Under the Public Employees Medical and Hospital Care Act (PEMHCA) which governs CalPERS Medical, employers must pay a Minimum Equal Contribution (MEC) for every employee, retiree, and survivor.

The following agreement to convert to CalPERS Medical was reached with TAEA. VTA will contribute up to the:

- Kaiser Bay Area Family rate for active TAEA employees.
- Kaiser Bay Area Single rate for TAEA retirees living in California.
- Kaiser Single Out-of-State rate for TAEA retirees living outside California.

VTA is required to submit optional Survivor Resolutions for survivors of retirees who retired prior to 1/1/16 who do not receive a PERS pension to make them eligible for medical coverage. Survivors of retirees who retire after 1/1/16 and do not receive a pension will not be eligible for medical coverage.

Each TAEA member will receive an annual contribution of \$300 towards a Flexible Spending Account (FSA).

DISCUSSION:

VTA has experienced significant rate increases over the past few years. The increases led to the loss of an HMO and PPO plan due to decreased enrollment. Other health plan providers, such as Blue Cross, Anthem Blue Cross, CIGNA, Health Net, and Aetna, declined to offer quotes to VTA based on our small population, demographics, and a high Kaiser enrollment (70%).

VTA began discussions with TAEA in 2014 regarding medical plan offerings which provide more options and a larger community risk pool. CalPERS offers 7 HMO plans and 3 PPO plans, with coverage in every state and internationally. CalPERS covers 1,200 public agencies and schools and has 1.5 million members.

ALTERNATIVES:

An alternative would be to maintain TAEA represented employees and retirees on existing medical plan contracts with Kaiser, Valley Health Plan, and UHC Medicare.

FISCAL IMPACT:

The conversion will result in \$13,583 in annual savings in TAEA employee premiums (using 2015 rates), based on CalPERS greater bargaining power to offer lower premiums.

An OPEB actuarial evaluation presented at the August 6, 2015 Board showed that the shift to CalPERS Medical for TAEA produced a \$475K reduction in the Actuarial Accrued Liability, and a \$108K reduction in the Annual Required Contribution (ARC) on a GASB basis, where VTA contributes up to the Kaiser rate. On a cash basis, the reduction in the Annual Required Contribution (ARC) for TAEA is \$152,000.

The combined savings of \$152,000 in the ARC, and \$13,583 savings resulting from lower employee premiums equals a \$165,583 in savings. This savings will be offset by the annual

CalPERS administrative fee (.0033 of total premium), The PERS administrative fee for TAEA is estimated at approximately \$1,847 per year. The Flexible Spending Account provision will cost \$10,800 annually and a \$2,009 FSA administrative fee, for a total of \$12,809 per year.

The net result to VTA is a total savings of \$150,927 annually when TAEA employees and retirees move to CalPERS Medical.

Prepared by: Sylvester Fadal
Memo No. 5212

RESOLUTION NO. Number
ELECTING TO BE SUBJECT TO THE PUBLIC EMPLOYEES' MEDICAL AND HOSPITAL CARE ACT
AT AN EQUAL AMOUNT FOR EMPLOYEES AND ANNUITANTS
WITH RESPECT TO A RECOGNIZED EMPLOYEE ORGANIZATION

- WHEREAS, (1) A contracting agency meeting the eligibility requirements set forth in Government Code Section 22920, may obtain health benefit plan(s), as defined under Government Code Section 22777, by submitting a resolution to the Board of Administration of the California Public Employees' Retirement System (the "Board"), and upon approval of such resolution by the Board, become subject to the Public Employees' Medical and Hospital Care Act (the "Act"); and
- WHEREAS, (2) **Santa Clara Valley Transportation Authority** is a contracting agency eligible to be subject to the Act under Government Code Section 22920; and
- WHEREAS, (3) Government Code Section 22892(a) provides that a contracting agency subject to Act shall fix the amount of the employer contribution by resolution; and
- WHEREAS, (4) Government Code Section 22892(b) provides that the employer contribution shall be an equal amount for both employees and annuitants, but may not be less than the amount prescribed by Section 22892(b) of the Act; and
- WHEREAS, (5) **Santa Clara Valley Transportation Authority** desires to obtain for its employees and annuitants who are members of **NonPERS Transportation Authority Engineers and Architects (TAEA), Local 21 (Medical Group 704)** the benefit of the Act and to accept the liabilities and obligations of an employer under the Act; now, therefore, be it
- RESOLVED, (a) **Santa Clara Valley Transportation Authority** elects to be subject to the provisions of the Act; and be it further
- RESOLVED, (b) That the employer contribution for each employee or annuitant shall be the amount necessary to pay the full cost of his/her enrollment, including the enrollment of family members, in a health benefits plan or plans up to a maximum of :

Type of enrollment	Monthly employer contribution
Basic (Party Rates 1-3)	Kaiser Bay Area Single Basic
Combination (Party Rates 10-12, Subscriber is Basic)	Premium (Party Rate 1)
Medicare (Party Rates 4-6)	Any Plan Single Medicare
Combination (Party Rates 7-9, Subscriber is Medicare)	Premium (Party Rate 4)

plus administrative fees and Contingency Reserve Fund assessments; and be it further

- RESOLVED, (c) **Santa Clara Valley Transportation Authority** has fully complied with any and all applicable provisions of Government Code Section 7507 in electing the benefits set forth above; and be it further
- RESOLVED, (d) That the participation of the employees and annuitants of **Santa Clara Valley**

Transportation Authority shall be subject to determination of its status as an “agency or instrumentality of the state or political subdivision of a State” that is eligible to participate in a governmental plan within the meaning of Section 414(d) of the Internal Revenue Code, upon publication of final Regulations pursuant to such Section. If it is determined that **Santa Clara Valley Transportation Authority** would not qualify as an agency or instrumentality of the state or political subdivision of a State under such final Regulations, CalPERS may be obligated, and reserves the right to terminate the health coverage of all participants of the employer.

- RESOLVED, (e) That the executive body appoint and direct, and it does hereby appoint and direct, Nuria Fernandez, General Manager to file with the Board a verified copy of this resolution, and to perform on behalf of **Santa Clara Valley Transportation Authority** all functions required of it under the Act; and be it further
- RESOLVED, (f) That coverage under the Act be effective on **January 1, 2016**.

Adopted at a regular meeting of the Santa Clara Valley Transportation Authority at 3331 North 1st Street, BLDG B1, San Jose, CA 95134-1927, this 1st day of October, 2015.

Signed: _____
Perry Woodward, Chairperson, VTA Board of Directors

Attest: _____
Elaine Baltao, Board Secretary

INSTRUCTIONS

This resolution form is the approved form designated by the California Public Employees' Retirement System (CalPERS). It should be used by a contracting agency for the purpose of electing to be subject to Public Employees' Medical and Hospital Care Act (PEMHCA) and to fix the monthly employer health contribution for employees and annuitants in accordance with Government Code Section 22892.

If the resolution is filed **on or before the tenth day of any month, it will be effective on the first of the following month** (date stamped as received by CalPERS; See address below).

WHEREAS, (2) should be completed with full name of the contracting agency.

WHEREAS, (5) should be completed with full name of the contracting agency and recognized employee organization.

RESOLVED, (a) should be completed with full name of the contracting agency.

RESOLVED, (b) should be completed to specify medical groups and the amount of the employer contribution toward the cost of enrollment for active employees and annuitants. The amount specified must be an amount equal to or greater than that prescribed by Section 22892(b).

Commencing January 1, 2009, the employer contribution shall be adjusted annually by the Board to reflect any change in the medical component of the Consumer Price Index, and shall be rounded to the nearest dollar.

RESOLVED, (c) should be completed with full name of the contracting agency.

RESOLVED, (d) should be completed with full name of the contracting agency.

RESOLVED, (e) requests the position title of the individual who handles the PEMHCA resolution for the contracting agency.

RESOLVED, (e) should be completed with full name of the contracting agency.

RESOLVED, (f) should be completed with the date the coverage is to become effective.

Because resolutions serve as a legally binding document, we require the original resolution, certified copy with original signatures, or a copy of the resolution with the agency's raised seal.

For resolution processing, deliver to the following:

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PO BOX 942714
Sacramento, CA 94229-2714

The certification shown following the resolution is to be completed by those individuals authorized to sign for the contracting agency in legal actions and is to include the name of the executive body; i.e. Board of Directors, Board of Trustees, etc., the location and the date of signing.

RESOLUTION NO. Number
ELECTING TO BE SUBJECT TO THE PUBLIC EMPLOYEES' MEDICAL AND HOSPITAL CARE ACT
AT AN EQUAL AMOUNT FOR EMPLOYEES AND ANNUITANTS
WITH RESPECT TO A RECOGNIZED EMPLOYEE ORGANIZATION

- WHEREAS, (1) A contracting agency meeting the eligibility requirements set forth in Government Code Section 22920, may obtain health benefit plan(s), as defined under Government Code Section 22777, by submitting a resolution to the Board of Administration of the California Public Employees' Retirement System (the "Board"), and upon approval of such resolution by the Board, become subject to the Public Employees' Medical and Hospital Care Act (the "Act"); and
- WHEREAS, (2) **Santa Clara Valley Transportation Authority** is a contracting agency eligible to be subject to the Act under Government Code Section 22920; and
- WHEREAS, (3) Government Code Section 22892(a) provides that a contracting agency subject to Act shall fix the amount of the employer contribution by resolution; and
- WHEREAS, (4) Government Code Section 22892(b) provides that the employer contribution shall be an equal amount for both employees and annuitants, but may not be less than the amount prescribed by Section 22892(b) of the Act; and
- WHEREAS, (5) **Santa Clara Valley Transportation Authority** desires to obtain for its employees and annuitants who are members of **Transportation Authority Engineers and Architects (TAEA), Local 21 (Medical Group 004)** the benefit of the Act and to accept the liabilities and obligations of an employer under the Act; now, therefore, be it
- RESOLVED, (a) **Santa Clara Valley Transportation Authority** elects to be subject to the provisions of the Act; and be it further
- RESOLVED, (b) That the employer contribution for each employee or annuitant shall be the amount necessary to pay the full cost of his/her enrollment, including the enrollment of family members, in a health benefits plan or plans up to a maximum of :

Type of enrollment	Monthly employer contribution
Basic (Party Rates 1-3)	Kaiser Bay Area Single Basic
Combination (Party Rates 10-12, Subscriber is Basic)	Premium (Party Rate 1)
Medicare (Party Rates 4-6)	Any Plan Single Medicare
Combination (Party Rates 7-9, Subscriber is Medicare)	Premium (Party Rate 4)

plus administrative fees and Contingency Reserve Fund assessments; and be it further

- RESOLVED, (c) **Santa Clara Valley Transportation Authority** has fully complied with any and all applicable provisions of Government Code Section 7507 in electing the benefits set forth above; and be it further
- RESOLVED, (d) That the participation of the employees and annuitants of **Santa Clara Valley**

Transportation Authority shall be subject to determination of its status as an “agency or instrumentality of the state or political subdivision of a State” that is eligible to participate in a governmental plan within the meaning of Section 414(d) of the Internal Revenue Code, upon publication of final Regulations pursuant to such Section. If it is determined that **Santa Clara Valley Transportation Authority** would not qualify as an agency or instrumentality of the state or political subdivision of a State under such final Regulations, CalPERS may be obligated, and reserves the right to terminate the health coverage of all participants of the employer.

- RESOLVED, (e) That the executive body appoint and direct, and it does hereby appoint and direct, Nuria Fernandez, General Manager to file with the Board a verified copy of this resolution, and to perform on behalf of **Santa Clara Valley Transportation Authority** all functions required of it under the Act; and be it further
- RESOLVED, (f) That coverage under the Act be effective on **January 1, 2016**.

Adopted at a regular meeting of the Santa Clara Valley Transportation Authority at 3331 North 1st Street, BLDG B1, San Jose, CA 95134-1927, this 1st day of October, 2015.

Signed: _____
Perry Woodward, Chairperson, VTA Board of Directors

Attest: _____
Elaine Baltao, Board Secretary

INSTRUCTIONS

This resolution form is the approved form designated by the California Public Employees' Retirement System (CalPERS). It should be used by a contracting agency for the purpose of electing to be subject to Public Employees' Medical and Hospital Care Act (PEMHCA) and to fix the monthly employer health contribution for employees and annuitants in accordance with Government Code Section 22892.

If the resolution is filed **on or before the tenth day of any month, it will be effective on the first of the following month** (date stamped as received by CalPERS; See address below).

WHEREAS, (2) should be completed with full name of the contracting agency.

WHEREAS, (5) should be completed with full name of the contracting agency and recognized employee organization.

RESOLVED, (a) should be completed with full name of the contracting agency.

RESOLVED, (b) should be completed to specify medical groups and the amount of the employer contribution toward the cost of enrollment for active employees and annuitants. The amount specified must be an amount equal to or greater than that prescribed by Section 22892(b).

Commencing January 1, 2009, the employer contribution shall be adjusted annually by the Board to reflect any change in the medical component of the Consumer Price Index, and shall be rounded to the nearest dollar.

RESOLVED, (c) should be completed with full name of the contracting agency.

RESOLVED, (d) should be completed with full name of the contracting agency.

RESOLVED, (e) requests the position title of the individual who handles the PEMHCA resolution for the contracting agency.

RESOLVED, (e) should be completed with full name of the contracting agency.

RESOLVED, (f) should be completed with the date the coverage is to become effective.

Because resolutions serve as a legally binding document, we require the original resolution, certified copy with original signatures, or a copy of the resolution with the agency's raised seal.

For resolution processing, deliver to the following:

Overnight Mail Service

California Public Employees' Retirement System
Health Contracts Unit
400 Q Street
Sacramento, CA 95811-6210

Regular Mail

California Public Employees' Retirement System
Health Contracts Unit
PO BOX 942714
Sacramento, CA 94229-2714

The certification shown following the resolution is to be completed by those individuals authorized to sign for the contracting agency in legal actions and is to include the name of the executive body; i.e. Board of Directors, Board of Trustees, etc., the location and the date of signing.

RESOLUTION NO. Number
ELECTING TO BE SUBJECT TO SECTION 22819.1
FOR FAMILY MEMBERS OF A DECEASED ANNUITANT WITHOUT A WARRANT
UNDER THE PUBLIC EMPLOYEES' MEDICAL AND HOSPITAL CARE ACT
WITH RESPECT TO A RECOGNIZED EMPLOYEE ORGANIZATION

- WHEREAS, (1) A contracting agency meeting the eligibility requirements set forth in Government Code Section 22920, may obtain health benefit plan(s), as defined under Government Code Section 22777, by submitting a resolution to the Board of Administration of the California Public Employees' Retirement System (the "Board"), and upon approval of such resolution by the Board, become subject to the Public Employees' Medical and Hospital Care Act (the "Act"); and
- WHEREAS, (2) **Santa Clara Valley Transportation Authority** is a contracting agency eligible to be subject to the Act under Government Code Section 22920; and
- WHEREAS, (3) Government Code Section 22819.1 permits a contracting agency subject to the Act to provide benefits to family members of a deceased annuitant who does not receive an allowance in place of the annuitant, upon proper application; now, therefore, be it
- RESOLVED, (a) **Santa Clara Valley Transportation Authority** desires to obtain for members of the **NonPERS Transportation Authority Engineers and Architects (TAEA), Local 21 (Medical Group 704)** the benefit of Section 22819.1 and accepts the liabilities and obligations of a contracting agency under the Section; and be it further
- RESOLVED, (b) **Santa Clara Valley Transportation Authority** elects to be subject to the provisions of Section 22819.1 of the Government Code; and be it further
- RESOLVED, (c) That the participation of the employees and annuitants of **Santa Clara Valley Transportation Authority** shall be subject to determination of its status as an "agency or instrumentality of the state or political subdivision of a State" that is eligible to participate in a governmental plan within the meaning of Section 414(d) of the Internal Revenue Code, upon publication of final Regulations pursuant to such Section. If it is determined that **Santa Clara Valley Transportation Authority** would not qualify as an agency or instrumentality of the state or political subdivision of a State under such final Regulations, CalPERS may be obligated, and reserves the right to terminate the health coverage of all participants of the employer.
- RESOLVED, (d) That the executive body appoint and direct, and it does hereby appoint and direct, Nuria Fernandez, General Manager to file with the Board a verified copy of this resolution, and to perform on behalf of **Santa Clara Valley Transportation Authority** all functions required of it under the Act; and be it further

Adopted at a regular meeting of the Santa Clara Valley Transportation Authority at 3331 North 1st Street, BLDG B1, San Jose, CA 95134-1927, this 1st day of October, 2015.

Signed: _____
Perry Woodward, Chairperson, VTA Board of Directors

Attest: _____
Elaine Baltao, Board Secretary

INSTRUCTIONS

This resolution form is the approved form designated by the California Public Employees' Retirement System (CalPERS). It should be used by a contracting agency electing to be subject to or subject to the Public Employees' Medical and Hospital Care Act (PEMHCA) when the agency desires to provide health benefit coverage for survivors of deceased annuitants as authorized by Section 22819.1 of the Government Code.

If the resolution is filed **on or before the tenth day of any month, it will be effective on the first of the following month** (date stamped as received by CalPERS; See address below).

- WHEREAS, (2) should be completed with full name of the contracting agency.
- RESOLVED, (a) should be completed with full name of the contracting agency and recognized employee organization.
- RESOLVED, (b) should be completed with full name of the contracting agency.
- RESOLVED, (c) should be completed with full name of the contracting agency.
- RESOLVED, (d) requests the position title of the individual who handles the Public Employees' Medical and Hospital Care Act resolution for the contracting agency.
- RESOLVED, (d) should be completed with full name of the contracting agency.

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- RESOLVED, (b) **Santa Clara Valley Transportation Authority** elects to be subject to the provisions of Section 22819.1 of the Government Code; and be it further
- RESOLVED, (c) That the participation of the employees and annuitants of **Santa Clara Valley Transportation Authority** shall be subject to determination of its status as an "agency or instrumentality of the state or political subdivision of a State" that is eligible to participate in a governmental plan within the meaning of Section 414(d) of the Internal Revenue Code, upon publication of final Regulations pursuant to such Section. If it is determined that **Santa Clara Valley Transportation Authority** would not qualify as an agency or instrumentality of the state or political subdivision of a State under such final Regulations, CalPERS may be obligated, and reserves the right to terminate the health coverage of all participants of the employer.
- RESOLVED, (d) That the executive body appoint and direct, and it does hereby appoint and direct, Nuria Fernandez, General Manager to file with the Board a verified copy of this resolution, and to perform on behalf of **Santa Clara Valley Transportation Authority** all functions required of it under the Act; and be it further

Adopted at a regular meeting of the Santa Clara Valley Transportation Authority at 3331 North 1st Street, BLDG B1, San Jose, CA 95134-1927, this 1st day of October, 2015.

Signed: _____
Perry Woodward, Chairperson, VTA Board of Directors

Attest: _____
Elaine Baltao, Board Secretary

INSTRUCTIONS

This resolution form is the approved form designated by the California Public Employees' Retirement System (CalPERS). It should be used by a contracting agency electing to be subject to or subject to the Public Employees' Medical and Hospital Care Act (PEMHCA) when the agency desires to provide health benefit coverage for survivors of deceased annuitants as authorized by Section 22819.1 of the Government Code.

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- RESOLVED, (a) should be completed with full name of the contracting agency and recognized employee organization.
- RESOLVED, (b) should be completed with full name of the contracting agency.
- RESOLVED, (c) should be completed with full name of the contracting agency.
- RESOLVED, (d) requests the position title of the individual who handles the Public Employees' Medical and Hospital Care Act resolution for the contracting agency.
- RESOLVED, (d) should be completed with full name of the contracting agency.

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PO BOX 942714
Sacramento, CA 94229-2714

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Date: September 16, 2015

Current Meeting: October 1, 2015

Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Director of Business Services, Alberto Lara

SUBJECT: Rescind ICMA Retirement Health Savings (RHS) Plan Agreements for TAEA

Policy-Related Action: No

Government Code Section 84308 Applies: No

ACTION ITEM

RECOMMENDATION:

Rescind the ICMA Retirement Health Savings (RHS) Plan Number 803315 for employees represented by TAEA, Local 21, who are converting to CalPERS Medical plans, effective January 1, 2016. (Resolution No. 2012.01.12)

BACKGROUND:

On January 5, 2012, the Board approved independent resolutions adopting the ICMA Retirement Corporation's (ICMA-RC) Vantage Care Retirement Health Savings Plan (RHS) for SEIU, Local 521, TAEA, Local 21, AFSCME Local 101, and Non-Represented Employees. The Board rescinded AFSCME and Non-Represented resolutions on August 28, 2014, and rescinded the SEIU resolution on September 3, 2015, so that each bargaining unit could move to CalPERS Medical.

TAEA employees who were hired (or re-hired) after January 1, 2012, have the option to choose a Defined Contribution Retirement Health Savings Plan, in lieu of the Defined Benefit Retiree Medical Plan. Under CalPERS rules, an employee who enrolls in VTA's Retirement Health Savings Plan could also enroll in CalPERS retiree medical, resulting in both retiree medical and a Health Savings Plan for the retiree. To avoid the liability of covering double retirement benefits, pending the Board's approval of this action, VTA's Defined Contribution Retirement Health Savings Plan will no longer be offered and the current plans will be terminated for TAEA represented employees.

DISCUSSION:

Approval of this Board action rescinds the agreements made with ICMA for TAEA, Local 21, and terminates this plan, effective 12/31/15.

ALTERNATIVES:

If the Board approves the CalPERS Medical Resolutions but does not approve rescinding the ICMA Retirement Health Savings Plans for TAEA represented employees, VTA could be liable for the cost of both retiree medical and RHS plans for any one retiree, since CalPERS does not allow an “in lieu of” benefit.

FISCAL IMPACT:

None.

Prepared by: Sylvester Fadal
Memo No. 5213



Date: September 28, 2015
 Current Meeting: October 1, 2015
 Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
 Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Chief Operating Officer, Inez Evans

SUBJECT: Bus Procurement Exercise 100 Bus Option

Policy-Related Action: Yes

Government Code Section 84308 Applies: Yes

ACTION ITEM

RECOMMENDATION:

Authorize the General Manager to exercise the option to purchase 90 standard forty foot hybrid buses and 10 express hybrid buses from Gillig LLC at a cost not to exceed \$71,559,512.

BACKGROUND:

On October 3, 2013 the Board of Directors authorized the purchase of 15 forty foot diesel electric hybrid low floor buses and 20 forty foot hybrid express buses, and the associated equipment, parts, training and tools from Gillig LLC. The Board also authorized the General Manager to retain the option to purchase 100 buses additional buses. The option buses would be priced as the original 15 low floor buses with a price escalator based on the appropriate PPI (Producer Price Index). The 15 low floor buses and 20 express buses have been delivered and are presently operating in service.

Due to the projected increase and improvement in service as well as the age of the existing buses, VTA seeks to exercise its option to purchase these additional 100 diesel electric hybrid buses. VTA's experience with the express buses purchased has indicated a need for additional express buses. As such, the request is to purchase 90 standard low floor hybrid buses and 10 express hybrid buses under this option. The pricing for the express buses would be based on the original express bus pricing plus the appropriate PPI.

DISCUSSION:

Over the next two years VTA plans to implement a significant level of additional bus service. The current bus fleet includes seventy one 1997, 1998 and 1999 high floor buses that have

operated between 600,000 and 850,000 miles and must be replaced. Most of the buses exceed 700,000 miles in operation and all are well beyond the FTA expected life of 12 years or 600,000 miles. In order to accommodate the replacement of older buses as well as fleet expansion needs, VTA is scheduled to purchase 125 forty foot low floor buses and 55 sixty foot low floor articulated buses. This purchase of 100 buses will be a major step in accommodating our current and projected bus needs.

The initial 35 buses purchased under this contract have been in service for 14 months. Ninety of the buses purchased under the option will be similar to the 15 standard buses received with the following minor updates at an additional cost. These include:

Wi-Fi systems: Presently all Express and BRT buses are equipped with Wi-Fi systems that allow customers riding the bus free internet access. It is the intent to include Wi-Fi systems on all future bus procurements.

Frameless windows: These windows will be similar to those on the Express buses and provide a more aesthetic appearance.

Roof fairing that will extend the full length of the bus. The present buses have a roof fairing to cover the hybrid system only. The new fairing will extend the length of the bus for more aesthetic appearance.

Destination sign system: The buses will be equipped with a new sign system that will have better visibility while retaining the same functions.

Ten of the buses purchased under the option would be similar to the 20 express buses with the following minor updates at an additional cost. These include:

Roof fairing that will extend the full length of the bus. The present buses have a roof fairing to cover the hybrid system only. The new fairing will extend the length of the bus for more aesthetic appearance.

Destination sign system: The buses will be equipped with a new sign system that will have better visibility while retaining the same functions.

ALTERNATIVES:

VTA could proceed with requesting proposals for the purchase of the buses. Doing so will delay the delivery of the highly needed buses.

VTA could proceed with the purchase of 100 standard buses under this option and delay the purchase of the 10 express buses. This would delay the implementation of additional express service.

STANDING COMMITTEE COMMENTS:

The Administration and Finance Committee (A&F) received this item, along with two other bus procurement items, on the regular agenda at their August 2015 meeting. Discussion included comments about the variety of bus configurations in VTA's fleet that are needed to meet

customer needs. Member Chavez requested that VTA advertise the amenities included in the different bus types and that customer experience and customer comments be included when advertising and evaluating bus procurement proposals.

FISCAL IMPACT:

This action will authorize up to \$71,559,512 to exercise the option to procure 90 standard 40 foot diesel electric hybrid buses and 10 express diesel electric hybrid buses. Appropriation for this contract is included in the FY16 Adopted VTA Transit Fund Capital Budget.

Prepared by: Arthur Douwes
Memo No. 5098

ATTACHMENTS:

- Government Section Code 843008_Gillig Option (PDF)

Attachment A

Forty Foot Regular and Express Bus Procurement

Contractor Firm	Contractor Role	Name	Location
Gillig	CEO	Dennis L. Howard	P.O. Box 3008 Hayward, California 94540-3008
Gillig	President	Derek Maunus	P.O. Box 3008 Hayward, California 94540-3008
Gillig	Vice President	Joseph Policarpio	P.O. Box 3008 Hayward, California 94540-3008

Santa Clara-Alum Rock Bus Rapid Transit (BRT) Project

October 1, 2015



Santa Clara-Alum Rock BRT Project



- Project Overview
- Background
- Current Conditions
- Construction Plan to Complete Project
 - Overall Plan
 - Plan for Alum Rock Avenue
- Summary Schedule

Santa Clara-Alum Rock BRT Project

Project Alignment and Station Locations



Santa Clara-Alum Rock BRT Project



Overview

Alum Rock Avenue

- Exclusive median busway and two median BRT Stops
- New roadway pavement
- Street widening and LED street lights
- New and upgraded traffic signals

Santa Clara Street

- Five BRT stops (Arena, Downtown, City Hall, 17th and 24th)

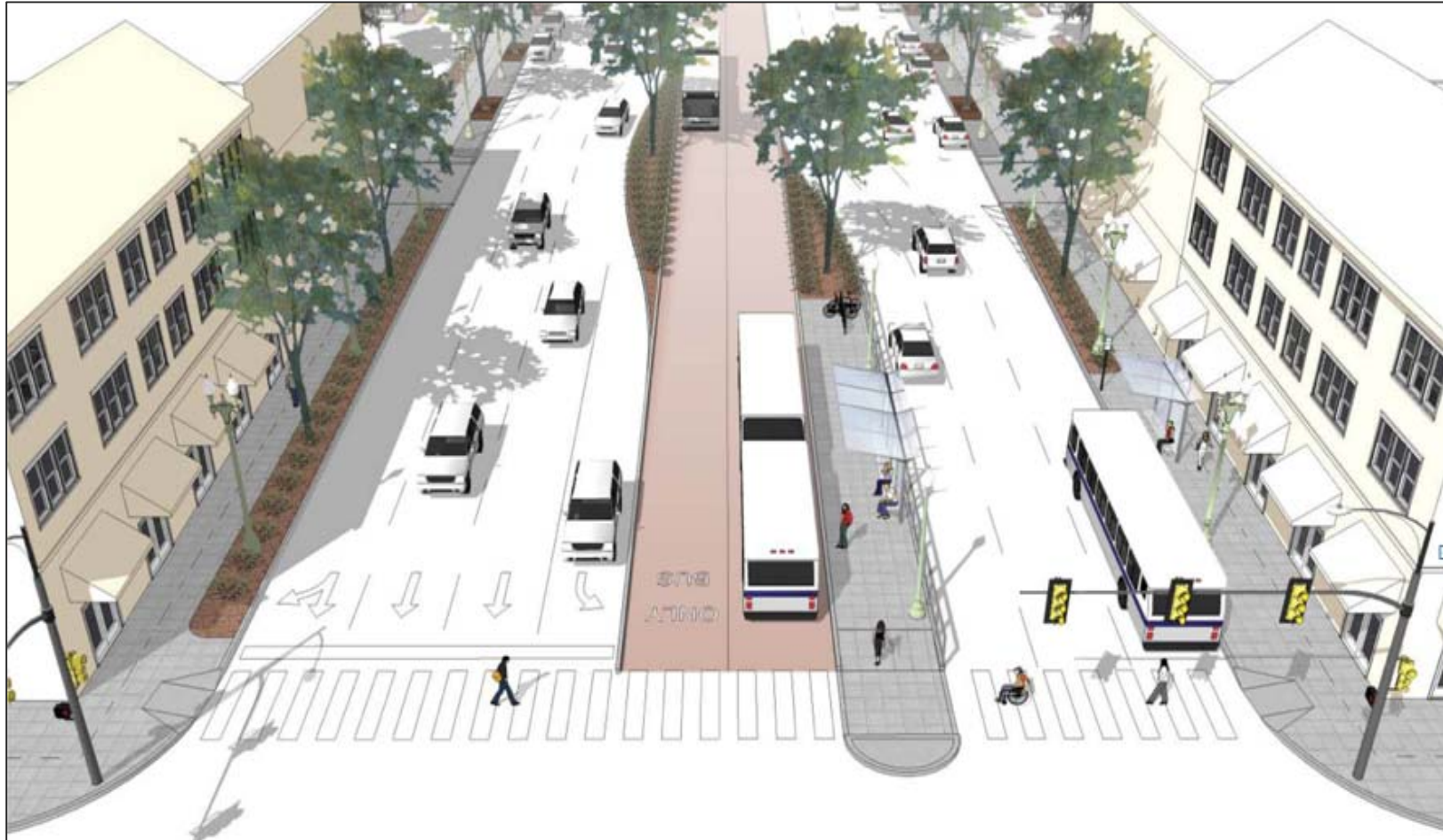
Capitol Avenue/Expressway

- Three BRT stops (Alum Rock, Story and Ocala)

Santa Clara-Alum Rock BRT Project



Typical Median Bus Lane



Santa Clara-Alum Rock BRT Project



Typical Median BRT Station on Alum Rock



Santa Clara-Alum Rock BRT Project



Typical Station Shelters



Santa Clara-Alum Rock BRT Project



Original Schedule

- ❑ Nov 2013 Contract Awarded to Goodfellow Top Grade
- ❑ Dec 2013 First charged day
- ❑ Mar 2014 Notice to proceed
- ❑ Jan 2015 Complete platforms on Santa Clara Street
- ❑ Feb 2015 Complete Alum Rock median and platforms
- ❑ Oct 2015 Contract completion

Recent Events

- July 2015 - Safety Shutdown issued to Goodfellow Top Grade Construction (GTGC) C830 Contract
- September 10, 2015 - Closeout and Settlement Agreement signed
- October 12, 2015 – GTGC to demobilize
- Project delivery restructured to ensure safe completion and minimize community impacts

Santa Clara-Alum Rock BRT Project



Delays up to July 2015

- ❑ Unmarked utilities
- ❑ Third party utility relocations
- ❑ Unsuitable soil conditions
- ❑ Shelter manufacturing
- ❑ Design changes
- ❑ Contractor's lack of progress

Santa Clara-Alum Rock BRT Project

Current Conditions



Alum Rock Avenue at King Road



Alum Rock Avenue at Jackson Avenue

Santa Clara-Alum Rock BRT Project

Current Conditions



Capitol Expressway – Ocala (Southbound)



Santa Clara Street – 24th Street Station

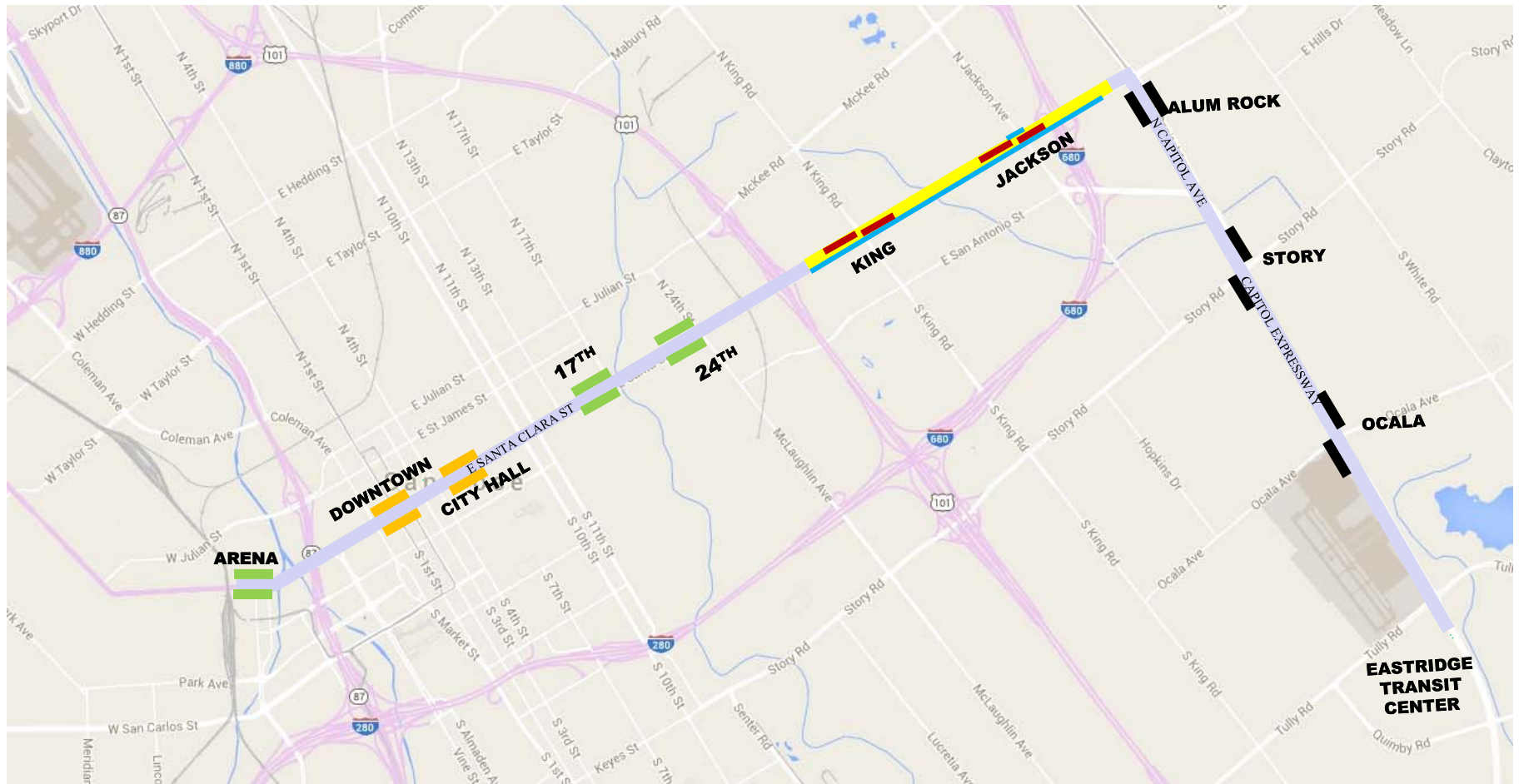
Construction Plan

Work will be done in two main phases:

- Phase 1 - Utilize the Restoration and Completion contract (C831) and certain subcontractors from previous GTGC contract to complete all work already underway, starting in late September 2015 and ending in March 2016.
 - Sidewalk, Lighting and Widening (Nov. 2015)
 - Non-median BRT stations (March 2016)
- Phase 2 – repackage and rebid remaining scope (i.e. work not started under previous GTGC contract); construction expected to begin March 2016 and end in late 2016.
 - Alum Rock Pavement Reconstruction and Busway
 - Downtown BRT Stops (completion in June 2016)

Santa Clara-Alum Rock BRT Project

Construction Plan



ROADWAY WORK

- ROADWAY WIDENING – OCTOBER 2015 TO FEBRUARY 2016
- ■ MEDIAN BUSWAY AND ROADWAY RECONSTRUCTION - MARCH 2016 TO DECEMBER 2016

STATIONS

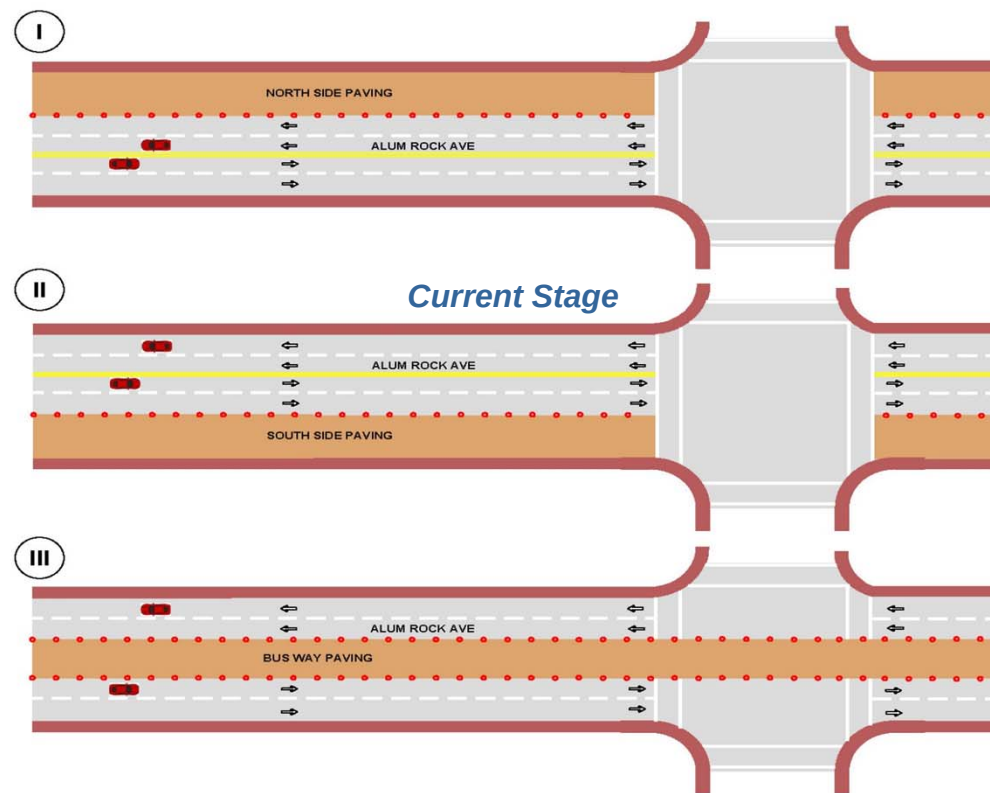
- OCTOBER 2015 TO JANUARY 2016
- DECEMBER 2015 TO MARCH 2016
- FEBRUARY 2016 TO JUNE 2016

Santa Clara-Alum Rock BRT Project

Construction Plan – Alum Rock Avenue



Original Plan

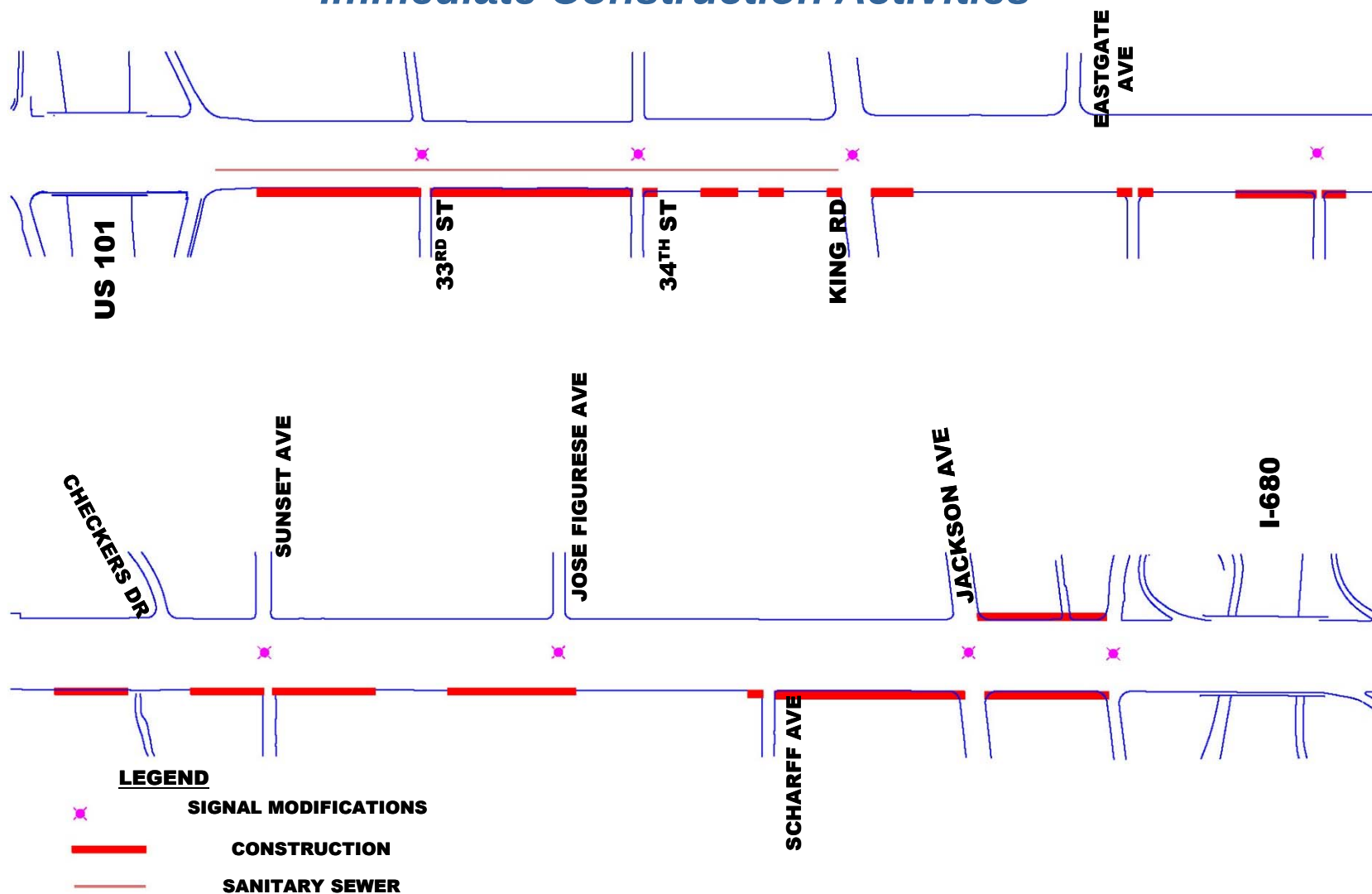


Santa Clara-Alum Rock BRT Project



Construction Plan – Alum Rock Avenue

Immediate Construction Activities

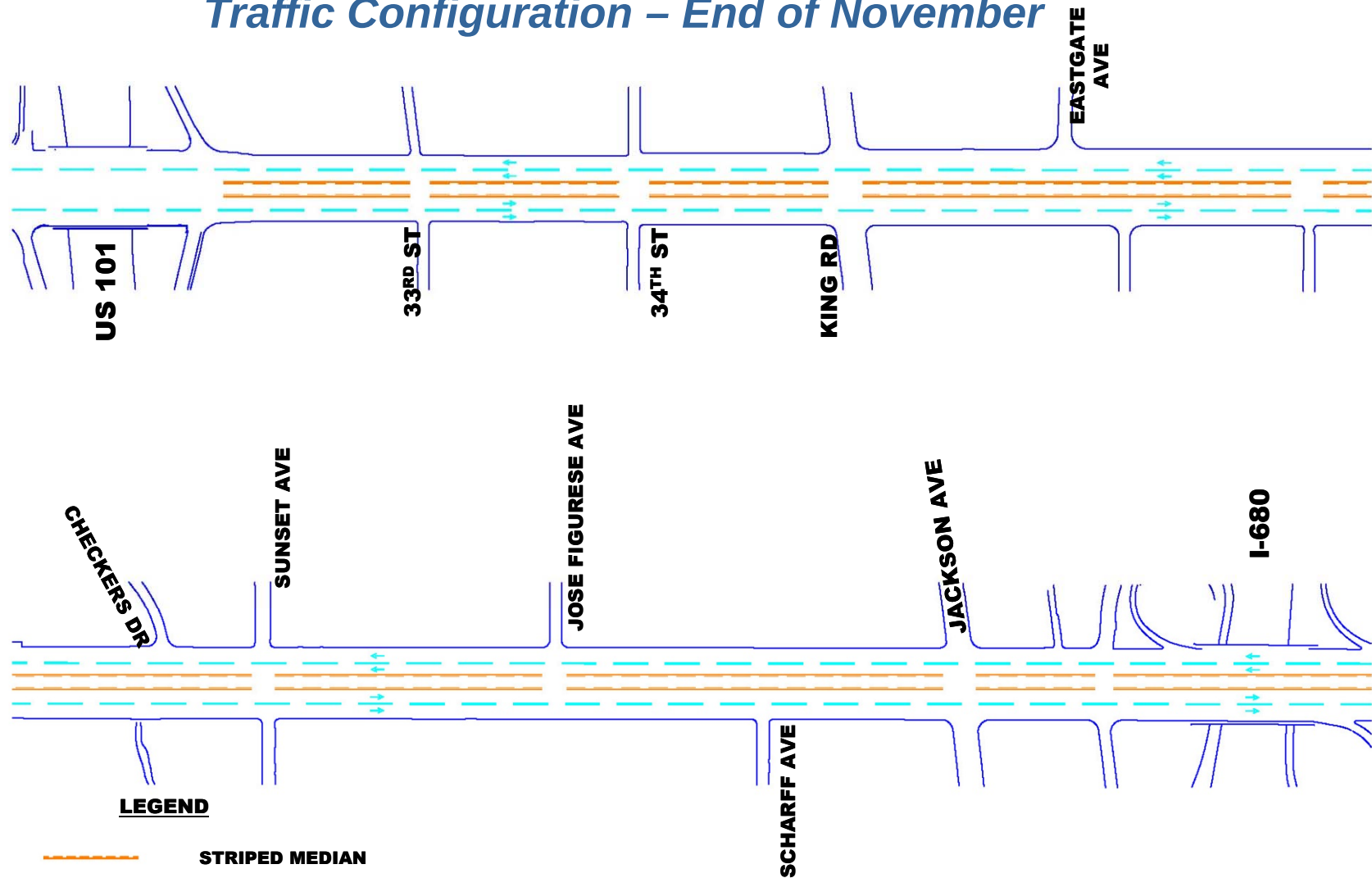


Santa Clara-Alum Rock BRT Project

Construction Plan – Alum Rock Avenue



Traffic Configuration – End of November

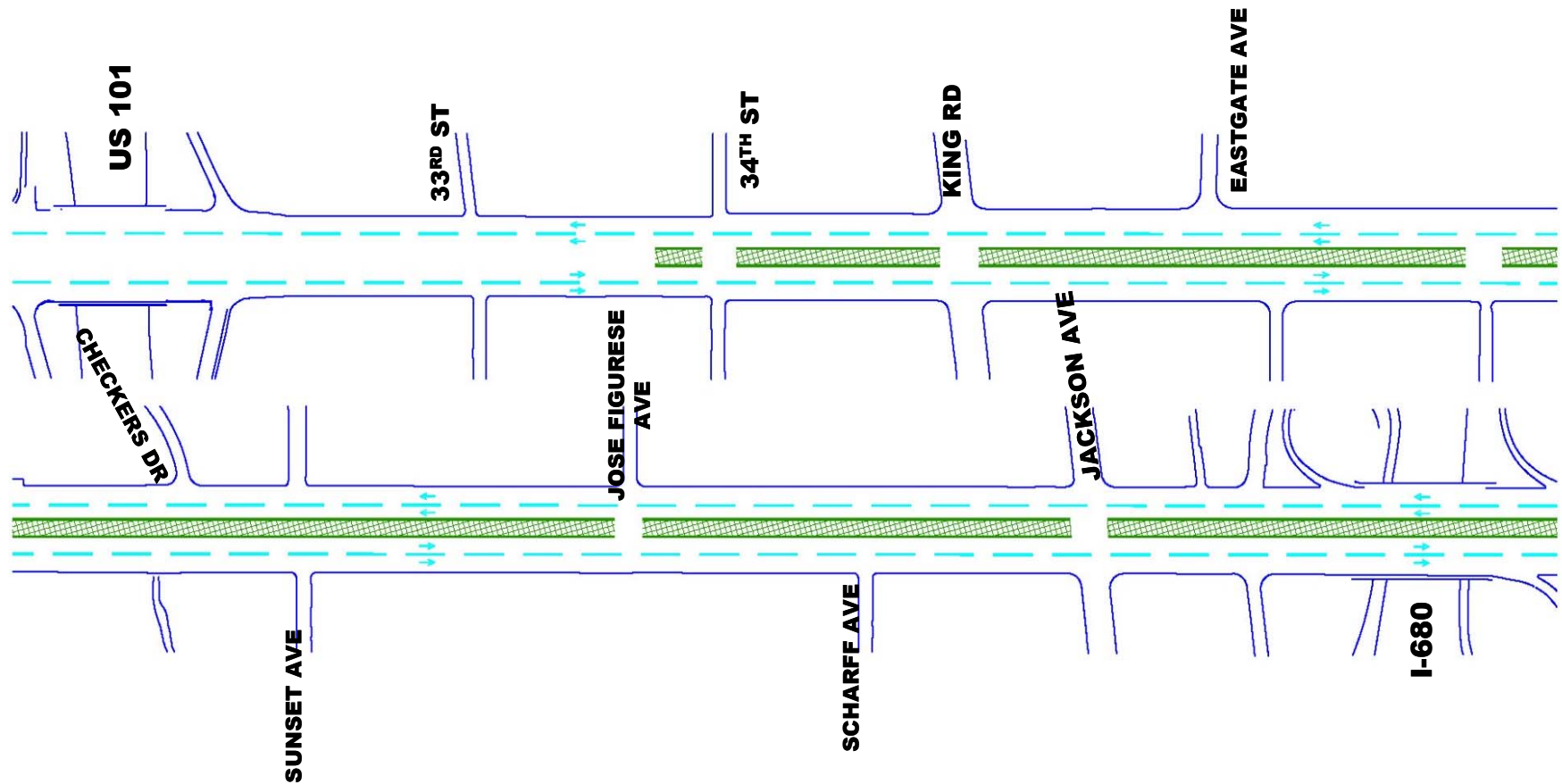


Santa Clara-Alum Rock BRT Project

Construction Plan – Alum Rock Avenue



New Construction Contract – Busway Median Construction

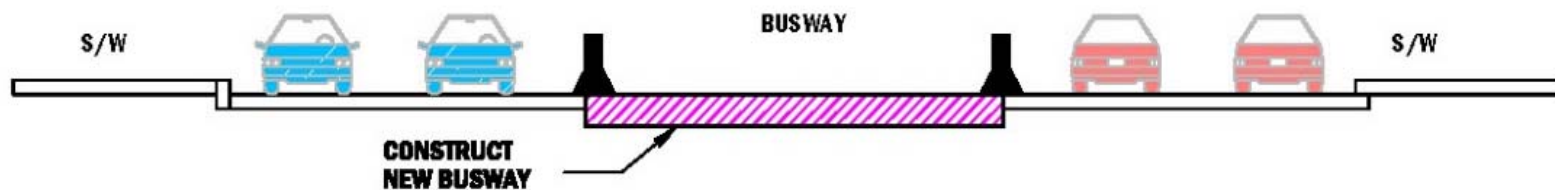


Santa Clara-Alum Rock BRT Project

Construction Plan – Alum Rock Avenue



New Construction Contract – Busway Median Construction Typical Section

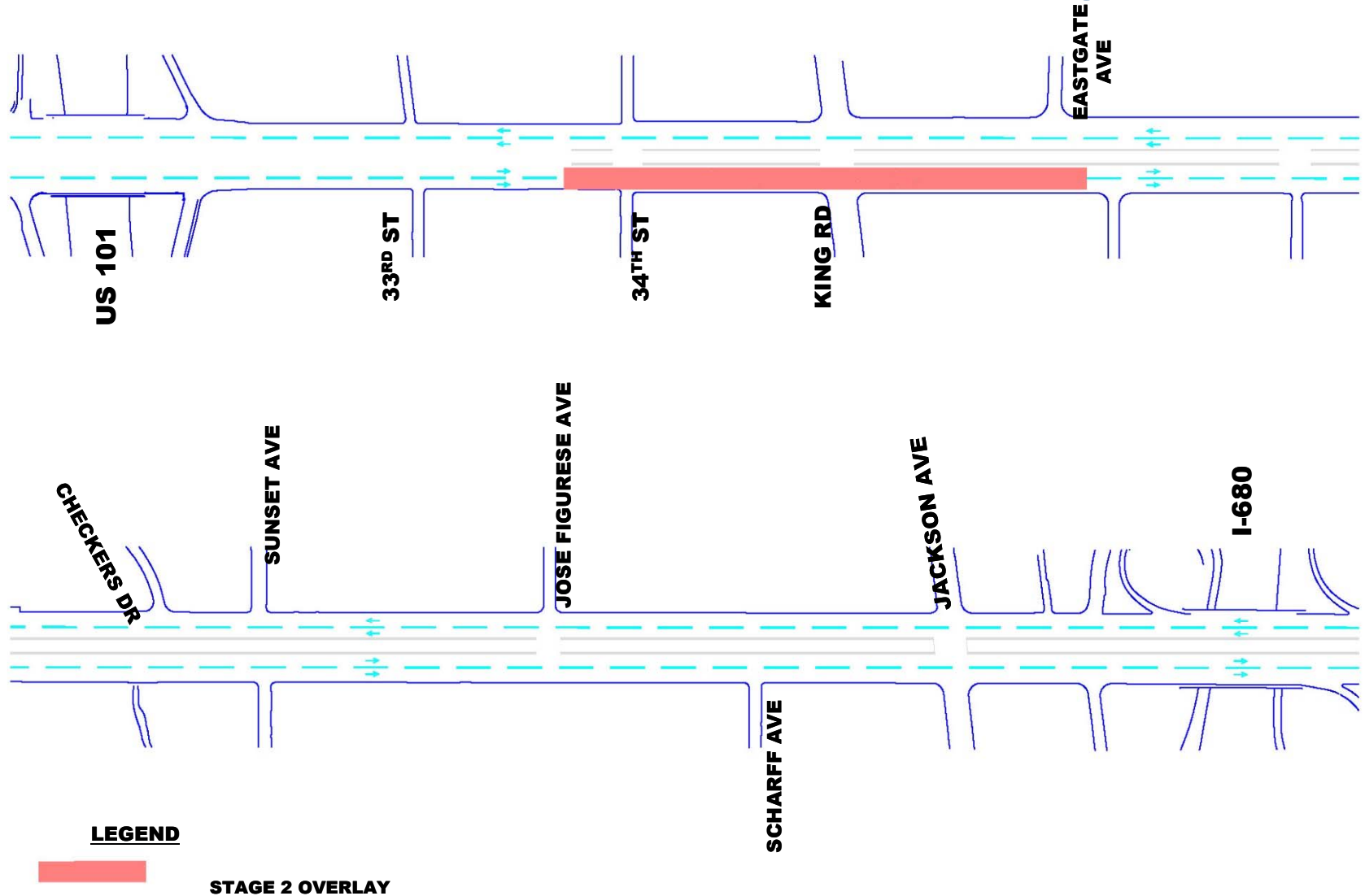


Santa Clara-Alum Rock BRT Project

Construction Plan – Alum Rock Avenue

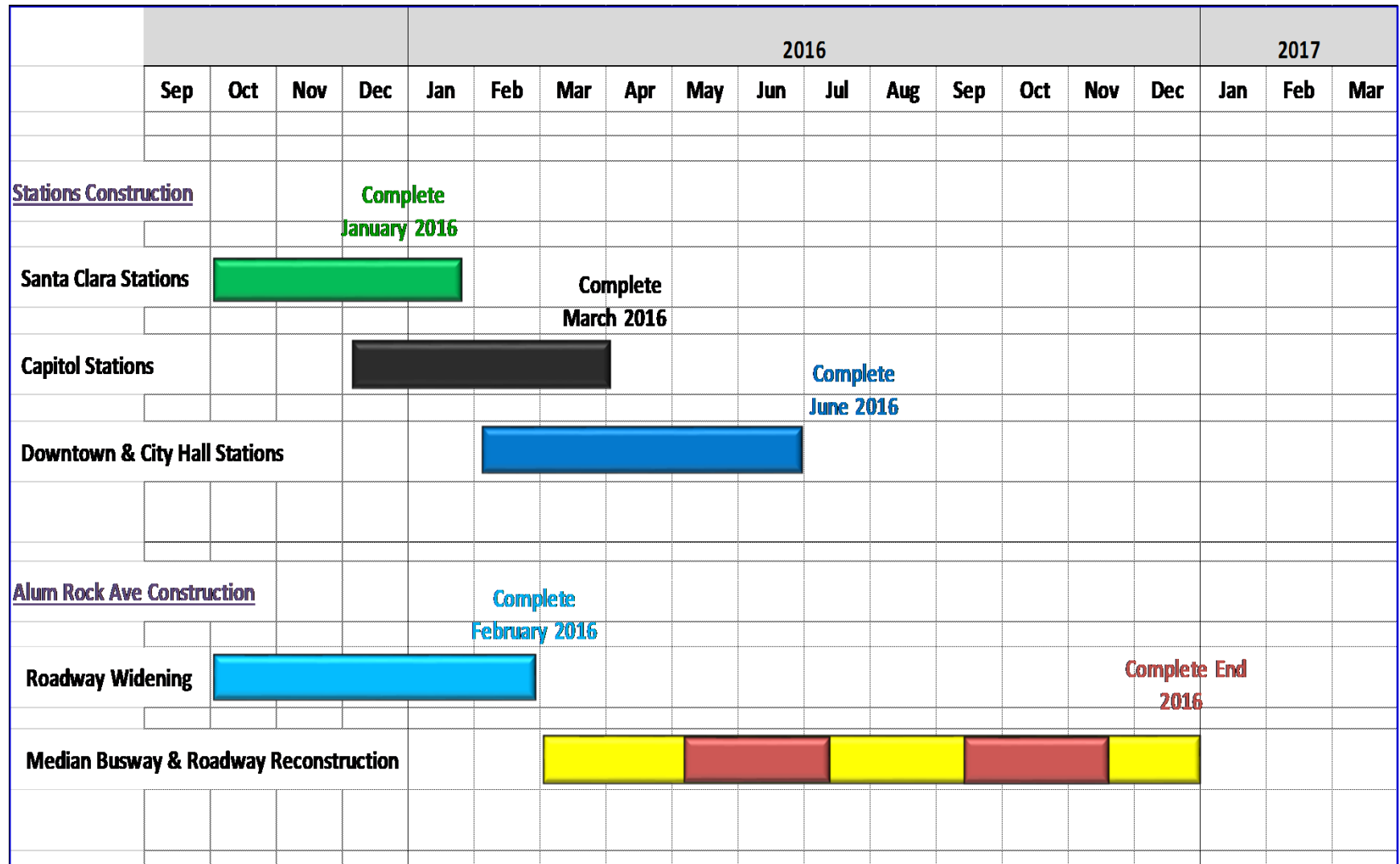


New Construction Contract – South Side Paving



Santa Clara-Alum Rock BRT Project

Summary Schedule





Date: September 24, 2015
 Current Meeting: October 1, 2015
 Board Meeting: October 1, 2015

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
 Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Chief Operating Officer, **Inez Evans**

SUBJECT: Update on Compressed Natural Gas (CNG) analysis

FOR INFORMATION ONLY

On August 15, 2013 Santa Clara Valley Transportation Authority (VTA) staff began an analysis of Compressed Natural Gas (CNG) as a potential fuel for the transit fleet. This study was requested by the Transit Planning and Operations Committee (TP&O) based on a recommendation from Director Khamis. The analysis is complete and staff's recommendation is to continue with the policy the Board adopted in 2000; namely to pursue the diesel path to conversion to a zero emission fleet.

BACKGROUND:

In 1999 the California Air Resources Board (CARB) required transit operators to select either a diesel path or a CNG fuel path to achieve a zero emission standard. Based upon available evidence at that time, the Board selected the low sulfur diesel fuel path. Because of the recent low cost and increased availability of CNG, the committee requested staff to reevaluate this decision.

With the continued requirement of transitioning to a zero emission fleet, staff evaluated the several aspects of a proposed conversion to determine if there was an opportunity to achieve a cost savings to the organization through the use of CNG fuel. The analysis shows that while there is a theoretical savings of \$2.3 million per year, this is offset by other factors involved in conversion to a CNG fuel source beyond the cost of fuel:

- Capital cost of facilities for service and fueling
- Potentially greater Green House Gas (GHG) emissions
- Increased service costs
- Decreased service reliability
- Challenge of supporting three technologies (diesel, electric and CNG) simultaneously

Given the importance of potential savings suggested by the cost comparison of diesel fuel to CNG, staff analyzed the overall impacts on our operation with great care. We also participated with CARB in an extensive test of emissions generated by our hybrid electric coaches as compared to CNG coaches on both dynamometer testing as well as actual revenue service testing. Staff's decision was influenced by the fact that the majority of the cost savings is in the purchase comparison of the vehicles (diesel electric hybrid v. CNG). Due to CARB's requirement that we begin purchasing a percentage of zero emission vehicles in 2018 transitioning to all zero emission bus purchases by 2028, this advantage is reduced.

Staff recognizes and appreciates the opportunity to examine this potential economy. As a result of this analysis, we are reassured that the Board has selected the most prudent and path to achieve the transition to a zero emission fleet. Attachment A provides more detailed information on the analysis that was performed and updates the previous report.

SUMMARY

Conversion to CNG buses could potentially result in some operating cost savings. However, the cost for yearly maintenance is higher. The buses are less fuel efficient. CNG may increase Greenhouse Gas emissions. Pending regulations requiring zero-emission buses would require additional facility costs and result in three different fuel structures per division, increasing maintenance, parts and materials complexity and likely requiring expansion of two divisions. The timeline to complete facility modifications and fueling station infrastructure is also substantial. These factors offset any potential savings.

Therefore, VTA staff recommends continuing the purchase of hybrid buses with a shift to zero-emission battery buses as they become more widely available.

STANDING COMMITTEE DISCUSSION/RECOMMENDATION:

The Transit Planning and Operations (TP&O) committee reviewed this item at its September 16, 2015 meeting. Chairperson Khamis noted that VTA would realize substantial savings by purchasing CNG buses and would realize substantial savings in annual fuel costs. He did not fully support the facility infrastructure costs VTA would pay to accommodate CNG buses and felt that the emissions data presented did not fully represent the true benefit of Hybrids over CNG. However, Chairperson Khamis would support whatever direction the Board of Directors would take on this issue. Chairperson Khamis requested that staff present this memo at the October 1, 2015 Board meeting.

Prepared By: Art Douwes
Memo No. 5154

ATTACHMENT A

FUEL COSTS

The fuel cost analysis in the 2013 report was based on average pricing for that year, with a 3% inflation escalator going forward, as projected by the Federal Department of Energy. Since that time, both diesel and CNG prices have actually fallen significantly, as shown below. Forecasting fuel prices is likely to remain extremely difficult.

	Diesel (per gallon)	CNG (per diesel gallon equivalent)
2013 Report Cost Assumption	\$3.64	\$0.91
2015 Year to Date Actual Average	\$1.88	\$0.36

Please note that VTA pays wholesale prices and receives some tax exemptions. Diesel pricing shown is per gallon; CNG pricing is given in diesel gallon equivalency (DGE). These figures include sales tax.

Considering the updated fuel pricing, any savings from switching the fleet to CNG are substantially reduced. Fuel savings would decline from an estimated cumulative of \$35,162,503 to \$19,577,657. The total savings over 12 years, which included cost estimates for maintenance of CNG vehicles, facility installation and maintenance costs, and the cost savings from buying CNG vehicles instead of hybrid vehicles, would now be \$27,357,619, down from \$42,942,465 in the 2013 analysis.

BUS COST

The 2013 evaluation indicated a bus cost differential between comparably equipped CNG and hybrid buses of approximately \$150,000 per bus. This is the main area of savings in all analyses done. This price differential appears to be the same in 2015.

FUELING FACILITY O&M COST

VTA's experience indicates that the diesel fueling facilities have negligible Operation and Maintenance (O&M) costs. VTA does not have any experience operating a CNG fueling facility. However, based on other transit agencies such as Los Angeles County Metropolitan Transportation Authority (LACMTA) and figures from CNG providers, there is a significant cost for the compression of natural gas as well as maintenance cost of the compressors and other parts of the facility. This cost is estimated to be approximately \$0.41 per diesel gallon equivalent (DGE).

FACILITY MODIFICATION

Modifications are required for maintenance facilities to safely accommodate CNG buses. Procurement and installation of CNG fueling facilities is required as well. Estimates for these facility projects range from \$18,000,000 to \$47,000,000, for VTA's three bus divisions. In the 2013 analysis, VTA estimated these costs at \$28,000,000. These numbers are still valid in 2015. These are construction cost estimates. There may also be some real estate acquisition costs, as noted on the Fleet Projections section of this memorandum.

ATTACHMENT A**MAINTENANCE COST**

It is widely acknowledged that the maintenance cost for CNG buses is higher than diesel hybrid buses. VTA's maintenance cost for standard diesel buses is approximately \$1.30 per mile, which includes parts and labor. VTA's maintenance cost for hybrid buses is lower, approximately \$1.01 per mile -- though it should be noted that the hybrid buses are newer and they will require a one-time battery replacement. The estimated cost for the battery replacement adds approximately \$0.08 per mile.

Other agencies with CNG fleets contacted for this analysis indicated that the additional costs for maintenance of the CNG buses are between \$0.06 and \$0.20 per mile more than standard diesel buses. VTA buses logged 18,071,293 miles in FY 2015. Using an average of \$0.13 per mile, this would add \$2.35 million per year to VTA's annual maintenance cost for a CNG fleet. This alone offsets the purchasing and fuel cost advantages of CNG.

EFFICIENCY

All of the cost analyses provided take into account the lower energy capacity of CNG versus diesel hybrid. Because of that lower energy capacity, the mileage for CNG buses is approximately 3.6 mpg (using DGE) as compared to 5.1 mpg for diesel hybrid buses. This could potentially exacerbate future fuel cost increases because the CNG fleet would require more fuel. The current fleet used approximately 4 million gallons of fuel in FY 2015. A CNG fleet would have required 5 million gallons to complete the same number of miles.

The 2013 CNG analysis assumed 176 new buses in service by FY 2018. For a variety of regulatory and funding reasons, VTA purchases are now planned to be compressed for delivery between FY 2017 and FY 2020 (see Fleet Projections section). While this alone would change the numbers of the estimate, it does not affect the overall conclusion from 2013.

That analysis showed that when the costs of maintenance, fuel and facilities, and new bus costs are taken into account, savings are possible by switching from hybrid diesel buses to CNG buses for VTA's fleet. However, the savings are offset by reliability and emissions issues. We also know, going forward, we face the costs associated with the State's mandate to switch to zero-emission buses. Other potential costs and issues are discussed elsewhere in this report.

CALIFORNIA AIR RESOURCES BOARD (CARB) TESTING and RESULTS:**EMISSIONS**

The California Air Resources Board (CARB) requested the use of three VTA hybrid buses for emissions testing and evaluation. In 2014, CARB tested three VTA hybrid buses (low mileage, medium mileage, and high mileage) on a chassis dynamometer as well as on the road over a specific route. The preliminary result of the testing indicated that there was no apparent degradation of the emissions system.

Previously, CARB contracted with West Virginia University (WVU) to test CNG buses. CARB provided the following analysis based on those and the VTA bus tests:

ATTACHMENT A

“Results from these two studies, as well as those from the VTA study, are reported in the attached table. CNG Total Hydrocarbon (THC) emissions were higher for both chassis dynamometer and on-road testing relative to the hybrid and diesel buses. This is most likely due to the use of CH₄, a hydrocarbon itself, as the primary fuel source. Emissions of Carbon Monoxide (CO) were also considerably higher for CNG buses relative to the hybrid and diesel buses for chassis dynamometer and on-road testing. CO emissions are significantly larger for the more aggressive urban driving routes and for the higher-mileage CNG buses relative to the low-mid-mileage buses tested. Nitrogen Oxides (NO_x) emissions are on average lower for CNG buses for dynamometer testing, and similar values for on-road testing compared to hybrid buses. However, for both testing regimes, CNG buses show large inter-bus variability for NO_x emissions. CO₂ emissions are comparable between hybrid, diesel, and CNG buses for all tests. However, CNG buses again show larger variability between buses and routes than for hybrid and diesel buses.”

CARB also provided their Emission Comparison of Transit Bus Technologies. This assessment indicates that the greenhouse gas (GHG) emissions of the hybrid bus, on a well-to-wheel basis, are lower than that of a CNG bus. The electric bus is projected to produce the least GHG. More detail on the CARB testing data is included in Appendix A of this memorandum.

BUS FLEET PROJECTIONS

CARB proposed new regulations to reduce Greenhouse Gas Emissions as well as other regulated emissions for transit bus fleets. The goal is to have 100% of the transit buses be zero emissions buses (ZEBs) by 2040. To achieve this goal and transition from fossil fuel buses to ZEBs, the proposed regulation is to mandate that a percentage of transit buses purchased in California after 2018 be ZEBs and that all new transit buses purchased after 2028 be ZEBs.

VTA's BUS PROCUREMENT NEEDS

VTA's bus procurement plans include bus replacements and buses for service expansion. Between now and 2028, VTA estimates purchasing approximately 600 new buses. Considering the expected requirement to start purchasing ZEBs effective 2018, the estimated bus procurement plan is as follows:

Year Order	Fossil Fuel Buses	ZEBs	Total
2015	179	5	184
2017	57	0	57
2018	45	11	56
2021	56	14	70
2022		20	20
2025	37	37	74
2026	65	65	130
Total	439	147	591

ATTACHMENT A

VTA will be purchasing another (439) fossil fuel buses, which could be diesel, hybrid electric diesel, or CNG. The following factors should be considered for the purchase of the buses.

FACILITIES

To operate CNG or electric buses, VTA must make significant facility modifications. For CNG buses, the maintenance facilities need to be modified to safely accommodate the volatile lighter-than-air natural gas.

Additionally, CNG fueling facilities must be installed at the three bus divisions. For zero emission buses, charging stations must also be installed at each bus division.

The use of CNG buses would mean that, in the near future, VTA would be operating buses on three different fuels (diesel, CNG and electricity). This would also mean that the facilities would need to be equipped for such. Adding both CNG fueling and electric charging facilities will be difficult at two of the bus divisions due to space limitations, compounded by the expansion of VTA's fleet -- especially with plans to more than double the number of 60' articulated buses.

The Chaboya Division is VTA's most crowded facility, and the introduction of articulated buses to that yard for planned BRT routes will bring it to maximum capacity, even without additional fueling facilities.

At North Division, the situation is similar, full introduction of the Santa Clara-Alum Rock BRT service and the future increase in standard articulated buses will also bring it to its maximum practical capacity. The issue overall is more critical at North because, with Hwy 101 and surface roads on all sides, there is no adjacent property that could be used for expansion.

CNG will be new technology to VTA. There will be costs associated with introducing it to the fleet. As examples, other properties have experienced issues with the methane detection and fire suppression systems becoming sources of service interruptions and requiring specialized maintenance. They found it critical to work with the fuel station manufacturer to review and revise maintenance practices and procedures, and to determine life-cycle planning, including regulatory agencies periodic inspections. They found it essential to review and revise staffing levels, financial plans, and capital funding, and they discovered that some materials required for vehicle and station maintenance have long lead times.

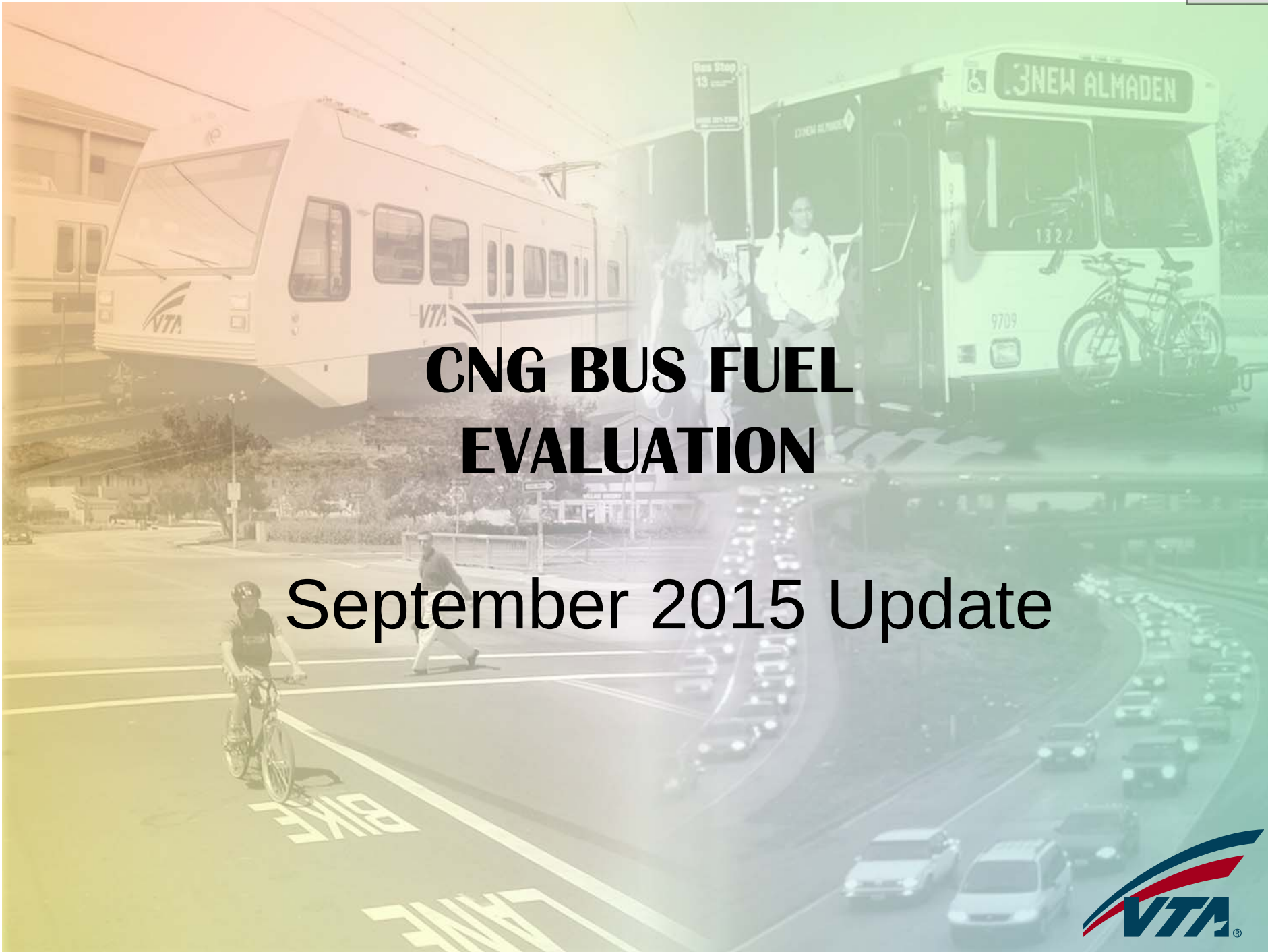
OPERATIONS RELIABILITY

Reliability is a major factor in transit operation. Breakdowns on the road (Roadcalls) are a disruption to passengers. An excessive number of Roadcalls could lead the public to lose confidence in the system and therefore reduced ridership. Although the CNG buses have made improvements in their performance, they are still more prone to breakdowns than diesel engines. CNG Engines require more frequent overhauls.

VTA's experience with the hybrid buses indicates a better reliability. For the 3rd quarter of FY 2014, the overall fleet averaged 8,409 miles between road calls, while the standard hybrid bus averaged 11,556 miles between road calls. This equates to a 37% improvement in reliability. The Express hybrid buses operated at more than 67,000 miles between road calls.

ATTACHMENT A**MAINTAINABILITY**

Extensive new equipment and training of maintenance mechanics at an unknown cost will be required to safely maintain CNG buses. VTA training staff will need to be expanded if both CNG and zero-emission buses are introduced to the fleet. Along with specialized training for the CNG itself, specialized training will be needed for handling the high-pressure tanks, valves, and plumbing used to store the CNG on board the buses.



CNG BUS FUEL EVALUATION

September 2015 Update



TRANSITION TO CNG CONSIDERATIONS

- Capital cost of facilities for service and fueling
- Green House Gas (GHG) emissions
- Challenge of supporting three technologies (diesel, electric and CNG) simultaneously

Bus Cost & Fuel Cost

- 2013 Estimate of \$150,000 savings per CNG bus remains the same in 2015.
- Fuel Costs:

	Diesel (per gallon)	CNG (per diesel gallon equivalent)
2013 Cost Assumption	3.64	\$0.91
2015 Year to date actual	\$1.88	\$0.36

Fuel Savings

- Fuel Savings declined from \$35,162,503 to \$19,577,657
- Total savings over 12 years(fuel, maintenance, facility installation, vehicle cost savings) becomes \$27.3 compared to \$42.9

FACILITY COST

Estimates for facility projects range from \$18,000,000 to \$47,000,000 considering three maintenance divisions.

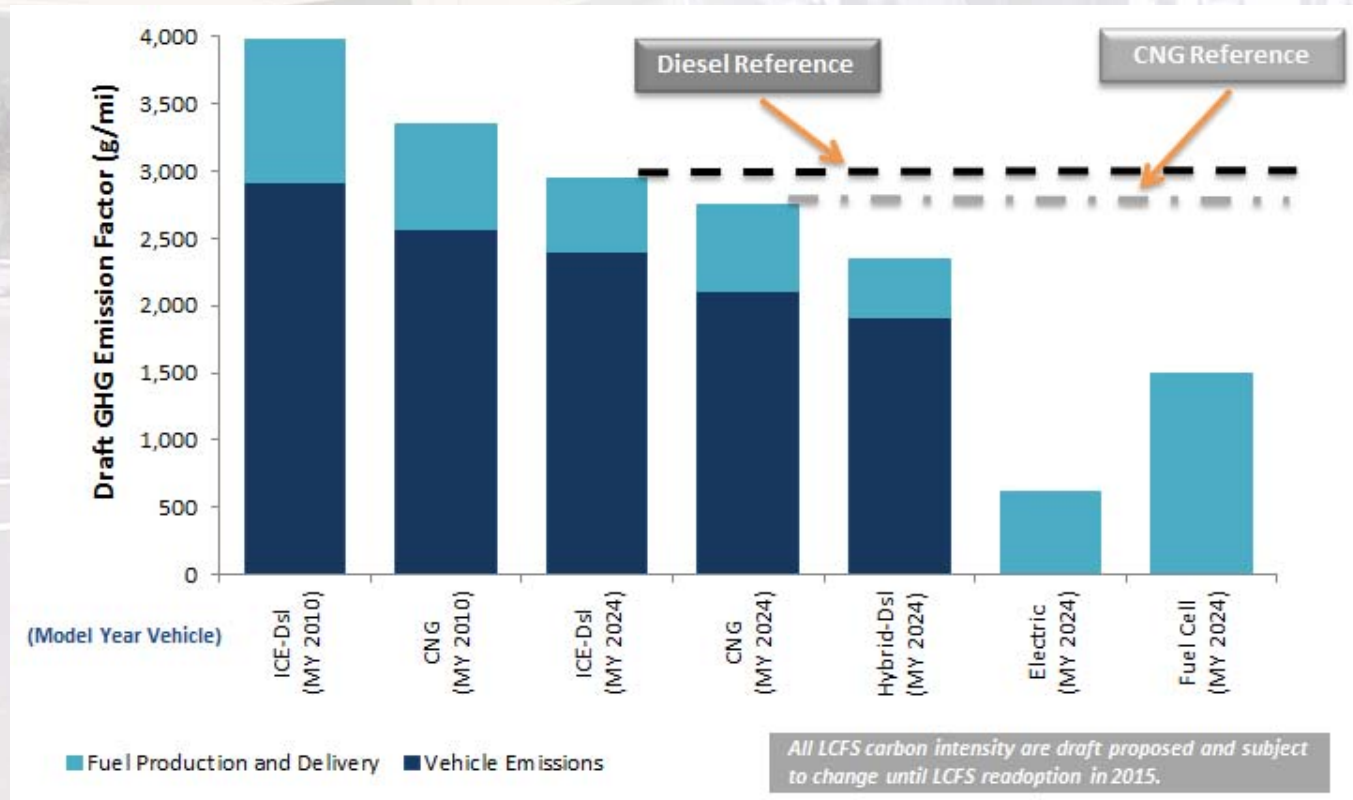
In the 2013 analysis VTA used \$28,000,000. It is believed that this number is still valid in 2015

Air Resources Board - Emissions Testing

- *“CNG THC emissions were higher for both chassis dynamometer and on-road testing relative to the hybrid and diesel buses”*
- *“Emissions of CO were also considerably higher for CNG buses relative to the hybrid and diesel buses for chassis dynamometer and on-road testing”*

Air Resources Board Greenhouse Gas Projections

Urban Bus GHG Emission Comparison



ZERO EMISSION BUSES (ZEB)

- The California Air Resources Board (CARB) has proposed new regulations
- The goal is to have 100% of the transit buses be zero emissions buses (ZEB) by 2040.
- To achieve this goal and transition from fossil fuel buses to ZEBs, the proposed regulation mandates a percentage of buses purchased in California after 2018 be ZEBs and that all new transit buses purchased after 2028 be ZEBs.

CNG BUS

BENEFITS

- Lower Fuel Cost
- Lower Bus Cost

ISSUES

- Higher GHG Emissions
- New CNG Fueling Facilities
- Maintenance Facility Modifications
- Heavier Buses
- More maintenance
- Less Reliable

Conclusion

- The analysis shows that while there is a theoretical savings of \$2.3 million per year, this is offset by other factors involved in conversion to a CNG fleet.
- The Board has selected the most prudent path to achieve the transition to a zero emission fleet.

Questions...



GOVERNANCE AND AUDIT COMMITTEE

Thursday, September 3, 2015

MINUTES

CALL TO ORDER

The Regular Meeting of the Governance and Audit Committee was called to order at 4:02 p.m. by Chairperson Woodward in Conference Room 157, County Government Center, 70 West Hedding Street, San José, California.

1. ROLL CALL

Attendee Name	Title	Status
Cindy Chavez	Vice Chairperson	Present
Rose Herrera	Member	Present
Ash Kalra	Member	Present
Perry Woodward	Chairperson	Present

A quorum was present.

2. PUBLIC PRESENTATIONS

There were no Public Presentations.

3. ORDERS OF THE DAY

Member Herrera requested that **Agenda Item #6** – State Route 85 Corridor Policy Advisory Board Appointments be removed from the Consent Agenda and placed on the Regular Agenda.

M/S/C (Kalra/Herrera) to accept the Orders of the Day and approve the Consent Agenda, as amended.

CONSENT AGENDA

4. Regular Meeting Minutes of June 4, 2015

M/S/C (Kalra/Herrera) to approve the Regular Meeting Minutes of June 4, 2015.

5. 2015 Board Standing Committee and Board Ad Hoc Committee Appointments

M/S/C (Kalra/Herrera) to recommend that the Board of Directors approve changes to 2015 Board Standing Committee and Board Ad Hoc Committee appointments.

6. (Removed from the Consent Agenda and placed on the Regular Agenda.)

Recommend that the Board of Directors approve appointments to the State Route 85 Corridor Policy Advisory Board.

NOTE: M/S/C MEANS MOTION SECONDED AND CARRIED AND, UNLESS OTHERWISE INDICATED, THE MOTION PASSED UNANIMOUSLY.

7. **El Camino Real Rapid Transit Policy Advisory Board Appointments**

M/S/C (Kalra/Herrera) to recommend that the Board of Directors approve appointments to the El Camino Real Rapid Transit Policy Advisory Board.

The Agenda was taken out of order.

REGULAR AGENDA

6. **State Route (SR) 85 Corridor Policy Advisory Board Appointments**

Members of the Committee and staff engaged in a discussion regarding the appointments to the SR 85 Corridor Policy Advisory Board.

M/S/C (Herrera/Kalra) to recommend that the Board of Directors approve appointments to the State Route 85 Corridor Policy Advisory Board.

Vice Chairperson Chavez took her seat at 4:09 p.m.

8. **Third-Party Fare Reporting Process Assessment**

Pat Hagan, Auditor General, provided a brief report noting scope of the assessment, observations, recommendations and Management response. He added that there were no significant findings.

M/S/C (Herrera/Chavez) to review and receive the Auditor General's report on the Third-Party Fare Reporting Process Assessment.

9. **BART Silicon Valley Comprehensive Agreement Assessment**

Corey Saunders, Deputy Auditor General, provided an overview of the report. Mr. Saunders and Mr. Hagan discussed the risk assessment main themes and noted the “high” risk rating is due to pervasiveness of the issues and potential impacts, workload required to mitigate risks, and the short time to implement mitigation measures between now and revenue service. They emphasized the importance of ensuring that VTA has the appropriate level of authority and oversight moving forward.

Upon inquiry of Vice Chairperson Chavez, Carolyn Gonot, Director of Engineering and Transportation Infrastructure Development, briefly discussed the next steps, including a two-year period to negotiate the Operations and Maintenance (O&M) agreement. Elements of the O&M agreement will be presented to the Silicon Valley Rapid Transit Program Working Committee (SVRT PWC) periodically.

Upon request of Vice Chairperson Chavez, Nuria I. Fernandez, General Manager and CEO, noted that staff could present the risk assessment report to the SVRT PWC, gather committee feedback, and bring forth recommendations relating to oversight structure and strategies to the VTA Board of Directors.

Members of the Committee suggested that an examination of Bay Area Rapid Transit’s (BART) agreement with other agencies or cities, such as the BART extension to the San Francisco Airport (SFO), and other best practices could offer some insight on the development of future agreements between VTA and BART.

Member Herrera expressed concern that there is a lack of an official body to address long-term or unforeseen issues. Ms. Fernandez noted that staff could examine a more formal structure to address concerns that may arise.

M/S/C (Chavez/Herrera) to review and receive the Auditor General's report on the BART Silicon Valley Comprehensive Agreement Assessment, and further, to provide findings to the SVRT PWC, bring SVRT PWC oversight structure and strategy recommendations to the VTA Board of Directors, and explore the implementation of an official body to address long-term issues.

10. VTA Ethics Hotline Program Quarterly Report

Mr. Saunders provided a brief summary of the report.

On order of Chairperson Woodward and there being no objection, the Committee received and reviewed the Quarterly Ethics Hotline Summary Report.

11. Review Status of Internal Audit Work Plan

Mr. Saunders provided a brief overview of completed and proposed projects.

On order of Chairperson Woodward and there being no objection, the Committee received an update from Auditor General Office staff on the status of projects contained in the current Internal Audit Work Plan.

OTHER ITEMS

12. Items of Concern and Referral to Administration

Upon query of Vice Chairperson Chavez, staff noted they will resend a memorandum from Bijal Patel, Deputy Director of Real Estate, regarding underground authority considerations to the Committee for their reference.

13. Governance & Audit Committee Work Plan

Ms. Fernandez provided a brief overview of the status of projects in the Governance & Audit Committee Work Plan.

On order of Vice Chairperson Woodward and there being no objection, the Committee reviewed the Committee Work Plan.

14. Committee Staff Report

There was no Committee Staff Report.

15. Chairperson's Report

There was no Chairperson's Report.

16. Determine Items for the Consent Agenda for future Board of Directors' Meetings.

CONSENT:

Agenda Item #5 – Recommend that the Board of Directors approve changes to 2015 Board Standing Committee and Board Ad Hoc Committee appointments.

Agenda Item #6 – Recommend that the Board of Directors approve appointments to the State Route 85 Corridor Policy Advisory Board.

Agenda Item #7 – Recommend that the Board of Directors approve appointments to the El Camino Real Rapid Transit Policy Advisory Board.

Agenda Item #8 – Review and receive the Auditor General's report on the Third-Party Fare Reporting Process Assessment.

REGULAR:

Agenda Item #9 – Review and receive the Auditor General's report on the BART Silicon Valley Comprehensive Agreement Assessment.

17. ANNOUNCEMENTS

There were no Announcements.

18. ADJOURNMENT

On order of Chairperson Woodward and there being no objection, the Committee was adjourned at 4:48 p.m.

Respectfully submitted,

Michelle Oblena, Board Assistant
VTA Office of the Board Secretary



TRANSIT PLANNING & OPERATIONS COMMITTEE

Wednesday, September 16, 2015

MINUTES

CALL TO ORDER

The Regular Meeting of the Transit Planning and Operations (TP&O) Committee was called to order at 11:04 a.m. by Chairperson Khamis in Conference Room B-104, Valley Transportation Authority (VTA), 3331 North First Street, San Jose, California.

1. ROLL CALL

Attendee Name	Title	Status
Johnny Khamis	Chairperson	Present
Sam Liccardo	Member	Absent
Ken Yeager	Vice Chairperson	Present
Jeannie Bruins	Member	Present
Dave Cortese	Alternate Member	Absent
Raul Peralez	Alternate Member	Absent

*Alternates do not serve unless participating as a Member.

A quorum was not present and a Committee of the Whole was declared.

2. PUBLIC PRESENTATIONS

There were no Public Presentations.

Member Bruins arrived at the meeting at 11:06 a.m. and a quorum was established.

3. ORDERS OF THE DAY

Chairperson Khamis indicated a public speaker card was received for **Agenda Item #5.**, Transit Operations Performance Report: Annual Report, and would be removed from the Consent Agenda and placed on the Regular Agenda.

M/S/C (Yeager/Bruins) to accept the Orders of the Day and approve the Consent Agenda, as amended.

NOTE: M/S/C MEANS MOTION SECONDED AND CARRIED AND, UNLESS OTHERWISE INDICATED, THE MOTION PASSED UNANIMOUSLY.

CONSENT AGENDA

4. Regular Meeting Minutes of August 19, 2015

M/S/C (Yeager/Bruins) to approve the Regular Meeting Minutes of August 19, 2015.

REGULAR AGENDA

5. Transit Operations Performance Report: Annual Report

Public Comment

Roland Lebrun, Interested Citizen, expressed concern with the Transit Operations Performance Report being on the Consent Agenda and suggested addressing shortfalls at the next Committee meeting.

On order of Chairperson Khamis and there being no objection, the Committee received the Transit Operations Performance Report: Annual Report (Fiscal Year 2015).

6. Determine the Committee's Vice Chairperson for the Remainder of 2015

Member Bruins nominated Member Yeager to serve as the Committee's Vice Chairperson for the remainder of 2015.

M/S/C (Bruins/Yeager) to close nominations and elect Member Yeager to serve as the Committee's Vice chairperson for the remainder of 2015.

7. Dynamic Transit Service Pilot Program Implementation

Ying Smith, Transportation Planning Manager, provided an overview of the staff report and a presentation highlighting: 1) Background; 2) First pilot: VTA Flex – Tasman (October 2015); 3) Tasman Zone Flex stops; 4) Pilot fare structure; 5) Priorities in service design; 6) Vehicles; 7) Opportunities for public-private partnerships; 8) Measure results and improve service design; 9) VTA Flex versus other ridesharing services; 10) Future pilot applications; and 11) Next steps.

Member Bruins noted comparisons were made to Uber and Lyft. She requested comparing the service with employer shuttles, such as the Marguerite in Palo Alto and other similar services.

Ms. Smith indicated staff will research the information.

The Committee discussed the following: 1) the number of pick-up locations; 2) number of passengers needed to consider the pilot successful; 3) how the system can be used; 4) utilization monitoring; and 5) ability to add additional vehicles as needed.

Member Bruins expressed excitement with the new program and getting information regarding performance after it launches.

Chairperson Khamis suggested the following: 1) advertise website on the bus and/or name of the app to attract more users; 2) add current location detection in the app to

indicate where the nearest pick-up site is located, so the user only has to enter their destination; 3) add suggestions for what to do after 8:30 p.m. so the user is not stranded after the service stops; 4) offer alternative transit options if a trip is rejected; 5) develop partnerships with other corporations to help advertise service; and 6) requested a report be brought back to the Committee on the status of the pilot.

Inez Evans, Chief Operating Officer and Staff Liaison, indicated staff will provide information to the Committee a month after the initial launch and will provide reports thereafter.

On order of Chairperson Khamis and there being no objection, the Committee received a report on the Dynamic Transit Service Pilot Program Implementation.

8. October 2015 Transit Service Changes

Jim Unites, Deputy Director, Operations, provided a brief overview of the staff report.

On order of Chairperson Khamis and there being no objection, the Committee received a report on the October 2015 Transit Service Changes.

9. Quarterly Marketing Report

Bernice Alaniz, Director of Communications, provided a brief report highlighting the following: 1) marketing and promotion of the Flex program to employers and community; 2) VTA received two First Place American Public Transportation Association (APTA) AdWheel awards for the marketing program and is in the running for the grand prize; 3) campaign to maximize Express Bus service; and 4) public will building campaign.

Mr. Lawson indicated staff can provide the Committee with copies of the packet being distributed to companies to market the Flex program.

On order of Chairperson Khamis and there being no objection, the Committee received the Quarterly Marketing report.

10. Compressed Natural Gas (CNG) analysis

Art Douwes, Operations Manager, Engineering, provided a brief overview of the staff report and a presentation, highlighting: 1) Transition to CNG considerations; 2) Bus and fuel cost; 3) Fuel savings; 4) Facility cost; 5) Air Resources Board - emissions testing; 6) Zero Emission Buses (ZEB); and 7) CNG Bus and benefits and issues.

Public Comment

Mr. Lebrun suggested using hydrogen fuel cell technology to achieve zero-emission.

Ms. Evans indicated staff is researching a pilot program for electric bus technology and plans to have something more concrete by the end of the year.

The Committee discussed the following: 1) Cost savings for VTA; 2) difference in emissions between CNG and hybrid vehicles; 3) bus procurement cycle; 4) working with three technologies; and 5) timeframe for electric bus pilot.

Mr. Lawson indicated several challenges in working with three technologies simultaneously. He noted staff's recommendation is a prudent approach but the Board can direct otherwise. In response to Chairperson Khamis' suggestion on additional information regarding hybrid and CNG emissions, he indicated an emission comparison report was available and copies were provided to the Committee.

On order of Chairperson Khamis and there being no objection, the Committee received an update on Compressed Natural Gas (CNG) analysis.

11. Land Use and Transportation in the City of Mountain View

Rob Swierk, Senior Transportation Planner, provided a brief overview of the staff report and introduced Martin Alkire, Principle Planner, City of Mountain View.

Mr. Swierk provided a presentation highlighting: 1) Background; 2) Key growth areas; and 3) Cores, corridors and station areas framework.

Mr. Alkire continued the presentation, highlighting: 1) North Bayshore Precise Plan; 2) San Antonio Center Phase 2; 3) El Camino Real Precise Plan; 4) South Whisman Neighborhood; 4) East Whisman area; 6) Mountain View Transportation Management Association (TMA) and new shuttles; and 7) Shoreline Boulevard Corridor study and Mountain View Transit Center.

Mr. Swierk concluded the presentation, highlighting: 1) Potential Stevens Creek crossing; and 2) Potential long and short term transportation strategies.

Chairperson Khamis requested Mr. Alkire ask the SR 85 Corridor Policy Advisory Board and the Mountain View City Council to direct their attention to the amount of growth and business activity in the area and to consider researching all transportation modes to find solutions that will help ease traffic congestion.

Member Bruins requested information on the successes of the private and public shuttles and how effective the programs have been.

Public Comment

Mr. Lebrun expressed concern with travel times of a BART connection to Mountain View.

On order of Chairperson Khamis and there being no objection, the Committee received and discussed information about land use and transportation in the City of Mountain View.

OTHER ITEMS

12. Stadium Events

Mr. Unites, provided a report highlighting successes at Levi's Stadium and Avaya Stadium events. He indicated staff is currently preparing for Super Bowl 50 and is in the final stages of rail service planning for the event.

Ms. Evans indicated there may be some questions asked that will not be able to be addressed in an open setting due to security concerns.

Member Yeager left the meeting at 12:08 p.m., the quorum was lost, and a Committee of the Whole was declared.

Public Comment

Mr. Lebrun expressed concern with Caltrain electrification.

On order of Chairperson Khamis and there being no objection, the Committee of the Whole received a report on Stadium Events.

13. VTa's Safety and Emergency Preparedness Program

Steve Keller, Director of Safety and Security, provided a brief report highlighting: 1) 9/11 interagency training at Levi's Stadium; 2) hazard training for VTA employees; 3) decrease in fare evasion rate; and 4) positive outcomes from the addition of a third shift for transit patrol.

On order of Chairperson Khamis and there being no objection, the Committee of the Whole received a report on VTA's Safety and Emergency Preparedness Program.

14. Ridership Report

Joonie Tolosa, Manager, Operations Analysis, Reporting & Systems, provided a brief overview of the August 2015 Monthly Ridership and Fare Revenue Performance report.

On order of Chairperson Khamis and there being no objection, the Committee of the Whole received the August 2015 Monthly Ridership Report and Fare Revenue Performance.

15. Items of Concern and Referral to Administration

There were no Items of Concern and Referral to Administration.

16. Review Committee Work Plan

On order of Chairperson Khamis and there being no objection, the Committee of the Whole reviewed the Committee Work Plan.

17. Committee Staff Report

Ms. Evans introduced Alberto Lara, Director of Business Services, and provided background information.

Mr. Lara addressed the Committee of the Whole and thanked them for welcoming him.

18. Determine Consent Agenda for the September 3, 2015, Board of Directors Meeting

CONSENT:

Agenda Item #7., Receive a report on the Dynamic Transit Service Pilot Program Implementation.

Agenda Item #8., Receive a report on the October 2015 Transit Service Changes.

REGULAR:

Agenda Item #10., Receive an update on Compressed Natural Gas (CNG) analysis.

19. Chairperson's Report

There was no Chairperson's Report.

20. Announcements

There were no Announcements.

21. ADJOURNMENT

On order of Chairperson Khamis and there being no objection, the meeting was adjourned at 12:29 p.m.

Respectfully submitted,

Menominee L. McCarter, Board Assistant
VTA Office of the Board Secretary

CONGESTION MANAGEMENT PROGRAM & PLANNING COMMITTEE

Thursday, September 17, 2015

MINUTES**CALL TO ORDER**

The Regular Meeting of the Congestion Management Program & Planning Committee (CMPP) was called to order at 10:02 a.m. by Chairperson Herrera in the VTA Conference Room B-104, 3331 North First Street, San José, California.

1. ROLL CALL

Attendee Name	Title	Status
Rose Herrera	Chairperson	Present
Magdalena Carrasco	Member	Absent
Jose Esteves	Member	Present
David Whittum	Vice Chairperson	Present
Jamie Matthews	Alternate Member	Absent
Raul Peralez	Alternate Member	Absent

* Alternates do not serve unless participating as a Member.

A quorum was present.

2. PUBLIC PRESENTATIONS

There were no Public Presentations.

3. ORDERS OF THE DAY

Member Esteves requested **Agenda Item # 5**, State Route (SR) 237 Express Lanes FY 2015 Annual Report, be removed from the Consent Agenda and placed on the Regular Agenda.

M/S/C (Whittum/Esteves) to accept the Orders of the Day and approve the Consent Agenda, as amended.

CONSENT AGENDA**4. Regular Meeting Minutes of August 20, 2015**

M/S/C (Whittum/Esteves) to approve the Regular Meeting Minutes of August 20, 2015.

5. (Removed from the Consent Agenda and placed on the Regular Agenda.)

Receive an update on State Route (SR) 237 Express Lanes Fiscal Year 2015 Annual Report.

6. Programmed Project Monitoring – Quarterly Report

M/S/C (Whittum/Esteves) to receive the Programmed Projects Quarterly Monitoring Report for April-June 2015.

NOTE: M/S/C MEANS MOTION SECONDED AND CARRIED AND, UNLESS OTHERWISE INDICATED, THE MOTION PASSED UNANIMOUSLY.

REGULAR AGENDA

5. SR 237 Express Lanes FY 2015 Annual Report

Casey Emoto, Deputy Director, Project Development, provided an overview of the staff report.

Member Esteves expressed concern about the delta between projections and actuals. He referred to “Figure 3: Southbound I-880 to Westbound SR 237 AM peak period Travel Time (Dixon Landing Road to North 1st Street),” on page 5 of 10 of the staff report, and asked staff how it correlates with the whole corridor.

On order of Chairperson Herrera and there being no objection, the Committee received an update on State Route (SR) 237 Express Lanes Fiscal Year 2015 Annual Report.

7. Envision Silicon Valley (ESV) Preliminary Project List

Scott Haywood, Transportation Planning Manager, provided an overview of the staff report, highlighting projects submitted by the cities in “Attachment A: Envision Silicon Valley Preliminary Project List.”

Members of the Committee discussed the following: 1) expressed concern that the process might confuse the public and urged staff to be clear on the Valley Transportation Plan (VTP)/Regional Transportation Plan (RTP) process and the potential ballot measure; 2) funding options; 3) encouraged VTA to engage all public officials and sub-committees to ensure the success of the tax measure; 4) the importance of keeping promises made to voters, particularly light rail to Eastridge; 5) suggested staff consider using innovative processes, such as “conjoint analysis” in analyzing priorities; and 6) noted the Committee did not have an opportunity to discuss ESV goals and criteria.

Public Comment

Roland Lebrun, Interested Citizen, noted the initial tax measure ballot was supposed to go in 2014, but was delayed. He referred to the ESV process and noted the public has determined the top priorities are faster and better transit and easing congestion. Next steps will be the ESV budget process and project evaluation to determine which projects will be included in the ballot measure for the voters to consider.

M/S/C (Whittum/Esteves) to approve submitting a recommendation to the Board of Directors to approve the List of Projects received from VTA’s Call for Projects and direct staff to submit the complete list to the Metropolitan Transportation Commission for consideration of inclusion in the Regional Transportation Plan; further directed staff to distinguish between VTP update process and potential ballot measure projects; be innovative in analyzing priorities (i.e. conjoint analysis); and engage public officials in the determination of priorities; and bring future ESV related items to CMPP for discussion.

8. 2016 State Transportation Improvement Program

Amin Surani, Principal Transportation Planner, provided the staff report. Marcella Rensi, Transportation Planning Manager provided background information on the State Transportation Improvement Program (STIP).

Members of the Committee and staff discussed State Route (SR) 152 including its history, Environmental Clearance, agency partnerships, and the STIP process.

Public Comment

Mr. Lebrun suggested the best approach towards SR 152 is a partnership with High-Speed Rail Authority (HSRA).

M/S/C (Whittum/Esteves) to approve submitting a recommendation to the Board of Directors to approve the project priorities for State Transportation Improvement Program (STIP) funds as described in the memo; and further to request staff to: a) engage elected officials on a more frequent basis in the STIP process; b) request that the California Transportation Commission (CTC) provide an early warning when there is a STIP funding reduction; and c) return to the Committee with the STIP project prioritization process.

9. Memorandum of Understanding between Council of San Benito County Governments and Santa Clara County

Mr. Emoto provided an overview of the staff report, noting San Benito County is considering moving forward with a tax measure for SR 152 in 2016. He stated the purpose of this item is to put together a policy forum where the two counties can have discussions on priorities and what could potentially go into a sales tax measure.

Members of the Committee discussed the following: 1) the appointment process to the partnership; 2) collaboration with HSRA; and 3) requested that future Memorandums of Understanding (MOU) be attached for Committee review.

Public Comment

Mr. Lebrun stated there is nothing wrong with staff negotiating the MOU, but noted the actual tax should be presented to the Board of Directors for review.

M/S/C (Whittum/Estevéz) to approve submitting a recommendation to the Board of Directors to authorize the General Manager to execute a Memorandum of Understanding with the Council of San Benito County Governments to formalize a partnership to provide direction on the development of the SR 152 Trade Corridor project and request Santa Clara Valley Transportation Authority Board of Directors to appoint two members from Santa Clara County to serve on the partnership; and further requested the Memorandum of Understanding be forwarded to the October 1, 2015, Board of Directors.

10. Land Use and Transportation Briefing Series: Mountain View

Robert Swierk, Senior Transportation Planner, introduced Randy Tsuda, Director of Community Development at City of Mountain View. Mr. Swierk provided an overview of the staff report. Mr. Swierk and Mr. Tsuda provided a presentation entitled "Land Use and Transportation Briefing: Mountain View," highlighting the following: 1) Background; 2) Overview of Growth Areas; 3) Cores, Corridors and Station Areas Framework; 4) North Bayshore Precise Plan – Approved December 2014; 5) San Antonio Center Phase 2 – Under Construction; 6) El Camino Real Precise Plan – Approved November 2014; 7) South Whisman Neighborhood – Approved; 8) East Whisman Area; 9) Mountain View TMA & New Shuttles; 10) Shoreline Boulevard Corridor Study & Mountain View Transit Center; 11) Potential Stevens Creek Crossings; 12) Potential Transportation Strategies – Shorter-term/Less Involved; and 13) Potential Transportation Strategies – Longer-Term/More Involved.

Chairperson Herrera thanked Mr. Tsuda for attending the Committee meeting and invited him to return to the October 15, 2015, meeting to answer questions.

On order of Chairperson Herrera and there being no objection, the Committee received the informational update on land use and transportation in the City of Mountain View.

Public Comment

Natanya Villegas, Interested Citizen, referred to **Agenda Item #12**, Dynamic Transit Service Pilot Project, and suggested expanding the program to add the area within close proximity to the Caltrain station in Sunnyvale.

11. (Deferred to October 15, 2015 CMPP Meeting.)

Receive an update on iTEAM Activities and Initiatives for Fiscal Year 2016 and Fiscal Year 2017.

12. (Deferred to October 15, 2015 CMPP Meeting.)

Receive information on the Dynamic Transit Service Pilot Program Implementation.

OTHER ITEMS

13. Items of Concern and Referral to Administration

There were no items of concern or referral to administration.

14. Committee Work Plan

On order of Chairperson Herrera and there being no objection, the Committee reviewed the Committee Work Plan.

15. Committee Staff Report

There was no Committee Staff Report.

16. Chairperson's Report

There was no Chairperson's Report.

17. Determine Consent Agenda for the September 3, 2015 Board of Directors Meeting

CONSENT:

Agenda Item #5. Receive an update on State Route 237 Express Lanes FY 2015 Report.

Agenda Item #6. Receive the Programmed Projects Quarterly Monitoring Report for April-June 2015.

Agenda Item #7. Approve the List of Projects received from VTA's Call for Projects and direct staff to submit the complete list to the Metropolitan Transportation Commission for consideration of inclusion in the Regional Transportation Plan.

Agenda Item #8. Approve project priorities for State Transportation Improvement Program (STIP) Funds.

Agenda Item #9. Authorize General Manager to execute a Memorandum of Understanding with the Council of San Benito County Governments to formalize a partnership to provide direction on the development of the SR 152 Trade Corridor project and request Santa Clara Valley Transportation Authority Board of Directors to appoint two members from Santa Clara County to serve on the partnership.

Agenda Item #10. Receive and discuss information about land use and transportation in the City of Mountain View.

REGULAR:

None.

18. ANNOUNCEMENTS

Inez Evans, Chief Operating Officer, announced the appointment of Alberto Lara as Director of Business Services.

19. ADJOURNMENT

On order of Chairperson Herrera and there being no objection, the meeting was adjourned at 11:45 a.m.

Respectfully submitted,

Anita McGraw, Board Assistant
VTA Office of the Board Secretary



ADMINISTRATION & FINANCE COMMITTEE

Thursday, September 17, 2015

MINUTES

CALL TO ORDER

The Regular Meeting of the Administration and Finance Committee (A&F) was called to order at 12:08 p.m. by Chairperson Kalra in Conference Room B-104, VTA River Oaks Campus, 3331 North First Street, San Jose, California.

1. ROLL

Attendee Name	Title	Status
Cindy Chavez	Board Member	Present
Jason Baker	Vice Chairperson	NA
Ash Kalra	Chairperson	Present
Perry Woodward	Board Member	Absent
Larry Carr	Alternate Board Member	Present
David Cortese	Alternate Board Member	NA
Raul Peralez	Alternate Board Member	NA
Howard Miller	Alternate Board Member	NA

* Alternates do not serve unless participating as a Member.

A quorum was present.

2. PUBLIC PRESENTATIONS

There were no Public Presentations

3. ORDERS OF THE DAY

Chairperson Kalra noted the following was an Addenda to the Agenda and requested the items be moved from the Regular Agenda and placed on the Consent Agenda: **Agenda Item 14.X.** Amend the C831 Property Restoration and Completion Contract for Santa Clara-Alum Rock BRT Project with Geroge Bianchi Construction; and **Agenda Item 14.XX** Contract Amendment with CH2MHill for Final Design Services and Design Support during construction for the Santa Clara-Alum Rock BRT Project.

Raj Srinath, Chief Financial Officer, reported the following revised Agenda items have minor revisions to the Fiscal Impact and have been placed on the table for review: **Agenda Item #7.** Rail Rehabilitation - Signal and Track Improvements Contract Amendment with Shimmick Construction Company for Additional Work to Install a Track Crossover near Lick Mill Station; **Agenda Item 14.X.** Amend the C831 Property Restoration and Completion Contract for Santa Clara-Alum Rock Bus Rapid Transit Project with George Bianchi Construction, Inc.; **Agenda Item 14.XX.** Contract Amendment with CH2MHill for Final Design Services and Design Support During Construction for the Santa Clara-Alum Rock Bus Rapid Transit Project.

Public Comment

Roland Lebrun, Interested Citizen, made the following comments: 1) expressed support for Agenda Item #7. Rail Rehabilitation - Signal and Track Improvements Contract Amendment; 2) noted the importance of having the scope of work up front; and 3) requested staff gather the overall costs to fund Levi's Stadium and make it available to the public.

M/S/C (Chavez/Carr) to accept the Orders of the Day and approve the Consent Agenda, as amended.

CONSENT AGENDA

Member Chavez referred to an off agenda report provided by staff from a previous meeting and requested confirmation that all El Paseo drivers part of the Altamont Commuter Express (ACE) Shuttle Service Contract will have an increase in pay from \$15.00 to \$18.00 in January 2016.

Mr. Lawson responded that he would confirm the salary increase and report back to Member Chavez.

4. Regular Meeting Minutes of April 16, 2015

M/S/C (Chavez/Carr) to approve the Regular Meeting Minutes of April 16, 2015.

5. Regular Meeting Minutes of August 20, 2015

M/S/C (Chavez/Carr) to approve the Regular Meeting Minutes of August 20, 2015.

6. Bicycle & Pedestrian Advisory Committee Appointment: Mountain View

M/S/C (Chavez/Carr) to approve submitting a recommendation to the Board of Directors to ratify the appointment of Greg Unangst to the Bicycle & Pedestrian Advisory Committee, representing the City of Mountain View, for the remainder of the two-year term ending June 30, 2016.

7. Rail Rehabilitation - Signal and Track Improvements Contract Amendment with Shimmick Construction Company for Additional Work to Install a Track Crossover near Lick Mill Station

M/S/C (Chavez/Carr) to approve submitting a recommendation to the Board of Directors to authorize the General Manager to amend Contract C13134F Rail Rehabilitation - Signal and Track Improvements contract with Shimmick Construction Company in an amount of \$850,000 for a total contract amount of \$6,951,358 for additional work to install a track crossover near Lick Mill Station

NOTE: M/S/C MEANS MOTION SECONDED AND CARRIED AND, UNLESS OTHERWISE INDICATED, THE MOTION PASSED UNANIMOUSLY.

8. Renewal of Employee Health Benefit Contracts

M/S/C (Chavez/Carr) to approve submitting a recommendation to the Board of Directors to authorize the General Manager to renew benefit contracts with Kaiser, United Health Care Medicare Plans, and Valley Health Plan medical plans for Amalgamated Transit Union, Local 265 (ATU) and Transportation Authority Engineers and Architects Association, Local 21 (TAEA) represented employees and retirees for calendar year 2016. Renew Pacific Union Dental and Custom Benefit Administrators for all VTA employees for calendar year 2016.

9. Land Use and Transportation Briefing Series: Mountain View

M/S/C (Chavez/Carr) to receive the information about land use and transportation in the City of Mountain View

10. Legislative Update Matrix

M/S/C (Chavez/Carr) to review the Legislative Update Matrix

14.X Amend the C831 Property Restoration and Completion Contract for Santa Clara-Alum Rock Bus Rapid Transit Project with George Bianchi Construction, Inc.

M/S/C (Chavez/Carr) to approve submitting a recommendation to the Board of Directors to authorize the General Manager to amend the C831 Property Restoration and Completion Contract with George Bianchi Construction, Inc., by an amount of \$4,000,000 for a total contract amount of \$6,041,505 for additional completion work for the Santa Clara Alum Rock Bus Rapid Transit Project

14.XX Contract Amendment with CH2MHill for Final Design Services and Design Support During Construction for the Santa Clara-Alum Rock Bus Rapid Transit Project

M/S/C (Chavez/Carr) to approve submitting a recommendation to the Board of Directors to authorize the General Manager to execute a contract amendment with CH2M Hill Inc. for an additional \$1,200,000 for a new contract total amount of \$21,668,963 and extend the contract term to March 31, 2017 to perform additional final design services and provide design support during construction for the Santa Clara Alum Rock Bus Rapid Transit Project

REGULAR AGENDA

11. Mountain View Double Track Project - Peninsula Corridor Joint Powers Board Contract Agreement for Construction Support

Carolyn Gonot, Director of Engineering and Transportation Infrastructure Development, provided an overview of the staff report.

M/S/C (Chavez/Carr) to approve submitting a recommendation to the Board of Directors to authorize the General Manager to execute a contract amendment with Peninsula Corridor Joint Powers Board in the amount of \$1,600,000 for a new contract value of \$3,082,000 to provide Construction Support for the Mountain View Double Track Project.

The Agenda was taken out of order.

13. Clipper Fare Collection System Memorandum of Understanding (MOU)

Ali Hudda, Deputy Director of Accounting, provided an overview of the staff report.

Member Chavez made the following comments: 1) inquired about the formal recruitment process for the Executive Director, noting the importance of hiring someone with regional experience and perspective; and 2) inquired if any Board Members will be appointed to the Executive Board.

Mr. Hudda informed the Committee that Nuria I. Fernandez, General Manager, will be appointed to the Committee. He further reported the General Managers of the five key agencies in the region will provide input during the recruitment process.

Chairperson Kalra noted the importance of receiving input from all individuals and appreciates how Clipper allows for an easier experience when riding VTA.

M/S/C (Chavez/Carr) to approve submitting a recommendation to the Board of Directors to authorize the General Manager to execute the Amended and Restated Clipper® Memorandum of Understanding with the Metropolitan Transportation Commission and other transit operators, clarify their respective roles and responsibilities, define roles and responsibilities for a newly defined Contracting Agency, establish a Clipper® Executive Board, establish a Clipper® Executive Director, and revise the cost allocation formula to ensure the successful operation and maintenance of Clipper®.

12. Permanent Disposition Process and Declaration of Surplus Property

Jennifer Rocci, Senior Transportation Planner-Property Development & Management, provided an overview of the staff report.

Member Chavez made the following comments: 1) noted if the goal is ground lease there is no need to declare it as surplus; 2) commented that the public sector needs to do a better job at maintaining assets; 3) suggested looking at ground leases first then declare surplus if there is nothing of value to the agency; and 4) commented that this item should be a topic of discussion for the Board of Directors; and 5) recommended VTA staff rethink the overall approach for real estate assets.

Ms. Rocci noted that the goal is to maintain flexibility in anything VTA does.

Member Carr expressed concern regarding the Main & Hale Park and Ride in the City of Morgan Hill (City), noting the significance of the property to the City's Road Widening Project and the Flood Control Project surrounding the Main and Hale Intersection.

Mr. Srinath recommended deferring the item to allow the following: 1) further evaluation of real estate assets; and 2) opportunity for Morgan Hill City Council to have further discussions about the proposed plan regarding Main & Hale Park and Ride.

On order of Chairperson Kalra and there being no objection, the Committee deferred the Permanent Disposition Process and Declaration of Surplus Property.

14. Presentation on Santa Clara-Alum Rock Project Status

Ms. Gonot introduced Mohamed Basma, Transportation Engineering Manager, who provided an update on the Santa Clara-Alum Rock Project status. Mr. Basma distributed a presentation entitled “Santa Clara-Alum Rock Bus Rapid Transit (BRT) Project,” highlighting: 1) Project Overview; 2) Background; 3) Current Conditions; 4) Construction Plan to Complete Project; 5) Summary Schedule; and 6) Community Outreach.

Mr. Basma further noted the following: 1) Project Alignment and Station Locations; 2) the goals for Alum Rock Avenue, Santa Clara Street and Capitol Avenue/Expressway; 3) the two main phases of the project; and 4) a Community meeting to be held on September 24, 2015.

Upon Member Chavez’s inquiry, Ms. Gonot responded that VTA staff kept the original September 24, 2015, Community meeting since information regarding it had already been made available to the public. Ms. Gonot stated that VTA staff is planning to hold an additional meeting.

Member Chavez made the following comments: 1) requested that VTA publicize their request to hold the September 24, 2015 meeting; 2) inquired if her staff was contacted regarding the meeting date; 3) requested VTA staff provide the information and slides shown to the Committee in a website link, so she may include it in the County news letter; 4) requested the information be provided in multiple languages including Vietnamese and Spanish; 5) suggested VTA staff coordinate a weekly meeting with the community in the area to help ease the impact and promote customer care; 6) requested that in addition to Board Member Carrasco, VTA staff provide information to San Jose Mayor Sam Liccardo, Council Member Raul Peralez, and her office; and 7) inquired about the ownership of Alum Rock street.

Ms. Gonot made the following comments: 1) noted that VTA staff plan to send out information immediately to the public in multiple languages; 2) informed the Committee that VTA staff was coming up with different ideas to help limit the impact and construction in certain areas; and 3) VTA staff will provide the detailed information regarding ownership of Alum Rock street.

Member Kalra noted the importance of building relationships and communication with the communities. He further noted that vendors should have a plan going forward that would show the history of the area.

Public Comment

Mr. Lebrun requested more clarity in the agenda packet by including a written report about the item being presented. Mr. Lebrun also inquired about funds related to the budget.

On Order of Chairperson Kalra and there being no objection, the Committee received a presentation on Santa Clara-Alum Rock Project Status.

14.X (Removed from the Regular Agenda and placed on the Consent Agenda.)

Authorize the General Manager to amend the C831 Property Restoration and Completion Contract with George Bianchi Construction, Inc., by an amount of \$4,000,000 for a total contract amount of \$6,041,505 for additional completion work for the Santa Clara Alum Rock Bus Rapid Transit Project.

14.XX (Removed from the Regular Agenda and placed on the Consent Agenda.)

Authorize Authorize the General Manager to execute a contract amendment with CH2M Hill Inc. for an additional \$1,200,000 for a new contract total amount of \$21,668,963 and extend the contract term to March 31, 2017 to perform additional final design services and provide design support during construction for the Santa Clara Alum Rock Bus Rapid Transit Project.

15. Monthly Investment Report for July 2015

Sean Bill, Investment Program Manager, provided an overview of the staff report and distributed a presentation entitled, "Economic and Market Watch," highlighting: 1) Progress on Initiatives; 2) Real Gross Domestic Product (GDP) Growth; 3) Consumer Price Index; 4) Nonfarm Payrolls; 5) Civilian Unemployment Rate; 6) China Recap; 7) China Impact on US Economy; 8) Treasury Yields; 9) S&P 500/Sectors; 10) Financial vs. Commodities; 11) Commodities Index; and 12) Portfolio Reviews;

Member Chavez left the meeting at 1:07 p.m. and a Committee of Whole was declared.

On Order of Chairperson Kalra and there being no objection, the Committee of the Whole received the Monthly Investment Report for July 2015.

OTHER ITEMS

16. Items of Concern and Referral to Administration

There were no Items of Concern and Referral to Administration.

17. Committee Work Plan

On order of Chairperson Kalra and there being no objection, the Committee of the Whole reviewed the Committee Work Plan.

18. Committee Staff Report

There was no Committee Staff Report.

19. Chairperson's Report

There was no Chairperson's Report.

20. Determine Consent Agenda for the October1, 2015, Board of Directors Meeting

CONSENT:

Agenda Item #6. Ratify the appointment of Greg Unangst to the Bicycle & Pedestrian Advisory Committee, representing the City of Mountain View, for the remainder of the two-year term ending June 30, 2016.

Agenda Item #7. Authorize the General Manager to amend Contract C13134F Rail Rehabilitation - Signal and Track Improvements contract with Shimmick Construction Company in an amount of \$850,000 for a total contract amount of \$6,951,358 for additional work to install a track crossover near Lick Mill Station.

Agenda Item #8. Authorize the General Manager to renew benefit contracts with Kaiser, United Health Care Medicare Plans, and Valley Health Plan medical plans for Amalgamated Transit Union, Local 265 (ATU) and Transportation Authority Engineers and Architects Association, Local 21 (TAEA) represented employees and retirees for calendar year 2016. Renew Pacific Union Dental and Custom Benefit Administrators for all VTA employees for calendar year 2016.

Agenda Item #10. Review the Legislative Update Matrix.

Agenda Item #11. Authorize the General Manager to execute a contract amendment with Peninsula Corridor Joint Powers Board in the amount of \$1,600,000 for a new contract value of \$3,082,000 to provide Construction Support for the Mountain View Double Track Project.

Agenda Item #13. Authorize the General Manager to execute the Amended and Restated Clipper® Memorandum of Understanding with the Metropolitan Transportation Commission and other transit operators, clarify their respective roles and responsibilities, define roles and responsibilities for a newly defined Contracting Agency, establish a Clipper® Executive Board, establish a Clipper® Executive Director, and revise the cost allocation formula to ensure the successful operation and maintenance of Clipper®.

Agenda Item #15. Receive the Monthly Investment Report for July 2015.

REGULAR:

Agenda Item #14. Receive a presentation on Santa Clara-Alum Rock Project Status.

21. Announcements

There were no Announcements.

22. ADJOURNMENT

On order of Chairperson Kalra and there being no objection, the Committee meeting was adjourned at 12:50 p.m.

Respectfully submitted,

Theadora Travers, Board Assistant
VTA Office of the Board Secretary



**CITIZENS ADVISORY COMMITTEE
and
2000 MEASURE A CITIZENS WATCHDOG COMMITTEE**

Wednesday, September 9, 2015

MINUTES

CALL TO ORDER

The Regular Meeting of the Citizens Advisory Committee (CAC)/2000 Measure A Citizens Watchdog Committee (CWC) was called to order at 4:01 p.m. by Chairperson Hadaya in Conference Room B-104, VTA River Oaks Campus, 3331 North First Street, San Jose, California.

1. ROLL CALL

Attendee Name	Title	Status
Stephen Blaylock	Member	Absent
Clinton Brownley	Member	Absent
Bena Chang	Member	Present
Chris Elias	Member	Absent
Sharon Fredlund	Member	Absent
William Hadaya	Chairperson	Present
Ray Hashimoto	Member	Present
Roberta Hugan	Member	Present
Aaron Morrow	Member	Absent
Charlotte Powers	Member	Present
Lucas Ramirez	Member	Present
Connie Rogers	Member	Present
Stephen Schmoll	Member	Absent
Martin Schulter	Member	Absent
Noel Tebo	Member	Present
Herman Wadler	Vice Chairperson	Present

A quorum was not present and a Committee of the Whole was declared.

2. ORDERS OF THE DAY

Jim Lawson, Director of Government Affairs, Executive Policy Advisor and Staff Liaison, noted staff requested **Agenda Item #11**, Legislative Update Matrix, be removed from the Consent Agenda and placed on the Regular Agenda.

3. PUBLIC PRESENTATIONS

There were no Public Presentations.

4. **Committee Staff Report**

Mr. Lawson reported the VTA Board of Directors took the following actions at their September 9, 2015, meeting: 1) the Board approved the Envision Silicon Valley Evaluation Criteria; 2) American Public Transportation Association (APTA) awarded VTA two First Place Awards in the 2015 Annual AdWheel Awards; 3) Federal Transit Administration (FTA) awarded VTA a \$200K grant from FTA's Innovative Public Transportation Workforce Development Program (Ladders of Opportunity Initiative); 4) VTA to launch pilot outreach and training program with local schools and organizations in fall of 2015; 5) announced Michael Hursh, Chief Operating Officer, has been appointed the General Manager of Alameda-Contra Costa (AC) Transit District; 6) VTA to host a lunchtime symposium on Wednesday, September 23, 2015, to recognize Hispanic Heritage Month; and 7) Montague Light Rail Station in Milpitas reopened on Monday, August 31, 2015.

Member Chang arrived at the meeting, took her seat at 4:08 p.m., and a quorum was established.

Member Ramirez queried if the Board revised and prioritized the Envision Silicon Valley Evaluation Criteria in any way prior to adoption. Staff noted three items were added relating to transit evaluation, and the criteria was not weighted or prioritized.

On order of Chairperson Hadaya and there being no objection, the Committee received the Committee Staff Report.

The Agenda was taken out of order.

2. **ORDERS OF THE DAY (Continued)**

Chairperson Hadaya called the Committee's attention back to this item as a quorum was not previously present.

M/S/C (Rogers/Hughan) to accept the Orders of the Day, and approve the Consent Agenda, as amended.

5. **Envision Silicon Valley Update**

John Ristow, Director of Planning and Program Development, provided a verbal report on Envision Silicon Valley (ESV) milestones, and stated after extensive discussion the Board approved the Envision Silicon Valley Evaluation Criteria to assist VTA in the selection of projects that will come through the process. He stated additional criteria were added, which expanded transit evaluation in terms of how best to look at transit projects.

On order of Chairperson Hadaya and there being no objection, the Committee received the Envision Silicon Valley Update.

6. **Chairperson's Report**

Chairperson Hadaya reported a VTA Board Workshop will be held on September 25, 2015, regarding Bay Area Rapid Transit (BART) Phase II. Chairperson Hadaya asked Member Hashimoto to comment on his discussion regarding traffic impact fees.

NOTE: M/S/C MEANS MOTION SECONDED AND CARRIED AND, UNLESS OTHERWISE INDICATED, THE MOTION PASSED UNANIMOUSLY.

Member Hashimoto reported that he participated in the Congestion Management Program and Planning Committee (CMPP) discussion regarding traffic impact fees. He stated it was a good exercise to have a building/developer perspective in a discussion. He noted it is helpful for developers to know the fees upfront, how the cities develop the formula, and the timing of completion of the improvement project.

On order of Chairperson Hadaya and there being no objection, the Committee received the Chairperson's Report.

7. **Committee for Transit Accessibility (CTA) Report**

There was no Committee for Transit Accessibility (CTA) Report.

8. **Bicycle and Pedestrian Advisory Committee (BPAC) Report**

There was no Bicycle and Pedestrian Advisory Committee (BPAC) Report.

COMBINED CAC AND 2000 MEASURE A CITIZENS WATCHDOG COMMITTEE CONSENT AGENDAS

9. **Regular Meeting Minutes of August 12, 2015**

M/S/C (Rogers/Hughan) to approve the Regular Meeting Minutes of August 12, 2015.

10. **SR 237 Express Lanes FY 2015 Annual Report**

M/S/C (Rogers/Hughan) to receive update on the State Route 237 Express Lanes Fiscal Year 2015 Annual Report.

11. **(Removed from the Consent Agenda and placed on the Regular Agenda.)**

Review the Legislative Update Matrix.

12. **Transit Passenger Environment Plan.**

M/S/C (Rogers/Hughan) to receive presentation on the Transit Passenger Environment Plan.

2000 MEASURE A CITIZENS WATCHDOG COMMITTEE REGULAR AGENDA

There were no items for the 2000 Measure A Citizens Watchdog Committee Regular Agenda.

CITIZENS ADVISORY COMMITTEE REGULAR AGENDA

11. **Legislative Update Matrix**

Aaron Quigley, Senior Policy Analyst, discussed the details of California Governor Brown's transportation funding proposal. Mr. Quigley stated the proposal requires a 2/3 majority vote to pass noting the Special Session is scheduled to end Friday, September 11, 2015.

Mr. Lawson expressed encouragement noting this as a very positive step in having the Governor personally involved, and gives the proposal a much better chance of passage. The Committee discussed the 2/3 vote required for passage of the proposal.

On order of Chairperson Hadaya and there being no objection, the Committee reviewed the Legislative Update Matrix.

13. Envision Silicon Valley Preliminary Project List

Chris Augenstein, Deputy Director, Transportation Planning, provided a verbal report, and a handout entitled “Envision Silicon Valley Preliminary Project List.”

The Committee discussed the following: 1) the process involved to reach the financially constrained list; 2) consolidation of duplicate projects; 3) collaboration of Envision Silicon Valley (ESV) meetings; 4) funding options; 5) communities’ concern about their individual transportation needs and how to achieve those goals such as Outreach, bus transportation, and housebound seniors; 6) process for North County West Valley cities’ proposal on future mass transit needs for Santa Clara County; 7) timeline when VTA will solicit stakeholder input; 8) queried about prioritization of the evaluation criteria, and will the Committee have an opportunity to comment.

Staff indicated the Committees and Stakeholders will have an opportunity to comment on the methodology within the next few months. Staff added the final draft of the proposal will return to the Committees.

M/S/C (Powers/Wadler) to recommend the Board of Directors approve the List of Projects received from VTA’s Call for Projects and direct staff to submit the complete list to the Metropolitan Transportation Commission for consideration of inclusion in the Regional Transportation Plan.

14. 2016 State Transportation Improvement Program (STIP) Strategy

Marcella Rensi, Transportation Planning Manager, provided the staff report.

Members of the Committee discussed whether delayed STIP funds will affect Measure A projects.

M/S/C (Hashimoto/Tebo) to recommend the Board of Directors approve project priorities for State Transportation Improvement Program (STIP) funds as described in the memo.

Member Hashimoto left the meeting at 4:46 p.m.,
the quorum was lost and a Committee of the Whole was declared.

15. Dynamic Transit Service Pilot Program Implementation

Aiko Cuenco, Transportation Planner, provided a brief overview of the staff report and a presentation entitled “Dynamic Transit Service Pilot,” highlighting the following: 1) Background; 2) First Pilot: VTA Flex – Tasman (Oct. 2015); 3) Tasman Zone Flex Stops; 4) Pilot 1 Fare Structure; 5) Priorities in Service Design; 6) Vehicles; 7) Opportunities for Public-Private Partnerships; 8) Measure Results and Improve Service Design; 8) VTA Flex vs. Other Ridesharing Services; 9) Future Pilot Applications; and 10) Next Steps.

Members of the Committee discussed length of the pilot project, and the possibility of making a reservation for service.

On order of Chairperson Hadaya and there being no objection, the Committee of the Whole received the Dynamic Transit Service Pilot Program Implementation Report.

16. Development Review Quarterly Report for April – June 2015

Robert Cunningham, Transportation Planner, provided a brief overview of the staff report, highlighting the following: 1) key plans and documents that VTA reviewed and commented on during the past quarter; and 2) eleven items that VTA previously provided comments on that were approved during the past quarter.

On order of Chairperson Hadaya and there being no objection, the Committee of the Whole received the Development Review Quarterly Report for April – June 2015.

17. Transportation Assistance Program (TAP) Update

Mr. Lawson provided a brief overview of the staff report.

Members of the Committee made the following comments: 1) expressed support for the program; and 2) noted TAP recipients are grateful for the program.

On order of Chairperson Hadaya and there being no objection, the Committee of the Whole received the Transportation Assistance Program (TAP) Update.

COMBINED CAC AND CITIZENS WATCHDOG COMMITTEE ITEMS

18. Citizens Advisory Committee and Citizens Watchdog Committee Work Plan

On order of Chairperson Hadaya and there being no objection, the Committee of the Whole reviewed the Citizens Advisory Committee and Citizens Watchdog Committee Work Plans.

OTHER

19. ANNOUNCEMENTS

There were no Announcements.

20. ADJOURNMENT

On order of Chairperson Hadaya and there being no objection, the meeting was adjourned at 5:11p.m.

Respectfully submitted,

Anita McGraw, Board Assistant
VTA Office of the Board Secretary

BICYCLE & PEDESTRIAN ADVISORY COMMITTEE

Wednesday, September 9, 2015

MINUTES**CALL TO ORDER**

The Regular Meeting of the Bicycle and Pedestrian Advisory Committee (BPAC) was called to order at 6:30 p.m. by Chairperson Brinsfield in Conference Room B-104, Santa Clara Valley Transportation Authority (VTA), 3331 North First Street, San José, California.

1. ROLL CALL

Attendee Name	Title	Status
David Almeida	City of Gilroy	Absent
Jim Bell	City of San José	Absent
Wes Brinsfield, Chairperson	City of Los Altos	Present
Kristal Caidoy, Vice Chairperson	City of Milpitas	Present
Barry Chaffin	City of Monte Sereno	Present
Paul Goldstein	City of Palo Alto	Present
Peter Hertan	Town of Los Gatos	Present
Breene Kerr	Town of Los Altos Hills	Absent
Dale Schouten	City of Santa Clara	Absent
Mary Seehafer	City of Morgan Hill	Absent
David Simons	City of Sunnyvale	Present
Jim Stallman	City of Saratoga	Present
Herman Wadler	City of Campbell	Present
James Wiant	City of Cupertino	Present
VACANT	<i>City of Mountain View</i>	N/A
VACANT	<i>County of Santa Clara</i>	N/A
Colin Heyne	Ex-Officio, SVBC	Present
Shiloh Ballard	Alternate Ex-Officio, SVBC	N/A

A quorum was not present and a Committee of the Whole was declared.

The Agenda was taken out of order.

3. PUBLIC PRESENTATIONS

There were no Public Presentations.

8. **Silicon Valley Bicycle Coalition's and California Walks' Vision Zero Toolkit Report**

Colin Heyne, Silicon Valley Bicycle Coalition (SVBC) Deputy Director and Jamie Fearer, California Walks Planning & Policy Manager, provided a brief overview, highlighting: 1) Vision Zero; 2) History of Vision Zero; 3) Why now?; 4) Why Vision Zero? Safety; 5) California Walks; 6) Vision Zero Toolkit basics; 7) The Essentials; 8) The Essentials: Equity and Engagement; 9) Evaluation and Planning; 10) Engineering; 11) Enforcement; 12) Education; 13) Encouragement; and 14) How: Local Advocates.

Member Goldstein took his seat at 6:42 pm and a quorum was established.

The Committee discussed the following: 1) drunk and reckless driving fatality statistics; and 2) possibly holding a regional education seminar on drunk biking, driving, and walking.

Member Hertan inquired about the breakdown of driver error and bicyclist error leading to accidents. Mr. Heyne will look into it.

On order of Chairperson Brinsfield and there being no objection, the Committee received the Silicon Valley Bicycle Coalition's and California Walks' Vision Zero Toolkit Report.

2. **ORDERS OF THE DAY**

Dawn Cameron, Santa Clara County Roads and Airports, requested moving **Agenda Item #6**: Approve the Regular Meeting Minutes of August 12, 2015 from the Consent Agenda to the Regular Agenda.

Lauren Ledbetter, Senior Transportation Planner and Staff Liaison, noted that **Agenda Item #4** and **Agenda Item #7** will be heard together.

M/S/C (Simons/Goldstein) to accept the Orders of the Day and approve the Consent Agenda, as amended.

CONSENT AGENDA

5. **Approve the Regular Meeting Minutes of March 11, 2015**

M/S/C (Simons/Goldstein) to approve the Regular Meeting Minutes of March 11, 2015.

6. **(Removed from the Consent Agenda and placed on the Regular Agenda.)**

Approve the Regular Meeting Minutes of August 12, 2015.

NOTE: M/S/C MEANS MOTION SECONDED AND CARRIED AND, UNLESS OTHERWISE INDICATED, THE MOTION PASSED UNANIMOUSLY.

REGULAR AGENDA

6. Approve the Regular Meeting Minutes of August 12, 2015

Ms. Cameron requested edits to the minutes to accurately reflect what was discussed. She referred to page 2 of 6 of the minutes, Item #12, to add “The County has identified some enhancements involving signage, striping, and shoulder buffering that will be implemented” and change the words “getting the public’s questions answered” to “this area”.

M/S/C (Goldstein/Wadler) to approve the Regular Meeting Minutes of August 12, 2015 as amended.

Ms. Ledbetter noted that Agenda Items #4 and #7 will be heard together.

Agenda Items #4 and #7

4. Update on Envision Silicon Valley

7. Envision Silicon Valley Preliminary Project List

Ms. Ledbetter, provided a brief overview, highlighting: 1) duplicate projects are currently being reconciled; and 2) specifics of potential projects will not be submitted to the Metropolitan Transportation Commission (MTC) only a lump sum cost for each category.

Public Comment

Doug Muirhead, Interested Citizen queried about the following: 1) the project list being posted on the Envision Silicon Valley website; and 2) the number of individuals and groups who took advantage of using VTA as the sponsor.

Members of the Committee expressed concern that some of the bicycle projects should have been part of completed larger projects.

Ms. Cameron mentioned that two County projects were not on the preliminary project list but should be added.

Members of the Committee were concerned that the list of projects has duplicate projects on it, overall and within the categories. Members of the Committee expressed concern that projects which appear to be bicycle and pedestrian related are in different categories. Multiple members were uneasy with forwarding the list to the Board as it was presented to BPAC because of missing and duplicate items.

Member Simons is worried that the projects are not supported by the public and voters.

On order of Chairperson Brinsfield, the Committee approved Agenda Items #4 and #7 as follows:

4. **On order of Chairperson Brinsfield** and there being no objection, the Committee received an update on Envision Silicon Valley.

7. **M/S/F (Goldstein/Simons)** on a vote of 7 ayes to 1 no to 1 abstention to acknowledge receipt of the List of Projects received from VTA's Call for Projects. Member Stallman opposed. Member Hertan abstained.

8.X Highway 85 and Almaden Expressway Modifications

Ms. Cameron introduced Masoud Akbarzadeh, County Traffic Engineer. Mr. Akbarzadeh provided a report, highlighting: 1) Project Location; 2) Pre-project Conditions; 3) New Lane Configuration; and 4) Proposed Enhancements.

Members of the Committee discussed the following: 1) lane configuration is consistent with area but enhancements can be made for safety; 2) painting the bike lane green for increased visibility and awareness; 3) converting the bike lane to a buffered bike lane with a two foot buffer beginning after the intersection; 4) concern that merging in front of the shopping center will take time for bicyclists to learn how best to navigate it safely; 5) the durability of green paint used for painted bike lanes; and 5) Santa Clara County (County) staff will monitor the intersection in person and via monitors for a period of time after it opens and periodically after that.

Public Comment

Mark Chou, Interested Citizen, commented on the following: 1) vehicles exiting in the right turn lane from State Route (SR) 85 may not stop; 2) the design of the intersection does not meet the safety guidelines in California; 3) potential dangers of the intersection were brought to the City of San José in 2011; and 4) encouraged Committee Members to let staff know that the lane striping on the exit from SR 85 is not safe for bicyclists.

On order of Chairperson Brinsfield and there being no objection, the Committee received a report regarding in-progress modifications to the intersection of Highway 85 nad Almaden Expressway.

OTHER

9. Committee Staff Report

Ms. Ledbetter provided a report, highlighting the following: 1) the September 16, 2015 webinar titled "Shared Streets, Slow Streets"; 2) a request to include pedestrian access in the transit plan; 3) the Viva Calle event at which VTA will have two booths; and 4) encouraged members to review the staff report and PowerPoint sent via email regarding the pilot Flex Program, VTA's on demand transit service.

On order of Chairperson Brinsfield and there being no objection, the Committee received the Committee Staff Report.

NOTE: M/S/F MEANS MOTION SECONDED AND FAILED.

10. Santa Clara County Staff Report

Ms. Cameron provided a report highlighting the following: 1) Loyola Bridge ribbon cutting date is still to be determined; and 2) Dan Collen at Santa Clara County Roads and Airports is retiring.

Ms. Cameron is going to try to get the BPAC members on the guest list for Dan Collen's retirement party in October 2015.

On order of Chairperson Brinsfield and there being no objection, the Committee received the Santa Clara County Staff Report.

Chairperson Brinsfield noted that Agenda Items #11 through #12 will be heard together.

Agenda Items #11 through #12

11. Chairperson's Report

12. Reports from BPAC Subcommittees

Chairperson Brinsfield reported that the Anti-Harassment Subcommittee received a neutral recommendation from the Housing, Land Use, Environmental Transportation (HLUET) Subcommittee to the County Supervisors. HLUET recommended follow up on the five E's (evaluation and planning, engineering, enforcement, education, and encouragement) and that it be expanded to include anyone who uses the road (bikes, pedestrians, wheelchairs, tractors, horses, and motor vehicles).

13. Citizens Advisory Committee (CAC) and 2000 Measure A Citizens Watchdog Committee (CWC) Report

Member Wadler mentioned he had the PowerPoint presentation on the Flex Program for anyone who would like to review it.

Member Wadler reported that Dan Collen gave a tour of the Communications Center and wondered if a tour can be arranged for the BPAC.

14. BPAC Work Plan

Ms. Ledbetter distributed the Staff Work Plan to the Committee, which was reviewed by the Committee.

Member Goldstein suggested adding shading to the staff work plan to make it easier to read when items will be heard by BPAC and the Board of Directors.

On order of Chairperson Brinsfield and there being no objection, the Committee reviewed the BPAC Work Plan.

15. ANNOUNCEMENTS

Member Herten stated he has never felt comfortable with the Envision Silicon Valley funding. He is pleased to hear that California Governor Jerry Brown took action on the tax for carbon emissions.

Member Stallman noted that real time tracking is available for buses and light rail. Light rail tracking is not part of the VTA app but run by a third party. Ms. Ledbetter will look into who the provider is for that app.

Member Goldstein thanked the Chairperson and staff for including the Mathilda Avenue interchange on the next agenda. The Guadalupe River Trail was closed without warning or a detour around the closure. He expressed concern that there are nails, screws, etc. from construction on streets.

Ex-Officio Member Heyne thanked the County for their help with getting signage at an intersection efficiently.

Member Wiant reported that Cupertino needs education about what the green paint means.

Member Simons reported that there is a need for separate funding for painting bike lanes green in Sunnyvale.

Ms. Ledbetter went to the Sunnyvale Safe Routes to School coordination meeting. Cupertino has hired a part time Safe Routes to School coordinator.

Chairperson Brinsfield noted that 1) the seat for a County representative on BPAC is open; 2) Foothill Expressway will be closed Monday night, September 14, 2015, through Tuesday morning, September 15, 2015, for road work; and 3) the Los Altos pedestrian master plan was passed and adopted by the City Council.

16. ADJOURNMENT

On order of Chairperson Brinsfield and there being no objection, the Committee meeting was adjourned at 8:31 p.m.

Respectfully submitted,

Thalia Young, Board Assistant
VTA Office of the Board Secretary



TECHNICAL ADVISORY COMMITTEE

Thursday, September 10, 2015

MINUTES

CALL TO ORDER

The Regular Meeting of the Technical Advisory Committee (TAC) was called to order at 1:31 p.m. by Chairperson Servín in Conference Room B-104, Santa Clara Valley Transportation Authority (VTA), 3331 North First Street, San José, California.

1. ROLL CALL

Attendee Name		Representing	Status
Shahid Abbas	Member	City of Sunnyvale	Present
Carol Shariat	Alternate Member	City of Sunnyvale	N/A
Rajeev Batra	Member	City of Santa Clara	Present
Kevin Riley	Alternate Member	City of Santa Clara	N/A
Karl Bjarke	Member	City of Morgan Hill	Present
Scott Creer	Alternate Member	City of Morgan Hill	N/A
Timm Borden	Member	City of Cupertino	Present
David Stillman	Alternate Member	City of Cupertino	N/A
Todd Capurso	Member	City of Campbell	Present
Michelle Quinney	Alternate Member	City of Campbell	N/A
John Cherbone	Vice Chairperson	City of Saratoga	Absent
Macedonia Nunez	Alternate Member	City of Saratoga	Present
Richard Chiu	Member	Town of Los Altos Hills	Present
Tina Tseng	Alternate Member	Town of Los Altos Hills	N/A
Dan Collen	Member	County of Santa Clara	Present
Dawn Cameron	Alternate Member	County of Santa Clara	N/A
Helen Kim	Member	City of Mountain View	Absent
Linda Forsberg	Alternate Member	City of Mountain View	Absent
Steve Chan	Alternate Member	City of Milpitas	Absent
Matt Morley	Member	Town of Los Gatos	Present
Lisa Petersen	Alternate Member	Town of Los Gatos	N/A
Cedric Novenario	Member	City of Los Altos	Present
Susanna Chan	Alternate Member	City of Los Altos	N/A
Jim Lightbody	Member	City of Palo Alto	Present
Jessica Sullivan	Alternate Member	City of Palo Alto	N/A
Ray Salvano	Member	City of San José	Present
Jim Ortbal	Alternate Member	City of San José	N/A
Henry Servín	Chairperson	City of Gilroy	Present
Teresa Mack	Alternate Member	City of Gilroy	N/A
Mo Sharma	Member	City of Monte Sereno	Absent
Nick Saleh	Ex-Officio Alternate Member	California Department of Transportation (Caltrans)	Present
Therese Trivedi	Ex-Officio Member	Metropolitan Transportation Commission (MTC)	Present
Stefanie Hom	Ex-Officio Alternate Member	Metropolitan Transportation Commission (MTC)	N/A

* Alternates do not serve unless participating as a Member.

A quorum was present.

2. **ORDERS OF THE DAY**

M/S/C (**Capurso/Salvano**) to accept the Orders of the Day, and approve the Consent Agenda.

3. **PUBLIC PRESENTATIONS**

Rob Means, Interested Citizen, provided a presentation regarding “Automated Transit Network” (ATN) technology as a transit option to the Bay Area Rapid Transit (BART) extension to downtown San Jose. He distributed a handout to the Committee entitled, “\$4B for 4 BART stations OR \$2B for 100 ATN stations?”

Member Abbas arrived at the meeting and took his seat at 1:34 p.m.

4. **Committee Staff Report**

John Ristow, Director of Planning and Program Development and Staff Liaison, invited the Committee to a panel discussion on *Overcoming Legal Obstacles to Complete Streets Design* on September 24, 2015, at the Sobrato Center for Nonprofits in the City of San Jose. Mr. Ristow introduced Aaron Quigley, Senior Policy Analyst.

Aaron Quigley, Senior Policy Analyst, provided a brief update on Governor Jerry Brown’s proposal to increase funding for transportation purposes through increases in gas and diesel excise taxes, annual road improvement charge of \$65 imposed on all motor vehicles, and modification to the State cap-and-trade program.

On order of Chairperson Servín and there being no objection, the Committee received the Committee Staff Report.

5. **Envision Silicon Valley Update**

John Sighamony, Senior Transportation Planner, noted he will provide an update to the Envision Silicon Valley process under **Agenda Item #13** – Envision Silicon Valley Preliminary Project List.

On order of Chairperson Servín and there being no objection, the Committee received an update on Envision Silicon Valley.

6. **Chairperson’s Report**

There was no Chairperson’s Report.

Member Lightbody announced the City of Palo Alto’s recent hiring of Joshua Mello as Chief Transportation Official.

7. **TAC Working Groups Report**

- Capital Improvement Program (CIP) Working Group

Celeste Fiore, Transportation Planner, provided a brief report of the August 25, 2015 meeting, noting the CIP Working Group received information on the following: 1) new project monitoring procedures; 2) new Vehicle Registration Fee (VRF) procedures; 3) update on Envision Silicon Valley; 4) Countywide Bicycle Plan update; 5) Pedestrian Access to Transit Plan update; and 6) discussion on One Bay Area Grant (OBAG), Cycle 2 program structure.

The next meeting of the CIP Working Group is scheduled for September 22, 2015.

NOTE: M/S/C MEANS MOTION SECONDED AND CARRIED AND, UNLESS OTHERWISE INDICATED, THE MOTION PASSED UNANIMOUSLY.

- Systems Operations & Management (SOM) Working Group

Eugene Maeda, Senior Transportation Planner, provided a brief overview of the August 26, 2015, SOM Working Group meeting, noting the following topics of discussion: 1) Caltrans iTEAM activities; 2) draft 2015 Congestion Management Program (CMP) document; and 3) Envision Silicon Valley and Valley Transportation Plan (VTP) 2045.

The next meeting of the SOM Working Group is tentatively scheduled for September 23, 2015.

- Land Use/Transportation Integration (LUTI) Working Group

Robert Swierk, Senior Transportation Planner, noted the LUTI Working Group has not met since its last meeting in August 2015. The next meeting will be in November, however, the specific date has not been determined.

On order of Chairperson Servín and there being no objection, the Committee received reports from TAC Working Groups.

CONSENT AGENDA

8. Regular Meeting Minutes of August 13, 2015

M/S/C (Capurso/Salvano) to approve the Regular Meeting Minutes of August 13, 2015.

9. Legislative Update Matrix

M/S/C (Capurso/Salvano) to review the Legislative Update Matrix.

10. State Route (SR) 237 Express Lanes Fiscal Year 2015 Annual Report

M/S/C (Capurso/Salvano) to receive an update on State Route 237 Express Lanes Fiscal Year 2015 Annual Report.

11. Programmed Project Monitoring – Quarterly Report

M/S/C (Capurso/Salvano) to receive the Programmed Projects Quarterly Monitoring Report for April-June 2015.

12. New Vehicle Registration Fee Procedures

M/S/C (Capurso/Salvano) to receive update on revisions to Vehicle Registration Fee Program.

REGULAR AGENDA

The Agenda was taken out of order.

16. Land Use and Transportation Briefing Series: Mountain View

Mr. Swierk provided a brief introduction and background of the land use and transportation briefing series and introduced Randy Tsuda, Community Development Director, City of Mountain View.

Mr. Tsuda provided a presentation, covering key precise plans and development projects in the City of Mountain View and potential transportation strategies.

Discussion ensued regarding the following: 1) implementation of Transportation Demand Management (TDM) measures; 2) potential implementation of congestion pricing in the North Bayshore area; 3) impact of large developments to neighboring cities; 4) strategies to monitor community or private shuttle usage and whether single occupancy vehicle (SOV) targets are being met; and 5) the City of Mountain View could serve as an example of public-private partnership on transportation solutions in major development areas.

Staff welcomed suggestions for future discussions on land use and transportation from the Committee.

Public Comment

Roland Lebrun, Interested Citizen, offered the following comments: 1) very few *Google* employees use VTA; 2) expressed concern with slow transit travel time from the future Milpitas BART station to the City of Mountain View via light rail; 3) the Dumbarton Rail could help address regional congestion; and 4) connectivity between *Facebook* and *Google* campuses should be examined.

On order of Chairperson Servín and there being no objection, the Committee received and discussed information about land use and transportation in the City of Mountain View.

13. Envision Silicon Valley Preliminary Project List

John Sighamony, Senior Transportation Planner, provided an overview of the staff report, noting additional projects will be included in the preliminary project list based on input from Member Agencies and an updated list will be forwarded to the Committee. Staff will work with the Metropolitan Transportation Commission (MTC) to ensure VTA's financially constrained list of projects will be included in the Regional Transportation Plan (RTP).

Mr. Ristow noted the VTA Board of Directors Workshop Meeting scheduled for September 25, 2015, will include a discussion on fund estimates for the potential sales tax measure.

Upon query of Members of the Committee, staff noted that pavement improvements and maintenance-type projects on state highways are not included on the list of projects. Alternate Ex-Officio Member Saleh added that state highway maintenance projects are addressed in the State Highway Operation and Protection Program (SHOPP), and he could forward the 2016 draft SHOPP project list to the Committee for their reference.

Public Comment

Mr. Lebrun made a comment that the total amount of projects from the preliminary list could be less due to some duplication on the list.

M/S/C (Batra/Capurso) to recommend the VTA Board of Directors approve the List of Projects received from VTA's Call for Projects and direct staff to submit the complete list to the Metropolitan Transportation Commission for consideration of inclusion in the Regional Transportation Plan, and further, requested the additional projects specified by the Member Agencies and Caltrans be included in the list of projects.

14. State Transportation Improvement Program (STIP) Strategy

Marcella Rensi, provided a brief staff report, noting the program is unfunded.

Public Comment

Mr. Lebrun offered a suggestion to fund the environmental clearance of the SR 152 New Alignment with California High Speed Rail Authority (CHSRA) efforts to clear, design and construct the High Speed Rail segment from the City of Gilroy to the City of Merced.

M/S/C (Morley/Capurso) to recommend the VTA Board of Directors approve project priorities for State Transportation Improvement Program (STIP) funds.

15. Dynamic Transit Service Pilot Program Implementation

Aiko Cuenco, Transportation Planner, provided a staff presentation, highlighting: 1) pilot program name identified as “VTA Flex”; 2) overview of service area, fare structure, priorities in service design, and bus features; 3) opportunities for public-private partnerships within the pilot service area; 4) overview of key performance indicators; 5) overview of VTA Flex service versus other ridesharing services; and 6) future pilot applications and next steps.

Members of the Committee and staff engaged in a discussion about the following: 1) opportunities to connect users to employers and residential developments in the service area; 2) asked about fares for transfers to/from light rail or other transit services; 3) asked about peak period hours and pricing; 4) possible implementation of the pilot service along the City of Santa Clara’s north/south corridors; and 5) the service could be of interest to smaller jurisdictions as a way to increase transit ridership.

Staff noted that periodic update reports will be brought to the Committee.

Public Comment

Mr. Means expressed support for the pilot program and asked about the budget for the program.

Mr. Lebrun expressed support for the VTA Flex name and asked if the buses are equipped with global positioning systems (GPS), Wi-fi, and passenger counters.

On order of Chairperson Servín and there being no objection, the Committee received information on the Dynamic Transit Service Pilot Program Implementation.

17. Update on iTEAM Activities

Casey Emoto, provided a brief staff report.

Alternate Ex-Officio Member Saleh introduced the following Caltrans staff/iTEAM members: 1) Dina El-Tawansy, Regional Project Manager; 2) Ephrem Meharena, Liaison for the Office of Local Assistance; and 3) Paul Ma, Liaison for Traffic Operations & Technology.

Alternate Ex-Officio Member Saleh also announced the Caltrans Innovation Contest and encouraged the Committee to submit innovative ideas on how to improve the State’s transportation system.

On order of Chairperson Servín and there being no objection, the Committee received an update on iTEAM Activities and Initiatives for Fiscal Year 2016 and Fiscal Year 2017.

OTHER ITEMS

18. Update on MTC Activities and Initiatives

Therese Trivedi, MTC Senior Planner, provided a brief update, noting the September 11, 2015, Joint MTC Planning Committee with the Association of Bay Area Governments (ABAG). She noted that the Administrative Committee meeting agenda includes a presentation on revised staff recommendation for goals and performance targets related to Plan Bay Area 2040. She also noted the October 6, 2015, Regional Advisory Working Group meeting to discuss transportation and land use scenarios in a workshop setting.

On order of Chairperson Servín, and there being no objection, the Committee received an update on MTC Activities and Initiatives.

19. Update on Caltrans Activities and Initiatives

Alternate Ex-Officio Member Saleh noted the Fiscal Year 2016-2017 Sustainable Transportation Planning Grant deadline for applications is on October 30, 2015, at 5:00 p.m. He introduced Earl Sherman, III, Caltrans Maintenance Manager.

- **Caltrans Maintenance Update**

Mr. Sherman provided an overview of Caltrans District 4 Maintenance Region for Fiscal Year 2014-2015, noting: 1) Southwest region's personnel allocation and challenge with hiring and retention; 2) program activity sub-programs and maintenance activities; and 3) summary of different types of expenditures.

Discussion ensued regarding the following: 1) fencing around illegal encampments and weed abatement in the City of Gilroy; 2) collaborative efforts between Caltrans and Member Agencies; and 3) graffiti and litter issues in the region versus the East Coast.

Member Batra left the meeting at 3:25 p.m.

Ex-Officio Member Trivedi left the meeting at 3:26 p.m.

Public Comment

Doug Muirhead, Interested Citizen, asked about Caltrans Maintenance's decision process on whether to use pesticide, non-pesticide or other means for weed control.

On order of Chairperson Servín, and there being no objection, the Committee received an update on Caltrans Activities and Initiatives.

20. TAC Committee Work Plan

On order of Chairperson Servín, and there being no objection, the Committee reviewed the work plan.

21. ANNOUNCEMENTS

Chairperson Servín encouraged Members of the Committee to invite their local agency legal staff to the *Overcoming Legal Obstacles to Complete Streets Design* panel discussion on September 24, 2015.

Upon query of Member Abbas, staff suggested that the SOM Working Group might be the ideal place to gather more information on local speed/traffic surveys.

22. **ADJOURNMENT**

On order of Chairperson Servín, and there being no objection, the meeting was adjourned at 3:35 p.m.

Respectfully submitted,

Michelle Oblena, Board Assistant
VTA Office of the Board Secretary



POLICY ADVISORY COMMITTEE

Thursday, September 10, 2015

MINUTES

CALL TO ORDER

The Regular Meeting of the Policy Advisory Committee (PAC) was called to order at 4:05 p.m. by Chairperson Carr in Conference Room B-104, Valley Transportation Authority (VTA), 3331 North First Street, San Jose, California.

1. ROLL CALL

Attendee Name	Title	Status
Paul Resnikoff	City of Campbell	Present
Michael Kotowski (Alternate)	City of Campbell	NA
Savita Vaidhyanathan	City of Cupertino	Absent
Barry Chang (Alternate)	City of Cupertino	Present
Cat Tucker	City of Gilroy	Absent
<i>Vacant (Alternate)</i>	<i>City of Gilroy</i>	-
<i>Vacant</i>	<i>City of Los Altos</i>	-
Mary Prochnow (Alternate)	City of Los Altos	Present
John Harpootlian	Town of Los Altos Hills	Present
<i>Vacant (Alternate)</i>	<i>Town of Los Altos Hills</i>	NA
Marcia Jensen	Town of Los Gatos	Present
Rob Rennie (Alternate)	Town of Los Gatos	NA
Carmen Montano	City of Milpitas	Present
Garry Barbadillo (Alternate)	City of Milpitas	NA
Susan Garner	City of Monte Sereno	Absent
Marshall Anstandig (Alternate)	City of Monte Sereno	Absent
Larry Carr	City of Morgan Hill	Present
Rich Constantine (Alternate)	City of Morgan Hill	NA
John McAlister	City of Mountain View	Absent
Chris Clark (Alternate)	City of Mountain View	Present
Liz Kniss	City of Palo Alto	Absent
Cory Wolbach (Alternate)	City of Palo Alto	Absent
Charles "Chappie" Jones	City of San Jose	Absent
<i>Vacant (Alternate)</i>	<i>City of San Jose</i>	-
Teresa O'Neill	City of Santa Clara	Present
Jerry Marsalli (Alternate)	City of Santa Clara	NA
Howard Miller	City of Saratoga	Present
Rishi Kumar (Alternate)	City of Saratoga	NA
Jim Davis	City of Sunnyvale	Present
Gustav Larsson (Alternate)	City of Sunnyvale	NA
Mike Wasserman	SCC Board of Supervisors	Present

A quorum was present.

2. **ORDERS OF THE DAY**

Chairperson Carr welcomed to the meeting Mary Prochnow, representing the City of Los Altos and Chris Clark representing the City of Mountain View.

M/S/C (Wasserman/O'Neil) to accept the Orders of the Day and approve the Consent Agenda.

3. **PUBLIC PRESENTATIONS**

There were no Public Presentations.

4. **Committee Staff Report**

Jim Lawson, Director of Government Affairs and Executive Policy Advisor and Staff Liaison, provided a report highlighting the following: 1) the Board of Directors took the following actions at the September 3, 2015 meeting: a) approved and adopted the Evaluation Criteria for Envision Silicon Valley; b) approved the appointments to the State Route 85 Corridor Policy Advisory Board; and c) approved the appointments to the El Camino Real Rapid Transit Policy Advisory Board; 2) announced VTA received two first place awards in the 2015 AdWheel Awards from the American Public Transportation Association (APTA); 3) announced VTA received a \$200,000 grant from the Federal Transit Administration (FTA) Innovative Public Transportation Workforce Development Program; 4) announced the resignation of Michael Hursh, Chief Operating Officer, effective September 11, 2015; 5) announced the Hispanic Heritage Diversity event will be held on September 23, 2015, at VTA's Auditorium.

Mr. Lawson introduced Aaron Quigley, Senior Policy Analyst, who provided a brief report on the Metropolitan Transportation Commission (MTC), noting California Governor Brown's proposal for increasing funding for transportation. Mr. Quigley further explained how the proposal would be funded and how the funds would be distributed.

Upon Member Miller's inquiry, Mr. Quigley responded that he would research how the California Environmental Quality Act (CEQA) would impact the SR 85 project.

On order of Chairperson Carr and there being no objection, the Committee received the Committee Staff Report.

Mr. Lawson requested the following items be heard consecutively: **Agenda Item #5.** Envision Silicon Valley and **Agenda Item #13.** Envision Silicon Valley Preliminary Project List.

5. **Envision Silicon Valley**

John Sighamony, Senior Transportation Planner, provided a brief report noting the draft goals, principles and next steps.

On order of Chairperson Carr and there being no objection, the Committee received an update on Envision Silicon Valley.

NOTE: M/S/C MEANS MOTION SECONDED AND CARRIED AND, UNLESS OTHERWISE INDICATED, THE MOTION PASSED UNANIMOUSLY.

The Agenda was taken out of order.

13. Envision Silicon Valley Preliminary Project List

Mr. Sighamony reported on the status and process for the call for project lists. Mr. Sighamony further reported some Committees' requests will be reflected in the Project List. He explained that the report will still continue to evolve over the next few months.

Members of the Committee made the following comments: 1) inquired about the intent of the project related to the funding put into the project; 2) noted the importance of providing funding in areas that are heavily used; 3) inquired about the MTC 2040 and the potential ballot measure; 4) inquired about the criteria staff used to determine what will be on the MTC list; 5) inquired about any fiscal constraints; and 6) suggested including project descriptions.

Mr. Sighamony noted project descriptions can be available to the public. Mr. Sighamony also reminded the Committee that the project list is a very large list, but that it will be narrowed down and refined. He further noted that staff is using the evaluation criteria that the Board of Directors previously approved.

Mr. Lawson commented that all agencies had the opportunity to submit projects that they felt were important, which is why one agency/city may have included a project and another agency/city not include the same project. Mr. Lawson further clarified that the goal of Envision Silicon Valley is to identify the critical transportation challenges in Santa Clara County. He noted that the overall goal is to narrow down and identify whether projects would be available to receive funds from grants, public private partnerships and/or the potential ballot measure. Mr. Lawson assured that the Committee will have numerous opportunities to provide feedback.

John Ristow, Director of Planning and Program Development, noted that there are projects in the existing Countywide Plan that have not been funded, but previously approved, and rolled over to the new list to be prioritized.

Carmen Montano arrived and took her seat at 4:24 p.m.

Member Jensen expressed concern about projects on the list that the Town of Los Gatos does not support.

Member Howard commented that the Committee still needs to move it forward to show the Board of Directors that the PAC reviewed the list but expressed their concerns.

Public Comment

Roland Lebrun, Interested Citizen, inquired about the following: 1) what projects will be available for VTA's budget tool; and 2) the Transportation Improvement Plan (TIP).

The Committee suggested to send letters to the Board of Directors regarding their thoughts on the projects list.

M/S/C (Miller/Davis) on a vote of 10 ayes, 2 noes and 0 abstentions to approve forwarding the following item to the Board of Directors without a recommendation the List of Projects received from VTA's Call for Projects and direct staff to submit the complete list to the Metropolitan Transportation Commission for consideration of inclusion in the Regional Transportation Plan. Further, the Committee noted the following: a) include the projects staff need to add but recognizing the list as complete to the best of their knowledge; b) the Committee is not endorsing the List of Projects and there are Committee Members who object to certain projects on the list. Members Jensen and Chang opposed.

6. Chairperson's Report

Chairperson Carr announced the following: 1) a Board Workshop will be held at VTA's River Oaks Campus on September 25, 2015; and 2) Silicon Valley Leadership Group (SVLG) is going to Washington D.C in order to talk about some of the priorities in Santa Clara County and requests any elected officials to join them.

Member Chang requested a brief summary about the September 25, 2015, Board Workshop since he will not attend.

CONSENT AGENDA

7. Regular Meeting Minutes of August 13, 2015

M/S/C (Wasserman/O'Neil) to approve the Regular Meeting Minutes of August 13, 2015.

8. Legislative Update Matrix

M/S/C (Wasserman/O'Neil) to review the Legislative Update Matrix.

9. Review the Legislative Update Matrix

M/S/C (Wasserman/O'Neil) to receive the Programmed Projects Quarterly Monitoring Report for April-June 2015.

10. Transportation Assistance Program (TAP) Update

M/S/C (Wasserman/O'Neil) to receive an update on the Transportation Assistance Program (TAP) for Low Income patrons.

11. SR 237 Express Lanes FY 2015 Annual Report

M/S/C (Wasserman/O'Neil) to receive an update on State Route 237 Express Lanes Fiscal Year 2015 Annual Report.

REGULAR AGENDA

12. 2016 State Transportation Improvement Program (STIP) Strategy

Marcella Rensi, Transportation Planning Manager, provided an overview of the staff report.

Public Comment

Omar Chatty, Interested Citizen, urged the Committee to help find funding for the two-lane corridor on SR 152 and possibly look at the reserves to help start the funding process.

Mr. Lebrun suggested partnering with High Speed Rail to look for a new alignment for SR 152.

Members of the Committee made the following comments: 1) inquired about the possibility of partnering with High Speed Rail; 2) requested information regarding the Environmental Impact Report (EIR) processes related to dates; and 3) requested information about the death rate on 152 and the problems related to the corridor.

Mr. Lawson clarified that staff recommendation to the Committee is to continue with the priorities listed in the staff report. Mr. Lawson noted that he would talk with High Speed Rail regarding SR 152 to see if there is any opportunity to collaborate with them. He further noted that the following information would be provided to the Committee: 1) the EIR process and life span; and 2) the death toll rate and any consistent problems on SR 152.

M/S/C (O'Neil/Carmen) to recommend the Board of Directors approve project priorities for State Transportation Improvement Program (STIP) funds.

Member Wasserman left the meeting at 5:03 p.m.

14. Local Transportation Needs and Priorities Presentation: Sunnyvale

Member Davis reported on the transportation needs and challenges in the City of Sunnyvale and provided a presentation entitled "Mathilda Avenue Improvements at SR 237 and US 101," highlighting: 1) Project History / Background; 2) Project Purpose; 3) Project Location; 4) Alternatives Considered For Further Study; 5) Existing Challenges – Mathilda at 101; 6) Existing Challenges – Mathilda at 237; 7) Mathilda Avenue (at US 101); 8) Mathilda Avenue (at Route 237); 9) Diverging Diamond Interchange; and 10) Project Development Process.

Member Davis noted the biggest challenge for his city is the Mathilda and Highway 101 interchange. Member Davis further noted possible solutions to help with the congestion in the area.

Public Comment

Mr. Lebrun requested that the presentation be made available online and suggested having express lanes in the area that could be used by buses.

On Order of Chairperson Carr and their being no objection, the Committee received a presentation from the City of Sunnyvale on its local transportation needs, priorities and challenges.

15. Land Use and Transportation Briefing Series: Mountain View

Robert Swierk, Senior Transportation Planner, provided a brief overview of the staff report and introduced Martin Alkire, Mountain View Principal Planner. Mr. Swierk provided a brief presentation, highlighting: 1) Background; 2) Overview of Growth Areas; and 3) Potential Transportation Strategies.

Members of Committee inquired about the following: 1) ways to increase ridership with light rail when BART to Silicon Valley is operational; and 2) status of Personal Rapid Transit (PRT) in Mountain View.

Mr. Swierk noted that staff is aware there is a need to close first and last mile gaps.

Member Davis announced the City of Sunnyvale will be sponsoring a PRT seminar on October 8, 2015, and noted everyone is welcome to attend.

Public Comment

Mr. Chatty made the following comments: 1) thanked the city of Morgan Hill for their decision regarding the Monterey roadways; 2) expressed concern about the dedicated lanes in Mountain View; and 3) suggested balancing true land use with real mobility.

On Order of Chairperson Carr and their being no objection, the Committee received and discussed information about land use and transportation in the City of Mountain View.

16. Dynamic Transit Service Pilot Program Implementation

Aiko Cuenco, Transportation Planner III, provided a presentation, highlighting: 1) Background; 2) First Pilot: VTA Flex – Tasman (Oct 2015); 3) Tasman Zone Flex Stops; 4) Pilot 1 Fare Structure; 5) Priorities in Service Design; 6) Vehicles; 7) Opportunities for Public-Private Partnerships; 8) Measure Results and Improve Service Design; 9) VTA Flex vs. Other Ridesharing Services; 10) Future Pilot Applications; and 11) Next Steps.

Upon Member Chang's inquiry, Ms. Cuenco responded that the frequency of the vehicles will be based on the trip requests.

On Order of Chairperson Carr and their being no objection, the Committee received information on the Dynamic Transit Service Pilot Program Implementation.

17. Update on iTEAM Activities

Mr. Ristow provided a brief overview of the staff report and introduced Nick Saleh, District Division Chief, Caltrans, noting the success and the purpose of the program is to allow Caltrans to be more involved with VTA.

Member Montano thanked Caltrans for the chevron markings placed at the Great Mall Parkway ramp in Milpitas.

On Order of Chairperson Carr and their being no objection, the Committee received an update on iTEAM Activities and Initiatives for Fiscal Year 2016 and Fiscal Year 2017

18. Regional Reports Update

Chairperson Carr reported the written reports are placed at the table.

A. Metropolitan Transportation Commission (MTC)

B. California Transportation Commission (CTC)

OTHER

19. Committee Work Plan

Public Comment

Mr. Chatty urged staff to add a topic regarding SR 152 safety and roadway conditions to the projects priority list and/or the Committee Work Plan.

On order of Chairperson Carr and there being no objection, the Committee reviewed the Committee Work Plan.

20. ANNOUNCEMENTS

There were no Announcements.

21. ADJOURNMENT

On order of Chairperson Carr and there being no objection, the Committee meeting was adjourned at 5:45 p.m.

Respectfully submitted,

Theadora Travers, Board Assistant
VTA Office of the Board Secretary



EL CAMINO REAL RAPID TRANSIT POLICY ADVISORY BOARD

Tuesday, August 26, 2015

MINUTES

CALL TO ORDER

The Regular Meeting of the El Camino Real Rapid Transit (ECRRT) Policy Advisory Board (“Committee”) was called to order at 3:04 p.m. by Chairperson Bruins in VTA Conference Room B-104, 3331 North First Street, San José, California.

1. ROLL CALL

Attendee Name	Title	Representing	Status
Jeannie Bruins	Chairperson	City of Los Altos	Present
Liz Kniss	Member	City of Palo Alto	Absent
Leonard Siegel	Member	City of Mountain View	Present
Jamie Matthews	Member	City of Santa Clara	Present
Pierluigi Oliverio	Member	City of San José	Present
Joe Simitian	Member	County of Santa Clara	Present
David Whittum	Member	City of Sunnyvale	Present
Ken Yeager	Vice Chairperson	County of Santa Clara	Present
<i>Vacant</i>		Santa Clara Valley Transportation Authority	N/A

A quorum was present.

Chairperson Bruins noted she had been working with VTA staff to incorporate presentations to address the Committee’s common themes in the hope of bringing a preferred alternative before the Board of Directors. Committee themes include the following: 1) those striving for communities to enthusiastically embrace an alternative; 2) requires a leap of faith, open-minded but skeptical; 3) community partnership with one another and with VTA; 4) does not appear to be a convergence on dedicated versus mixed flow; 5) things being too theoretical; 6) questioning some of the data, models, etc.; 7) lack of a common baseline of knowledge; 8) alternatives not fully analyzed in the environmental analysis process; 9) possibility of modifications to any of the alternatives that are in the study; and 10) proof of concept of Santa Clara Alum Rock Bus Rapid Transit implementation and results.

2. PUBLIC PRESENTATIONS

There were no Public Presentations.

3. ORDERS OF THE DAY

There were no Orders of the Day.

CONSENT AGENDA

4. **Regular Meeting Minutes of June 30, 2015**

M/S/C (Whittum/Siegel) to approve the Regular Meeting Minutes of the June 30, 2015.

5. **(Removed from the Consent Agenda and placed on the Regular Agenda.)**

Approve the 2015 El Camino Real Rapid Transit Policy Advisory Board (ECRRT PAB) Meeting Schedule.

REGULAR AGENDA

5. **2015 El Camino Real Rapid Transit Policy Advisory Board Meeting Schedule**

Member Simitian expressed concern with continuing to meet when no progress forward is made, and queried where the Committee is headed in the coming months and why.

Nuria I. Fernandez, General Manager and CEO, acknowledged Member Simitian's comments and noted the Santa Clara Alum Rock Bus Rapid Transit (SC-AR BRT) project is still under construction. Ms. Fernandez stated it takes about a year of operation to determine performance. She stated what VTA is hoping to garner from this Committee are: a) if there is a path forward; and 2) if that path is going to lead to a decision point as to whether VTA should continue, or refocus and find a different alternative.

Discussion ensued regarding the following 1) one or two alternatives would help alleviate concerns; 2) encouraged monthly meetings to make a decision before the deadline; 3) funding considerations; 4) travel time analysis and benefits; 5) expressed concern about having dedicated lanes forced upon the community; 6) expressed an interest in a mixed flow alternative; 7) noted communities are not sold that the net benefit would be worth the dedicated lane, but may support an alternative that does provide a net benefit for people moving up and down El Camino Real; 8) expressed support for meeting monthly to explore new options, reaching a decision and moving forward; 9) noted without centralized planning there will never be a consensus; and 10) encouraged Committee Members to think regionally and move forward.

M/S/C (Siegel/Matthews) to approve the the 2015 El Camino Real Rapid Transit Policy Advisory Board (ECRRT PAB) Meeting Schedule.

Public Comment

Roland Lebrun, Interested Citizen, suggested VTA look at how the three north/south grade alignments (lightrail, Caltrain, and BART) work in San Francisco. He noted the Envision Silicon Valley (ESV) process has started people thinking about transportation at a county level, and suggested the Committee pause until a countywide transportation plan is in place.

6. **El Camino Real Bus Rapid Transit (BRT) Project History**

Steven Fisher, Senior Transportation Planner, provided the staff report, and a presentation entitled "Route 522," highlighting the El Camino Real Bus Rapid Transit (BRT) Project History.

NOTE: M/S/C MEANS MOTION SECONDED AND CARRIED AND, UNLESS OTHERWISE INDICATED, THE MOTION PASSED UNANIMOUSLY.

Member Simitian noted the four cities along the El Camino Real Corridor are Palo Alto, Los Altos, Mountain View and Sunnyvale, and queried about each cities' current position on dedicated lanes.

Member Wolback stated the City of Palo Alto is currently opposed to dedicated lanes.

Chairperson Bruins stated the City of Los Altos has not taken a position on dedicated lanes. The City has deferred.

Member Siegel stated the City of Mountain View took a 3 to 2 vote in favor of dedicated lanes, noting two people said they might want to include Route 22 with the Express Bus in the same lane.

Member Whittum stated the City of Sunnyvale is opposed to dedicated lanes, in favor of mixed flow with a preference for cut-outs rather than bulb-outs.

Member Matthews stated the last official position of the City of Santa Clara was in support of dedicated lanes, noting City Council members have since changed and the current council does not firmly support dedicated lanes.

Member Simitian stated this information was helpful in determining that the Cities are not all in favor of dedicated lanes, but are interested in exploring other alternatives and that is reason to continue monthly Committee meetings. He also queried if a conversation had taken place about what action by VTA on El Camino might mean in the context of a proposed tax election in 2016, noting it may prove challenging.

Public Comment

Mark Balestra, El Camino Coalition, commented on the following: 1) thanked the Committee for an open discussion; 2) expressed local business owners' deep concern about the outcome of the Bus Rapid Transit (BRT) initiative on El Camino; 3) noted opposition to dedicated lanes; and 4) stated the El Camino Coalition asks that VTA endorse the beneficial and non-disruptive mixed flow BRT alternative for El Camino Real.

Paul Pedersen, Interested Citizen, made the following comments: 1) expressed concern about dedicated lanes; 2) suggested VTA staff look at the impact of the county's current widening project of San Tomas Expressway south of El Camino Real, which impacts eastbound El Camino traffic; and 3) encouraged a mixed flow solution.

Alex Morgan, Interested Citizen, noted the community does not support BRT on El Camino and expressed concern about the worsening traffic stress and congestion.

Chris Lepe, Transform, provided a handout noting this type of misinformation is being distributed to upset the community, and noted the following: 1) a polling of business' along El Camino Real and the community show the majority of the community supports this project and only a minority is opposed; and 2) expressed support for the BRT project.

On order of Chairperson Bruins and there being no objection, the Committee received a Report on the El Camino Real Bus Rapid Transit (BRT) Project History.

7. City Plans and Growth in the El Camino Real Corridor

Robert Swierk, Senior Transportation Planner, provided an overview of the staff report, and a presentation entitled “City Plans and Growth in the El Camino Real Corridor,” highlighting: 1) Presentation Outline; 2) City Plans and Policies: San Jose; 3) City Plans: Santa Clara; 4) City Plans and Policies: Sunnyvale; 5) City Plans and Policies: Mountain View; 6) City Plans and Policies: Los Altos; 7) City Plans and Policies: Palo Alto; 8) Growth Projections Based on City Plans and Policies; 9) Recent Development Approvals in El Camino Real Corridor; 10) Recent Construction Activity in El Camino Real Corridor; 11) Pedestrian and Bicycle Collisions in Santa Clara County; 12) Bicycle & Pedestrian Collisions on El Camino Real; 13) Geographic Distribution of Pedestrian Collisions on El Camino Real; 14) Geographic Distribution of Bicyclist Collisions on El Camino Real; 15) El Camino Real Compared to Other Nearby Arterials; and 16) Route 522.

Members of the Committee discussed the following: 1) normalizing data based on volumes, or miles walked or biked along the corridor; 2) consider roadway design improvements to mitigate risks; and 3) include more detailed collision information, such as “are these bicyclists trying to make a left turn on El Camino, or are they just walking along El Camino,” noting each situation calls for different solution.

Ms. Fernandez noted the take away from this presentation is that as Cities are making independent decisions to add density and development, they need to understand that the current infrastructure cannot absorb more vehicles. She stated some action or alternative needs to happen to address the congestion.

The Committee discussed how the dedicated lane alternative would create enough room for a Class 4 Dedicated Bicycle Lane if the City chose not have on street parking.

On order of Chairperson Bruins and there being no objection, the Committee received a report on City Plans and Growth in the El Camino Real Corridor.

8. Project Alternatives Not Fully Analyzed in the Environmental Analysis Process

Mr. Fisher provided a brief overview of the staff report, and a presentation entitled “BRT Alternatives Not Fully Analyzed in the Draft Environmental Impact Report/Environmental Analysis (DEIR/EA),” highlighting the selection of Alternatives, for the DEIR/EA, which includes: 1) Alternative 1: All Buses in the Median Dedicated Lane; 2) Alternative 2: Six Auto Lanes Plus Dedicated BRT Lanes; 3) Alternative 3: All Buses in Curb Dedicated Lane; and 4) Alternative 4: Private Shuttles Use Median Transit Lane. Mr. Fisher also reviewed the conclusion noting the alternatives discussed have not received widespread support in the official project record and new alternatives in the environmental process would take time and budget.

Members of the Committee discussed the following: 1) requested information on a dedicated lane alternative that allows a lot of people to move down the corridor briskly while also freeing up space in other lanes of traffic; 2) efforts to coordinate Bus Routes 22 and 522 for better connectivity; 3) consider time of day restrictions to alleviate commuter congestion; 4) exploration of curb lanes and the appeal of High Occupancy Vehicle (HOV) lanes to reduce number of cars in the neighborhood; 6) queried about the appropriate time to analyze Alternative 4; 7) queried if staff would come back with other alternatives if a consensus cannot be reached; and 8) noted Alternative 4 is the only alternative that would not require an extensive new environmental analysis.

Public Comment

Mr. Lepe expressed excitement about the opportunity to discuss alternatives, and noted the importance of asking if the reliability and access benefits of having more stops for Bus Routes 22 and the 522 counterbalance with the speed loss, noting a concern about time delay for the project. He expressed support for Alternative 4 noting it achieves the vision of the Grand Boulevard, and encouraged VTA to move forward with this scenario.

Mr. Lebrun expressed support for the HOV Lanes, and suggested VTA research the London Bus Lanes on YouTube noting London transport buses, private buses, taxis, and motor bikes all share the lane.

On order of Chairperson Bruins and there being no objection, the Committee received a Report on BRT Alternatives Not Fully Analyzed in the Environmental Analysis Process.

9. ANNOUNCEMENTS

There were no Announcements.

10. ADJOURNMENT

On order of Chairperson Bruins and there being no objection, the meeting was adjourned at 4:35 p.m.

Respectfully submitted,

Anita McGraw, Board Assistant
VTA Office of the Board Secretary



COUNCIL AGENDA: 04-12-16
ITEM: 4.1

Memorandum

TO: CITY COUNCIL

FROM: Mayor Sam Liccardo
Councilmember Manh Nguyen
Councilmember Raul Perez

SUBJECT: NORTH SAN JOSE AREA
DEVELOPMENT POLICY

DATE: April 8, 2016

Approved

Date

4-8-16

Manh Nguyen FB

RECOMMENDATION

Accept the staff report related to the North San Jose Area Development Policy update and preparation of the Environmental Impact Report, with direction that the Administration return to Council in August 2016 with:

- A. A framework outlining specific criteria and a determination of the required environmental clearance by which 1,500 residential units from Phase II can move forward in the near term-prior to the full build-out of the 10 million industrial capacity triggering the threshold of Phase II.
 1. The framework should allow for residential development in either of the following two circumstances:
 - a. **Densification of existing sites for mixed-use TOD:** Where housing is integrated into a high density (>120 DU/AC), mixed-use, transit-oriented development that provides large ground-floor retail space, or build-out of office, retail, hotel, or other employment-serving uses with some minimum requirements (e.g., exceeding 150,000 SF, or the FAR of the site's current use). Eligible sites must lie within a ½ mile of a light rail station.
 - b. **On-campus worker housing:** Allowing large employers - with at least 2,000 employees--to build housing on-site exclusively for employees.
 2. Requirements:
 - a. **Affordable Housing:** All developments will be subject to inclusionary and impact fee requirements, regardless of their date of entitlement.
 - b. **Transportation Infrastructure:** Projects must be accompanied by a Development Agreement that ensures payment of fees--in an amount that substantially exceeds what would be paid under the current Area Development Policy for residential development - to ensure progress toward needed road and transit improvements in North San Jose.
- B. Identify a comprehensive strategy for build-out of retail, restaurants, and other basic amenities that make North San Jose a more compelling place to work and live.

- C. Present options for a reduced Traffic Impact Fee for office/R&D development, as directed by Council in November 2014.
- D. Complete an assessment of utilities and other infrastructure needed to support the proposed 2030 jobs and housing capacity, as directed by Council in November 2014.
- E. Provide an evaluation of the transportation implications of the proposed changes and the impacts to current residential neighborhoods in the short-term (3-5 years), and what impact the opening of BART in 2017 at the Berryessa Station will have on traffic conditions, if any.
- F. Present an Outreach Program that ensures that residents within the North San Jose Policy Area are provided an opportunity to meaningfully weigh-in on the proposed policy changes.

BACKGROUND

The North San Jose Plan has fallen short of expectations and objectives in several important respects. The traffic impact fees have discouraged employers and developers from locating there, in the view of many, in part because they substantially exceed that of the surrounding market. We've only seen substantive development through fee waivers and reductions, and fee collections remain inadequate for the build-out of needed transportation improvements. We routinely hear from CEO's and HR directors of tech employers in North San Jose that the area lacks the retail, restaurants, and other amenities that would make it more attractive for their workforce. Industrial development has happened slowly, and although we now see considerable progress in office/R&D development, the aggregate pace has lagged expectations. Most importantly, the Plan's phasing appears to have perpetuated the segregation of uses --- precisely the condition that exacerbates traffic, GFG emissions, and auto dependence. Creating a "there-there" in North San Jose requires the creation of walkable, mixed-use communities that integrate employment, housing, retail, entertainment, and other uses, and we hope that we can spur progress toward that ambition.

CITY COUNCIL AGENDA

APRIL 12, 2016

SYNOPSIS

CHAPPIE JONES
ASH KALRA
RAUL PERALEZ
MANH NGUYEN
MAGDALENA CARRASCO

DISTRICT 1
DISTRICT 2
DISTRICT 3
DISTRICT 4
DISTRICT 5

SAM LICCARDO MAYOR

PIERLUIGI OLIVERIO
TAM NGUYEN
ROSE HERRERA VICE MAYOR
DONALD ROCHA
JOHNNY KHAMIS

DISTRICT 6
DISTRICT 7
DISTRICT 8
DISTRICT 9
DISTRICT 10

The City of San José is committed to open and honest government and strives to consistently meet the community's expectations by providing excellent service, in a positive and timely manner, and in the full view of the public.

Welcome to the San José City Council meeting!

This Agenda contains both a Consent Calendar section for routine business items that require Council approval, and general business items arranged to correspond with San José's City Service Areas (CSAs). City Service Areas represent the policy-making level for strategic planning, policy setting, and investment decisions in the critical functions the City provides to the community. They are:

- ***Strategic Support Services*** — The internal functions that enable the CSAs to provide direct services to the community in an effective and efficient manner.
- ***Community & Economic Development*** — Manage the growth and change of the community in order to create and preserve healthy neighborhoods and ensure a diverse range of employment and housing opportunities.
- ***Neighborhood Services*** — Serve, foster, and strengthen community by providing access to lifelong learning and opportunities to enjoy life.
- ***Transportation & Aviation Services*** — A safe and efficient transportation system that contributes to the livability and economic health of the City; and provide for the air transportation needs of the community and the region at levels that is acceptable to the community.
- ***Environment and Utility Services*** — Manage environmental services and utility systems to ensure a sustainable environment for the community.
- ***Public Safety Services*** — Commitment to excellence in public safety by investing in neighborhood partnerships as well as prevention, enforcement, and emergency preparedness services.

You may speak to the City Council about any discussion item that is on the agenda, and you may also speak during Open Forum on items that are not on the agenda and are within the subject matter jurisdiction of the City Council or Successor Agency to the Redevelopment Agency Board. If you wish to speak to the City Council, please refer to the following guidelines:

- **Fill out a Yellow Speaker's Card and submit it to the City Clerk seated at the front table. Do this before the meeting or before the item is heard.** This will ensure that your name is called for the item(s) that you wish to address, and it will help ensure the meeting runs smoothly for all participants.
- When the Council reaches your item on the agenda, the Mayor will open the public hearing and call your name. Please address the Council from the podium, which is located to the left of the City Clerk's table.
- Each speaker generally has two minutes to speak per item. The amount of time allotted to speakers may vary at the Mayor's discretion, depending on the number of speakers or the length of the agenda.
- To assist you in tracking your speaking time, there is a display on the podium. The green light turns on when you begin speaking; the yellow light turns on when you have 30 seconds left; and the red light turns on when your speaking time is up.

Please be advised that, by law, the City Council is unable to discuss or take action on issues presented during Open Forum. According to State Law (the Brown Act) items must first be noticed on the agenda before any discussion or action.

The San José City Council meets every Tuesday at 1:30 p.m. and Tuesday at 7 p.m. as needed, unless otherwise noted. If you have any questions, please direct them to the City Clerk's staff seated at the tables just below the dais. Thank you for taking the time to attend today's meeting. We look forward to seeing you at future meetings.

Agendas, Staff Reports and some associated documents for City Council items may be viewed on the Internet at <http://www.sanjoseca.gov/index.aspx?NID=3549>. Council Meetings are televised live and rebroadcast on Channel 26.

All public records relating to an open session item on this agenda, which are not exempt from disclosure pursuant to the California Public Records Act, that are distributed to a majority of the legislative body will be available for public inspection at the Office of the City Clerk at San José City Hall, 200 E. Santa Clara Street, Tower 14th Floor, San José, CA 95113 at the same time that the public records are distributed or made available to the legislative body. Any draft contracts, ordinances and resolutions posted on the Internet site or distributed in advance of the Council meeting may not be the final documents approved by the City Council. Contact the Office of the City Clerk at (408) 535-1260 or CityClerk@sanjoseca.gov for the final document.

To request an accommodation or alternative format under the Americans with Disabilities Act for City-sponsored meetings, events or printed materials, please call (408) 535-1260 or (408) 294-9337 as soon as possible, but at least three business days before the meeting.

On occasion the City Council may consider agenda items out of order.

- **Call to Order and Roll Call**
9:33 a.m. - Closed Session, Call to Order in Council Chambers
Absent Council Members: All Present.

1:33 p.m. - Regular Session, Council Chambers, City Hall
Absent Council Members: All Present.
- **Invocation (District 4)**
Thich Vien Thong and Thich Bao Tri, the Tu Lam Buddhist Temple offered the Invocation.
- **Pledge of Allegiance**
Mayor Sam Liccardo led the Pledge of Allegiance.
- **Orders of the Day**
Heard after Ceremonial Items.
The Orders of the Day and the Amended Agenda were approved.
- **Closed Session Report**
Heard after Ceremonial Items.
No Report.

1. CEREMONIAL ITEMS

- 1.1 Presentation of a proclamation recognizing the Week of April 10 – 16, 2016 as “National Library Week” in the City of San José. (Library/Herrera)
Mayor Sam Liccardo, Vice Mayor Rose Herrera and Library Director Jill Bourne recognized the week of April 10 through April 16, 2016 as “National Library Week” in San José.
- 1.2 Presentation of a proclamation recognizing the Week of April 10 – 16, 2016 as “National Public Safety Telecommunications Week” in the City of San José honoring the San José Police and Fire Public Safety Dispatchers who help those in need of emergency services. (Fire/Police/Peralez)
Mayor Sam Liccardo, Council Member Raul Peralez, Chief of Police Edgardo Garcia, Fire Chief Curtis Jacobson and Staff recognized the week of April 10 through April 16, 2016 as “National Public Safety Telecommunications Week” in San José and honored the San José Police and Fire Public Safety Dispatchers.

2. CONSENT CALENDAR

2.1 Approval of Minutes.

2.2 Final Adoption of Ordinances.

Recommendation: Final adoption of ordinances.

- (a) ORD. NO. 29715 – An ordinance of the City of San José amending Section 6.88.600 of Chapter 6.88 of Title 6 of The San José Municipal Code to change the date by which Medical Marijuana Collectives shall file an Annual Audit. CEQA: CEQA: Not a Project, File No. PP10-068(c), Municipal Code or Policy change that involves no changes in the physical environment.

Ordinance No. 29715 adopted.

2.3 Approval of Council Committee Minutes.

Recommendation: Approval of Council Committee Minutes.

- (a) Rules and Open Government Committee Minutes of March 16, 2016. (Mayor)
(b) Public Safety, Finance and Strategic Support Committee Minutes of March 17, 2016. (Oliverio)

CEQA: Not a Project, File No. PP10-069(c), City Administrative Activities.

Approved.

2.4 Mayor and Council Excused Absence Requests. No Report.

2.5 City Council Travel Reports. No Report.

2. CONSENT CALENDAR

- 2.6 **Report from the Council Liaison to the Retirement Boards.**
No Report.

- 2.7 **Amendment to the Agreement with Jacobs Engineering Group, Inc. for Airport Capital Improvement Projects.**

Recommendation: Approve a Fourth Amendment to Master Agreement with the Jacobs Engineering Group, Inc. (formerly Carter & Burgess, Inc.) for continuing program support services on Airport capital improvement projects, extending the term one year from July 1, 2016 through June 30, 2017, with no increase in total compensation. CEQA: Not a Project, File No. PP10-066(a), Agreements/Contracts for Professional Services that involve no changes to the physical environment. (Airport)
(Deferred from 3/29/16 – Item 2.9)
Approved.

- 2.8 **Vinci Park North Dumpster Day.**

Recommendations: As recommended by the Rules and Open Government Committee on March 30, 2016:

- (a) Retroactively approve the Vinci Park North Dumpster Day scheduled on April 9, 2016 as a City Council sponsored Special Event and approve the expenditure of funds.
- (b) Approve the two additional Dumpster Days in District 4 on April 30, 2016 and May 14, 2016, as City Council sponsored Special Events and approve the expenditure of funds.
- (c) Approve and accept donations from various individuals, businesses or community groups to support the event.

CEQA: Not a Project, File No. PP15-077, Temporary Special Events. (M. Nguyen)
[Rules Committee referral 3/30/16 – Item G(1)(c)]

Approved.

- 2.9 **2015 Regional Active Transportation Program Grant for Coyote Creek Trail, Mabury Road to Empire Street.**

Recommendation:

- (a) Adopt a resolution to identify the City Manager or his designee as the authorized representative to negotiate and execute a Grant Agreement and associated documents with Caltrans for the Coyote Creek Trail segment from Mabury Road to Empire Street; and

Resolution No. 77712 adopted.

- (b) Commit to provide a local match of \$927,600 in support of the grant funded project.

CEQA: Coyote Creek Trail Master Plan Mitigated Negative Declaration, File No. PP09-218. (Parks, Recreation and Neighborhood Services/Transportation)

Approved.

2. CONSENT CALENDAR

2.10 Agreement with Community Crime Prevention Associates for the San José Bringing Everyone's Strengths Together and Mayor's Gang Prevention Task Force Programs.

Recommendation: Approve a Consultant Agreement with Community Crime Prevention Associates to evaluate the San José Bringing Everyone's Strengths Together and Mayor's Gang Prevention Task Force programs, for a period retroactive to December 1, 2015 through November 30, 2016, for an amount not to exceed \$176,845. CEQA: Not a Project, File No. PP10-066(e), Services that involve no physical changes to the environment. (Parks, Recreation and Neighborhood Services)
Approved.

2.11 Request for Travel for Council Member Carrasco.

Recommendation:

- (a) Approve travel for Council Member Magdalena Carrasco and Sabrina Parra-Garcia.
- (b) Authorize an excused absence for Council Member Carrasco from Rules and Open Government on April 20, 2016 and April 27, 2016 as well as the Public Safety, Finance & Strategic Support Committee Meeting on April 21, 2016 and the City Council Meeting on April 26, 2016 due to Authorized City Business.
Source of Funds: Mayor/Council Travel Budget and D5 Council Budget.
CEQA: Not a Project, File No. PP10-069(c), City Administrative Activities. (Carrasco)
Approved.

2.12 AB 2176 (Campos): Shelter Crisis: Declaration: Facilities.

Recommendation: As recommended by the Rules and Open Government Committee meeting on April 6, 2016, adopt a position of Support if Amended for AB 2176 (Campos). In addition, direct staff to take necessary action to meet the stated objective as needed. CEQA: Not a Project, File No. PP10-069(d), Legislative Positions. (Housing) [Rules Committee referral 4/6/16 – Item G(1)]
Support position for adopted for Amended AB 2176.
Staff was directed to include as a condition: to specify that the emergency declaration applies to a “transitional community within its jurisdiction”.

3. STRATEGIC SUPPORT SERVICES

3.1 Report of the City Manager, Norberto Dueñas (Verbal Report).

City Manager Norberto Dueñas announced the City of San José was recognized for the 26th year for receiving the 2016 Distinguished Budget Presentation Award and thanked Senior Deputy City Manager/Budget Director Jennifer A. Maguire, Assistant Budget Director Margaret McCahan, Deputy Director Jim Shannon and Staff for their excellent work.

3. STRATEGIC SUPPORT SERVICES

3.2 Labor Negotiations Update.

Recommendation: Accept Labor Negotiations Update.

Heard at 9:33 a.m.

No Report.

3.3 Actions Related to the Liquidated Damages for Late Payroll Records Policy for Housing Contracts.

Recommendation:

(a) Adopt a resolution:

- (1) Amending the current prevailing wage enforcement mechanism for late submission of certified payroll records on City's Housing projects to assess liquidated damages in the amount of \$250.00 per day provided that the liquidated damages assessed do not exceed the total contract amount of the developer's, general contractor's or subcontractor's contract who failed to submit timely certified payroll records, and provided further there was no actual wage violation discovered in the late records and the late records were submitted to the City within one year from when they were due.
- (2) Applying the amended prevailing wage enforcement mechanism for late submission of certified payroll records to all City's Housing project contracts entered into on or after January 1, 2013.
- (3) Authorizing City staff to refund, subject to the appropriation of funds, the difference in the amount of liquidated damages between the prior enforcement mechanism without a cap and the amended enforcement mechanism with a cap for all City's Housing project contracts entered into on or after January 1, 2013 where full payment of liquidated damages was made to the City within one year from when they were due.

(b) Adopt the following 2015-2016 Appropriation Ordinance amendments in the Low and Moderate Income Housing Asset Fund:

- (1) Increase the Loan Management appropriation to the Housing Department for Loan Management in the amount of \$100,680.
- (2) Decrease the Unrestricted Ending Fund Balance appropriation in the amount of \$100,680.

CEQA: Not a Project, File No. PP10-068(b), Municipal Code or Policy Change that involve no changes in the physical environment. (Public Works/City Manager)

Deferred to April 19, 2016 per Administration.

3. STRATEGIC SUPPORT SERVICES

3.4 Audit of the Use and Coordination of Volunteers.

Recommendation: As recommended by the Neighborhood Services and Education Committee on March 10, 2016, accept the audit report on the use and coordination of volunteers. CEQA: Not a Project, File No. PP10-069(a), Staff Reports, Assessments, and Annual Reports that involve no approvals of City Actions. (City Auditor)
[Neighborhood Services & Education Committee referral 3/10/16 – Item (d)(1)]

The memorandum from Mayor Sam Liccardo, dated April 11, 2016, was approved, including the following:

- (1) **Accept the Audit on the City's Use and Coordination of Volunteers.**
- (2) **In addition to the recommendations of the City Auditor, direct the City Manager to place particular emphasis on actions to:**
 - (a) **Align volunteer agreements and policies to make volunteer enrollment and management easier.**
 - (b) **Align and consolidate current volunteer web pages, databases and software to:**
 1. **Create a simplified, streamlined point of access for residents**
 2. **Ensure consistent reporting across departments**
 3. **Link with the web pages of the Mayor and the Council Offices, including www.wearesanjose.org**
 4. **Integrate with the next generation CRM enterprise software Citywide**
 - (c) **Develop a program for collaborating with neighborhood based social media platforms such as NextDoor and the (under construction) Neighborhood Dashboard Project, so that program level staff can post volunteer opportunities and events in a geographically targeted manner.**
 - (d) **Incorporate suggestions for engagement through volunteer opportunities conveyed in multiple languages from community partners.**
 - (e) **Return to the Neighborhood Services and Education Committee in early 2017 with an update on progress, using objective service metrics across all programs and departments.**

3.5 Actions Related to the Report on Request for Proposal for a Radio Frequency Identification System.

Recommendation:

- (a) **Accept the report on the Request for Proposal for the purchase of a Radio Frequency Identification (RFID) System and adopt a resolution authorizing the City Manager to:**

(Item Continued on the Next Page)

3. STRATEGIC SUPPORT SERVICES

3.5 Actions Related to the Report on Request for Proposal for a Radio Frequency Identification System. (Cont'd.)

Recommendation:

- (a) (1) Execute an Agreement with Bibliotheca, LLC (Norcross, GA) for the purchase of a Library RFID System solution, including hardware, software licenses, related professional services, taxes, maintenance and support, for an initial five-year term, with a maximum compensation not-to-exceed \$2,899,391 for the initial five year term, subject to the annual appropriation of funds.
- (2) Execute change orders to cover any unanticipated changes or requirements in the system design and implementation, not-to-exceed \$251,612, subject to the appropriation of funds.
- (3) Exercise one-year options to extend the term of the Agreement to provide on-going maintenance and support, after the initial five-year term, at the rate of \$86,986 per year with annual cost adjustments capped at 3%, subject to the annual appropriation of funds.
- (4) Purchase RFID tags as required after the initial five-year term, subject to the annual appropriation of funds.

Report Accepted.

Resolution No. 77713 adopted.

- (b) Adopt the following 2015-2016 Appropriation Ordinance amendments in the Construction Tax and Property Conveyance Tax Fund: Library Purposes:

- (1) Increase the Materials Handling Technology appropriation by \$812,000.
- (2) Decrease the Ending Fund Balance by \$812,000.

CEQA: Not a Project, File No. PP10-066(a), Agreements and Contracts for Professional Services that involve no changes to the physical environment. (Finance/City Manager)

Ordinance No. 29718 adopted.

4. COMMUNITY & ECONOMIC DEVELOPMENT

4.1 North San José Area Development Policy.

Recommendation: As recommended by the Community and Economic Development Committee on February 22, 2016, accept the status report related to updating the North San José Area Development Policy and Environmental Impact Report. CEQA: Not a Project, File No. PP10-069(a), Staff Reports that involve no approvals of any City Actions. (Economic Development/Planning, Building and Code Enforcement / Transportation)

(Action Continued on the Next Page)

4. COMMUNITY & ECONOMIC DEVELOPMENT

4.1 North San José Area Development Policy. (Action Cont'd.)

The memorandum from Mayor Sam Liccardo, Council Member Manh Nguyen and Council Member Raul Peralez, dated April 8, 2016, was approved, accepting the Staff Report related to the North San José Area Development Policy Update and preparation of the Environmental Impact Report, with direction that the Administration return to Council in August 2016 with:

- (A) A framework outlining specific criteria and a determination of the required environmental clearance by which 1,500 residential units from Phase II can move forward in the near term prior to the full build out of the 10 million industrial capacity triggering the threshold of Phase II.
 - (1) The framework should allow for residential development in either of the two circumstances:
 - (a) Densification of existing site for mixed use TOD: Where housing is integrated into a high density (>120 DU/AC) mixed use, transit oriented development that provides large ground floor retail space or build out of office, retail, hotel or other employment serving uses with some minimum requirements (e.g. exceeding 150,000 SF, or the FAR of the site's current use). Eligible sites must lie within a ½ mile of a light rail station.
 - (b) On campus worker housing: Allowing large employers – with at least 2,000 employees – to build housing on-site exclusively for employees.
 - (2) Requirements:
 - (a) Affordable Housing: All developments will be subject to inclusionary and impact fee requirements, regardless of their date of entitlement.
 - (b) Transportation Infrastructure: Projects must be accompanied by a Development Agreement that ensures payment of fees -- in an amount that substantially exceeds what would be paid under the current Area Development Policy for residential development -- to ensure progress toward needed road and transit improvements in North San José.
- (B) Identify a comprehensive strategy for build out of retail, restaurants and other basic amenities that make North San José a more compelling place to work and live.
- (C) Present options for a reduced Traffic Impact Fee for Office/R&D development, as directed by Council in November 2014.
- (D) Complete an assessment of utilities and other infrastructure needed to support the proposed 2030 jobs and housing capacity, as directed by Council in November 2014.
- (E) Provide an evaluation of the transportation implications of the proposed changes and the impacts to current residential neighborhoods in the short term (3-5 years) and what impact the opening of BART in 2017 at the Berryessa Station will have on traffic conditions, if any.

(Action Continued on the Next Page)

4. COMMUNITY & ECONOMIC DEVELOPMENT

4.1 North San José Area Development Policy. (Action Cont'd.)

- (F) Present an Outreach Program that ensures that residents within the North San José Policy Area are provided an opportunity to meaningfully weigh in on the proposed policy changes.

Staff was further directed to incorporate standards for higher than minimum density for affordable housing.

Noes: Oliverio.

4.2 Amendment to the City Council Policy for Surplus Property Related to Affordable Housing.

Recommendation: Adopt a resolution approving a City Council Policy for disposing of surplus property that includes provisions relating to affordable housing. CEQA: Not a Project, File No. PP10-068(c), Code or Policy change that involve no changes in the physical environment. (Economic Development/Housing)

(Deferred from 2/2/16 - Item 4.1, 3/1/16 - Item 4.1, et al, and 4/5/16 – Item 4.1)

Deferred to April 19, 2016 per Administration.

4.3 Maintaining “Best-Face Forward” Activities Post Super Bowl.

Recommendation: As recommended by the Community and Economic Development Committee on March 28, 2016, accept staff report on how the City will maintain ongoing “Best Face Forward” activities regarding human trafficking, graffiti abatement, tree trimming, and gateway clean-ups Downtown after the Super Bowl. CEQA: Not a Project, File No. PP10-069(a), Staff Reports that involve no approvals of any City Actions.

(Economic Development)

[Community and Economic Development Committee referral from 3/28/16 – Item (d)(4)]

The memorandum from Mayor Sam Liccardo, Council Member Raul Peralez, Council Member Ash Kalra and Council Member Donald Rocha, dated April 8, 2016, was approved:

- (1) Accept the Staff Report on how the City will maintain ongoing “Best Face Forward” activities following Super Bowl 50.
- (2) Direct Staff to report back to Council by November 2016 on all updates related to the sign code in the Downtown Sign Zone including but not limited to electronic billboards and supergraphics.

5. NEIGHBORHOOD SERVICES

5.1 Neighborhoods Commission 2016 Caucus Process.

Recommendation:

- (a) Approve the 2016 Caucus Process recommended by the Neighborhoods Commission to select Neighborhood Commissioners in Districts 2, 4, 6, 8, and 10.
- (b) Reaffirm as adopted on June 18, 2013 (Item 5.1) by City Council that Commissioners who had been serving on the pilot were appointed to serve terms ending with the district caucuses in 2014 and 2016.

CEQA: Not a Project, File No. PP10-069(c), City Administrative Activities that involve no physical changes to the environment. Council Districts 2, 4, 6, 8, and 10. (City Manager)

Approved.

6. TRANSPORTATION & AVIATION SERVICES

6.1 Actions Related to the 2016 Remove and Replace Asphalt Concrete Pavement Project.

Recommendation:

- (a) Approve award of a construction contract for the 8099-2016 Remove and Replace Asphalt Concrete Pavement Project, to the lowest responsive bidder, G. Bortolotto & Company, Inc. in the amount of \$2,428,425.
- (b) Approve a ten percent contingency in the amount of \$242,843.

CEQA: Exempt, Section 15301(c) Existing Facilities, File No. PP14-069. Council Districts 1, 3, 4, 5, 6, 7, 8, 9, and 10. (Transportation)

Approved.

7. ENVIRONMENTAL & UTILITY SERVICES

8. PUBLIC SAFETY SERVICES

8.1 Actions Related to the Fireworks Enforcement Ordinance.

Per the discretion of the Mayor and Council Item 8.1 was heard after Item 4.1.

Recommendation:

- (a) Approve an ordinance amending the City of San José 1.08.040 of Chapter 1.08 of Title 1 related to enforcement of the San José Municipal Code or other City Ordinance, adding a new Chapter 10.17 to Title 10, and repealing Section 17.12.940 of Chapter 17.12 of Title 17 of the San José Municipal Code to prohibit the sale, use, possession and storage of fireworks and to provide for civil liability under certain circumstances for persons responsible for minors who violate the prohibition in Chapter 10.17 related to fireworks.

Ordinance No. 29719 passed for publication.

- (b) Adopt a resolution amending the Administrative Citation Schedule of Fines to establish administrative fines for violations related to Fireworks, and repealing Resolution No. 77702.

CEQA: Not a Project, File No. PP10-068(c), Municipal Code or Policy Change that involves no changes to the physical environment. (Fire)

The memorandum from Mayor Sam Liccardo, Vice Mayor Rose Herrera, Council Member Raul Peralez, Council Member Donald Rocha and Council Member Johnny Khamis, dated April 8, 2016, was approved, accepting the City Manager's recommendations, with direction to the City Manager to return to Council in 30 days with a more detailed program utilizing the full scope of the ordinance changes to enable administrative enforcement of illegal firework usage and include:

- (1) **A clear description of which City employees will now be authorized, trained and managed to issue citations – such as Code Enforcement Officers, Park Rangers, Parking Control Officers, Community Service Officers or any other appropriate Staff authorized by the City Manager.**
- (2) **An implementation plan to ensure that:**
 - (a) **Dispatchers, Council Offices and other City Staff are coordinated, particularly to ensure clear direction about to whom they can refer complaints and reports of illegal fireworks activity.**
 - (b) **Authorized enforcement Staff are fully trained on the administration citation processes.**
 - (c) **A clear description processes for challenges of citations.**
 - (d) **Adequate Staffing of non-sworn personnel to enforce the ordinance administratively.**
- (3) **Any marketing or outreach plan – through media, social media or other digital means, neighborhood meetings, nonprofits, schools or through relevant City Staff such as San José Police Department Crime Prevention and Parks, Recreation and Neighborhood Services Gang Preventions – to inform residents of the ability to report online or by phone and to notify youth and other residents of enhanced enforcement.**

(Action Continued on the Next Page)

8. PUBLIC SAFETY SERVICES

8.1 Actions Related to the Fireworks Enforcement Ordinance. (Cont'd.)

(Action Cont'd.)

- (4) The proposed ordinance must allow anonymity of reporting parties and permit those complainants to voluntarily wave anonymity where citations are challenged.
- (5) Any other elements essential for effective implementation of administrative enforcement.
- (6) Annual post 4th of July Report to the Public Safety, Finance and Strategic Support Committee.

Staff was further directed to return with an update at the Budget Process in May 2016 as to the status of the following items:

- (1) First offense fine \$500 in lieu of \$350.
- (2) Length of time for the second fine elevated to an 18-month window.
- (3) Report back specifically with data of the results of outreach to the community and what the total amount of fines were received.

Resolution No. 77714 adopted, as amended.

9. REDEVELOPMENT – SUCCESSOR AGENCY

• Notice of City Engineer's Pending Decision on Final Maps

In accordance with Sec. 19.16.140d of the San José Municipal Code, this is notice of the City Engineer's pending decision on the following Final Maps:

<u>Tract</u>	<u>Location</u>	<u>Council District</u>	<u>Developer</u>	<u>Lots/ Units</u>	<u>Type</u>	<u>Proposed Decision</u>
10348	2485 Almaden Expressway	6	Pulte Home Corporation	1/24	MFA	Approve

In accordance with Sec. 19.16.140d of the San José Municipal Code, this is notice of the City Engineer's receipt of the following Final Maps for review:

<u>Tract</u>	<u>Location</u>	<u>Council District</u>	<u>Developer</u>	<u>Lots/Units</u>	<u>Type</u>
10355	201 W. Julian Street	3	San Pedro Life I	1/315	MFA

- **Open Forum**

There was no public testimony from the floor.

- **Adjournment**

The Council of the City of San José adjourned the meeting at 6:32 p.m. in memory of Julie Loeffler. Julie Adriane Loeffler passed away on February 20, 2016. A loving mother to Sydney and Kyle, a loving wife to Larry, and a devoted sister and daughter, she will be sorely missed. The Cambrian District and the San José community lost a bright star who has left a caring legacy in her absence.

City Place Intersection Mitigation Measures to Background Plus Project Impacts										
ID	San Jose Impacted Intersection	Jurisdiction	City Place Proposed Mitigation	SJ Proposed Mitigation	Cost Estimate	Project Responsibility	Alternative (1): Fair-Share vs. NSJ EIR			
							NSJ EIR Trips	Project Trips	% Project Share	Cost Estimate
#17	Rio Robles / Tasman	San Jose	Widen SB to include LT and Shared TH & RT NB/SB Signal Phasing Mod	Widen SB to include LT, one TH & one RT; Signal mod to separate ped phase from SBL; Upgrade crosswalks; Improve ped access from Guadalupe River Trail to buildings	\$ 1,000,000	NSJ TIF or Fair-share contribution	390	950	71%	\$ 708,955
#18	First / Tasman	San Jose	No feasible mitigation New bus/shuttle stop proposed	Improve access to/from LR platforms for peds and bikes; Upgrade ped environment at the intersection and connection between LRT station and north of Tasman	\$ 500,000	NSJ TIF or Fair-share contribution	1,661	700	30%	\$ 148,242
#24	First / Montague	County (CMP)	No feasible mitigation Future Interchange Planned	Contribute to the future grade separation intersection or LRT (VTA Efficiency Plan); Improve ped and transit access	\$ 95,000,000	% Total Traffic	4,578	820	15%	\$ 14,431,271
#25	Zanker / Montague	County (CMP)	Widen Zanker to 3 lanes Add 2nd NB/SB LT with no separate RT lanes HOV-type signal to support future BRT	Contribute to Zanker Widening project that includes also consider two-way bike lanes or separated bikeway	\$ 67,000,000	% Total Traffic	5,309	650	11%	\$ 7,308,273
#26	Montague / River-Oaks	County	Install EB RT overlap phase and limit NB U-turns	Contribute to Zanker Widening project that includes also consider two-way bike lanes or separated bikeway	-	% Total Traffic	3,296	440	12%	\$ 1,178,653
#27	Trimble / Montague	County (CMP)	County Expressway Plan (Fly-over) Tier 1B priority	Contribute to the Fly-over	\$ 49,000,000	% Total Traffic	3,870	440	10%	\$ 5,002,320
#29	De La Cruz / Trimble	San Jose (CMP)	Add 3rd SB LT lane	No feasible mitigation	\$ 1,000,000	NSJ TIF or Fair-share contribution	1,306	520	28%	\$ 284,775
#30	First / Trimble	San Jose (CMP)	Add 2nd EB LT and exclusive WB RT lane	Add 2nd EB LT and exclusive WB RT lane; Include bike facility upgrade	\$ 1,500,000	NSJ TIF or Fair-share contribution	2,944	230	7%	\$ 108,696
#34	First / Brokaw	San Jose (CMP)	Add 3rd WB LT Lane Bicycle facilities along 1st Street b/t Brokaw and Gish and sidewalk to US 101 NB loop on-ramp	Contribute to Zanker Rd to Skyport Dr Connection; Old Bayshore Hwy improvements; First St curb push-back to accommodate bike lanes and parking bay	\$ 138,000,000	NSJ TIF or Fair-share contribution	1,848	130	7%	\$ 9,069,767
#57	Great America / SR 237 (WB)	Santa Clara (CMP)	Add 3rd WB LT and 2nd WB RT lane	Add 3rd WB LT and 2nd WB RT lane; Improve ped trail	\$ 1,000,000	100%	182	2,590	93%	\$ 1,000,000
#84	Gold / Gold Connector	San Jose	Add 2nd NB LT and 2nd EB RT lane Move pedestrian crossing to the north leg	Add 2nd NB LT and 2nd EB RT lane; Improve ped trail connection (trail must align with crosswalk)	\$ 1,000,000	100%	N/A	1,340	100%	\$ 1,000,000
#125	San Tomas / Stevens Creek	County (CMP)	Add WB RT and 3rd SB LT lane County Expressway Plan (4 Lanes + Exclusive RT + HOV lanes) Tier 2 priority	Contribute to overall County Expressway Plan (4 Lanes + Exclusive RT + HOV lanes); Add exclusive WB RT and 3rd SB LT lane	\$ 49,000,000	% Total Traffic	-9	160	N/A	\$ 1,056,604
#109	Liberty/ Taylor	San Jose	Traffic signal installation	Contribute 100% cost of traffic control device to be used to insulate Alviso neighborhood from Project traffic	\$ 500,000	100%	N/A	540	100%	\$ 500,000
Missing	First / Old Bayshore	San Jose	N/A	Contribute to Zanker Rd to Skyport Dr Connection; Old Bayshore Hwy improvements; First St curb push-back to accommodate bike lanes and parking bay	-	NSJ TIF or Fair-share contribution	2,368	253	10%	\$ 3,466,760
					Subtotal \$ 404,500,000					Subtotal \$ 45,264,317

DOT/DPW Technical Comments to City Place FEIR
April 28, 2016

In 2007, San Jose adopted the North San Jose Area Development Policy which conformed to the transportation policy in place at that time. In 2011, San Jose adopted the Envision 2040 General Plan which updated transportation policy and standards to recognize multimodal travel as a vital and viable transportation system. This vision is subsequently promoted statewide, countywide, as well as other city jurisdictions. Therefore, the City Place FEIR should support the updated transportation standards adopted by all jurisdictions rather than relying on what were adopted in relatively more outdated transportation standards, including those in the North San Jose Deficiency Plan 2006.

As stated in Section II.C of the City's FEIR comment letter, the FEIR's reliance on North San Jose traffic impact fees as mitigation for the Project's North San Jose impacts is misplaced. The North Jose Traffic Impact Fee Plan did not include Project traffic because the Project was not included in the Santa Clara General Plan. The North San Jose traffic impact fee rate is not intended to provide mitigation measures for the Project, and thus should not be used as basis for mitigation.

Based on the FEIR, San Jose estimated that the Project's fair share contribution towards San Jose's acceptable mitigation measures for 14 project-level, significant impacts is approximately \$45.3 million. This estimate includes additional fair share mitigation for the significant impact at North First Street and Old Bayshore Parkway that was omitted from the FEIR. Moreover, this estimate does not account for administrative costs or construction index changes. In addition, this estimate does not account for fair-share contribution towards all considerable Cumulative impacts since the information provided in both FEIR and the Response to Comment Letter A17b.4 is not adequate for such determination. San Jose estimated that fair-share contribution towards all considerable Cumulative impacts could increase the total Project responsibility by approximately an additional \$10 million.

(#15) Renaissance Drive/Tasman Drive (Table 3.3-50)

Impacts: Cumulative with Project

Based on the Response to Comment Letter A17b.4, San Jose asserts that the Project contribute fair-share towards a mitigation acceptable to San Jose for the Cumulative impact; however, the information provided in FEIR and the Response to Comment Letter A17b.4 is not adequate to determine if the Cumulative impact is considerable and the appropriate fair-share calculations.

(#17) Rio Robles/Tasman Drive (Table 3.3-20, Table 3.3-26, Table 3.3-50)

Impacts: Existing with Project, Existing with Project Phases 1-3, Background with Project, Cumulative with Project

As stated in Comment Letter A17b.4, San Jose has identified acceptable mitigation to include, among other improvements, one left-turn lane, one through lane, and one right-turn lane at the southbound approach, as opposed to the DEIR-proposed one left-turn lane and one shared through/right-turn lane. Table 3.3-20, Table 3.3-26, and Table 3.3-50 have not been revised correctly to reflect this modified and acceptable mitigation. San Jose recommends that the Project contribute fair-share to the modified and acceptable mitigation.

(#18) North First Street/Tasman Drive (Table 3.3-20, Table 3.3-50)

Impacts: Background with Project, Cumulative with Project

Based on the Response to Comment Letter A17b.4, San Jose disagrees that the new shuttle bus stop is used as the basis to determine fair share contribution. The proposed mitigation is established based on outdated transportation standards. The transportation standards provided in the adopted Envision 2040 General Plan should be used to determine the appropriate mitigation measure. The Project should contribute fair share to a mitigation that is developed from such standards and acceptable to San Jose..

(#19) Zanker Road/Tasman Drive (Table 3.3-50)

Impacts: Cumulative with Project

Based on the Response to Comment Letter A17b.4, San Jose asserts that the Project contribute fair-share towards a mitigation acceptable to San Jose for the Cumulative impact; however, the information provided in FEIR and the Response to Comment Letter A17b.4 is not adequate to determine if the Cumulative impact is considerable and the appropriate fair-share calculations.

(#24) North 1st Street/Montague Expressway (Table 3.3-20, Table 3.3-26, Table 3.3-50)

Impacts: Existing with Project, Existing with Project Phases 1-3, Background with Project, Cumulative with Project

FEIR stated that the Project would contribute fair share to the off-setting mitigation based on the percentage of project trips to total traffic at the intersection. As mentioned in this letter, however, San Jose asserts that fair share contribution is calculated based on the percentage of project trips to the total of future added trips at the intersection, since the cost of the mitigation should be borne by only future new roadway users.

(#25) Zanker Road/Montague Expressway (Table 3.3-20, Table 3.3-26, Table 3.3-50)

Impacts: Existing with Project, Existing with Project Phases 1-3, Background with Project, Cumulative with Project

The Response to Comment Letter A17b.4 does not address San Jose's modified mitigation measure to include not only the widening of Zanker Road and the second northbound and southbound left-turn lanes, but also separated bike lanes on both sides of the street, crosswalk treatments, and other improvements consistent with San Jose's updated transportation standards and multimodal mobility goals.

(#26) Montague Expressway/Plumeria Drive-River Oaks (Table 3.3-20, Table 3.3-26, Table 3.3-50)

Impacts: Existing with Project, Existing with Project Phases 1-3, Background with Project, Cumulative with Project

After evaluating the intersection based on information provided in the Response to Comment Letter A17b.4 and FEIR, San Jose is concerned that the proposed partial mitigation would not be sufficient to facilitate the eastbound right-turn traffic of 660 PM peak hour volumes under the Background with Project Conditions. TRAFFIX calculations indicated that the PM 95th percentile queue is approximately 135 vehicles per lane, the average delay for the movement is approximately 424 seconds (or 7 minutes) per vehicle, and the total cycle length is 211 seconds (or 3.5 minutes). San Jose recommends fair share contribution towards the Zanker Road Widening as a secondary mitigation which would be a more viable transportation improvement.

(#27) Trimble Road/Montague Expressway (Table 3.3-20, Table 3.3-26, Table 3.3-50)

Impacts: Existing with Project, Existing with Project Phases 1-3, Background with Project, Cumulative with Project

The North San Jose EIR 2005 that attempted to address future trips associated with North San Jose developments and land use programs of other jurisdictions identified at that time. Inconsistent with the City of Santa Clara's land use program, City Place would add trips to the intersection beyond all previously identified future trips associated with City of Santa Clara's General Plan. Therefore, San Jose asserts that it is equitable that the Project contributes fair-share to the mitigation based on the percentage of project trips to the total of future added trips at the intersection.

(#28) McCarthy Boulevard-O'Toole Avenue/Montague Expressway (Table 3.3-50)

Impacts: Cumulative with Project

The North San Jose EIR 2005 that attempted to address future trips associated with North San Jose developments and land use programs of other jurisdictions identified at that time. Inconsistent with the City of Santa Clara's land use program, City Place would add trips to the intersection beyond all previously identified future trips associated with City of Santa Clara's General Plan. Therefore, San Jose asserts that it is equitable that the Project contributes fair-share to the mitigation for the cumulative impact based on the percentage of project trips to the total of future added trips at the intersection.

(#29) De La Cruz Boulevard/Trimble Road (Table 3.3-20, Table 3.3-50)

Impacts: Background with Project, Cumulative with Project

Based on the Response to Comment Letter A17b.4, San Jose does not deem adding a third southbound left-turn lane a viable and acceptable mitigation. San Jose asserts that the Project works with San Jose to determine a viable and acceptable mitigation, based on which the Project contribute fair share..

(#30) North First Street/Trimble Road (Table 3.3-20, Table 3.3-50)

Impacts: Background with Project, Cumulative with Project

The Response to Comment Letter A17b.4 the off-setting mitigation identified in the FEIR needs to address regional, VTA's and San Jose's updated transportation standards and include adequate treatments at the intersection to facilitate safe and comfortable bicycle left-turns, pedestrian crossing, and other improvements consistent with regional multimodal mobility goals.

(#31) Zanker Road/Trimble Road (Table 3.3-50)

Impacts: Cumulative with Project

Based on the Response to Comment Letter A17b.4, San Jose asserts that the Project contribute fair-share towards a mitigation acceptable to San Jose for the Cumulative impact; however, the information provided in FEIR and the Response to Comment Letter A17b.4 is not adequate to determine if the Cumulative impact is considerable and the appropriate fair-share calculations.

(#34) North First Street/Brokaw Road (Table 3.3-20, Table 3.3-26, Table 3.3-50)

Impacts: Existing with Project, Existing with Project Phases 1-3, Background with Project, Cumulative with Project

Based on the Response to Comment Letter A17b.4, San Jose asserts that the Zanker Road connection from Old Bayshore Highway over US 101 to Skyport Drive along a partial US 101

interchange is a viable and appropriate mitigation acceptable to San Jose. Fair share calculations should be based on this mitigation, regardless of the timeline of the mitigation.

(#36) Zanker Road/Brokaw Road (Table 3.3-50)

Impacts: Cumulative with Project

Based on the Response to Comment Letter A17b.4, San Jose asserts that the Project contribute fair-share towards a mitigation acceptable to San Jose for the Cumulative impact; however, the information provided in FEIR and the Response to Comment Letter A17b.4 is not adequate to determine if the Cumulative impact is considerable and the appropriate fair-share calculations.

(#57) Great America Parkway/SR 237 WB Off-Ramp (Table 3.3-20, Table 3.3-26, Table 3.3-35, Table 3.3-50)

Impacts: Existing with Project, Existing with Project Variant Access Scheme, Existing with Project Phases 1-3, Existing with Project Phases 1-3 Variant Access Scheme, Background with Project, Background with Project Variant Access Scheme, Cumulative with Project

San Jose does not accept the Response to Comment Letter A17b.4 that the Project would pay fees to San Jose for only construction of the third westbound left-turn lane and associated receiving lane under the SR 237 underpass and an additional second westbound right-turn lane. The proposed mitigation would lead to a secondary impact of bikeway connection that needs to be addressed. San Jose asserts that the Project is fully responsible for funding and implementing the acceptable mitigation that includes (1) right-of-way acquisition, (2) relocation and realignment of bicycle facility affected by the improvements, and (3) construction of the third westbound left-turn lane and associated receiving lane under the SR 237 underpass and an additional second westbound right-turn lane.

(#84) Gold Street/Gold Street Connector (Table 3.3-20, Table 3.3-35, Table 3.3-50)

Impacts: Existing with Project, Existing with Project Variant Access Scheme, Background with Project, Background with Project Variant Access Scheme, Cumulative with Project

As stated in the Comment Letter A17b.4, San Jose supports a mitigation measure that would not affect the alignment of the Highway 237 Bikeway connection, or would include relocation and realignment of bicycle facility if affected by such improvements. San Jose asserts that the Project is fully responsible for funding and implementing an acceptable mitigation that includes (1) right-of-way acquisition, (2) relocation and realignment of bicycle facility affected by the improvements, and (3) construction of the Gold Street widening and geometric and signal modifications at the intersection.

(#109) Liberty Street/North Taylor Street

Based on the Response to Comment Letter A17b.4, San Jose asserts that implementation of traffic control devices, equivalent to the cost of a new traffic signal, is the full responsibility of the Project to protect the Alviso neighborhood from the Project traffic.

(#125) San Tomas Expressway/Stevens Creek Boulevard (Table 3.3-20, Table 3.3-50)

Impacts: Background with Project, Cumulative with Project

San Jose does not have any comments to the Response to Comment Letter A17b.4.



Regulatory Announcement

Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements

The U.S. Environmental Protection Agency (EPA) is establishing a comprehensive national control program that will regulate the heavy-duty vehicle and its fuel as a single system. As part of this program, new emission standards will begin to take effect in model year 2007 and will apply to heavy-duty highway engines and vehicles. These standards are based on the use of high-efficiency catalytic exhaust emission control devices or comparably effective advanced technologies.

Because these devices are damaged by sulfur, we are also reducing the level of sulfur in highway diesel fuel by 97 percent by mid-2006. The program provides substantial flexibility for refiners, especially small refiners, and for manufacturers of engines and vehicles, to aid them in implementing the new requirements in the most cost-efficient manner.

Background

The pollution emitted by diesel engines contributes greatly to our nation's continuing air quality problems. Even with more stringent heavy-duty highway engine standards set to take effect in 2004, these engines will continue to emit large amounts of oxides of nitrogen (NO_x) and particulate matter (PM), both of which contribute to serious public health problems in the United States. Exposure is widespread, particularly in urban areas.

Diesel exhaust or diesel particulate matter (soot) is likely to cause lung cancer in humans. Other health effects include aggravation of respiratory and cardiovascular disease, aggravation of existing asthma, acute respiratory symptoms, chronic bronchitis and decreased lung function.

Heavy-duty trucks and buses today account for about one-third of NO_x emissions and one-quarter of PM emissions from mobile sources. In some urban areas, the contribution is even greater. EPA's

new program will result in PM and NO_x emission levels that are 90 percent and 95 percent below today's levels, respectively.

The results of this historic program are comparable to the advent of the catalytic converter on cars, as the standards will for the first time result in the widespread introduction of exhaust emission control devices on diesel engines. And, just as removing lead from gasoline enables the use of catalytic converters, this program removes sulfur from diesel fuel to enable the use of these advanced emission controls on diesel vehicles.

New Standards for Heavy-Duty Highway Engines and Vehicles

We are finalizing a PM emissions standard for new heavy-duty engines of 0.01 grams per brake-horsepower-hour (g/bhp-hr), to take full effect for diesels in the 2007

model year. We are also finalizing standards for NO_x and non-methane hydrocarbons (NMHC) of 0.20 g/bhp-hr and 0.14 g/bhp-hr, respectively. These NO_x and NMHC standards will be phased in together between 2007 and 2010, for diesel engines. The phase-in will be on a percent-

of-sales basis: 50 percent from 2007 to 2009 and 100 percent in 2010.

Gasoline engines will be subject to these standards based on a phase-in requiring 50 percent compliance in the 2008

model year and 100 percent compliance in the 2009 model year.

The program includes flexibility provisions to facilitate the transition to the new standards and to encourage the early introduction of clean technologies, and adjustments to various testing and compliance requirements to address differences between the new technologies and existing engine-based technologies.

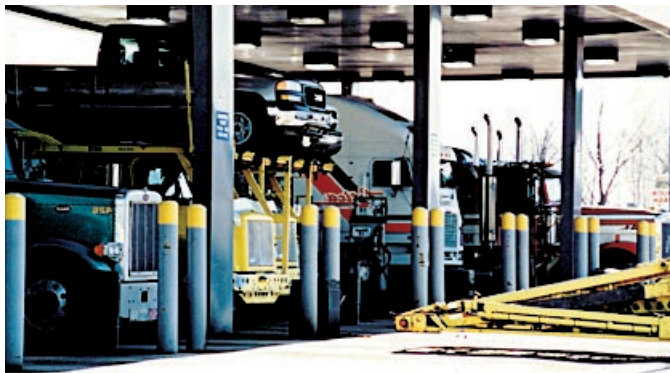
New Standards for Diesel Fuel

Refiners will be required to start producing diesel fuel for use in highway vehicles with a sulfur content of no more than 15 parts per million (ppm), beginning June 1, 2006. At the terminal level, highway diesel fuel sold as low sulfur fuel will be required to meet the 15 ppm sulfur standard as of July 15, 2006. For retail stations and fleets, highway diesel fuel sold as low sulfur fuel



must meet the 15 ppm sulfur standard by September 1, 2006.

This program includes a combination of flexibilities available to refiners to ensure a smooth transition to low sulfur highway diesel fuel. Refiners can take advantage of a temporary compliance option, including an averaging, banking and trading component, beginning in June 2006 and lasting through 2009, with credit given for early compliance before June 2006. Under this option, up to 20 percent of highway diesel fuel may continue to be produced at the existing 500 ppm sulfur maximum standard, though it must be segregated from 15 ppm fuel in the distribution system, and may only be used in pre-2007 model year heavy-duty vehicles.



We are providing additional hardship provisions for small refiners to minimize their economic burden in complying with the 15 ppm sulfur standard and giving additional flexibility to refiners subject to the Geographic Phase-in Area (GPA) provisions of the Tier 2 gasoline sulfur program, which will allow them the option of staggering their gasoline and diesel investments. We are also adopting a general

hardship provision for which any refiner may apply on a case-by-case basis under certain conditions.

Health and Environmental Benefits

Without significant new controls on motor vehicle emissions, millions of Americans will continue to breathe unhealthy air. The new standards will result in substantial benefits to the public health and welfare through significant annual reductions in emissions of NO_x, PM, NMHC, carbon monoxide, sulfur dioxide, and air toxics. The clean air impact of this program will be dramatic when fully implemented. These emission reductions will prevent 8,300 premature deaths, more than 9,500 hospitalizations, and 1.5 million work days lost.

As a result of this program, each new truck and bus will be more than 90 percent cleaner than current models. The clean air impact of this program will be dramatic when fully implemented. This program will provide annual emission reductions equivalent to removing

the pollution from more than 90 percent of today's trucks and buses, or about 13 million trucks and buses.

We project a 2.6 million ton reduction of NO_x emissions in 2030 when the current heavy-duty vehicle fleet is completely replaced with newer heavy-duty vehicles that comply with these emission standards. By 2030, this program will reduce annual emissions of NMHC by 115,000 tons and

PM by 109,000 tons. These emissions reductions are on par with those for passenger vehicles and low sulfur gasoline under the Tier 2 program.

Ozone causes a range of health problems related to breathing, including chest pain, coughing, and shortness of breath. PM is deposited deep in the lungs and causes premature death, increased emergency room visits, and increased respiratory symptoms and disease. With both ozone and PM, children and the elderly are most at risk. In addition, ozone, NO_x, and PM adversely affect the environment in various ways, including crop damage, acid rain, and visibility impairment.

Costs of the Program

We project that the emission reductions and the resulting significant public health and environmental benefits of this program will come at an average cost increase of about \$1,200 to \$1,900 per new vehicle, depending on the vehicle size. To put this in perspective, new vehicle prices today can range from as much as \$150,000 for a new heavy-duty truck to \$250,000 for a new bus. We estimate that when fully implemented, the sulfur reduction requirement will increase the cost of producing and distributing diesel fuel by about 4-1/2 to 5 cents per gallon.

For More Information

You can access the final rule and related documents electronically on the Office of Transportation and Air Quality (OTAQ) Web site at:

<http://www.epa.gov/otaq/diesel.htm>

You can also contact the OTAQ Library for document information at:

U.S. Environmental Protection Agency
OTAQ Library
2000 Traverwood Drive
Ann Arbor, MI 48105
(734) 214-4311



Federal Register

Thursday,
January 18, 2001

Part V

Environmental Protection Agency

40 CFR Parts 69, 80, and 86

**Control of Air Pollution From New Motor
Vehicles: Heavy-Duty Engine and Vehicle
Standards and Highway Diesel Fuel Sulfur
Control Requirements; Final Rule**

ENVIRONMENTAL PROTECTION AGENCY**40 CFR Parts 69, 80, and 86**

[AMS-FRL-6923-7]

RIN 2060-AI69

Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements**AGENCY:** Environmental Protection Agency.**ACTION:** Final rule.

SUMMARY: The pollution emitted by diesel engines contributes greatly to our nation's continuing air quality problems. Even with more stringent heavy-duty highway engine standards set to take effect in 2004, these engines will continue to emit large amounts of nitrogen oxides and particulate matter, both of which contribute to serious public health problems in the United States. These problems include premature mortality, aggravation of respiratory and cardiovascular disease, aggravation of existing asthma, acute respiratory symptoms, chronic bronchitis, and decreased lung function. Numerous studies also link diesel exhaust to increased incidence of lung cancer. We believe that diesel exhaust is likely to be carcinogenic to humans by inhalation and that this cancer hazard exists for occupational and environmental levels of exposure.

We are establishing a comprehensive national control program that will regulate the heavy-duty vehicle and its fuel as a single system. As part of this program, new emission standards will begin to take effect in model year 2007, and will apply to heavy-duty highway engines and vehicles. These standards are based on the use of high-efficiency catalytic exhaust emission control devices or comparably effective advanced technologies. Because these devices are damaged by sulfur, we are also reducing the level of sulfur in highway diesel fuel significantly by mid-2006. The program provides substantial flexibility for refiners,

especially small refiners, and for manufacturers of engines and vehicles. These options will ensure that there is widespread availability and supply of the low sulfur diesel fuel from the very beginning of the program, and will provide engine manufacturers with the lead time needed to efficiently phase-in the exhaust emission control technology that will be used to achieve the emissions benefits of the new standards.

We estimate that heavy-duty trucks and buses today account for about one-third of nitrogen oxides emissions and one-quarter of particulate matter emissions from mobile sources. In some urban areas, the contribution is even greater. This program will reduce particulate matter and oxides of nitrogen emissions from heavy duty engines by 90 percent and 95 percent below current standard levels, respectively. In order to meet these more stringent standards for diesel engines, the program calls for a 97 percent reduction in the sulfur content of diesel fuel. As a result, diesel vehicles will achieve gasoline-like exhaust emission levels. We are also finalizing more stringent standards for heavy-duty gasoline vehicles, based in part on the use of the low sulfur gasoline that will be available when the standards go into effect.

The clean air impact of this program will be dramatic when fully implemented. By 2030, this program will reduce annual emissions of nitrogen oxides, nonmethane hydrocarbons, and particulate matter by a projected 2.6 million, 115,000 and 109,000 tons, respectively. We project that these reductions and the resulting significant environmental benefits of this program will come at an average cost increase of about \$2,000 to \$3,200 per new vehicle in the near term and about \$1,200 to \$1,900 per new vehicle in the long term, depending on the vehicle size. In comparison, new vehicle prices today can range well over \$100,000 for larger heavy-duty vehicles. We estimate that when fully implemented the sulfur reduction requirement will increase the cost of producing and distributing diesel fuel by about five cents per gallon.

DATES: This rule will become effective March 19, 2001. The incorporation by reference of certain publications listed in this rule is approved by the Director of the Office of Federal Register as of March 19, 2001.

ADDRESSES: *Comments:* All comments and materials relevant to today's action have been placed in Public Docket No. A-99-06 at the following address: U.S. Environmental Protection Agency (EPA), Air Docket (6102), Room M-1500, 401 M Street, SW, Washington, DC 20460 (on the ground floor in Waterside Mall) from 8:00 a.m. to 5:30 p.m., Monday through Friday, except on government holidays. You can reach the Air Docket by telephone at (202) 260-7548 and by facsimile at (202) 260-4400. We may charge a reasonable fee for copying docket materials, as provided in 40 CFR part 2.

FOR FURTHER INFORMATION CONTACT: Margaret Borushko, U.S. EPA, National Vehicle and Fuel Emissions Laboratory, 2000 Traverwood, Ann Arbor MI 48105; Telephone (734) 214-4334, FAX (734) 214-4816, E-mail borushko.margaret@epa.gov

SUPPLEMENTARY INFORMATION:**Regulated Entities**

This action will affect you if you produce or import new heavy-duty engines which are intended for use in highway vehicles such as trucks and buses, or produce or import such highway vehicles, or convert heavy-duty vehicles or heavy-duty engines used in highway vehicles to use alternative fuels, or produce or import light-duty highway diesel vehicles. It will also affect you if you produce, import, distribute, or sell highway diesel fuel, or sell nonroad diesel fuel.

The following table gives some examples of entities that may have to follow the regulations. But because these are only examples, you should carefully examine the regulations in 40 CFR parts 69, 80, and 86. If you have questions, call the person listed in the **FOR FURTHER INFORMATION CONTACT** section of this preamble:

Category	NAICS Codes ^a	SIC Codes ^b	Examples of potentially regulated entities
Industry	336112 336120	3711	Engine and Truck Manufacturers
Industry	811112 811198	7533 7549	Commercial Importers of Vehicles and Vehicle Components
Industry	324110	2911	Petroleum Refiners
Industry	422710 422720	5171 5172	Diesel Fuel Marketers and Distributors
industry	484220	4212	Diesel Fuel Carriers

Category	NAICS Codes ^a	SIC Codes ^b	Examples of potentially regulated entities
	484230	4213	

^a North American Industry Classifications System (NAICS).

^b Standard Industrial Classification (SIC) system code.

Access to Rulemaking Documents Through the Internet

Today's final rule is available electronically on the day of publication from the Environmental Protection Agency Internet Web site listed below. Electronic copies of the preamble, regulatory language, Regulatory Impact Analysis, and other documents associated with today's final rule are available from the EPA Office of Transportation and Air Quality (formerly the Office of Mobile Sources) Web site listed below shortly after the rule is signed by the Administrator. This service is free of charge, except any cost that you incur for connecting to the Internet.

Environmental Protection Agency Web Site: <http://www.epa.gov/fedrgstr/> (Either select a desired date or use the Search feature.)

Office of Transportation and Air Quality (OTAQ) Web Site: <http://www.epa.gov/otaq/> (Look in "What's New" or under the "Heavy Trucks/Busses" topic.)

Please note that due to differences between the software used to develop the document and the software into which document may be downloaded, changes in format, page length, etc. may occur.

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- XI. Statutory Provisions and Legal Authority

I. Overview

This rule covers the second of two phases in a comprehensive nationwide program for controlling emissions from heavy-duty engines (HDEs) and vehicles. It builds upon the phase 1 program we recently finalized (65 FR 59896, October 6, 2000). That action affirmed the 50 percent reduction in emissions of oxides of nitrogen (NO_x) from 2004 model year highway diesel engines, set in 1997 (62 FR 54693, October 21, 1997), and set new emission standards for heavy-duty gasoline-fueled engines and vehicles for 2005.

This second phase of the program looks beyond 2004, based on the use of high-efficiency exhaust emission control devices and the consideration of the vehicle and its fuel as a single system. In developing this rule, we took into consideration comments received in response to the advance notice of proposed rulemaking (64 FR 26142, May 13, 1999) and the notice of proposed rulemaking (NPRM) (65 FR 35430, June 2, 2000), including comments provided at five public hearings last June.

This program will result in particulate matter (PM) and NO_x emission levels that are 90 percent and 95 percent below the standard levels in effect today, respectively. In order to meet these more stringent standards for diesel engines, the rule mandates a 97 percent reduction in the sulfur content of diesel fuel. The heavy-duty engine standards will be effective starting in the 2007 model year and the low sulfur diesel fuel needed to facilitate the standards will be widely available in September 2006. As a result, diesel vehicles will achieve gasoline-like exhaust emission levels, in addition to their inherent advantages over gasoline vehicles with respect to fuel economy, lower greenhouse gas emissions, and lower evaporative hydrocarbon emissions. The rule also includes more stringent standards for heavy-duty gasoline vehicles. In addition to its impact on heavy-duty vehicle emissions, this rule will make clean diesel fuel available in time for implementation of the light-duty Tier 2 standards.

The standards will result in substantial benefits to public health and

welfare and the environment through significant reductions in emissions of NO_x , PM, nonmethane hydrocarbons (NMHC), carbon monoxide (CO), sulfur oxides (SO_x), and air toxics. We project that by 2030, this phase 2 program will reduce annual emissions of NO_x , NMHC, and PM by 2.6 million, 115,000 and 109,000 tons, respectively. These emission reductions will prevent 8,300 premature deaths, over 9,500 hospitalizations, and 1.5 million work days lost. All told the benefits of this rule equal \$70.3 billion. A sizeable part of the benefits in the early years of this program come from large reductions in the amount of direct and secondary PM caused by the existing fleet of heavy-duty vehicles. These reductions are due to the use of the higher quality diesel fuel in these vehicles.

A. What Requirements Are Being Set?

There are two basic parts to this program: (1) New exhaust emission standards for heavy-duty highway engines and vehicles, and (2) new quality standards for highway diesel fuel. The systems approach of combining the engine and fuel standards into a single program is critical to the success of our overall efforts to reduce emissions, because the emission standards will not be feasible without the fuel change. The feasibility of the emission standards is based on the use of high-efficiency exhaust emission control devices that would be damaged by sulfur in the fuel. This rule, by providing extremely low sulfur diesel fuel, will also enable cleaner diesel passenger vehicles and light-duty trucks. This is because the same pool of highway diesel fuel also services these light-duty diesel vehicles, and these vehicles can employ technologies similar to the high-efficiency heavy-duty exhaust emission control technologies that will be enabled by the fuel change. We believe these technologies are needed for diesel vehicles to comply with our Tier 2 emissions standards for light-duty highway vehicles (65 FR 6698, February 10, 2000).

We believe that this systems approach is a comprehensive way to enable effective new technologies for clean diesel, affecting all sizes of highway diesel engines, and may translate to future reductions from diesel engines used in nonroad applications too. The fuel change, in addition to enabling new technologies, will also produce emissions and maintenance benefits in the existing fleet of highway diesel vehicles. These benefits will include reduced sulfate PM and sulfur oxides emissions, reduced engine wear and less

frequent oil changes, and longer-lasting exhaust gas recirculation (EGR) components on engines equipped with EGR. Heavy-duty gasoline vehicles will also be expected to have much lower emissions due to the transfer of recent technology developments for light-duty applications, and the recent action taken to reduce sulfur in gasoline as part of the Tier 2 rule.

The basic elements of the rule are outlined below. Detailed provisions and justifications for our rule are discussed in subsequent sections.

1. Heavy-Duty Emission Standards

We are finalizing a PM emissions standard for new heavy-duty engines of 0.01 grams per brake-horsepower-hour (g/bhp-hr), to take full effect for diesels in the 2007 model year.¹ We are also finalizing standards for NO_x and NMHC of 0.20 g/bhp-hr and 0.14 g/bhp-hr, respectively. These NO_x and NMHC standards will be phased in together between 2007 and 2010, for diesel engines. The phase-in will be on a percent-of-sales basis: 50 percent from 2007 to 2009 and 100 percent in 2010. This phase-in schedule differs somewhat from the proposed schedule for reasons explained in Section III. Gasoline engines will be subject to these standards based on a phase-in requiring 50 percent compliance in the 2008 model year and 100 percent compliance in the 2009 model year. This phase-in schedule also differs from that proposed for reasons explained in Section III. In addition, we are finalizing our proposal to include turbocharged diesels in the existing crankcase emissions prohibition, effective in 2007.

Standards for complete HDVs will be implemented on the same schedule as for gasoline engine standards. For certification of complete vehicles between 8500 and 10,000 pounds gross vehicle weight rating (GVWR), the standards are 0.2 grams per mile (g/mi) for NO_x , 0.02 g/mi for PM, 0.195 g/mi for NMHC, and 0.032 g/mi for formaldehyde.² For vehicles between

¹ Note that throughout this preamble we refer to diesel and gasoline vehicles and engines. We tend to use those terms given the preponderance of vehicles using diesel fuel or gasoline fuel in the U.S. heavy-duty highway market. However, when we refer to a diesel engine, we generally mean any engine using the diesel cycle. When we refer to a gasoline engine or vehicle, we generally mean any Otto-cycle vehicle or engine. Therefore, the emission standards discussed throughout this preamble apply equally to engines and vehicles fueled by alternative fuels, unless otherwise specified in the regulatory text accompanying today's rule.

² Vehicle weight ratings in this rule refer to GVWR (the curb weight of the vehicle plus its maximum recommended load of passengers and cargo) unless noted otherwise.

10,000 and 14,000 pounds, the standards are 0.4 g/mi for NO_x, 0.02 g/mi for PM, 0.230 g/mi for NMHC, and 0.040 g/mi for formaldehyde. These standards levels are roughly comparable to the engine-based standards in these size ranges. Note that these standards will not apply to vehicles above 8500 pounds that we classify as medium-duty passenger vehicles as part of our Tier 2 program.

Finally, we are adopting new evaporative emissions standards for heavy-duty engines and vehicles, effective on the same schedule as the gasoline engine and vehicle exhaust emission standards. The new standards for 8500 to 14,000 pound vehicles are 1.4 and 1.75 grams per test for the 3-day diurnal and supplemental 2-day diurnal tests, respectively. Standards levels of 1.9 and 2.3 grams per test will apply for vehicles over 14,000 pounds. These standards represent more than a 50 percent reduction in the numerical standards as they exist today.

The program includes flexibility provisions to facilitate the transition to the new standards and to encourage the early introduction of clean technologies, and adjustments to various testing and compliance requirements to address differences between the new technologies and existing engine-based technologies. These provisions are described in Sections III and VI.

2. Fuel Quality Standards

This rule specifies that, beginning June 1, 2006, refiners must begin producing highway diesel fuel that meets a maximum sulfur standard of 15 parts per million (ppm). All 2007 and later model year diesel-fueled vehicles must be refueled with this new low sulfur diesel fuel. This sulfur standard is based on our assessment of the impact of sulfur on advanced exhaust emission control technologies, and a corresponding assessment of the feasibility of low sulfur fuel production and distribution.

Today's program includes a combination of flexibilities available to refiners to ensure a smooth transition to low sulfur highway diesel fuel. First, refiners can take advantage of a temporary compliance option, including an averaging, banking and trading component, beginning in June 2006 and lasting through 2009, with credit given for early compliance before June 2006. Under this temporary compliance option, up to 20 percent of highway diesel fuel may continue to be produced at the existing 500 ppm sulfur maximum standard. Highway diesel fuel marketed as complying with the 500 ppm sulfur standard must be segregated

from 15 ppm fuel in the distribution system, and may only be used in pre-2007 model year heavy-duty vehicles. Second, we are providing additional hardship provisions for small refiners to minimize their economic burden in complying with the 15 ppm sulfur standard. Third, we are providing additional flexibility to refiners subject to the Geographic Phase-in Area (GPA) provisions of the Tier 2 gasoline sulfur program, which will allow them the option of staggering their gasoline and diesel investments. Finally, we are adopting a general hardship provision for which any refiner may apply on a case-by-case basis under certain conditions. These hardship provisions, coupled with the temporary compliance option, will provide a "safety valve" allowing up to 25 percent of highway diesel fuel produced to remain at 500 ppm for these transitional years to minimize any potential for highway diesel fuel supply problems.

In addition, today's program includes unique provisions for implementing the low sulfur diesel fuel program in the State of Alaska, given that it is exempt from the current 500 ppm standard. Certain U.S. territories are excluded from both the new engine standards and highway diesel fuel standards.

The compliance provisions for ensuring diesel fuel quality are essentially consistent with those that have been in effect since 1993 under the existing 500 ppm sulfur standard (55 FR 34120, August 21, 1990). Additional compliance provisions have been established primarily during the transition years of the program to verify refiners' compliance with the temporary compliance option to ensure the two grades of highway diesel fuel remain segregated, and to discourage misfueling of model year 2007 and later diesel vehicles.

B. Why is EPA Taking This Action?

1. Heavy-Duty Vehicles Contribute to Serious Air Pollution Problems

As discussed in detail in Section II, emissions from heavy-duty vehicles contribute greatly to a number of serious air pollution problems, and would have continued to do so into the future absent further controls to reduce these emissions. First, heavy-duty vehicles contribute to the health and welfare effects of ozone, PM, NO_x, SO_x, and volatile organic compounds (VOCs), including toxic compounds such as formaldehyde. These adverse effects include premature mortality, aggravation of respiratory and cardiovascular disease (as indicated by increased hospital admissions and

emergency room visits, school absences, work loss days, and restricted activity days), changes in lung function and increased respiratory symptoms, changes to lung tissues and structures, altered respiratory defense mechanisms, chronic bronchitis, and decreased lung function. Ozone also causes crop and forestry losses, and PM causes damage to materials and soiling of commonly used building materials and culturally important items such as statues and works of art. Second, NO_x, SO_x and PM contribute to substantial visibility impairment in many parts of the U.S. Third, NO_x emissions from heavy-duty trucks contribute to the acidification, nitrification and eutrophication of water bodies. Fourth, the Agency has concluded, and the Clean Air Scientific Advisory Committee has approved in public session, that diesel exhaust is likely to be carcinogenic to humans.

Millions of Americans live in areas with unhealthy air quality that currently endangers public health and welfare. Without emission reductions from the standards for heavy-duty vehicles, there is a significant risk that an appreciable number of 45 areas with 128 million people across the country will violate the 1-hour ozone national ambient air quality standard (NAAQS) during the period when these standards will take effect. Furthermore, our analysis shows that PM₁₀ concentrations in 10 areas with a population of 28 million people face a significant risk of exceeding the PM₁₀ NAAQS without significant additional controls between 2007 and 2030. Under the mandates and authorities in the Clean Air Act, Federal, state, and local governments are working to bring ozone and particulate levels into compliance with the 1-hour ozone and PM₁₀ NAAQS through State Implementation Plan (SIP) attainment and maintenance plans, and to ensure that future air quality reaches and continues to achieve these health-based standards. The reductions in this rulemaking will play a critical part in these important efforts to attain and maintain the NAAQS. In addition, reductions from this action will also reduce public health and welfare effects associated with ozone and fine PM at concentrations that do not constitute a violation of the 1-hour ozone and PM₁₀ NAAQS.

Emissions from heavy-duty vehicles account for substantial portions of the country's ambient PM and NO_x levels. (NO_x is a key precursor to ozone formation). By 2007, we estimate that heavy-duty vehicles will account for 28 percent of mobile source NO_x emissions and 20 percent of mobile source PM emissions. These proportions are even

higher in some urban areas, such as in Sacramento, Atlanta, and Washington, DC, where HDVs contribute over 34 percent of the mobile source NO_x emissions, and in Santa Fe, Los Angeles, and Hartford, where heavy-duty vehicle PM emissions account for 38, 25 and 30 percent of the mobile source PM emissions inventory, respectively. Over time, the relative contribution of diesel engines to air quality problems will go even higher if diesel-equipped light-duty vehicles become more popular, as is expected by some automobile manufacturers. The PM and NO_x standards for heavy-duty vehicles in this rule will have a substantial impact on emissions. By 2030, NO_x emissions from heavy-duty vehicles under today's standards will be reduced by 2.6 million tons, and PM emissions will decline by about 109,000 tons, dramatically reducing this source of NO_x and PM emissions. Urban areas, which include many poorer neighborhoods, can be disproportionately impacted by HDV emissions, and these neighborhoods will thus receive a relatively larger portion of the benefits expected from new HDV emissions controls.

In addition to its contribution to PM inventories, diesel exhaust PM is of special concern because it has been implicated in an increased risk of lung cancer and respiratory disease. The EPA draft Health Assessment Document for Diesel Exhaust (Draft Assessment) was reviewed in public session by the Clean Air Scientific Advisory Committee (CASAC) on October 12–13, 2000.³ The Agency has concluded, and the CASAC approved at this session, that diesel exhaust is likely to be carcinogenic to humans. State and local governments, in their efforts to protect the health of their citizens and comply with requirements of the Clean Air Act (CAA or “the Act”), have recognized the need to achieve major reductions in diesel PM emissions, and have been seeking Agency action in setting stringent new standards to bring this about.⁴

2. Technology-Based Solutions

Although the air quality problems caused by diesel exhaust are challenging, we believe they can be resolved through the application of high-efficiency emissions control

technologies. As discussed in detail in Section III, the development of diesel emissions control technology has advanced in recent years so that very large emission reductions (in excess of 90 percent) are possible, especially through the use of catalytic emission control devices installed in the vehicle's exhaust system and integrated with the engine controls. These devices are often referred to as “exhaust emission control” or “aftertreatment” devices. Exhaust emission control devices, in the form of the well-known catalytic converter, have been used in gasoline-fueled automobiles for 25 years, but have had only limited application in diesel vehicles.

Based on the Clean Air Act requirements discussed in Section I.B.3, we are setting stringent new emission standards that will result in the use of these diesel exhaust emission control devices (see Section III). We are also finalizing changes to diesel fuel quality standards in order to enable these high-efficiency technologies (Section IV). Heavy-duty gasoline engines will also be able to reach the significantly lower emission levels envisioned in this rule by relying on the transfer of recent technology developments for light-duty applications, given the recent action taken to reduce sulfur in gasoline (65 FR 6698, February 10, 2000).

To meet the new standards, application of high-efficiency exhaust emission controls for both PM and NO_x will be needed. High-efficiency PM exhaust emission control technology has been available for several years, although engine manufacturers have generally not needed this technology in order to meet our PM emission standards. This technology has continued to improve over the years, especially with respect to durability and robust operation in use. It has also proven extremely effective in reducing exhaust hydrocarbon emissions. Thousands of such systems are now in use in fleet programs, especially in Europe. However, as discussed in detail in Section III, these systems are very sensitive to sulfur in the fuel. For the technology to be viable and capable of meeting the standards, we believe that it will require diesel fuel with sulfur content capped at the 15 ppm level.

Similarly, high-efficiency NO_x exhaust emission control technology will be needed if heavy-duty vehicles are to attain the new standards. We believe this technology, like the PM technology, is dependent on the 15 ppm maximum diesel fuel sulfur levels being adopted in this rule to be feasible and capable of achieving the standards. Similar high-efficiency NO_x exhaust

emission control technology has been quite successful in gasoline direct injection engines that operate with an exhaust composition fairly similar to diesel exhaust. However, as discussed in Section III, application of this technology to diesels has some additional engineering challenges. In that section we discuss the current status of this technology. We also discuss the major development issues still to be addressed and the development steps that can be taken to address these issues. With the lead time available and the certainty of low-sulfur diesel fuel established by today's action, the evidence leaves us confident that the application of this technology to diesels will proceed at a reasonable rate of progress and will result in systems capable of achieving the standards.

The need to reduce the sulfur in diesel fuel is driven by the requirements of the exhaust emission control technology that we project will be needed to meet the standards. The challenge in accomplishing the sulfur reduction is driven by the feasibility of needed refinery modifications, and by the costs of making the modifications and running the equipment. Today, a number of refiners are acting to provide low sulfur diesel to some markets. In consideration of the impacts that sulfur has on the efficiency, reliability, and fuel economy impact of diesel engine exhaust emission control devices, we believe that controlling the sulfur content of highway diesel fuel to the 15 ppm level is necessary and feasible, and, in the context of this rule's overall program, cost effective.

3. Basis For Action Under the Clean Air Act

Section 202(a)(1) of the Act directs us to establish standards regulating the emission of any air pollutant from any class or classes of new motor vehicles or engines that, in the Administrator's judgment, cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare. Section 202(a)(3) requires that EPA set standards for heavy-duty trucks that reflect the greatest degree of emission reduction achievable through the application of technology which we determine will be available for the model year to which the standards apply. We are to give appropriate consideration to cost, energy, and safety factors associated with the application of such technology. We may revise such technology-based standards, taking costs into account, on the basis of information concerning the effects of air pollution from heavy-duty vehicles or engines and other sources of mobile source related

³ EPA (2000) Review of EPA's Health Assessment Document for Diesel Exhaust (EPA 600/8–90/057E). Review by the Clean Air Scientific Advisory Committee (CASAC) December 2000. EPA–SAB–CASAC–01–003.

⁴ For example, see letter dated July 13, 1999 from John Elston and Richard Baldwin on behalf of the State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Control Officials (docket A–99–06, item II–D–78).

pollutants on the public health and welfare. Section 202(a)(3)(C) requires that promulgated standards apply for no less than three years and go into effect no less than 4 years after promulgation. This rule conforms with these statutory requirements.

We believe the evidence provided in Section III and the Regulatory Impact Analysis (RIA) indicates that the stringent emission standards finalized today are feasible and reflect the greatest degree of emission reduction achievable in the model years to which they apply. We have given appropriate consideration to costs in choosing these standards. Our review of the costs and cost-effectiveness of these standards indicate that they will be reasonable and comparable to the cost-effectiveness of other emission reduction strategies that have been required or could be required in the future. We have also reviewed and given appropriate consideration to the energy factors of this rule in terms of fuel efficiency and effects on diesel fuel supply, production, and distribution, as discussed below, as well as any safety factors associated with these standards.

The information regarding air quality and the contribution of heavy-duty engines to air pollution in Section II and the RIA provides strong evidence that emissions from such engines significantly and adversely impact public health or welfare. First, there is a significant risk that several areas will fail to attain or maintain compliance with the NAAQS for 1-hour ozone concentrations or PM₁₀ concentrations during the period that these new vehicle and engine standards will be phased into the vehicle population, and that heavy-duty engines contribute to such concentrations, as well as to concentrations of other NAAQS-related pollutants. This risk will be significantly reduced by the standards adopted today; however, the evidence indicates that some risk remains even after the reductions achieved by these new controls on heavy-duty vehicles and diesel fuel. Second, EPA believes that diesel exhaust is likely to be carcinogenic to humans. The risk associated with exposure to diesel exhaust includes the particulate and gaseous components. Some of the toxic air pollutants associated with emissions from heavy-duty vehicles and engines include benzene, formaldehyde, acetaldehyde, dioxin, acrolein, and 1,3-butadiene. Third, emissions from heavy-duty engines contribute to regional haze and impaired visibility across the nation, as well as acid deposition, POM deposition, eutrophication and

nitrification, all of which are serious environmental welfare problems.

Based on this evidence, EPA believes that, for purposes of section 202(a)(1), emissions of NO_x, VOCs, SO_x and PM from heavy-duty trucks can reasonably be anticipated to endanger the public health or welfare. In addition, this evidence indicates that it will not be appropriate to modify the technology-based standards pursuant to section 202(a)(3)(B). EPA believes that it is required under section 202(a)(3)(A) to set technology-based standards that meet the criteria of that provision, and is not required to make an affirmative determination under section 202(a)(1). Instead EPA is authorized to take air quality into consideration under section 202(a)(3)(B) in deciding whether to modify or not set standard under section 202(a)(3)(A). In this case, however, EPA believes the evidence fully supports a determination under section 202(a)(1) to set standards, and a determination not to modify such standards under section 202(a)(3)(B).

In addition, there is significant evidence that emissions from heavy-duty trucks contribute to levels of ozone such that large segments of the national population are expected to experience prolonged exposure over several hours at levels that present serious concern for the public health and welfare. The same is true for exposure to fine PM. These public health and welfare problems are expected to occur in many parts of the country, including areas that are in compliance with the 1-hour ozone and PM₁₀ NAAQS (PM₁₀ is particulate matter that is 10 microns or smaller). This evidence is an additional reason why the controls finalized today are justified and appropriate under the Act. While EPA sees this as additional support for this action, EPA also believes that the evidence of air pollution problems summarized above and described in greater detail elsewhere is an adequate justification for this rule independent of concern over prolonged exposure to ozone and fine PM levels.

Section 211(c) of the CAA allows us to regulate fuels where emission products of the fuel either: (1) Cause or contribute to air pollution that reasonably may be anticipated to endanger public health or welfare, or (2) will impair to a significant degree the performance of any emission control device or system which is in general use, or which the Administrator finds has been developed to a point where in a reasonable time it will be in general use were such a regulation to be promulgated. This rule meets each of these criteria. The discussion of the first

test is substantially the same as the above discussion for the heavy-duty engine standards, because SO_x and sulfate PM emissions from heavy-duty diesel vehicles are due to sulfur in diesel fuel. The substantial adverse effect of high diesel sulfur levels on diesel control devices or systems expected to be used to meet the heavy-duty standards is discussed in depth in Section III.F and in the RIA. In addition, our authority under section 211(c) is discussed in more detail in Appendix A to the RIA.

C. Putting This Rule In Perspective

There are several helpful perspectives to establish in understanding the context for this rule: the growing popularity of diesel engines, past progress and new developments in diesel emissions control, Tier 2 light-duty emission standards and other related EPA initiatives (besides the above-discussed rulemaking for highway heavy-duty engine emission standards in 2004), and recent actions and plans to control diesel emissions by the States and in other countries.

1. Diesel Popularity

The diesel engine is increasingly becoming a vital workhorse in the United States, moving much of the nation's freight, and carrying out much of its farm, construction, and other labor. Diesel engine sales have grown significantly over the last decade, so that now about a million new diesel engines are put to work in the U.S. every year. Unfortunately, these diesel engines emit large quantities of harmful pollutants annually.

Furthermore, although diesel emissions in this country come mostly from heavy-duty trucks and nonroad equipment, an additional source may grow out of auto manufacturers' plans to greatly increase the sales of diesel-powered light-duty vehicles (LDVs) and especially of light-duty trucks (LDTs), a category that includes the fast-selling sport-utility vehicles, minivans, and pickup trucks. These plans reflect the continuation of an ongoing dieselization trend, a trend recently most evident in the growing popularity of diesel-powered light heavy-duty trucks (8500 to 19,500 pounds). Diesel market penetration is working its way from larger to smaller highway applications and to a broader array of nonroad equipment applications. Finally, especially in Europe where diesels have already gained a broad consumer acceptance, the diesel engine is increasingly viewed as an attractive technology option for reducing emissions of gases that contribute to

global warming, because it has greater operating efficiency than a gasoline engine.

2. Past Progress and New Developments

Since the 1970's, highway diesel engine designers have employed numerous strategies to meet our emissions standards, beginning with smoke controls, and focusing in the 1990's on increasingly stringent NO_x, hydrocarbon, and PM standards. These strategies have generally focused on reducing engine-out emissions and not on exhaust emission controls, although relatively low-efficiency oxidation catalysts have been applied in some designs to reduce PM, with the recognition that their effectiveness is limited by sulfur in the fuel. On the fuel side, we set quality standards that provided emissions benefits by limiting the amount of sulfur and aromatics in highway diesel fuel beginning in 1993 (55 FR 34120, August 21, 1990). Our most recent round of standard setting for heavy-duty highway diesels occurred in 1997 (62 FR 54693, October 21, 1997), effective with the 2004 model year. These standards were recently reviewed in a final rulemaking (65 FR 59896, October 6, 2000). These actions will result in engines that emit only a fraction of the NO_x, hydrocarbons, and PM produced by engines manufactured just a decade ago. We consider this an important first phase of our current initiative to reconcile the diesel engine with the environment.

Nevertheless, certain characteristics inherent in the way diesel fuel combustion occurs have prevented achievement of emission levels comparable to those of today's gasoline-fueled vehicles. Although diesel engines provide advantages in terms of fuel economy, durability, and evaporative emissions, and have inherently low exhaust emissions of hydrocarbons and carbon monoxide, controlling NO_x emissions is a greater challenge for diesel engines than for gasoline engines, primarily because of the ineffectiveness of three-way catalysis in the oxygen-rich and relatively cool diesel exhaust environment. Similarly, PM emissions, which are inherently low for properly operating gasoline engines, are more difficult to control in diesel engines, because the diesel combustion process tends to form soot particles. The challenge is somewhat complicated by the fact that historical diesel NO_x control approaches tend to increase PM, and vice versa, but both are harmful pollutants that need to be controlled.

Considering the air quality impacts of diesel engines and the potential for growth of diesels in the lighter-duty

portion of the market, it is imperative that progress in diesel emissions control continue. Significant progress has already been made in the design of exhaust emission control devices for diesel applications, driven in part by the challenge presented by the stringent Tier 2 standards for light-duty vehicles. As discussed in detail in Section III, new exhaust emission control technologies for NO_x, PM, and hydrocarbon reduction will allow a major advancement in diesel emissions control of a magnitude comparable to that ushered in by the automotive catalytic converter in the 1970's. However, changes in diesel fuel quality will be needed to enable these high-efficiency exhaust emission control devices.

3. Tier 2 Emissions Standards

Auto manufacturers' design plans for new light-duty diesel vehicle models will be greatly affected by our recent adoption of stringent new emission standards for light-duty highway vehicles (referred to as "Tier 2" standards) that will phase in between 2004 and 2009. These Tier 2 standards will require significant improvements in electronic engine controls and catalysts on gasoline vehicles. We anticipate that these advances will be transferred over to heavy-duty gasoline vehicles in meeting the standards finalized in this rule. The Tier 2 NO_x and PM standards, that apply equally to gasoline and diesel vehicles, will also require the use of high-efficiency emission control technologies on light-duty diesel vehicles. The low sulfur highway diesel fuel brought about by this rule will make it possible for designers to employ these high-efficiency exhaust emission control technologies in these light-duty applications. The timing of the fuel change provides for the use of these devices in time to satisfy Tier 2 phase-in requirements.

The Tier 2 program phases in interim and final standards over a number of years, providing manufacturers the option of delaying some of their production of final Tier 2 designs until later in the phase-in. For vehicles up to 6000 lbs GVWR (LDVs) and light light-duty trucks (LLDTs), the interim standards begin in 2004 and phase out by 2007, as they are replaced by the final Tier 2 standards. For vehicles between 6000 and 8500 lbs (heavy light-duty trucks (HLDTs)), the interim standards begin in 2004 and phase out by 2009 as they are replaced by the final Tier 2 standards. A new category of vehicles between 8,500 and 10,000 lbs, medium-duty passenger vehicles

(MDPVs), will follow the same phase-in schedule as HLDTs.

Our assessment in the Tier 2 final rule is that the interim standards are feasible for diesel vehicles without a need for fuel quality changes. Manufacturers can take advantage of the flexibilities provided in the Tier 2 program to delay the need for light-duty diesels to meet the final Tier 2 levels until late in the phase-in period (as late as 2007 for LDVs and LLDTs, and 2009 for HLDTs and MDPVs). However, low sulfur fuel is expected to be needed for diesel vehicles designed to meet the final NO_x and PM standards, because these vehicles are likely to employ light-duty versions of the sulfur-sensitive exhaust emission control technologies discussed in Section III. The gasoline quality changes and light-duty gasoline engine developments that will result from the Tier 2 rule will also help make it feasible for heavy-duty gasoline engines to meet the standards in this rule.

4. Mobile Source Air Toxics Rulemaking

Passenger cars, on-highway trucks, and nonroad equipment emit hundreds of different compounds and elements. Several of these are considered to be known, likely, or possible human carcinogens. These include diesel exhaust, plus several VOCs such as acetaldehyde, benzene, 1,3-butadiene, formaldehyde, and acrolein. Trace metals may also be present in heavy-duty diesel engine emissions, resulting from metals in fuels and lubricating oil, and from engine wear. Several of these metals have carcinogenic and mutagenic effects.

Important reductions in these and other mobile source air toxics have occurred under existing programs established under Clean Air Act Sections 202(a) (on-highway engine requirements), 211 (the fuel requirements), and 213 (nonroad engine requirements). Although these programs are primarily designed for control of criteria pollutants, especially ozone and PM₁₀, they also achieve important reductions in diesel PM and gaseous air toxics through VOC and hydrocarbon controls.

In addition to these programs, Section 202(l)(2) of the Act directs us to consider additional controls to reduce emissions of hazardous air pollutants from motor vehicles, their fuels, or both. Those standards are to reflect the greatest degree of emission reduction achievable through the application of technology which will be available, taking into account existing standards, costs, noise, energy, and safety factors. We published a proposed rule on mobile source air toxics on August 4,

2000 (65 FR 48058). This MSAT final rule was signed on December 20, 2000. Interested parties should refer to the final rule if interested in the ultimate form of the regulation.

The mobile source air toxics (MSATs) rule consists of four parts. First, we identify a list of 21 MSATs that are known to be emitted from motor vehicles or their fuels and are considered by the Agency to pose potential adverse human health risks. Diesel exhaust is included on this MSAT list because, as discussed in Section II, human epidemiological studies have suggested that diesel exhaust is associated with increased risk of adverse respiratory effects and lung cancer. Second, the MSAT rule considers the contribution of mobile sources to the nation's air toxics inventory and evaluates the toxics benefits of existing mobile source emission control programs. The benefits of the program as proposed are included in this analysis. Third, the MSAT final rule considers whether additional controls are appropriate at this time, given technological feasibility, cost, and the other criteria specified in the Act. The final rule includes a toxics performance standard applicable to reformulated gasoline and anti-dumping standards that apply to conventional gasoline. With regard to additional vehicle-based controls, we proposed that it is not appropriate at this time to set more stringent standards than the technology forcing standards found in this rule and our recently adopted Tier 2 rulemaking. Finally, because of our concern about the potential future health impacts of exposure to the public of air toxics from the remaining emissions from mobile sources in the future, we continue our toxics-related research activities and to conduct a future rulemaking to evaluate whether, based on the additional data, additional mobile source air toxics controls should be adopted. This rulemaking would be completed no later than 2004.

EPA also intends to rely on today's rule to satisfy in part its obligations under section 202(l) of the Clean Air Act. In the mobile source air toxics NPRM, the Agency proposed a list of mobile source air toxics, including diesel exhaust, as well as a number of specific constituents of heavy-duty vehicle exhaust (gasoline and diesel).⁵ The emissions standards established in today's action result in the greatest achievable reductions of diesel PM and heavy-duty vehicle NMHC. The Agency is scheduled to finalize the mobile

source air toxics rulemaking on or before December 20, 2000.

5. Nonroad Engine Standards and Fuel

Although this rule covers only highway diesel engines and fuel, it is clear that potential requirements for nonroad diesel engines and fuel are related. It is expected that nonroad diesel fuel quality, currently unregulated, may need to be controlled in the future in order to reduce the large contribution of nonroad engines to NO_x and PM inventories. Refiners, fuel distributors, states, environmental organizations, and others have asked that we provide as much information as possible about the future specifications for both types of fuel as early as possible.

We do plan to give further consideration to additional control of nonroad engine emissions. As discussed below in Section VIII, an effective control program for these engines requires the resolution of several major issues relating to engine emission control technologies and how they are affected by fuel sulfur content. The many issues connected with any rulemaking for nonroad engines and fuel warrant serious attention, and we believe it is premature for us to take any action on this initiative in this rule. We plan to initiate action in the future to formulate proposals that would address both nonroad diesel fuel and engines.

6. State Initiatives

The California Air Resources Board (ARB) and local air quality management districts within California are also pursuing measures to better control diesel emissions. Key among these efforts is work resulting from the Board's designation of particulate emissions from diesel-fueled engines as a toxic air contaminant (TAC) on August 27, 1998. TACs are air pollutants that may cause or contribute to an increase in death or serious illness or may pose a present or future hazard to human health. The TAC designation was based on research studies showing that emissions from diesel-fueled engines may cause cancer in animals and humans, and that workers exposed to higher levels of emissions from diesel-fueled engines are more likely to develop lung cancer.

In September 2000 the ARB approved a Diesel Risk Reduction Plan developed by its staff following an extensive public process.⁶ This plan includes several California measures related to highway diesel vehicles, including the major

elements of the program we are establishing on a nationwide basis in this final rule. Because truck travel from other states has a large effect on California's air quality, the plan and the Board's resolution further encourages the EPA adopt this nationwide program, as well as other diesel-related emissions reduction programs.

The ARB has also adopted stringent new emission requirements for urban transit buses and is considering similar requirements for school buses.⁷ This program is aimed at encouraging the use of clean alternative fuels and high-efficiency diesel emission control technologies. Their program includes requirements for zero-emissions buses, fleet average NO_x levels, and retrofits for PM control, as well as model year 2007 NO_x and PM standards levels of 0.2 and 0.01 g/bhp-hr, respectively (equal to the levels finalized in this rule). It also requires that all diesel fuel used by transit agencies after July 1, 2002 must meet a cap of 15 ppm sulfur. This is a much earlier schedule than that finalized in this rule, to support the ARB's proposed transit bus fleet program.

Other states, most notably Texas, have taken steps toward adopting programs for cleaner diesel fuel and cleaner diesel engines. On December 6, 2000, the Texas Natural Resource Conservation Commission adopted a program that, among other things, would require the capping of diesel fuel sulfur levels in many counties to 15 ppm by June 2006.⁸ This proposal exemplifies the importance that states with air quality problems have attached to clean diesel fuel, and specifically to the 15 ppm maximum sulfur requirement in 2006 being set in this rule.

7. Retrofit Programs

Many States facing air quality improvement challenges have expressed strong interest in programs that will reduce emissions from existing highway and nonroad diesel engines through the retrofitting of these engines with improved emission control devices. The urban transit bus program adopted by the California ARB includes such a retrofit requirement as one of its major components (see Section I.C.6). In March 2000 we announced our own Diesel Retrofit Initiative to support and

⁷ "Notice of Public Hearing To Consider the Adoption of a Public Transit Bus Fleet Rule and Emission Standards For New Urban Buses", California ARB, November 30, 1999, and ARB Resolution 00-2, dated February 24, 2000.

⁸ Title 30, Texas Administrative Code, Chapter 114, Subchapter H, Division 2. Also see Texas Natural Resource Conservation Commission website www.tnrcc.state.tx.us.

⁵ 65 FR 48058, August 4, 2000.

⁶ State of California Air Resources Board Resolution 00-30, September 28, 2000.

encourage fleet operators, air quality planners, and retrofit manufacturers in creating effective retrofit programs. These programs are appealing because the slow turnover of the diesel fleet to the new low-emitting engines makes it difficult to achieve near-term air quality goals through new engine programs alone. Some of the exhaust emission control technologies discussed in this rule are especially appealing for use in retrofits because they can be fitted to an existing vehicle as add-on devices without major engine modifications, although some of the more sophisticated systems that require careful control of engine parameters may be more challenging.

Because of the uncertainty at this time in how and when such programs may be implemented, our analysis for today's rule does not calculate any benefits from them. Nevertheless, we believe that this program can enable the viability of these retrofit technologies. We expect that large emission benefits from the existing fleet could be realized as a result of the fuel changes we are finalizing here, combined with retrofit versions of the technologies that will be developed in response to the finalized engine standards. These benefits will be especially important in the early years of the program when new vehicles standards are just beginning to have an impact, and when States and local areas need to gain large reductions to attain air quality goals.

8. Actions In Other Countries

There is substantial activity taking place in many countries related to the regulation of diesel fuel and engines. The large light-duty vehicle market share enjoyed by diesels in many European countries has helped to stir innovation in dealing with diesel emissions problems. Advanced emissions control technologies are being evaluated there in the in-use fleet and experience gained from these trials is helping to inform the diesel emissions control discussion in the U.S. In addition, several European countries have low sulfur diesel fuel, with maximum sulfur levels varying from 10 to 50 ppm, and so experience gained from the use of these fuels, though not completely transferable to the U.S. situation, also provides valuable experience. European Union countries will limit sulfur in diesel fuel to 50 ppm by 2005, and even more aggressive plans are being discussed or implemented. The United Kingdom made a rapid conversion to 50 ppm maximum sulfur diesel fuel in 1999 by offering tax incentives. This change occurred with much smaller refinery investments than

had been predicted, and some refinery production there is actually at levels well below the 50 ppm cap. Germany is moving forward with plans to introduce a 10 ppm sulfur cap for diesel fuel by 2003, also via tax incentives, and is attempting to get the 50 ppm specification that was adopted by the European Commission revised downward to the 10 ppm cap level. The Commission is reviewing the implications of moving to this level.

One European country has had extensive experience with the transition to low sulfur diesel fuel. In the early 1990's, Sweden decided to take advantage of the environmental benefits of 10 ppm sulfur/low aromatics fuel by introducing it with a reduction in the diesel fuel tax. The program has been quite successful, and in excess of 90 percent of the highway diesel fuel used there is of this 10 ppm maximum sulfur class.⁹

The government of Canada has expressed its intent to harmonize its fuel regulations with the U.S. fuels standards being adopted today.¹⁰ This would simplify the operation of new-technology vehicles that cross the U.S.-Canada border. However, the success of the U.S. program does not depend on harmonized diesel fuel standards, and Section VI.H discusses how differences between the future fuel specifications in the U.S. and those in Canada and Mexico may be accommodated.

II. The Air Quality Need and Projected Benefits

A. Overview

Heavy-duty vehicle emissions contribute to air pollution with a wide range of adverse health and welfare impacts. Emissions of VOC, CO, NO_x, SO_x, and PM from HD vehicles contribute a substantial percentage of the precursors or direct components of ambient concentrations of ozone, PM, sulfur and nitrogen compounds, aldehydes, and substances known or considered likely to be carcinogens. Emissions of VOCs include some specific substances known or suspected to cause cancer. Of particular concern is human epidemiological evidence linking diesel exhaust to an increased risk of lung cancer, and the Agency is also concerned about the noncancer health effects of diesel exhaust. We have finalized on December 20, 2000 a rule which lists diesel particulate matter and

diesel exhaust organic gases as a mobile source air toxic under section 202(l) of the Clean Air Act, and the particulate matter standard finalized today reflects the greatest degree of emissions reductions achievable under section 202(l) for on-highway heavy-duty vehicle PM emissions. Heavy-duty vehicle emissions also cause adverse environmental effects including visibility reductions, acid rain, nitrification and eutrophication of water bodies.

Emissions from heavy-duty vehicles, which are predominantly diesel-powered, account for substantial portions of the country's ambient PM and ground-level ozone levels. By 2007, we estimate that heavy-duty vehicles will account for 28 percent of mobile source NO_x emissions (including highway and non-road), and 20 percent of mobile source PM emissions. These proportions are even higher in some urban areas, such as Atlanta and Los Angeles. Urban areas, which include many poorer neighborhoods, can be disproportionately impacted by HDV emissions because of heavy traffic in and out of densely populated urban areas.

The Agency developed new emissions inventories and conducted new air quality modeling for this rule to determine the risk of exposure to unhealthy ambient concentrations of ozone and particulate matter in 2007, 2020 and 2030. This analysis, supplemented with local air quality modeling and other information on emissions and air quality trends, indicates that an appreciable number of the 45 areas with a total population of 128 million people face a significant risk of violating the 1-hour ozone standard between 2007 and 2030. Ten PM₁₀ nonattainment areas with 28 million people face a significant risk of experiencing particulate matter levels that violate the PM₁₀ standard during the same period.

Under the mandates and authorities in the Clean Air Act, federal, state, and local governments are working to bring ozone and particulate levels into compliance with the 1-hour ozone and PM₁₀ NAAQS through SIP attainment plans. Areas that reach attainment without reductions from this rule are likely to need additional reductions to ensure that future air quality continues to achieve ozone and PM standards, and areas that seek redesignation to attainment may use the reductions from this rule in future maintenance plans.

The heavy-duty vehicle and engine emission standards, along with the diesel fuel sulfur standard finalized today, will have a dramatic impact in

⁹ Memo from Thomas M. Baines to Docket A-99-06, October 29, 1999, Docket #A-99-06, Item II-G-12.

¹⁰ "Process Begins to Develop Long term Agenda to Reduce Air Pollution from Vehicles and Fuels", Environment Canada press release, May 26, 2000.

reducing the large contribution of HDVs to air pollution. These standards will result in substantial benefits to public health and welfare through significant annual reductions in emissions of NO_x, PM, NMHC, carbon monoxide, sulfur dioxide, and air toxics. For example, we project a 1.8 million ton reduction in NO_x emissions from HD vehicles in 2020, which will increase to 2.6 million tons in 2030 when the current HD vehicle fleet is completely replaced with newer HD vehicles that comply with these emission standards. When coupled with the emission reductions projected to result from the Phase 1 (model year 2004) HDV standards, the emission reductions from heavy-duty vehicles are projected to be as large as the substantial reductions the Agency expects from light-duty vehicles as a result of its recently promulgated Tier 2 rulemaking.

In sum, the Agency's air quality modeling and other evidence demonstrates that ambient concentrations of ozone, particulate matter, sulfur and nitrogen compounds, VOCs, air toxics, CO and diesel exhaust are anticipated to endanger public health, welfare and the environment in the time period between 2007 and 2030. Emission reductions expected from today's action are predicted to lessen future ambient concentrations of ozone and particulate matter and associated adverse public health and welfare effects.

B. Public Health and Welfare Concerns

1. Health and Welfare Concerns Raised During Public Hearings

The Agency received a significant number of comments on this section during the public hearings and in written comments from interested parties. Comments are addressed in this section as well as in the Response to Comment document that accompanies this action.

Throughout the five public hearings held around the country on the proposed heavy-duty engine and diesel fuel rule, the Agency received strong public support at each venue for increasing the stringency of heavy-duty truck and bus emission standards, and for further controls on sulfur in diesel fuel, in order to enable the necessary exhaust emission control. In addition to the 55,000 comments received from citizens in support of the Agency proposal to clean diesel fuel by mid-2006 and reduce emissions from diesel engines in 2007, we received 8,500 comments from citizens urging the Agency to act prior to 2007.

Public officials and representatives of environmental, public health, or community-based organizations testified regularly about the link between public health ailments, such as asthma and lung cancer, and air pollution caused by diesel exhaust and particulate matter. In different ways, many noted that the impact of diesel soot is compounded by the fact that it is discharged at street level where people live and breathe. A regular complaint was the close proximity of bus depots, transfer terminals, and heavily-trafficked roadways to homes and apartment buildings, and in particular, to hospitals, playgrounds and schools. A common theme revolved around the notion that since asthma is an incurable disease, it was of utmost importance to help reduce the severity and frequency of attacks by reducing environmental triggers such as ozone, particulate matter and diesel exhaust.

Major industries represented during these public hearings were the heavy-duty vehicle engine manufacturers, the oil industry, and the commercial truckers. While each had a different perspective, most supported the underlying intent of the proposal to improve public health and welfare, and some also supported the specific requirements as proposed. For those who objected to the proposal, the main thrust of their concerns related to the stringency and public health necessity of the new standards and the diesel fuel sulfur requirement. Largely in their written comments, these industries raised questions about the need for additional reductions in order to meet existing ozone and PM national ambient air quality standards and took exception with the Agency's characterization of diesel exhaust as a human carcinogen at environmental levels of exposure. Some industry commenters also challenged the Agency's reliance on public welfare and environmental effects such as visibility impairment and eutrophication of water bodies because the Agency had insufficiently quantified the benefits that would result from new standards on heavy-duty vehicles and diesel fuel.

The following subsections present the available information on the air pollution situation that is likely to exist without this rule for each ambient pollutant. We also present information on the improvement that is expected to result from this rule.

2. Ozone and Its Precursors

a. Health and Welfare Effects From Short-Term Exposures to Ozone

NO_x and VOC are precursors in the photochemical reaction which forms tropospheric ozone. A large body of evidence shows that ozone can cause harmful respiratory effects including chest pain, coughing, and shortness of breath, which affect people with compromised respiratory systems most severely. When inhaled, ozone can cause acute respiratory problems; aggravate asthma; cause significant temporary decreases in lung function of 15 to over 20 percent in some healthy adults; cause inflammation of lung tissue; produce changes in lung tissue and structure; may increase hospital admissions and emergency room visits; and impair the body's immune system defenses, making people more susceptible to respiratory illnesses. Children and outdoor workers are likely to be exposed to elevated ambient levels of ozone during exercise and, therefore, are at greater risk of experiencing adverse health effects. Beyond its human health effects, ozone has been shown to injure plants, which has the effect of reducing crop yields and reducing productivity in forest ecosystems.

There is strong and convincing evidence that exposure to ozone is associated with exacerbation of asthma-related symptoms. Increases in ozone concentrations in the air have been associated with increases in hospitalization for respiratory causes for individuals with asthma, worsening of symptoms, decrements in lung function and increased medication use. Studies have also indicated that exposure to particulate matter can be associated with altered lung function and increased respiratory symptoms, and asthmatic children are considered to be particularly sensitive to these effects. In addition, exposures to particulate matter or ozone have been shown to have a priming effect for responsiveness to allergens, with the pollutant exposure leading to heightened responses to allergens among allergic asthmatics. It is not believed, based on the current evidence, that exposure to outdoor pollutants such as ozone or particulate matter is a cause of asthma.

Asthma is one of the most common and costly diseases in the United States. According to the President's Task Force on Environmental Health Risks and Safety Risks to Children, America is in the midst of an asthma epidemic.¹¹

¹¹ *Asthma and the Environment: A Strategy to Protect Children*, President's Task Force on

Since 1980, the number of asthma sufferers in the United States has more than doubled from 6.7 million to 17.3 million in 1998.¹² Today, more than 5 percent of the US population has asthma. On average, 15 people died every day from asthma in 1995, and the death rate has nearly tripled since 1975. In 1998, the cost of asthma to the U.S. economy was estimated to be \$11.3 billion, with hospitalizations accounting for the single largest portion of the cost.¹³ A recent report by the Pew Environmental Health Commission at Johns Hopkins School of Public Health estimates that by 2010, 22 million Americans will suffer from asthma, or one in 14 Americans and one in every five families.¹⁴ At present, asthma cannot be cured, only controlled.

To address this growing public health problem, the President's Task Force on Environmental Health Risks and Safety Risks to Children ranked asthma as its highest priority. The President's Task Force created and charged the Asthma Priority Area Workgroup, co-chaired by EPA and the Department of Health and Human Services, with reviewing current Federal efforts to address the issue, and to make recommendations. In May, 2000, the Task Force issued a strategy that focused on developing a greater understanding of the role environmental factors associated with the onset of asthma; and triggers of asthma. The report found that "children with asthma have long been recognized as particularly sensitive to outdoor air pollution." The report noted that "25 percent of children in America live in areas that regularly exceed EPA limits for ozone." The first guiding principle was to focus efforts to "eliminate the disproportionate impact of asthma in minority populations and those living in poverty." Testimony received during the Agency's five public hearings on this rule contained numerous references and detailed personal accounts as to the severe and sometimes fatal impact of asthma on the lives of American citizens.

Environmental Health Risks and Safety Risks to Children, January 28, 1999, Revised May, 2000.

¹² *Asthma Prevention Program of the National Center for Environmental Health*, Centers for Disease Control and Prevention, "At-A-Glance, 1999; Centers for Disease Control and Prevention, CDC, *Surveillance for Asthma—United States, 1960–1995*," MMWR 47 (No. SS-1) (April 1998).

¹³ *Asthma Statistics*, National Institutes of Health, National, Heart, Lung, and Blood Institute, January, 1999.

¹⁴ *Attack Asthma: Why America Needs A Public Health Defense System to Battle Environmental Threats*, Pew Environmental Health Commissions at the Johns Hopkins School of Public Health, June, 2000.

b. Current and Future Nonattainment Status With the 1-Hour Ozone NAAQS

Today, ground level ozone remains a pervasive pollution problem in the United States. As of July, 2000, 102 million people (1999 census) lived in 31 metropolitan areas designated nonattainment under the 1-hour ozone NAAQS.¹⁵ This is a sharp decline from the 101 nonattainment areas originally identified under the Clean Air Act Amendments of 1990, but elevated ozone concentrations remain a serious public health concern throughout the nation.

Over the last decade, declines in ozone levels were found mostly in urban areas, where emissions are heavily influenced by controls on mobile sources and their fuels.¹⁶ Twenty-three metropolitan areas have realized a decline in ozone levels since 1989, but at the same time, ozone levels in 11 metropolitan areas with 7 million people have increased.¹⁷ Regionally, California and the Northeast have recorded significant reductions in peak ozone levels, while four other regions (the Mid-Atlantic, the Southeast, the Central and Pacific Northwest) have seen ozone levels increase.

The highest ambient concentrations are currently found in suburban areas, consistent with downwind transport of emissions from urban centers. Concentrations in rural areas have risen to the levels previously found only in cities. Over the last decade, ozone levels at 17 of our National Parks have increased, and in 1998, ozone levels in two parks were 30 to 40 percent higher than the ozone NAAQS.

i. Results of Photochemical Ozone Modeling and Analysis of Emissions Inventories

In conjunction with this rulemaking, the Agency performed ozone air quality modeling for nearly the entire Eastern U.S. covering metropolitan areas from Texas to the Northeast.¹⁸ This ozone air quality modeling was based upon the same modeling system as was used in

the Tier 2 air quality analysis, with the addition of updated inventory estimates for 2007 and 2030.¹⁹ This modeling supports the conclusion that there is a broad set of areas with predicted ozone concentrations in 2007 and 2030 at or above 0.125 ppm, in the baseline scenarios without additional emission reductions. EPA established the 1-hour standard at 0.12 parts per million (ppm) daily maximum 1-hour average concentration not to be exceeded more than once per year on average. Compliance with the 1-hour standard is judged on the basis of the most recent three years of ambient air quality monitoring data.

We have compared and supplemented our own ozone modeling with other modeling studies, submitted to us as state implementation plan (SIP) revisions, or brought to our attention through our consultations with states on SIP revisions that are in development. The ozone modeling in the SIP revisions has the advantage of using emission inventories that are more specific to the area being modeled, and of using meteorological conditions selected specifically for each area. Also, the SIP revisions included other evidence and analysis, such as analysis of air quality and emissions trends, observation-based models that make use of data on concentrations of ozone precursors, alternative rollback analyses, and information on the responsiveness of the air quality model. For some areas, we decided that the predictions of 1-hour ozone exceedances from our modeling were less reliable than conclusions that could be drawn from this additional evidence and analysis. For example, in some areas our episodes did not capture the meteorological conditions that have caused high ozone, while local modeling did so. Thus, these local analyses are considered to be more extensive than our own modeling for estimating whether there would be NAAQS nonattainment without further emission reductions, when interpreted by a weight of evidence method which meets our guidance for such modeling.

Photochemical ozone modeling conducted for this rulemaking was based in part on updated national emissions inventories for all sources. National emission trends for NO_x

¹⁵ Memorandum to Air Docket, September 18, 2000. Information on ozone nonattainment areas and populations as of July 31, 2000 from US EPA website www.epa.gov/airs/nonattn.html, USA Air Quality Nonattainment Areas, Office of Air Quality Planning and Standards.

¹⁶ National Emissions Trends database.

¹⁷ National Air Quality and Emissions Trends Report, 1998, March, 2000, at 28.

¹⁸ EPA also performed ozone air quality modeling for the western United States but, as described further in the air quality technical support document, model predictions were well below corresponding ambient concentrations. Because of poor model performance for this region of the country, the results of western ozone modeling were not relied on for this rule.

¹⁹ Consistent with a commitment expressed in the proposal, the Agency released the emissions inventory inputs for, and a description of, ozone modeling into the public record (docket number A-99-06), and also onto a website developed expressly for this purpose, on a continuous basis as they were developed. Further discussion of this modeling, including evaluations of model performance relative to predicted future air quality, is provided in the air quality modeling Technical Support Document (TSD).

predict a significant decline from 1996 to 2007, a leveling off of the downward trend between 2007 to 2020, and an increase in NO_x inventories from 2020 to 2030. By 2030, national NO_x levels are estimated to reach levels that are within ten percent of 2007 levels. Predictions of national VOC emissions indicate a reduction from 1996 to 2007, followed by an increase between 2007 and 2030 resulting in 2030 levels that are estimated to be 10 percent greater than VOC emissions levels in 2007. In metropolitan ozone nonattainment areas, such as Charleston, Chicago and Houston, NO_x or VOC emissions in 2030 are predicted to reach or exceed 2007 levels. These estimated national and metropolitan area emissions inventories of ozone precursors are consistent with the conclusions reached by analysis of ozone modeling conducted for this rule that additional reductions are needed in order to enable areas to reach and maintain attainment of the ozone standard between 2007 and 2030.

The Agency conducted ozone modeling based on inventories developed with and without reductions from this rulemaking for three future years: 2007, 2020 and 2030. The year 2007 was chosen because it is also the first year of implementation for the new standards adopted in today's action. It is also the year that nine major urban areas with a history of persistent and elevated ozone concentrations must demonstrate attainment, and is also relevant to the South Coast Air Basin of California (South Coast) with an attainment date of 2010. In addition, modeling was performed for 2030 when the full benefits of the rule are expected to be realized and for 2020 which represents an intermediate year between the start of the program and full turnover of the affected vehicle fleet. The year 2020 is also representative of the period when areas that have come into attainment may need additional reductions in order to maintain the standard.

Today's rule will provide a substantial reduction in emissions of ozone precursors, particularly NO_x. These emissions reductions will greatly lower ozone concentrations which will help federal and State efforts to bring about attainment of the current 1-hour ozone standard. As described in the Air Quality Modeling Technical Support Document for this rule, EPA performed regional scale ozone modeling for the Eastern U.S. to assess the impacts of the controls in this rule on predicted 1-hour ozone exceedances. The results of this modeling were examined for those 37 areas in the East for which EPA's modeling predicted exceedances in

2007, 2020 and/or 2030 and current 1-hour design values are above the standard or within 10 percent of the standard. The results for these areas combined indicate that there will be substantial reductions in the number of exceedances and the magnitude of high ozone concentrations in both 2020 and 2030 due to this rule. The modeling also indicates that without the rule, exceedances would otherwise increase by 37 percent between 2020 and 2030 as growth in emissions offsets the reductions from Tier 2 and other current control programs.

For all areas combined, the rule is forecast to provide a 33 percent reduction in exceedances in 2020 and a 38 percent reduction in 2030. The total amount of ozone above the standard is expected to decline by nearly 37 percent in 2020 and 44 percent in 2030. Also, daily maximum ozone exceedances are lowered by 5 ppb on average in 2020 and nearly 7 ppb in 2030. The modeling forecasts an overall net reduction of 39 percent in exceedances from 2007, which is close to the start of this program, to 2030 when controls will be fully in place. In addition, the results for each individual area indicates that all areas are expected to have fewer exceedances in 2030 with the HDV controls than without this rule.

During the public comment period on the proposed rule, EPA received several comments that expressed concern about potential increases in ozone that might result from this rule. As indicated above, the air quality modeling results indicate an overall reduction in ozone levels in 2007 and 2030 during the various episodes modeled. Examining individual areas, nearly the entire country is projected to benefit substantially from the reductions in this rule.²⁰ There is a metropolitan area that EPA modeled as having exceedances with the one-hour ozone standard under baseline conditions in 2007 through 2030, which the Agency's modeling for the HDV rule estimated could have less than a 3 percent increase in its peak ozone levels in 2020 and 2030 and small net increase (i.e., less than 1 ppb) in levels above the 1-hour standard in 2030. However, EPA's air quality modeling did not predict an increase in the number of exceedances in this CMSA/MSA in 2020 and a decrease in exceedances occurred in 2030. In another CMSA/MSA in another State, in 2030 there was less than a one percent increase in the summer peak level. Yet,

²⁰ The air quality modeling was performed for the Eastern region of the United States, but EPA also expects the rule to benefit nonattainment areas throughout the entire nation, including California.

this area had fewer exceedances and lower ozone above the 1-hour standard in both 2020 and 2030 under the rule. EPA expects that the States will have State Implementation Plans that will consider federal controls and complement them with State actions to provide attainment and will work with the States to ensure this occurs.

Considering all of EPA's air quality modeling results, it is clear that the significant ozone reductions from this rule outweigh the limited ozone increases that may occur in the future assuming no additional reductions from federal or local controls. Additional details on this are provided in the Response to Comments document and in EPA's Heavy Duty Rule Air Quality Modeling Technical Support Document. Furthermore, EPA's Regulatory Impact Analysis for this rule shows significant health and welfare benefits occurring from the ozone reductions that the rule provides (see details on the benefits in Section V.F.5 of the preamble and Chapter VII of the RIA).

ii. Areas At Risk of Exceeding the 1-Hour Ozone Standard in the Future

This section presents the Agency's conclusions about the risk of future nonattainment for 45 areas listed in Table II.B-1 based on photochemical ozone modeling conducted for this rule and other evidence such as local air quality modeling.²¹ The areas listed in Table II.B-1 are separated into two broad groups: (1) Those areas with attainment dates in 2007 or 2010 that will benefit from reductions from this rule to attain and maintain the standard; and (2) those areas with attainment dates prior to 2007 that will benefit from reductions from this rule to maintain the standard after their attainment dates. Because ozone concentrations causing violations of the 1-hour ozone standard are well established to endanger public health and welfare, this indicates that it is appropriate for the Agency to set new standards for heavy-duty vehicles. The following discussion follows these groupings from top to bottom. A more detailed discussion is found in the Regulatory Impact Analysis (RIA).

Ten metropolitan areas contained within designated ozone nonattainment areas have statutorily-defined attainment dates of 2007 or 2010, or

²¹ In the proposal, we relied on photochemical ozone modeling performed for recently promulgated standards on light duty vehicles, or Tier 2. The results presented in this final rulemaking for heavy-duty vehicles and diesel fuel are largely consistent with the findings presented in the proposal, with small differences due to updated emissions inventories. As stated in the proposal, the ozone modeling methodologies used in the proposal and presented here in the final rule are identical.

have requested attainment date extensions to 2007. These 10 areas are listed at the top of Table II.B-1, and are New York City, Houston, Hartford, New London, Chicago, Milwaukee, Dallas, Beaumont-Port Arthur, Los Angeles, and Southeast Desert.

Each of these areas needs additional emission reductions in order to reach attainment by 2007, and to maintain the standards in the future. Some of these areas have emission reduction shortfalls that are identified in their attainment demonstrations (*i.e.*, South Coast Air Basin, New York and Houston), and reductions from this rule will assist State efforts to reach attainment.²² Three other areas—Southeast Desert, Hartford, New London—are subject to ozone transport from upwind areas with identified shortfalls (South Coast and New York), and depend upon attainment from these upwind areas to reach attainment themselves. We have received attainment plans for two areas in Texas (Dallas and Beaumont-Port Arthur), and the Agency is likely to consider the reductions from this rule in its proposed approval of these attainment plans in **Federal Register** notices. Finally, there are two areas in the Midwest—Chicago and Milwaukee—that have incorporated reductions from this rule into their regional ozone modeling, and plan to rely on reductions from this rule to support their 2007 attainment demonstration.²³

For all ten areas, even if all shortfalls were filled by the States, there is some risk that at least some of the areas will not attain the standards by their attainment dates of 2007, or 2010 for Los Angeles. In that event, the reductions associated with this program, which increase substantially after 2007, will help assure that any residual failures to attain are remedied. Finally, there is also some risk that the areas will be unable to maintain attainment after 2007. Considered collectively, there is a significant risk that some areas will not be in attainment throughout the period when the new standards will reduce heavy-duty vehicle emissions.

The rest of the areas have required attainment dates prior to 2007, or have no attainment date but are subject to a general obligation to have a SIP that provides for attainment and maintenance. These 34 areas, according

to our modeling, are at risk of exceeding the ozone NAAQS between 2007 and 2030. These areas will be able to rely on reductions from this rule to continue to maintain the standard after attainment is reached, and will be able to take credit for this program in their maintenance plans when they seek redesignation to attainment of the ozone standard. If any of these areas reach attainment, and then fall back into nonattainment, or fail to reach attainment by 2007, reductions from this rule will assist these areas in achieving the ozone standard. If an area does not choose to seek redesignation, the continuing reductions from this rulemaking will help ensure maintenance (*i.e.*, prevent future exceedances) with the 1-hour standard after initial attainment is reached.

Areas with attainment dates prior to 2007 are presented in two groupings in the table at the end of this section: a group of 20 areas in the middle of Table II.B-1, and a group of 15 areas at the bottom of Table II.B-1. For the middle group of 20 areas, EPA and the States are pursuing the established statutory processes for attaining and maintaining the ozone standard, or have already redesignated these areas to attainment with a maintenance plan (*e.g.*, Cincinnati). EPA has re-instated the 1-hour ozone standard to some of these areas, restoring the applicability of these processes to them. The Agency believes that there is a significant risk that future air quality in a number of these areas will exceed the ozone standard at some time in the 2007 and later period. This belief is based on three factors: (1) Recent exceedances in 1997–1999, (2) predicted exceedances in 2007, 2020 or 2030 after accounting for existing mobile source requirements and other local or regional controls currently in place or required, and (3) our assessment of the magnitude of recent violations, the year-to-year variability of meteorological conditions conducive to ozone formation, transport from areas with later attainment dates, and other variables inherent in predicting future attainment such as the potential for some areas to experience unexpectedly high economic growth rates, growth in vehicle miles traveled, varying population growth from area to area, and differences in vehicle choice.

Only a subset of these 20 areas have yet adopted specific control measures that have allowed the Agency to fully approve an attainment plan. For some of these areas, we have proposed a finding, based on all the available evidence, that the area will attain by its applicable attainment date. We have approved a 10-year maintenance plan for Cincinnati, OH from 1999 to 2009. However, in many cases, these proposals depend on the State adopting additional emission reduction measures. The RIA provides more information on our recent proposals on attainment demonstrations and maintenance plans.²⁴ Until the SIPs for these areas are actually submitted, reviewed and approved by EPA, there is some risk that these areas will not adopt fully approvable SIPs.

Finally, there are 15 additional metropolitan areas for which the available ozone modeling and other evidence is less clear regarding the need for additional reductions (see Table II.B-1). Our ozone modeling predicted these areas to need further reductions to avoid exceedances in 2007, 2020 or 2030. The recent air quality monitoring data for these areas shows ozone levels with less than a 10 percent margin below the NAAQS. We believe there is a risk that future ozone levels will be above the NAAQS because of the year-to-year variability of meteorological conditions conducive to ozone formation, or because local emissions inventories may increase faster than national inventories.

iii. Conclusion

In sum, without these reductions, there is a significant risk that an appreciable number of the 45 areas, with a population of 128 million people in 1999, will violate the 1-hour ozone standard during the time period when these standards will apply to heavy-duty vehicles. The evidence summarized in this section, and presented in more detail in the air quality modeling TSD and the RIA, supports the Agency's belief that emissions of NO_x and VOC from heavy-duty vehicles in 2007 and later will contribute to a national ozone air pollution problem that warrants regulatory action under section 202(a)(3) of the Act.

²² The South Coast's "additional measures" which rely on new technologies, are located in its 1994 SIP.

²³ Technical Support Document, Midwest Subregional Modeling: 1-Hour Attainment Demonstration for Lake Michigan Area and

Emissions Inventory, Illinois Environmental Protection Agency, Indiana Department of Environmental Management, Michigan Department of Environmental Quality, Wisconsin Department of Natural Resources, September 27, 2000, at 14 and at 8.

²⁴ We have recently proposed favorable action, in some cases with a condition that more emission reductions be obtained, on attainment demonstrations in these areas with attainment dates prior to 2007: Philadelphia, Washington-Baltimore, Atlanta, and St. Louis.

TABLE II.B-1 ^a

[Areas and 1999 Populations at Risk of Exceeding the Ozone Standard between 2007 and 2030]

MSA/CMSA/State	1999 Population (in millions)
Areas with 2007/2010 Attainment Dates (Established or Requested)	
Beaumont-Port Arthur, TX	0.4
Chicago-Gary-Kenosha, IL-IN-WI	8.9
Dallas-Fort Worth, TX	4.9
Hartford, CT	1.1
Houston-Galveston-Brazoria, TX	4.5
Los Angeles-Riverside-Orange County, CA	16.0
Milwaukee-Racine, WI	1.6
New London-Norwich, CT-RI	0.3
New York-Northern New Jersey-Long Island, NY-NJ-CT-PA	20.2
Southeast Desert, CA	0.5
10 areas	58.4
Areas with Pre-2007 Attainment Dates or No Specific Attainment Date, with a Recent History of Nonattainment.	
Atlanta, GA	3.9
Baton Rouge, LA	0.6
Birmingham, AL	0.9
Boston-Worcester-Lawrence, MA-HN-ME-CT	5.7
Charlotte-Gastonia-Rock Hill, NC-SC	1.4
Detroit-Ann Arbor-Flint, MI MSA	5.5
Huntington-Ashland, WV-KY-OH	0.3
Louisville, KY-IN	1.0
Macon, GA MSA	0.3
Memphis, TN-AR-MS	1.1
Nashville, TN	1.2
Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD	6
Richmond-Petersburg, VA	1
Sacramento-Yolo, CA	1.7
San Diego, CA	2.8
San Francisco-Oakland-San Jose, CA	6.9
San Joaquin Valley, CA	3.2
St. Louis, MO-IL	2.6
Ventura County, CA	0.7
Washington, DC-Baltimore, DC, MD, VA MSA	7.4
20 Areas	54.2
Areas with Pre-2007 Attainment Dates and Recent Concentrations within 10 percent of an Exceedance.	
Barnstable-Yarmouth, MA	0.2
Benton Harbor, MI	0.2
Biloxi-Gulfport-Pascagoula, MS MSA	0.4
Charleston, WV MSA	0.3
Cincinnati-Hamilton, OH-KY-IN	2.0
Cleveland-Akron, OH CMSA	2.9
Grand Rapids-Muskegon-Holland, MI MSA	1.1
Houma, LA	0.2
Lake Charles, LA	0.2
New Orleans, LA MSA	1.3
Norfolk-Virginia Beach-Newport News, VA-NC MSA	1.6
Orlando, FL MSA	1.5
Pensacola, FL MSA	0.4
Providence-Fall River-Warwick, RI-MA	1.1
Tampa-St. Petersburg-Clearwater, FL MSA	2.3
15 areas	15.7
Total Areas: 45	Population: 128

^a In order to determine the reliability of model predictions the Agency ran the ozone model for current ozone concentrations and compared those predictions with actual ozone levels recorded by ozone monitors. The results of the model's performance are presented in the RIA for this rule.

c. Public Health and Welfare Concerns from Prolonged and Repeated Exposures to Ozone

A large body of scientific literature regarding health and welfare effects of ozone has associated health effects with certain patterns of ozone exposures that do not necessarily include any hourly ozone concentration above the 0.12 parts per million (ppm) level of the 1-hour NAAQS. The science indicates that there are health effects attributable to prolonged and repeated exposures to lower ozone concentrations. Studies of 6 to 8 hour exposures showed health effects from prolonged and repeated exposures at moderate levels of exertion to ozone concentrations as low as 0.08 ppm. Prolonged and repeated ozone concentrations at these levels are common in areas throughout the country, and are found in areas that are exceeding, and areas that are not exceeding, the 1-hour ozone standard. For example, 153 million people, or 87 percent of the total population in counties evaluated (176 million), lived in areas with 2 or more days with concentrations of 0.09 ppm or higher in 1998, including areas currently violating the 1-hour NAAQS. In the 2007, before the application of emission reductions resulting from this rule, we estimated that 116 million, or 93 percent of the total population considered in the analysis, are predicted to live in areas with at least 2 days with model-adjusted 8-hour average concentrations of 0.08 ppm or higher. By 2030, the number of people (139 million) and the relative percentage (91 percent) of the total population considered in the analysis is projected to grow significantly without reductions from this rule. Since prolonged exposures at moderate levels of ozone are more widespread than exceedances of the 1-hour ozone standard, and given the continuing nature of the 1-hour ozone problem described above, adverse health effects from this type of ozone exposure can reasonably be anticipated to occur in the future in the absence of this rule. Adverse welfare effects can also be anticipated, primarily from damage to vegetation. See the RIA for further details.

Studies of acute health effects have shown transient pulmonary function responses, transient respiratory symptoms, effects on exercise performance, increased airway responsiveness, increased susceptibility to respiratory infection, increased hospital and emergency room visits, and transient pulmonary respiratory inflammation. Such acute health effects have been observed following prolonged

exposures at moderate levels of exertion at concentrations of ozone well below the current standard of 0.12 ppm. The effects are more pronounced at concentrations above 0.09 ppm, affecting more subjects or having a greater effect on a given subject in terms of functional changes or symptoms. A more detailed discussion may be found in the RIA.

With regard to chronic health effects, the collective data have many ambiguities, but provide suggestive evidence of chronic effects in humans. There is a biologically plausible basis for considering the possibility that repeated inflammation associated with exposure to ozone over a lifetime, as can occur with prolonged exposure to moderate ozone levels below peak levels, may result in sufficient damage to respiratory tissue that individuals later in life may experience a reduced quality of life, although such relationships remain highly uncertain.

Ozone has many welfare effects, with damage to plants being of most concern. Plant damage affects crop yields, forestry production, and ornamentals. The adverse effect of ozone on forests and other natural vegetation can in turn cause damage to associated ecosystems, with additional resulting economic losses, as well as aesthetic impacts which may not be fully quantifiable in economic terms. Ozone concentrations of 0.10 ppm can be phytotoxic to a large number of plant species, and can produce acute injury and reduced crop yield and biomass production. Ozone concentrations at or below 0.10 ppm have the potential over a longer duration of creating chronic stress on vegetation that can result in reduced plant growth and yield, shifts in competitive advantages in mixed populations, decreased vigor, and injury from other environmental stresses.

Section 202(a) provides EPA with authority to promulgate standards applicable to motor vehicle emissions that "in the Administrator's judgment, cause or contribute to air pollution reasonably anticipated to endanger public health and welfare." The evidence in the RIA regarding the occurrence of adverse health effects due to prolonged and repeated exposure to ozone concentrations in the range discussed above, and regarding the populations that are expected to receive exposures at these levels, along with the welfare effects described above, supports a conclusion that emissions of NO_x and VOC from heavy-duty vehicles in 2007 and later will be contributing to a national air pollution problem that warrants regulatory action under section 202(a) of the Act.

3. Particulate Matter

a. Health and Welfare Effects

Particulate matter (PM) represents a broad class of chemically and physically diverse substances. It can be principally characterized as discrete particles that exist in the condensed (liquid or solid) phase spanning several orders of magnitude in size. All particles equal to and less than 10 microns are called PM₁₀. Fine particles can be generally defined as those particles with an aerodynamic diameter of 2.5 microns or less (also known as PM_{2.5}), and coarse fraction particles are those particles with an aerodynamic diameter greater than 2.5 microns, but equal to or less than a nominal 10 microns. The health and environmental effects of PM are strongly related to the size of the particles.

The emission sources, formation processes, chemical composition, atmospheric residence times, transport distances and other parameters of fine and coarse particles are distinct. Fine particles are directly emitted from combustion sources and are formed secondarily from gaseous precursors such as sulfur dioxide, nitrogen oxides, or organic compounds. Fine particles are generally composed of sulfate, nitrate, chloride and ammonium compounds; organic and elemental carbon; and metals. Combustion of coal, oil, diesel, gasoline, and wood, as well as high temperature process sources such as smelters and steel mills, produce emissions that contribute to fine particle formation. In contrast, coarse particles are typically mechanically generated by crushing or grinding and are often dominated by resuspended dusts and crustal material from paved or unpaved roads or from construction, farming, and mining activities. Fine particles can remain in the atmosphere for days to weeks and travel through the atmosphere hundreds to thousands of kilometers, while coarse particles deposit to the earth within minutes to hours and within tens of kilometers from the emission source.

Diesel particles are a component of both coarse and fine PM, but fall mostly in the fine and ultrafine size range.²⁵ Diesel PM contains small quantities of numerous mutagenic and carcinogenic compounds. While representing a very small portion (less than one percent) of the national emissions of metals, and a small portion of diesel particulate matter (one to five percent), we note that several toxic trace metals of potential

²⁵ Fine particulate matter includes particles with a diameter less than 2.5 micrometers. Ultrafine particulate matter include particles with a diameter less than 100 nanometers.

toxicological significance are also emitted by diesel engines including chromium, manganese, mercury and nickel. In addition, small amounts of dioxins have been measured in diesel exhaust, some of which may partition into the particle phase, though the impact of these emissions on human health is not clear.

Particulate matter, like ozone, has been linked to a range of serious respiratory health problems. Scientific studies suggest a likely causal role of ambient particulate matter (which is attributable to a number of sources including diesel) in contributing to a series of health effects. The key health effects categories associated with ambient particulate matter include premature mortality, aggravation of respiratory and cardiovascular disease (as indicated by increased hospital admissions and emergency room visits, school absences, work loss days, and restricted activity days), aggravated asthma, acute respiratory symptoms, including aggravated coughing and difficult or painful breathing, chronic bronchitis, and decreased lung function that can be experienced as shortness of breath. Observable human noncancer health effects associated with exposure to diesel PM include some of the same health effects reported for ambient PM such as respiratory symptoms (cough, labored breathing, chest tightness, wheezing), and chronic respiratory disease (cough, phlegm, chronic bronchitis and suggestive evidence for decreases in pulmonary function). Symptoms of immunological effects such as wheezing and increased allergenicity are also seen. Studies in rodents, especially rats, show the potential for human inflammatory effects in the lung and consequential lung tissue damage from chronic diesel exhaust inhalation exposure. Both fine and coarse particles can accumulate in the respiratory system. Exposure to fine particles is most closely associated with such health effects as premature mortality or hospital admissions for cardiopulmonary disease. For additional

information on health effects, see the RIA. PM also causes damage to materials and soiling of commonly used building materials and culturally important items such as statutes and works of art. It is a major cause of substantial visibility impairment in many parts of the U.S.

Heavy-duty vehicles contribute to particle formation through a number of pollutants. The contribution to PM fine varies by region of the country. Sulfate plays a major role in the composition of fine particulate across the country, but typically makes up over half the fine particles found in the Eastern United States. Organic carbon accounts for a large portion of fine particle mass, with a slightly higher fraction in the west. Diesel engines are the principal source of elemental carbon, which makes up about 5–6 percent of particle mass. Nationally, nitrate plays a relatively small role in the make up of fine particles, but ammonium nitrate plays a far larger role in southern California. Ammonium nitrate—formed secondarily from NO_x and ammonia emissions—is one of the most significant components of particulate matter pollution in California. During some of the worst episodes of elevated particle levels in the South Coast, ammonium nitrate can account for about 65–75 percent of the PM_{2.5} mass. Reducing ammonium nitrate through controls on NO_x sources is a critical part of California's particulate matter strategy. Nationally, the standards finalized in this rule will significantly reduce HDV emissions of SO_x, NO_x, VOCs and elemental carbon, and thus contribute to reductions in ambient concentrations of PM₁₀ and PM_{2.5}.

b. Attainment and Maintenance of the PM₁₀ NAAQS

Under the CAA, we are to regulate HDV emissions if they contribute to air pollution that can reasonably be anticipated to endanger public health and welfare. We have already addressed the question of what concentration patterns of PM endanger public health,

in setting the NAAQS for PM₁₀ in 1987. The PM NAAQS were revised in 1997, largely by adding new standards for fine particles (PM_{2.5}) and modifying the form of the daily PM₁₀ standard. On judicial review, the revised standards were remanded for further proceedings, and the revised PM₁₀ standards were vacated. The Supreme Court is currently reviewing that decision. Oral arguments were held on November 7, 2000 and a decision by the Court is expected in 2001. Pending final resolution of the litigation, the 1987 PM₁₀ standard is the applicable NAAQS for PM₁₀.

Commenters questioned the need for additional PM₁₀ reductions in order to achieve attainment with the PM₁₀ NAAQS, and questioned the Agency's statement that, unlike ozone, PM₁₀ emissions are projected to increase in the future. Commenters are correct that significant progress has occurred over the last decade,²⁶ but the Agency's statement was based on projected PM₁₀ inventory increases in the future between 1996 and 2030. During this period, inventory trends for current PM₁₀ nonattainment areas, or those with concentrations within 10 percent of the standard, are predicted to increase significantly. For example, from 1996 to 2030, increases are predicted in Clark County (Las Vegas) of 41 percent, Harris County (Houston) of 37 percent, and Phoenix of 24 percent. A more detailed discussion is provided in the RIA.

i. Current PM₁₀ Nonattainment

The most recent PM₁₀ monitoring data indicates that 14 designated PM₁₀ nonattainment areas with a projected population of 23 million violated the PM₁₀ NAAQS in the period 1997–1999. Table II.B–3 lists the 14 areas, and also indicates the PM₁₀ nonattainment classification and 1999 projected population for each PM₁₀ nonattainment area. The projected population in 1999 was based on 1990 population figures which were then increased by the amount of population growth in the relevant county from 1990 to 1999.

TABLE II.B–3.—PM₁₀ NONATTAINMENT AREAS VIOLATING THE PM₁₀ NAAQS IN 1997–99

Area	Classification	1999 Population (projected, in millions)
Hayden/Miami, AZ	Moderate	0.004
Phoenix, AZ	Serious	2.977
Nogales, AZ	Moderate	0.025
San Joaquin Valley, CA	Serious	3.214
Imperial Valley, CA	Moderate	0.122

²⁶ Ambient concentrations of PM₁₀ and PM_{2.5} emissions have declined over the last ten years by

25 percent and 19 percent, respectively. National

Air Quality and Emissions Trends Report, 1998, US EPA, March, 2000.

TABLE II.B-3.—PM₁₀ NONATTAINMENT AREAS VIOLATING THE PM₁₀ NAAQS IN 1997-99—Continued

Area	Classification	1999 Population (projected, in millions)
Owens Valley, CA	Serious	0.018
Searles Valley, CA	Moderate	0.029
Coachella Valley, CA	Serious	0.239
South Coast Air Basin	Serious	14.352
Las Vegas, NV	Serious	1.200
Reno, NV	Moderate	0.320
Anthony, NM ^b	Moderate	0.003
El Paso, TX ^a	Moderate	0.611
Wallula, WA ^b	Moderate	0.052
Total Areas: 14 .....	.....	23.167

^a EPA has determined that continuing PM₁₀ nonattainment in El Paso, TX is attributable to international transport under section 179(B).

^b The violation in this area has been determined to be attributable to natural events under section 188(f) of the Act.

In addition to the 14 PM₁₀ nonattainment areas that are currently violating the PM₁₀ NAAQS, there are 25 unclassifiable areas that have recently recorded ambient concentrations of PM₁₀ above the PM₁₀ NAAQS. EPA adopted a policy in 1996 that allows areas with PM₁₀ exceedances that are attributable to natural events to retain their designation as unclassifiable if the State is taking all reasonable measures to safeguard public health regardless of the sources of PM₁₀ emissions. Areas that remain unclassifiable areas are not required under the Clean Air Act to submit attainment plans, but we work with each of these areas to understand the nature of the PM₁₀ problem and to determine what best can be done to reduce it. With respect to the monitored violations reported in 1997-99 in the 25 areas designated as unclassifiable, we have not yet excluded the possibility that factors such as a one-time monitoring upset or natural events, which ordinarily would not result in an area being designated as nonattainment for PM₁₀, may be responsible for the problem. Emission reductions from today's action will assist these currently unclassifiable areas to achieve ambient PM₁₀ concentrations below the current PM₁₀ NAAQS.

ii. Risk of Future Exceedances of the PM₁₀ Standard

The new standards for heavy-duty vehicles will benefit public health and welfare through reductions in direct diesel particles and NO_x, VOCs, and SO_x which contribute to secondary formation of particulate matter. Because ambient particle concentrations causing violations of the PM₁₀ standard are well

established to endanger public health and welfare, this information supports the new standards for heavy-duty vehicles. The reductions from today's rule will assist States as they work with the Agency through implementation of local controls including development and adoption of additional controls as needed to move their areas into attainment by the applicable deadline, and maintain the standards thereafter.

The Agency's PM inventory analysis performed for this rulemaking predicts that without additional reductions 10 areas face a significant risk of failing to meet or to maintain the PM₁₀ NAAQS even with federal, State and local controls currently in place.²⁷ Table II.B-4 presents information about these 10 areas and subdivides them into two groups. The first group of 6 areas are designated PM₁₀ nonattainment areas which had recent monitored violations of the PM₁₀ NAAQS in 1997-1999 and increasing inventories of PM₁₀ from 2007 to 2030 (see Table II.B-3 for predicted increases in emissions). These areas have a population of 19 million. Included in the group are the nonattainment areas that are part of the Los Angeles, Phoenix and Las Vegas (Clark County) metropolitan areas, where traffic from heavy-duty vehicles is substantial. These six areas will benefit from the reductions in emissions that will occur from the new standards for heavy-duty vehicles, as will other areas impacted by heavy-duty vehicle emissions.

The second group of four counties listed in Table II.B-4 with a total of nine million people in 1999 also had predicted exceedances of the PM₁₀ standard. While these four areas

registered, in either 1997 or 1998, single-year annual average monitored PM₁₀ levels of at least 90 percent of the PM₁₀ NAAQS, these areas did not exceed the formal definition of the PM₁₀ NAAQS over the three-year period ending in 1999. For each of these four areas (i.e., Cuyahoga, Harris, New York, and San Diego), inventories of total PM₁₀ are predicted to increase between 1996, when these areas recorded values within 10 percent of the PM₁₀ standard, and 2030 when this rule will take full effect. Additionally, EPA is in the process of taking final action on a request by the State of Ohio to redesignate Cuyahoga County as attainment. This action is based on locally developed information and is consistent with the requirements of the CAA which include, among other requirements a 10-year plan for maintenance of the PM₁₀ standard.

For some of these areas, total PM₁₀ inventories are predicted to decline or stay relatively constant from 1996 to 2007, and then increase after 2007. Based on inventory projections, the small margin of attainment which the four areas currently enjoy will likely erode between 1996 and 2030, and for some areas before 2007, if additional actions to reduce the growth of future emissions are not taken. We therefore consider these four areas to each individually have a significant risk of exceeding the PM₁₀ standard between 2007 and 2030 without further emission reductions. The emission reductions from the new standards for heavy-duty vehicles will help these areas attain and maintain the PM₁₀ NAAQS in conjunction with other processes that

²⁷ EPA has evaluated projected emissions for this analysis rather than future air quality because REMSAD, the model EPA has used for analyses related to this rule, was designed principally to estimate long-term average concentrations of fine

particulate matter and its ability to predict short-term PM₁₀ concentrations has not been satisfactorily demonstrated. In contrast with ozone, which is the product of complex photochemical reactions and therefore difficult to directly relate to precursor

emissions, ambient PM₁₀ concentrations are more heavily influenced by direct emissions of particulate matter and can therefore be correlated more meaningfully with emissions inventories.

are currently moving these areas towards attainment.

TABLE II.B-4—AREAS WITH SIGNIFICANT RISK OF EXCEEDING THE PM₁₀ NAAQS WITHOUT FURTHER EMISSION REDUCTIONS BETWEEN 2007 AND 2030

Area	Percent increases in PM ₁₀ emissions (1996–2030)	1999 Population (projected) (millions)
Areas currently exceeding the PM ₁₀ standard:		
Clark Co., NV (Las Vegas)	41	1.217
El Paso, TX ^a	14	0.611
Hayden/Miami, AZ	4	0.004
Los Angeles South Coast Air Basin, CA	14	14.352
Nogales, AZ	3	0.025
Phoenix, AZ	24	3.012
Subtotal for 6 Areas .....	.....	19.22
Areas within 10% of exceeding the PM ₁₀ standard:		
Cuyahoga Co., OH (Cleveland)	28	1.37
Harris, Co., TX (Houston)	37	3.26
New York Co., NY	14	1.55
San Diego Co., CA	13	2.83
Subtotal for 4 Areas .....	.....	9.01
10 Areas .....	.....	28.23

^aEPA has determined that PM₁₀ nonattainment in this area is attributable to international transport. While reductions in heavy-duty vehicle emissions cannot be expected to result in attainment, they will help reduce the degree of PM₁₀ nonattainment.

EPA recognizes that the SIP process is ongoing and that nonattainment areas are in the process of implementing, or will be adopting and implementing, additional control measures to achieve the PM₁₀ NAAQS in accordance with their attainment dates under the Clean Air Act. EPA believes, however, that as in the case of ozone, there are uncertainties inherent in any demonstration of attainment that is premised on forecasts of emission levels in future years. Even if these areas adopt and submit SIPs that EPA is able to approve as demonstrating attainment of the PM₁₀ standard, and attain the standard by the appropriate attainment dates, the inventory analysis conducted for this rule and the history of PM₁₀ levels in these areas indicates that there is still a significant risk that these areas will need the reductions from the heavy-duty vehicle standards adopted today to maintain the PM₁₀ standards in the long term (ie, between 2007 and 2030). In addition, this list does not fully consider the possibility that there are other areas which are now meeting the PM₁₀ NAAQS that have at least a significant probability of requiring further reductions to continue to maintain it.

c. Public Health and Welfare Concerns From Exposure to Fine PM

Many epidemiologic studies have shown statistically significant associations of ambient PM levels with a variety of human health endpoints in sensitive populations, including mortality, hospital admissions and emergency room visits, respiratory illness and symptoms measured in community surveys, and physiologic changes in mechanical pulmonary function. These effects have been observed in many areas with ambient PM levels at or below the current PM₁₀ NAAQS. The epidemiologic science points to fine PM as being more strongly associated with some health effects, such as premature mortality, than coarse PM.

Associations of both short-term and long-term PM exposure with most of the above health endpoints have been consistently observed. The general internal consistency of the epidemiologic data base and available findings have led to increasing public health concern, due to the severity of several studied endpoints and the frequent demonstration of associations of health and physiologic effects with ambient PM levels at or below the current PM₁₀ NAAQS. The weight of epidemiologic evidence suggests that ambient PM exposure has affected the public health of U.S. populations.

Specifically, increased mortality associated with fine PM was observed in cities with longer-term average fine PM concentrations in the range of 16 to 21 µg/m³.

Current 1999 PM_{2.5} monitored values, which cover about a third of the nation's counties, indicate that at least 40 million people live in areas where long term ambient fine particulate matter levels are at or above 16 µg/m³ (37 percent of the population in the areas with monitors), which is the low end of the range of long term average PM_{2.5} concentrations in cities where statistically significant associations were found with serious health effects, including premature mortality (EPA, 1996).²⁸

The Agency used the Regulatory Model System for Aerosols and Deposition (REMSAD) to model baseline and post-control ambient PM concentrations. For a description of the REMSAD model, the reader is referred to Chapter VII of the RIA.

Our REMSAD modeled predictions allow us to also estimate the affected population for the counties which do not currently have PM_{2.5} monitors. According to our national modeled predictions, there were a total of 76

²⁸ EPA (1996) Review of the National Ambient Air Quality Standards for Particulate Matter: Policy Assessment of Scientific and Technical Information OAQPS Staff Paper. EPA-452/R-96-013.

million people (1996 populations) living in areas with modeled annual average PM_{2.5} concentrations at or above 16 µg/m³ (29 percent of the population).²⁹

The REMSAD model also allows us to estimate future PM_{2.5} levels. However, the most appropriate method of making these projections relies on the model to predict changes between current and future states. Thus, we have estimated future conditions only for the areas with current PM_{2.5} monitored data (which, as just noted, covers about a third of the nation's counties). For these counties, REMSAD predicts the current level of 37 percent of the population living in areas where fine PM levels are at or above 16 µg/m³ to increase to 59 percent in 2030.

It is reasonable to anticipate that sensitive populations exposed to similar or higher levels, now and in the 2007 and later time frame, will also be at increased risk relative to the general population of premature mortality associated with exposures to fine PM. In addition, statistically significant relationships have also been observed in U.S. cities between PM levels and increased respiratory symptoms and decreased lung functions in children.

Since EPA's examination in the mid-1990s of the epidemiological and toxicological evidence of the health effects of PM, many new studies have been published that reevaluate or extend the initial research. The Agency is currently reviewing these new studies to stay abreast of the literature and adjust as necessary its assessment of PM's health effects. It is worth noting that within this new body of scientific literature, there are two new studies funded by the Health Effects Institute, a EPA-industry jointly funded group, that have generally confirmed the mid-1990s findings of the Agency about the association of fine particles and premature mortality and various other respiratory and cardiovascular effects. HEI's *National Morbidity, Mortality and Air Pollution Study* (NMMAPS), evaluated associations between air pollutants and mortality in 90 U.S. cities, and also evaluated associations between air pollutants and hospital admissions among the elderly in 14 U.S. cities.³⁰ In HEI's *Reanalysis of the Harvard Six Cities Study and the*

American Cancer Society Study of Particulate Air Pollution and Mortality, data were obtained from the original investigators for two previous studies.^{31 32} The extensive analyses included replication and validation of the previous findings, as well as sensitivity analyses using alternative analytic techniques, including different methods of covariate adjustment, exposure characterization, and exposure-response modeling.³³

Section 202(a) provides EPA with independent authority to promulgate standards applicable to motor vehicle emissions that "in the Administrator's judgment, cause or contribute to air pollution reasonably anticipated to endanger public health and welfare." The body of health evidence is supportive of our view that PM exposures are a serious public health concern. This concern exists for current exposures as well as exposures that can reasonably be anticipated to occur in the future. The risk is significant from an overall public health perspective because of the large number of individuals in sensitive populations that we expect to be exposed to ambient fine PM in the 2007 and later time frame, as well as the importance of the negative health effects. This information warrants a requirement to reduce emissions from heavy-duty vehicles, to address elevated levels of fine PM. This evidence supports EPA's conclusion that emissions from heavy-duty vehicles that lead to the formation of fine PM in 2007 and later will be contributing to a national air pollution problem that warrants action under section 202(a)(3).

d. Other Welfare Effects Associated with PM

The deposition of airborne particles reduces the aesthetic appeal of buildings, and promotes and accelerates the corrosion of metals, degrades paints, and deteriorates building materials such as concrete and limestone. This materials damage and soiling are related to the ambient levels of airborne particulates, which are emitted by

heavy-duty vehicles. Although there was insufficient data to relate materials damage and soiling to specific concentrations, and thereby to allow the Agency to establish a secondary PM standard for these impacts, we believe that the welfare effects are real and that heavy-duty vehicle PM, NO_x, SO_x, and VOC contribute to materials damage and soiling.

e. Conclusions Regarding PM

There is a significant risk that, despite statutory requirements and EPA and State efforts towards attainment and maintenance, some areas of the U.S. will violate the PM₁₀ NAAQS in 2007 and thereafter. Heavy-duty vehicles contribute substantially to PM₁₀ levels, as shown in Section II.C below.

It is also reasonable to anticipate that concentrations of fine PM, as represented for example by PM_{2.5} concentrations, will also endanger public health and welfare even if all areas attain and maintain the PM₁₀ NAAQS. Heavy-duty vehicles contribute to this air pollution problem.

There are also important environmental impacts of PM₁₀, such as regional haze which impairs visibility. Furthermore, while the evidence on soiling and materials damage is limited and the magnitude of the impact of heavy-duty vehicles on these welfare effects is difficult to quantify, these welfare effects support our belief that this action is necessary and appropriate.

Finally, in addition to its contribution to PM inventories, diesel exhaust PM is of special concern because it has been implicated in an increased risk of lung cancer and respiratory disease in human studies, and an increased risk of noncancer health effects as well. The information provided in this section shows that there will be air pollution that warrants regulatory action under section 202(a)(3) of the Act.

4. Diesel Exhaust

Diesel emissions are of concern to the agency beyond their contribution to ambient PM. As discussed in detail in the draft RIA, there have been health studies specific to diesel exhaust emissions which indicate potential hazards to human health that appear to be specific to this emissions source. For chronic exposure, these hazards included respiratory system toxicity and carcinogenicity. Acute exposure also causes transient effects (a wide range of physiological symptoms stemming from irritation and inflammation mostly in the respiratory system) in humans though they are highly variable depending on individual human susceptibility. The chemical

²⁹ REMSAD modeling for PM_{2.5} annual average concentrations. Total 1996 population in all REMSAD grid cells is 263 million.

³⁰ Samet JM, Zeger SL, Dominici F, Currierio F, Coursac I, Dockery DW, Schwartz J, Zanobetti A. 2000. The National Morbidity, Mortality and Air Pollution Study: Part II: Morbidity, Mortality and Air Pollution in the United States. Research Report No. 94, Part II. Health Effects Institute, Cambridge MA, June 2000.

³¹ Dockery, D.W., Pope, C.A., III, Xu, X., Spengler, J.D., Ware, J.H., Fay, M.E., Ferris, B.G., Speizer, F.E. (1993) An association between air pollution and mortality in six U.S. cities. *N. Engl. J. Med.* 329:1753-1759.

³² Pope, C. A., III, Thun, M. J., Namboodiri, M. M., Dockery, D. W., Evans, J. S., Speizer, F. E., Heath, C. W., Jr. (1995) Particulate air pollution as a predictor of mortality in a prospective study of U.S. adults. *Am. J. Respir. Crit. Care Med.* 151: 669-674.

³³ Krewski D, Burnett RT, Goldberg MS, Hoover K, Siemiatycki J, Jarrett M, Abrahamowicz M, White WH. (2000) Reanalysis of the Harvard Six Cities Study and the American Cancer Society Study of Particulate Air Pollution and Mortality. Special Report to the Health Effects Institute, Cambridge MA, July 2000.

composition of diesel exhaust includes several hazardous air pollutants, or air toxics. In our Mobile Source Air Toxic Rulemaking under section 202(l) of the Act discussed above, EPA determined that diesel particulate matter and diesel exhaust organic gases be identified as a Mobile Source Air Toxic (MSAT). The purpose of the MSAT list is to provide a screening tool that identifies compounds emitted from motor vehicles or their fuels for which further evaluation of emissions controls is appropriate. As discussed in chapter 3 on engine technology, the particulate matter standard finalized today reflects the greatest degree of emissions reductions achievable under section 202(l) for on-highway heavy-duty vehicle PM emissions.

a. Potential Cancer Effects of Diesel Exhaust

The EPA has concluded that diesel exhaust is likely to be carcinogenic to humans by inhalation at occupational and environmental levels of exposure.³⁴ The draft Health Assessment Document for Diesel Exhaust (draft Assessment), was reviewed in public session by the Clean Air Scientific Advisory Committee (CASAC) on October 12–13, 2000.³⁵ The CASAC found that the Agency's conclusion that diesel exhaust is likely to be carcinogenic to humans is scientifically sound. CASAC concurred with the draft Assessment's findings with the proviso that EPA provide modifications and clarifications on certain topics. The Agency expects to produce the finalized Assessment in early 2001. Information presented here is consistent with that to be provided in the final Assessment.

In its review of the published literature, EPA found that about 30 individual epidemiologic studies show increased lung cancer risk associated with diesel emissions. In the draft Assessment EPA evaluated 22 studies that were most relevant for risk assessment, 16 of which reported significant increased lung cancer risks, ranging from 20 to 167 percent, associated with diesel exhaust exposure. Published analytical results of pooling many of the 30 studies showed that on average, the risks were increased by 33 to 47 percent. Questions remain about the influence of other factors (e.g., effect

of smoking, other particulate sources), the quality of the individual epidemiologic studies, exposure levels, and consequently the precise magnitude of the increased risk of lung cancer. From a weight of evidence perspective, EPA concludes that the epidemiologic evidence, as well as supporting data from certain animal and mode of action studies, support the Agency's conclusion that exposure to diesel exhaust is likely to pose a human lung cancer hazard to occupationally exposed individuals as well as to the general public exposed to typically lower environmental levels of diesel exhaust.

Risk assessments in the peer-reviewed literature have attempted to assess the lifetime risk of lung cancer in workers occupationally exposed to diesel exhaust. These estimates suggest that lung cancer risk may range from 10^{-4} to 10^{-2} .^{36 37 38} The Agency recognizes the significant uncertainties in these studies, and has not used these estimates to assess the possible cancer unit risk associated with ambient exposure to diesel exhaust.

While available evidence supports EPA's conclusion that diesel exhaust is likely to be a human lung carcinogen, and thus is likely to pose a cancer hazard to humans, EPA has concluded that the available data are not sufficient to develop a confident estimate of cancer unit risk. The absence of a cancer unit risk for diesel exhaust limits our ability to quantify, with confidence, the potential impact of the hazard (magnitude of risk) on exposed populations. In the draft Assessment, EPA acknowledged this limitation and provided a discussion of the possible environmental cancer risk consistent with the majority of the occupational epidemiological findings of increased lung cancer risk and the exposure differences between the occupational and environmental settings.³⁹ The Agency concluded in developing its perspective on risk that there is a reasonable potential that environmental

lifetime cancer risks ("environmental risk range") from diesel exhaust may exceed 10^{-5} and could be as high as 10^{-3} .⁴⁰

The environmental risk estimates included in the Agency's risk perspective are meant only to gauge the possible magnitude of risk to provide a means to understand the potential significance of the lung cancer hazard. The estimates are not to be construed as cancer unit risk estimates and are not suitable for use in analyses which would estimate possible lung cancer cases in exposed populations.

EPA recognizes that, as in all such risk assessments, there are uncertainties in this assessment of the environmental risk range including limitations in exposure data, uncertainty with respect to the most accurate characterization of the risk increases observed in the epidemiological studies, chemical changes in diesel exhaust over time, and extrapolation of the risk from occupational to ambient environmental exposures. As with any such risk assessment for a carcinogen, despite EPA's thorough examination of the available epidemiologic evidence and exposure information, at this time EPA can not rule out the possibility that the lower end of the risk range includes zero.⁴¹ However, it is the Agency's best scientific judgement that the assumptions and other elements of this analysis are reasonable and appropriate for identifying the risk potential based on the scientific information currently available.

The Agency believes that the risk estimation techniques that were used in the draft Assessment to gauge the potential for and possible magnitude of risk are reasonable and the CASAC

⁴⁰ As used in this rule, environmental risk is defined as the risk (i.e. a mathematical probability) that lung cancer would be observed in the population after a lifetime exposure to diesel exhaust. Exposure levels may be occupational lifetime or environmental lifetime exposures. An environmental risk in the magnitude of 10^{-5} translates as the probability of lung cancer being evidenced in one person in a population of one hundred thousand having a lifetime exposure.

⁴¹ EPA's scientific judgment (which CASAC has supported) is that diesel exhaust is likely to be carcinogenic to humans. Notably, similar scientific judgements about the carcinogenicity of diesel exhaust have been recently made by the National Toxicology Program of the Department of Health and Human Services, NIOSH, WHO, and OEHA of the State of California. In the risk perspective discussed above, EPA recognizes the possibility that the lower end of the environmental risk range includes zero. The risks could be zero because (1) some individuals within the population may have a high tolerance level to exposure from diesel exhaust and therefore are not susceptible to the cancer risks from environmental exposure and (2) although EPA has not seen evidence of this, there could be a threshold of exposure below which there is no cancer risk.

³⁴ U.S. EPA (2000) Health Assessment Document for Diesel Exhaust: SAB Review Draft. EPA/600/8-90/057E Office of Research and Development, Washington, D.C. The document is available electronically at www.epa.gov/ncea/dieslexh.htm.

³⁵ EPA (2000) Review of EPA's Health Assessment Document for Diesel Exhaust (EPA 600/8-90/057E). Review by the Clean Air Scientific Advisory Committee (CASAC) December 2000. EPA-SAB-CASAC-01-003.

³⁶ California Environmental Protection Agency, Office of Health Hazard Assessment (CAL-EPA, OEHHA) (1998) Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant. Appendix III Part B Health Risk Assessment for Diesel Exhaust. April 22, 1998.

³⁷ Harris, J.E. (1983) Diesel emissions and Lung Cancer. Risk Anal. 3:83–100.

³⁸ Stayner, L.S., Dankovic, D., Smith, R., Steenland, K. (1998) Predicted Lung Cancer Risk Among Miners Exposed to Diesel Exhaust Particles. Am. J. of Indus. Medicine 34:207–219.

³⁹ See Chapter 8.4 and 9.5.2 of the U.S. EPA (2000) Health Assessment Document for Diesel Emissions: SAB Review Draft. EPA/600/8-90/057E Office of Research and Development, Washington, D.C. The document is available electronically at www.epa.gov/ncea/dieslexh.htm.

panel has concurred with the Assessment's discussion of the possible environmental risk range with an understanding that some clarifications and caveats would be added to the final version of the Assessment. Details of the technical approach used in estimating the possible range of environmental risks and uncertainties are provided in the RIA.

In the draft Assessment, the Agency also provided a discussion of the potential overlap and/or relatively small difference between some occupational settings where increased lung cancer risk is reported and ambient environmental exposures. The potential for small exposure differences underscores the concern that some degree of occupational risk may also be present in the environmental setting and that extrapolation of occupational risk to ambient environmental exposure levels should be more confidently judged to be appropriate. The relevant exposure information is presented in the RIA.

In the absence of having a unit cancer risk to assess environmental risk, EPA has considered the relevant epidemiological studies and principles for their assessment, the relative risk from occupational exposure as assessed by others, and relative exposure differences between occupational and ambient environmental levels of diesel exhaust exposure.

While uncertainty exists in estimating the possible magnitude of the environmental risk range, the likely hazard to humans together with the potential for significant environmental risks leads the Agency to believe that diesel exhaust emissions should be reduced in order to protect the public's health. We believe that this is a prudent measure in light of:

- The designation that diesel exhaust is likely to be carcinogenic to humans,
- The exposure of the entire population to various levels of diesel exhaust,
- The consistent observation of significantly increased lung cancer risk in workers exposed to diesel exhaust, and
- The potential overlap and/or relatively small difference between some occupational settings where increased lung cancer risk is reported and ambient exposures.

In the late 1980s, the International Agency for Research on Cancer (IARC) determined that diesel exhaust is "probably carcinogenic to humans" and the National Institute for Occupational Safety and Health classified diesel exhaust a "potential occupational

carcinogen."^{42 43} Based on IARC findings, the State of California identified diesel exhaust in 1990 as a chemical known to the State to cause cancer. In 1996, the International Programme on Chemical Safety of the World Health Organization listed diesel exhaust as a "probable" human carcinogen.⁴⁴ In 1998, the California Office of Environmental Health Hazard Assessment (OEHHA, California EPA) identified diesel PM as a toxic air contaminant due to the noncancer and cancer hazard and because of the potential magnitude of the cancer risk.⁴⁵ Most recently, the U.S. Department of Health and Human Services National Toxicology Program designated diesel exhaust particles as "reasonably anticipated to be a human carcinogen" in its Ninth Report on Carcinogens.⁴⁶ The concern for a carcinogenicity hazard resulting from diesel exhaust exposures is longstanding and widespread.

b. Noncancer Effects of Diesel Exhaust

The acute and chronic exposure-related noncancer effects of diesel exhaust emissions are also of concern to the Agency. Acute exposure to diesel exhaust can result in physiologic symptoms consistent with irritation and inflammation, and evidence of immunological effects including increased reaction to allergens and some symptoms associated with asthma. The acute effects data, however, lack sufficient detail to permit the calculation of protective levels for human exposure.

For chronic diesel exhaust exposure, EPA is completing the development of an inhalation reference concentration (RfC). The RfC is an estimate of the continuous human inhalation exposure (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious noncancer effects during

⁴² National Institute for Occupational Safety and Health (NIOSH) (1988) Carcinogenic effects of exposure to diesel exhaust. NIOSH Current Intelligence Bulletin 50. DHHS, Publication No. 88-116. Centers for Disease Control, Atlanta, GA.

⁴³ International Agency for Research on Cancer (1989) Diesel and gasoline engine exhausts and some nitroarenes, Vol. 46. Monographs on the evaluation of carcinogenic risks to humans. World Health Organization, International Agency for Research on Cancer, Lyon, France.

⁴⁴ World Health Organization (1996) Diesel fuel and exhaust emissions: International program on chemical safety. World Health Organization, Geneva, Switzerland.

⁴⁵ Office of Environmental Health Hazard Assessment (1998) Health risk assessment for diesel exhaust, April 1998. California Environmental Protection Agency, Sacramento, CA.

⁴⁶ U.S. Department of Health and Human Services (2000) Ninth report on carcinogens. National Toxicology Program, Research Triangle Park, NC. ehis.niehs.nih.gov/roc/toc9.html.

a lifetime. While the limited amount of human data are suggestive of respiratory distress, animal test data are quite definitive in providing a basis to anticipate a hazard to the human lung based on the irritant and inflammatory reactions in test animals. Thus, EPA believes that chronic diesel exhaust exposure, at sufficient exposure levels, increases the hazard and risk of an adverse health effect. Based on CASAC advice regarding the use of the animal data to derive the RfC, the Agency will provide in the final Assessment in 2001 an RfC based on diesel exhaust effects in test animals of approximately 5 µg/m³.

In addition, it is also instructive to recognize that diesel exhaust particulate matter is part of ambient fine PM. A qualitative comparison of adverse effects of exposure to ambient fine PM and diesel exhaust particulate matter shows that the respiratory system is adversely affected in both cases, though a wider spectrum of adverse effects has been identified for ambient fine PM. Relative to the diesel PM database, there is a wealth of human data for fine PM noncancer effects. Since diesel exhaust PM is a component of ambient fine PM, the fine PM health effects data base can be informative. The final Assessment will discuss the fine PM health effects data and its relation to evaluating health effects associated with diesel exhaust.

5. Other Criteria Pollutants

The standards being finalized today will help reduce levels of three other pollutants for which NAAQS have been established: carbon monoxide (CO), nitrogen dioxide (NO₂), and sulfur dioxide (SO₂). As of July, 2000, every area in the United States has been designated to be in attainment with the NO₂ NAAQS. There were 28 areas designated as nonattainment with the SO₂ standard, and 17 areas designated CO nonattainment areas.

A health threat of carbon monoxide at outdoor levels occurs for those who suffer from cardiovascular disease, such as angina pectoris, where it can exacerbate the effects. Studies also show that outdoor levels can lower peak performance from individuals that are exercising and lower exercise tolerance of sensitive individuals. EPA believes that epidemiological evidence suggests that there is a risk of premature mortality and lowered birth weight from CO exposure.⁴⁷ The Carbon Monoxide Criteria Document was finalized in

⁴⁷ U.S. Environmental Protection Agency, Air Quality Criteria for Carbon Monoxide, June 2000.

August 2000 and made available to the public at that time.

6. Other Air Toxics

In addition to NO_x and particulates, heavy-duty vehicle emissions contain several other substances that are known or suspected human or animal carcinogens, or have serious noncancer health effects. These include benzene, 1,3-butadiene, formaldehyde, acetaldehyde, acrolein, and dioxin. For some of these pollutants, heavy-duty engine emissions are believed to account for a significant proportion of total nation-wide emissions. Although these emissions will decrease in the short term, they are expected to increase between 2010 and 2020 without the emission limits, as the number of miles traveled by heavy-duty trucks increases. In the RIA, we present current and projected exposures to benzene, 1,3-butadiene, formaldehyde, and acetaldehyde from all on-highway motor vehicles.

By reducing hydrocarbon and other organic emissions, both in gas phase and bound to particles, the emission control program in today's action will also reduce the direct emissions of air toxics from HDVs. Today's action will reduce exposure to hydrocarbon and other organic emissions and therefore help reduce the impact of HDV emissions on cancer and noncancer health effects.

a. Benzene

Highway mobile sources account for 42 percent of nationwide emissions of benzene and HDVs account for 7 percent of all highway vehicle benzene emissions.⁴⁸ The EPA has recently reconfirmed that benzene is a known human carcinogen by all routes of exposure (including leukemia at high, prolonged air exposures), and is associated with additional health effects including genetic changes in humans and animals and increased proliferation of bone marrow cells in mice.^{49 50 51} EPA

⁴⁸ U.S. EPA (2000) 1996 National Toxics Inventory. <http://www.epa.gov/ttn/uatw/nata>. Inventory values for 1,3 butadiene, formaldehyde, acetaldehyde, and acrolein discussed below also come from this source.

⁴⁹ International Agency for Research on Cancer, IARC monographs on the evaluation of carcinogenic risk of chemicals to humans, Volume 29, Some industrial chemicals and dyestuffs, International Agency for Research on Cancer, World Health Organization, Lyon, France, p. 345–389, 1982.

⁵⁰ Irons, R.D., W.S. Stillman, D.B. Colagiovanni, and V.A. Henry, Synergistic action of the benzene metabolite hydroquinone on myelopoietic stimulating activity of granulocyte/macrophage colony-stimulating factor in vitro, *Proc. Natl. Acad. Sci.* 89:3691–3695, 1992.

⁵¹ Environmental Protection Agency, Carcinogenic Effects of Benzene: An Update,

believes that the data indicate a causal relationship between benzene exposure and acute lymphocytic leukemia and suggest a relationship between benzene exposure and chronic non-lymphocytic leukemia and chronic lymphocytic leukemia. Respiration is the major source of human exposure and at least half of this exposure is attributable to gasoline vapors and automotive emissions. A number of adverse noncancer health effects including blood, disorders, such as preleukemia and aplastic anemia, have also been associated with low-dose, long-term exposure to benzene.

b. 1,3-Butadiene

Highway mobile sources account for 42 percent of the annual emissions of 1,3-butadiene and HDVs account for 15 percent of the highway vehicle portion. Today's program will play an important role in reducing in the mobile contribution of 1,3-butadiene. Reproductive and/or developmental effects have been observed in mice and rats following inhalation exposure to 1,3-butadiene.⁵² No information is available on developmental/reproductive effects in humans following exposure to 1,3-butadiene. In the EPA 1998 draft Health Risk Assessment of 1,3-Butadiene, that was reviewed by the SAB, EPA proposed that 1,3-butadiene is a known human carcinogen based on human epidemiologic, laboratory animal data, and supporting data such as the genotoxicity of 1,3-butadiene metabolites.⁵³ The Environmental Health Committee of EPA's Scientific Advisory Board (SAB), reviewed the draft document in August 1998 and recommended that 1,3-butadiene be classified as a probable human carcinogen, stating that designation of 1,3-butadiene as a known human carcinogen should be based on observational studies in humans, without regard to mechanistic or other information.⁵⁴ In applying the 1996 proposed Guidelines for Carcinogen Risk Assessment, the Agency relies on both observational studies in humans as well as experimental evidence demonstrating causality and therefore

National Center for Environmental Assessment, Washington, DC, 1998.

⁵² Environmental Protection Agency, Draft Health Risk Assessment of 1,3-Butadiene, National Center for Environmental Assessment, Office of Research and Development, U.S. EPA, EPA/600/P-98/001A, February 1998.

⁵³ An SAB Report: Review of the Health Risk Assessment of 1,3-Butadiene. EPA-SAB-EHC-98, August, 1998.

⁵⁴ Scientific Advisory Board. 1998. An SAB Report: Review of the Health Risk Assessment of 1,3-Butadiene. EPA-SAB-EHC-98, August, 1998.

the designation of 1,3-butadiene as a known human carcinogen remains applicable.⁵⁵ The Agency has revised the draft Health Risk Assessment of 1,3-Butadiene based on the SAB and public comments. The draft Health Risk Assessment of 1,3-Butadiene will undergo the Agency consensus review, during which time additional changes may be made prior to its public release and placement on the Integrated Risk Information System (IRIS).

c. Formaldehyde

Highway mobile sources contribute 24 percent of the national emissions of formaldehyde, and HDVs account for 36 percent of the highway portion. EPA has classified formaldehyde as a probable human carcinogen based on evidence in humans and in rats, mice, hamsters, and monkeys.⁵⁶ Epidemiological studies in occupationally exposed workers suggest that long-term inhalation of formaldehyde may be associated with tumors of the nasopharyngeal cavity (generally the area at the back of the mouth near the nose), nasal cavity, and sinus. Formaldehyde exposure also causes a range of noncancer health effects, including irritation of the eyes (tearing of the eyes and increased blinking) and mucous membranes. Sensitive individuals may experience these adverse effects at lower concentrations than the general population and in persons with bronchial asthma, the upper respiratory irritation caused by formaldehyde can precipitate an acute asthmatic attack. The agency is currently conducting a reassessment of risk from inhalation exposure to formaldehyde.

d. Acetaldehyde

Highway mobile sources contribute 29 percent of the national acetaldehyde emissions and HDVs are responsible for approximately 33 percent of these highway mobile source emissions. Acetaldehyde is classified as a probable human carcinogen and is considered moderately toxic by the inhalation, oral, and intravenous routes. The primary acute effect of exposure to acetaldehyde vapors is irritation of the eyes, skin, and respiratory tract. At high concentrations, irritation and pulmonary effects can occur, which could facilitate the uptake of other contaminants. The agency is currently conducting a reassessment of

⁵⁵ [55]: EPA 1996. Proposed guidelines for carcinogen risk assessment. **Federal Register** 61(79):17960–18011.

⁵⁶ Environmental Protection Agency, Assessment of Health Risks to Garment Workers and Certain Home Residents from Exposure to Formaldehyde, Office of Pesticides and Toxic Substances, April 1987.

risk from inhalation exposure to acetaldehyde.

e. Acrolein

Highway mobile sources contribute 16 percent of the national acrolein emissions and HDVs are responsible for approximately 39 percent of these highway mobile source emissions. Acrolein is extremely toxic to humans when inhaled, with acute exposure resulting in upper respiratory tract irritation and congestion. The Agency has developed a reference concentration for inhalation (RfC) of acrolein of 0.02 micrograms/m³.⁵⁷ Although no information is available on its carcinogenic effects in humans, based on laboratory animal data, EPA considers acrolein a possible human carcinogen.

f. Dioxins

Recent studies have confirmed that dioxins are formed by and emitted from heavy-duty diesel trucks and are estimated to account for 1.2 percent of total dioxin emissions in 1995. In the environment, the pathway of immediate concern is the food pathway (*e.g.*, human ingestion of certain foods, *e.g.* meat and dairy products contaminated by dioxin) which may be affected by deposition of dioxin from the atmosphere. EPA classified dioxins as probable human carcinogens in 1985. Recently EPA has proposed, and the Scientific Advisory Board has concurred, to classify one dioxin compound, 2,3,7,8-tetrachlorodibenzo-p-dioxin as a human carcinogen and the complex mixtures of dioxin-like compounds as likely to be carcinogenic to humans using the draft 1996 carcinogen risk assessment guidelines.⁵⁸ Using the 1986 cancer risk assessment guidelines, the hazard characterization for 2,3,7,8-tetrachlorodibenzo-p-dioxin is "known" human carcinogen and the hazard characterization for complex mixtures of dioxin-like compounds is "probable" human carcinogens. Acute and chronic noncancer effects have also been reported for dioxin.

7. Other Welfare and Environmental Effects

Some commenters challenged the Agency's use of adverse welfare and

environmental effects associated with emissions from heavy-duty vehicles as a partial basis for this rulemaking. Other commenters went to great lengths to support the Agency's inclusion of these welfare and environmental effects. Additional information has been added since the proposal in order to update and clarify the available information on welfare and environmental impacts of heavy-duty vehicle emissions. The following section presents information on four categories of public welfare and environmental impacts related to heavy-duty vehicle emissions: acid deposition, eutrophication of water bodies, POM deposition, and impairment of visibility.

a. Acid Deposition

Acid deposition, or acid rain as it is commonly known, occurs when SO₂ and NO_x react in the atmosphere with water, oxygen, and oxidants to form various acidic compounds that later fall to earth in the form of precipitation or dry deposition of acidic particles.⁵⁹ It contributes to damage of trees at high elevations and in extreme cases may cause lakes and streams to become so acidic that they cannot support aquatic life. In addition, acid deposition accelerates the decay of building materials and paints, including irreplaceable buildings, statues, and sculptures that are part of our nation's cultural heritage. To reduce damage to automotive paint caused by acid rain and acidic dry deposition, some manufacturers use acid-resistant paints, at an average cost of \$5 per vehicle—a total of \$61 million per year if applied to all new cars and trucks sold in the U.S.

Acid deposition primarily affects bodies of water that rest atop soil with a limited ability to neutralize acidic compounds. The National Surface Water Survey (NSWS) investigated the effects of acidic deposition in over 1,000 lakes larger than 10 acres and in thousands of miles of streams. It found that acid deposition was the primary cause of acidity in 75 percent of the acidic lakes and about 50 percent of the acidic streams, and that the areas most sensitive to acid rain were the Adirondacks, the mid-Appalachian highlands, the upper Midwest and the high elevation West. The NSWS found that approximately 580 streams in the Mid-Atlantic Coastal Plain are acidic primarily due to acidic deposition. Hundreds of the lakes in the

Adirondacks surveyed in the NSWS have acidity levels incompatible with the survival of sensitive fish species. Many of the over 1,350 acidic streams in the Mid-Atlantic Highlands (mid-Appalachia) region have already experienced trout losses due to increased stream acidity. Emissions from U.S. sources contribute to acidic deposition in eastern Canada, where the Canadian government has estimated that 14,000 lakes are acidic. Acid deposition also has been implicated in contributing to degradation of high-elevation spruce forests that populate the ridges of the Appalachian Mountains from Maine to Georgia. This area includes national parks such as the Shenandoah and Great Smoky Mountain National Parks.

A recent study of emissions trends and acidity of waterbodies in the Eastern United States by the General Accounting Office (GAO) found that sulfates declined in 92 percent of a representative sample of lakes from 1992 to 1999, and nitrate levels increased in 48 percent of the lakes sampled.⁶⁰ The decrease in sulfates is consistent with emissions trends, but the increase in nitrates is inconsistent with the stable levels of nitrogen emissions and deposition. The study suggests that the vegetation and land surrounding these lakes have lost some of their previous capacity to use nitrogen, thus allowing more of the nitrogen to flow into the lakes and increase their acidity. Recovery of acidified lakes is expected to take a number of years, even where soil and vegetation have not been "nitrogen saturated," as EPA called the phenomenon in a 1995 study.⁶¹ This situation places a premium on reductions of SO_x and especially NO_x from all sources, including HDVs, in order to reduce the extent and severity of nitrogen saturation and acidification of lakes in the Adirondacks and throughout the United States.

The SO_x and NO_x reductions from today's action will help reduce acid rain and acid deposition, thereby helping to reduce acidity levels in lakes and streams throughout the country and help accelerate the recovery of acidified lakes and streams and the revival of ecosystems adversely affected by acid deposition. Reduced acid deposition levels will also help reduce stress on forests, thereby accelerating reforestation efforts and improving timber production. Deterioration of our

⁵⁷ U.S. EPA (1993) Environmental Protection Agency, Integrated Risk Information System (IRIS), National Center for Environmental Assessment, Cincinnati, OH.

⁵⁸ U.S. EPA (2000) Exposure and Human Health Reassessment of 2,3,7,8-Tetrachlorodibenzo-p-Dioxin (TCDD) and Related Compounds. Part III: Integrated Summary and Risk Characterization for 2,3,7,8-Tetrachlorodibenzo-p-Dioxin (TCDD) and Related Compounds. External Review Draft. EPA/600/P-00/001Ag.

⁵⁹ Much of the information in this subsection was excerpted from the EPA document, Human Health Benefits from Sulfate Reduction, written under Title IV of the 1990 Clean Air Act Amendments, U.S. EPA, Office of Air and Radiation, Acid Rain Division, Washington, DC 20460, November 1995.

⁶⁰ Acid Rain: Emissions Trends and Effects in the Eastern United States, US General Accounting Office, March, 2000 (GOA/RCED-00-47).

⁶¹ Acid Deposition Standard Feasibility Study: Report to Congress, EPA 430R-95-001a, October, 1995.

historic buildings and monuments, and of buildings, vehicles, and other structures exposed to acid rain and dry acid deposition also will be reduced, and the costs borne to prevent acid-related damage may also decline. While the reduction in sulfur and nitrogen acid deposition will be roughly proportional to the reduction in SO_x and NO_x emissions, respectively, the precise impact of today's action will differ across different areas.

b. Eutrophication and Nitrification

Eutrophication is the accelerated production of organic matter, particularly algae, in a water body. This increased growth can cause numerous adverse ecological effects and economic impacts, including nuisance algal blooms, dieback of underwater plants due to reduced light penetration, and toxic plankton blooms. Algal and plankton blooms can also reduce the level of dissolved oxygen, which can also adversely affect fish and shellfish populations.

In 1999, NOAA published the results of a five year national assessment of the severity and extent of estuarine eutrophication. An estuary is defined as the inland arm of the sea that meets the mouth of a river. The 138 estuaries characterized in the study represent more than 90 percent of total estuarine water surface area and the total number of US estuaries. The study found that estuaries with moderate to high eutrophication conditions represented 65 percent of the estuarine surface area. Eutrophication is of particular concern in coastal areas with poor or stratified circulation patterns, such as the Chesapeake Bay, Long Island Sound, or the Gulf of Mexico. In such areas, the "overproduced" algae tends to sink to the bottom and decay, using all or most of the available oxygen and thereby reducing or eliminating populations of bottom-feeder fish and shellfish, distorting the normal population balance between different aquatic organisms, and in extreme cases causing dramatic fish kills.

Severe and persistent eutrophication often directly impacts human activities. For example, losses in the nation's fishery resources may be directly caused by fish kills associated with low dissolved oxygen and toxic blooms. Declines in tourism occur when low dissolved oxygen causes noxious smells and floating mats of algal blooms create unfavorable aesthetic conditions. Risks to human health increase when the toxins from algal blooms accumulate in edible fish and shellfish, and when toxins become airborne, causing respiratory problems due to inhalation.

According to the NOAA report, more than half of the nation's estuaries have moderate to high expressions of at least one of these symptoms—an indication that eutrophication is well developed in more than half of U.S. estuaries.

In recent decades, human activities have greatly accelerated nutrient inputs, such as nitrogen and phosphorous, causing excessive growth of algae and leading to degraded water quality and associated impairments of freshwater and estuarine resources for human uses.⁶² Since 1970, eutrophic conditions worsened in 48 estuaries and improved in 14. In 26 systems, there was no trend in overall eutrophication conditions since 1970.⁶³ On the New England coast, for example, the number of red and brown tides and shellfish problems from nuisance and toxic plankton blooms have increased over the past two decades, a development thought to be linked to increased nitrogen loadings in coastal waters. Long-term monitoring in the United States, Europe, and other developed regions of the world shows a substantial rise of nitrogen levels in surface waters, which are highly correlated with human-generated inputs of nitrogen to their watersheds.

On a national basis, the most frequently recommended control strategies by experts surveyed by National Oceanic and Atmospheric Administration (NOAA) between 1992–1997 were agriculture, wastewater treatment, urban runoff, and atmospheric deposition.⁶⁴ In its Third Report to Congress on the Great Waters, EPA reported that atmospheric deposition contributes from 2 to 38 percent of the nitrogen load to certain coastal waters.⁶⁵ A review of peer reviewed literature in 1995 on the subject of air deposition suggests a typical contribution of 20 percent or higher.⁶⁶ Human-caused nitrogen loading to the Long Island Sound from the atmosphere was estimated at 14 percent by a collaboration of federal and

state air and water agencies in 1997.⁶⁷ The National Exposure Research Laboratory, US EPA, estimated based on prior studies that 20 to 35 percent of the nitrogen loading to the Chesapeake Bay is attributable to atmospheric deposition.⁶⁸ The mobile source portion of atmospheric NO_x contribution to the Chesapeake Bay was modeled at about 30 percent of total air deposition.⁶⁹

Deposition of nitrogen from heavy-duty vehicles contributes to elevated nitrogen levels in waterbodies. In the Chesapeake Bay region, modeling shows that mobile source deposition occurs in relatively close proximity to highways, such as the 1–95 corridor which covers part of the Bay surface. The new standards for heavy-duty vehicles will reduce total NO_x emissions by 2.6 million tons in 2030. The NO_x reductions will reduce the airborne nitrogen deposition that contributes to eutrophication of watersheds, particularly in aquatic systems where atmospheric deposition of nitrogen represents a significant portion of total nitrogen loadings.

c. Polycyclic Organic Matter Deposition

EPA's Great Waters Program has identified 15 pollutants whose deposition to water bodies has contributed to the overall contamination loadings to these Great Waters.⁷⁰ One of these 15 pollutants, a group known as polycyclic organic matter (POM), are compounds that are mainly adhered to the particles emitted by mobile sources and later fall to earth in the form of precipitation or dry deposition of particles. The mobile source contribution of the 7 most toxic POM is at least 62 tons/year and represents only those POM that adhere to mobile source particulate emissions.⁷¹ The majority of these emissions are produced by diesel engines.

⁶⁷ The Impact of Atmospheric Nitrogen Deposition on Long Island Sound, The Long Island Sound Study, September, 1997.

⁶⁸ Dennis, Robin L., Using the Regional Acid Deposition Model to Determine the Nitrogen Deposition Airshed of the Chesapeake Bay Watershed, SETAC Technical Publications Series, 1997.

⁶⁹ Dennis, Robin L., Using the Regional Acid Deposition Model to Determine the Nitrogen Deposition Airshed of the Chesapeake Bay Watershed, SETAC Technical Publications Series, 1997.

⁷⁰ Deposition of Air Pollutants to the Great Waters—Third Report to Congress, June, 2000, Office of Air Quality Planning and Standards Deposition of Air Pollutants to the Great Waters—Second Report to Congress, Office of Air Quality Planning and Standards, June 1997, EPA-453/R-97-011.

⁷¹ The 1996 National Toxics Inventory, Office of Air Quality Planning and Standards, October 1999.

⁶² Deposition of Air Pollutants to the Great Waters, Third Report to Congress, June, 2000.

⁶³ Deposition of Air Pollutants to the Great Waters, Third Report to Congress, June, 2000. Great Waters are defined as the Great Lakes, the Chesapeake Bay, Lake Champlain, and coastal waters. The first report to Congress was delivered in May, 1994; the second report to Congress in June, 1997.

⁶⁴ Bricker, Suzanne B., et al., National Estuarine Eutrophication Assessment, Effects of Nutrient Enrichment in the Nation's Estuaries, National Ocean Service, National Oceanic and Atmospheric Administration, September, 1999.

⁶⁵ Deposition of Air Pollutants to the Great Waters, Third Report to Congress, June, 2000.

⁶⁶ Valigura, Richard, et al., Airsheds and Watersheds II: A Shared Resources Workshop, Air Subcommittee of the Chesapeake Bay Program, March, 1997.

POM is generally defined as a large class of chemicals consisting of organic compounds having multiple benzene rings and a boiling point greater than 100 degrees C. Polycyclic aromatic hydrocarbons are a chemical class that is a subset of POM. POM are naturally occurring substances that are byproducts of the incomplete combustion of fossil fuels and plant and animal biomass (e.g., forest fires). Also, they occur as byproducts from steel and coke productions and waste incineration. Evidence for potential human health effects associated with POM comes from studies in animals (fish, amphibians, rats) and in human cells culture assays. Reproductive, developmental, immunological, and endocrine (hormone) effects have been documented in these systems. Many of the compounds included in the class of compounds known as POM are classified by EPA as probable human carcinogens based on animal data.

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The particulate reductions from today's action will help reduce not only the particulate emissions from highway diesel engines but also the deposition of the POM adhering to the particles, thereby helping to reduce health effects of POM in lakes and streams, accelerate the recovery of affected lakes and streams, and revive the ecosystems adversely affected.

d. Visibility and Regional Haze

Visibility impairment, also called regional haze, is a complex problem caused by a variety of sources, both natural and anthropogenic (e.g., motor vehicles). Regional haze masks objects on the horizon and reduces the contrast of nearby objects. The formation, extent, and intensity of regional haze are functions of meteorological and chemical processes, which sometimes cause fine particle loadings to remain suspended in the atmosphere for several days and to be transported hundreds of kilometers from their sources (NRC, 1993).

Visibility has been defined as the degree to which the atmosphere is transparent to visible light (NRC, 1993).

Visibility impairment is caused by the scattering and absorption of light by particles and gases in the atmosphere. Fine particles (0.1 to 2.5 microns in diameter) are more effective per unit mass concentration at impairing visibility than either larger or smaller particles (NAPAP, 1991). Most of the diesel particle mass emitted by diesel engines falls within this fine particle size range. Light absorption is often caused by elemental carbon, a product of incomplete combustion from activities such as burning diesel fuel or wood. These particles cause light to be scattered or absorbed, thereby reducing visibility.

Heavy-duty vehicles contribute a significant portion of the emissions of direct PM, NO_x, and SO_x that result in ambient PM that contributes to regional haze and impaired visibility. The Grand Canyon Visibility Transport Commission's report found that heavy-duty diesel vehicles contribute 41 percent of fine elemental carbon or soot, 20 percent of NO_x, 7 percent of fine organic carbon, and 6 percent of SO_x. The report also found that reducing total mobile source emissions is an essential part of any program to protect visibility in the Western U.S. The Commission identified mobile source pollutants of concern as VOC, NO_x, and elemental and organic carbon. The Western Governors Association, in later commenting on the Regional Haze Rule and on protecting the 16 Class I areas on the Colorado Plateau, stated that the federal government, and particularly EPA, must do its part in regulating emissions from mobile sources that contribute to regional haze in these areas. As described more fully later in this section, today's action will result in large reductions in these pollutants. These reductions are expected to provide an important step towards improving visibility across the nation. Emissions reductions being achieved to attain the 1-hour ozone and PM₁₀ NAAQS will assist in visibility improvements. Moreover, the timing of the reductions from the standards fits very well with the goals of the regional haze program. We will work with the regional planning bodies to make sure they have the information to take account of the reductions from this final rule in their planning efforts.

The Clean Air Act contains provisions designed to protect national parks and wilderness areas from visibility impairment. In 1999, EPA promulgated a rule that will require States to develop plans to dramatically improve visibility in national parks. Although it is difficult

to determine natural visibility levels, we believe that average visual range in many Class I areas in the United States is significantly less (about 50–66 percent of natural visual range in the West, about 20 percent of natural visual range in the East) than the visual range that will exist without anthropogenic air pollution. The final Regional Haze Rule establishes a 60-year time period for planning purposes, with several near term regulatory requirements, and is applicable to all 50 states. One of the obligations is for States to representative conduct visibility monitoring in mandatory Class I Federal areas and determine baseline conditions using data for year 2000 to 2004. Reductions of particles, NO_x, sulfur, and VOCs from this rulemaking will have a significant impact on moving all states towards achieving long-term visibility goals, as outlined in the 1999 Regional Haze Rule.

C. Contribution from Heavy-Duty Vehicles

Nationwide, heavy-duty vehicles are projected to contribute about 15 percent of the total NO_x inventory, and 28 percent of the mobile source inventory in 2007. Heavy-duty NO_x emissions also contribute to fine particulate concentrations in ambient air due to the transformation in the atmosphere to nitrates. The NO_x reductions resulting from today's standards will therefore have a considerable impact on the national NO_x inventory. All highway vehicles account for 34 percent and heavy-duty highway vehicles account for 20 percent of the mobile source portion of national PM₁₀ emissions in 2007. The heavy-duty portion of the inventory is often greater in the cities, and the reductions in this rulemaking will have a relatively greater benefit in those areas.

1. NO_x Emissions

Heavy-duty vehicles are important contributors to the national inventories of NO_x emissions. Without NO_x reductions from this rule, HDVs are expected to contribute approximately 18 percent of annual NO_x emissions in 1996. The HDV contribution is predicted to fall to 15 percent in 2007 and 14 percent in 2020 due to reductions from the 2004 heavy-duty rulemaking, and then rise again to 16 percent of total NO_x inventory by 2030 (Table II.C–1). Annual NO_x reductions from this rule are expected to total 2.6 million tons in 2030.

TABLE II.C-1—NO_x EMISSIONS FROM HDVs WITH AND WITHOUT REDUCTIONS FROM THIS RULE

Year	Without this rule (base case)		With this rule (control case)
	HDV annual NO _x tons	HDV annual NO _x tons as a percent of total NO _x	Reductions in annual HDV NO _x tons
1996	4,810,000	18	n/a
2007	3,040,000	15	58,000
2020	2,560,000	14	1,820,000
2030	2,960,000	16	2,570,000

The contribution of heavy-duty vehicles to NO_x inventories in many MSAs is significantly greater than that reflected in the national average. For example, HDV contributions to total annual NO_x is greater than the national average in the eight metropolitan statistical areas listed in Table II.C-2. Examples of major cities with a history of persistent ozone violations that are heavily impacted by NO_x emissions from HDVs include: Los Angeles, Washington, DC, San Diego, Hartford, Atlanta, Sacramento. As presented in the table below, HDV's contribute from 22 percent to 33 percent of the total NO_x inventories in these selected cities. NO_x emissions also contribute to the formation of fine particulate matter, especially in the West. In all areas, NO_x also contributes to environmental and welfare effects such as regional haze, and eutrophication and nitrification of water bodies.

TABLE II.C-2—HEAVY-DUTY VEHICLE PERCENT CONTRIBUTION TO NO_x INVENTORIES IN SELECTED URBAN AREAS IN 2007

MSA, CMSA / State	HDV NO _x as portion of total NO _x (%)	HDV NO _x as portion of mobile source NO _x (%)
<i>National</i>	15	28
Sacramento, CA	33	37
Hartford, CT	28	38
San Diego, CA ..	25	28
San Francisco, CA	24	29
Atlanta, GA	22	34
Los Angeles	22	26
Dallas	22	28
Washington-Baltimore, MSA ..	22	36

2. PM Emissions

Nationally, we estimate that primary emissions of PM₁₀ to be about 33 million tons/year in 2007. Fugitive dust, other miscellaneous sources and crustal material (wind erosion) constitute approximately 90 percent of the 2007 PM₁₀ inventory. However, there is

evidence from ambient studies that emissions of these materials may be overestimated and/or that once emitted they have less of an influence on monitored PM concentration than this inventory share would suggest. Mobile sources account for 22 percent of the PM₁₀ inventory (excluding the contribution of miscellaneous and natural sources) and highway heavy-duty engines, the subject of today's action, account for 20 percent of the mobile source portion of national PM₁₀ emissions in 2007.

The contribution of heavy-duty vehicle emissions to total PM emissions in some metropolitan areas is substantially higher than the national average. This is not surprising, given the high density of these engines operating in these areas. For example, in Los Angeles, Atlanta, Hartford, San Diego, Santa Fe, Cincinnati, and Detroit, the estimated 2007 highway heavy-duty vehicle contribution to mobile source PM₁₀ ranges from 25 to 38 percent, while the national percent contribution to mobile sources for 2007 is projected to be about 20 percent. As illustrated in Table II.C-3, heavy-duty vehicles operated in El Paso, Indianapolis, San Francisco, and Minneapolis also account for a higher portion of the mobile source PM inventory than the national average. These data are based on updated inventories developed for this rulemaking. Importantly, these estimates do not include the contribution from secondary PM, which is an important component of diesel PM.

TABLE II.C-3—2007 HEAVY-DUTY VEHICLE CONTRIBUTION TO URBAN MOBILE SOURCE PM INVENTORIES

MSA, State	HDV PM Contribution to mobile source PMG ^a
<i>National (48 State)</i>	20
Atlanta, GA MSA	25
Cincinnati-Hamilton, OH-KY-IN CMSA	26
Detroit-Ann Arbor-Flint, MI CMSA	25
El Paso, TX MSA	23
Hartford, CT MSA	30
Indianapolis, IN MSA	23
Los Angeles-Riverside-Orange County, CA CMSA	25
Minneapolis-St. Paul, MN-WI MSA	23
San Diego, CA MSA	27
San Francisco-Oakland-San Jose, CA CMSA	24
Santa Fe, NM MSA	38

^a Direct exhaust emissions only; excludes secondary PM.

The city-specific emission inventory analysis and investigations of ambient PM_{2.5} summarized in the RIA indicate that the contribution of diesel engines to PM inventories in several urban areas around the U.S. is much higher than indicated by the national PM emission inventories only. One possible explanation for this is the concentrated use of diesel engines in certain local or regional areas which is not well represented by the national, yearly average presented in national PM emission inventories. Another reason may be underestimation of the in-use diesel PM emission rates. Our current modeling incorporates deterioration only as would be experienced in properly maintained, untampered vehicles. We are currently in the process of reassessing the rate of in-use deterioration of diesel engines and vehicles which could significantly increase the contribution of HDVs to diesel PM.

3. Environmental Justice

Environmental justice is a priority for EPA. The Federal government stated its concern, in part, over this issue through issuing Executive Order 12898, Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994). This Order requires that federal agencies make achieving environmental justice part of their mission. Similarly, the EPA created an Office of Environmental Justice (originally the Office of Environmental Equity) in 1992, commissioned a task force to address environmental justice issues, oversees a Federal Advisory Committee addressing environmental justice issues (the National Environmental Justice Advisory Council), and has developed an implementation strategy as required under Executive Order 12898.

Application of environmental justice principles as outlined in the Executive Order advances the fair treatment of people of all races, income, and culture with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment implies that no person or group of people should shoulder a disproportionate share of any negative environmental impacts resulting from the execution of this country's domestic and foreign policy programs.

For the last several years, environmental organizations and community-based citizens groups have been working together to phase out diesel buses in urban areas. For example, the Natural Resources Defense Council initiated a "Dump Dirty Diesel" campaign in the 1990s to press for the phase out of diesel buses in New York City. Other environmental organizations operating in major cities such as Boston, Newark, and Los Angeles have joined this campaign. The Coalition for Clean Air worked with NRDC and other experts to perform exposure monitoring in communities located near distribution centers where diesel truck traffic is heavy. These two organizations concluded that facilities with heavy truck traffic are exposing local communities to diesel exhaust concentrations far above the average levels in outdoor air. The report states: "These affected communities, and the workers at these distribution facilities with heavy diesel truck traffic, are bearing a disproportionate burden of the health risks."⁷² Other diesel "hot spots"

identified by the groups are bus terminals, truck and bus maintenance facilities, retail distribution centers, and busy streets and highways.

While there is currently a limited understanding of the relationship of environmental exposures to the onset of asthma, the environmental triggers of asthma attacks for children with asthma have become increasingly well characterized.⁷³ Asthma's burden falls hardest on the poor, inner city residents, and children. Among children up to 4 years of age, asthma prevalence increased 160 percent since 1980.⁷⁴ African-American children have an annual rate of hospitalization three times that for white children, and are four times as likely to seek care at an emergency room.⁷⁵ In 1995, the death rate from asthma in African-American children, 11.5 per million, was over four times the rate in white American children, 2.6 per million.⁷⁶

Local community groups and private citizens testified at public hearings held for this rule that the residents of their communities suffer greatly, and disproportionately, from air pollution in general, and emissions from heavy-duty vehicles in particular. For example, a testifier in New York pointed out that "since Northern Manhattan and the South Bronx experience asthma mortality and morbidity rates at three to five times greater than the citywide average, New York City's problem is Northern Manhattan's crisis."⁷⁷

The new standards established in this rulemaking are expected to improve air quality across the country and will provide increased protection to the public against a wide range of health effects, including chronic bronchitis, respiratory illnesses, and aggravation of asthma symptoms. These air quality and public health benefits could be expected to mitigate some of the environmental justice concerns related to heavy-duty

vehicles since the rule will provide relatively larger benefits to heavily impacted urban areas.

D. Anticipated Emissions Benefits

This subsection presents the emission benefits we anticipate from heavy-duty vehicles as a result of our new NO_x, PM, and NMHC emission standards for heavy-duty engines. The graphs and tables that follow illustrate the Agency's projection of future emissions from heavy-duty vehicles for each pollutant. The baseline case represents future emissions from heavy-duty vehicles at present standards (including the MY2004 standards). The controlled case quantifies the future emissions of heavy-duty vehicles once the new standards in this FRM are implemented.

We use the same baseline inventory as is used in the county-by-county, hour-by-hour air quality analyses associated with this rule. However, we made a slight modification to the controlled inventory to incorporate the changes between the proposed and final standards. Because the detailed air quality analyses took several months to perform, we had to use the proposed standards for the air quality analysis. Since beginning this analysis, we updated the control case emission inventories to reflect the final phase-in of the NO_x standard, slight changes to the timing of the HDGV standards, a temporary compliance option for introducing the low sulfur fuel requirements, and various hardship provisions for refiners in our emission inventory projections. The emission inventory calculations are presented in detail in the Regulatory Impact Analysis.

1. NO_x Reductions

The Agency expects substantial NO_x reductions on both a percentage and a tonnage basis from the new standards. The RIA provides additional projections between 2007 and 2030. As stated previously, HDVs contribute about 15 percent to the national NO_x inventory for all sources in 2007. Figure II.D-1 shows our national projections of total NO_x emissions with and without the engine controls finalized today. Table II.D-1 presents the total reductions.⁷⁸ This includes both exhaust and crankcase emissions.⁷⁹ The standards

⁷³ *Asthma and the Environment: A Strategy to Protect Children, President's Task Force on Environmental Health Risks and Safety Risks to Children*, January 28, 1999, Revised May, 2000.

⁷⁴ Asthma Statistics, National Institutes of Health, National Heart, Lung and Blood Institute, January, 1999.

⁷⁵ *Asthma and the Environment: A Strategy to Protect Children, President's Task Force on Environmental Health Risks and Safety Risks to Children*, January 28, 1999, Revised May, 2000. The Task Force was formed in conjunction with Executive Order 13045 (April 21, 1997), is co-chaired by Department of Health and Human Services and EPA, and is charged with recommending strategies for protecting children's environmental health and safety. In April, 1998, the Task Force identified childhood asthma as one of its top four priorities for immediate attention.

⁷⁶ *Id.*

⁷⁷ Testimony by Peggy Shepard, Executive Director, West Harlem Environmental Action, June 19th, 2000.

⁷² *Exhausted by Diesel: How America's Dependence on Diesel Engines Threatens Our Health*, Natural Resources Defense Council, Coalition for Clean Air, May 1998.

⁷⁸ The baseline used for this calculation is the 2004 HDV standards (64 FR 58472). These reductions are in addition to the NO_x emissions reductions projected to result from the 2004 HDV standards.

⁷⁹ We include in the NO_x projections excess emissions, developed by the EPA's Office of Enforcement and Compliance, that were emitted by many model year 1998-98 diesel engines. This is described in more detail in Chapter 2 of the RIA.

should result in close to a 90 percent reduction in NO_x from new engines.

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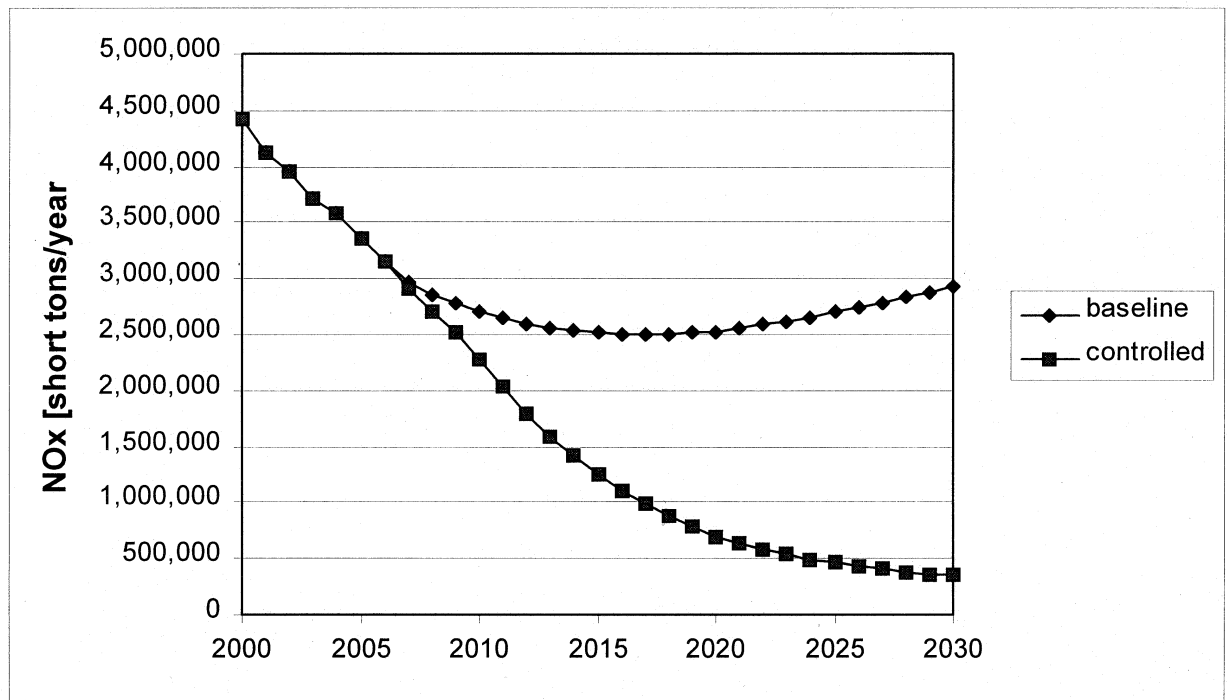


Figure II.D-1: Projected Nationwide Heavy-Duty Vehicle NO_x Emissions

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TABLE II.D-1.—ESTIMATED
REDUCTIONS IN NO_x

Calendar year	NO _x reduction [thousand short tons]
2007	58
2010	419
2015	1,260
2020	1,820
2030	2,570

2. PM Reductions

As stated previously, HDVs will contribute about 20 percent to the 2007 national PM₁₀ inventory for mobile sources. The majority of the projected PM reductions are directly a result of the exhaust PM standard. However, a modest amount of PM reductions will come from reducing sulfur in the fuel. For the existing fleet of heavy-duty vehicles, a small fraction of the sulfur in diesel fuel is emitted directly into the atmosphere as direct sulfate, and a

portion of the remaining fuel sulfur is transformed in the atmosphere into sulfate particles, referred to as indirect sulfate. Reducing sulfur in the fuel decreases the amount of direct sulfate PM emitted from heavy-duty diesel engines and the amount of heavy-duty diesel engine SO_x emissions that are transformed into indirect sulfate PM in the atmosphere.⁸⁰ For engines meeting the new standards, we consider low sulfur fuel to be necessary to enable the PM control technology. In other words, we do not claim an additional benefit beyond the new exhaust standard for reductions in direct sulfate PM for new engines. However, once the low sulfur fuel requirements go into effect, many pre-2007 model year engines would also be using low sulfur fuel. Because these pre-2007 model year engines are certified with higher sulfur fuel, they will achieve reductions in PM beyond their certification levels.

Figure II.D-2 shows our national projections of total HDV PM (TPM)

emissions with and without the new engine controls. This figure includes brake and tire wear, crankcase emissions and the direct sulfate PM (DSPM) benefits due to the use of low sulfur fuel by the existing fleet. These direct sulfate PM benefits from the existing fleet are also graphed separately. The new standards will result in about a 90 percent reduction in exhaust PM from new heavy-duty diesel engines. The low sulfur fuel should result in more than a 95 percent reduction in direct sulfate PM from pre-2007 heavy-duty diesel engines. Due to complexities of the conversion and removal processes of sulfur dioxide, we do not attempt to quantify the indirect sulfate reductions that would be derived from this rulemaking in the inventory analysis. Nevertheless, we recognize that these indirect sulfate PM reductions contribute significant additional benefits to public health and welfare, and we include this effect in our more detailed air quality analysis.

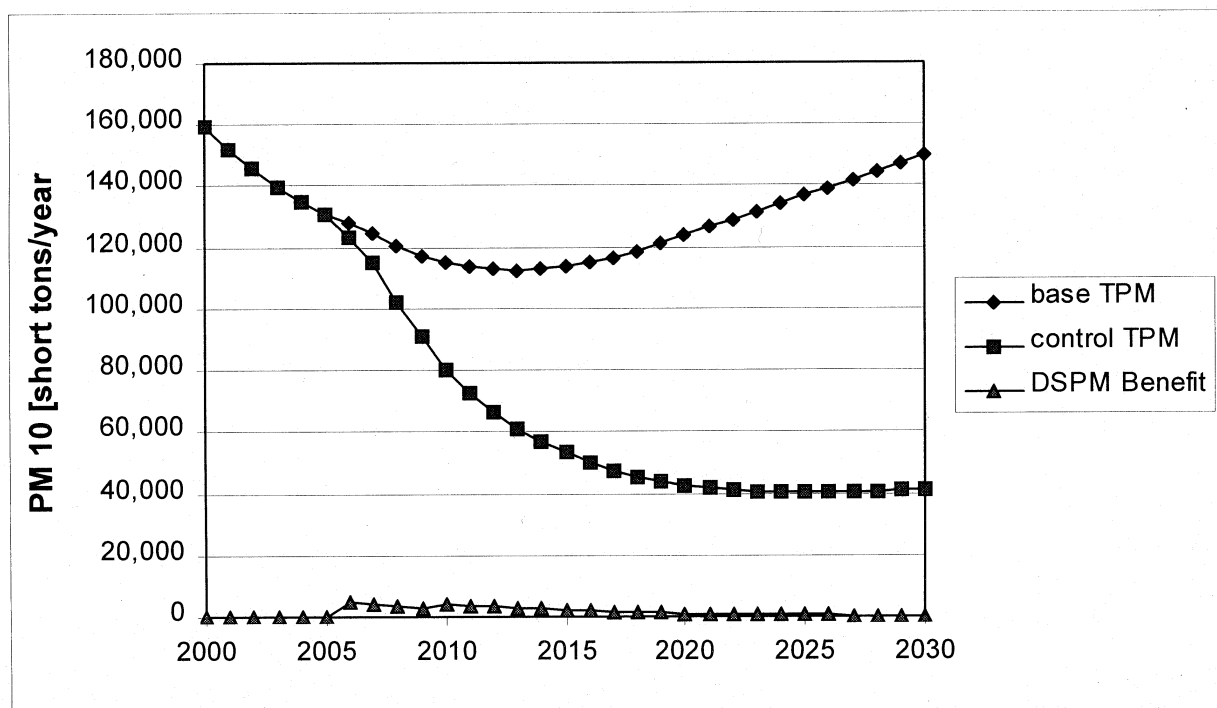


Figure II.D-2: Projected Nationwide Heavy-Duty Vehicle PM Emissions
and Direct Sulfate Emission Reductions

⁸⁰ Sulfate forms a significant portion of total fine particulate matter in the Northeast Chemical speciation data in the Northeast collected in 1995

shows that the sulfate fraction of fine particulate matter ranges from 20 and 27 percent of the total fine particle mass. *Determination of Fine Particle*

and Concentrations and Chemical Composition in the Northeastern United States. 1995. NESCAUM, prepared by Cass, et al., September 1999.

TABLE II.D-2.—ESTIMATED REDUCTIONS IN PM	
Calendar year	PM reduc- tion [thou- sand short tons]
2007	11
2010	36
2015	61
2020	82
2030	109

3. NMHC Reductions

The standards described in Section III are designed to be feasible for both gasoline and diesel heavy-duty vehicles. Although the standards give manufacturers the same phase-in for NMHC as for NO_x, we model the NMHC reductions for diesel vehicles to be fully in place in 2007 due to the application of particulate control technology. We believe the use of aftertreatment for PM control will cause the NMHC levels to

be below the standards as soon as the PM standard goes into effect in 2007.

HDVs account for about 3 percent of national VOC and 8 percent from mobile sources in 2007. Figure II.D-3 shows our national projections of total NMHC emissions with and without the new engine controls. This includes both exhaust emissions and evaporative emissions. Table II.D-3 presents the projected reductions of NMHC due to the new standards.

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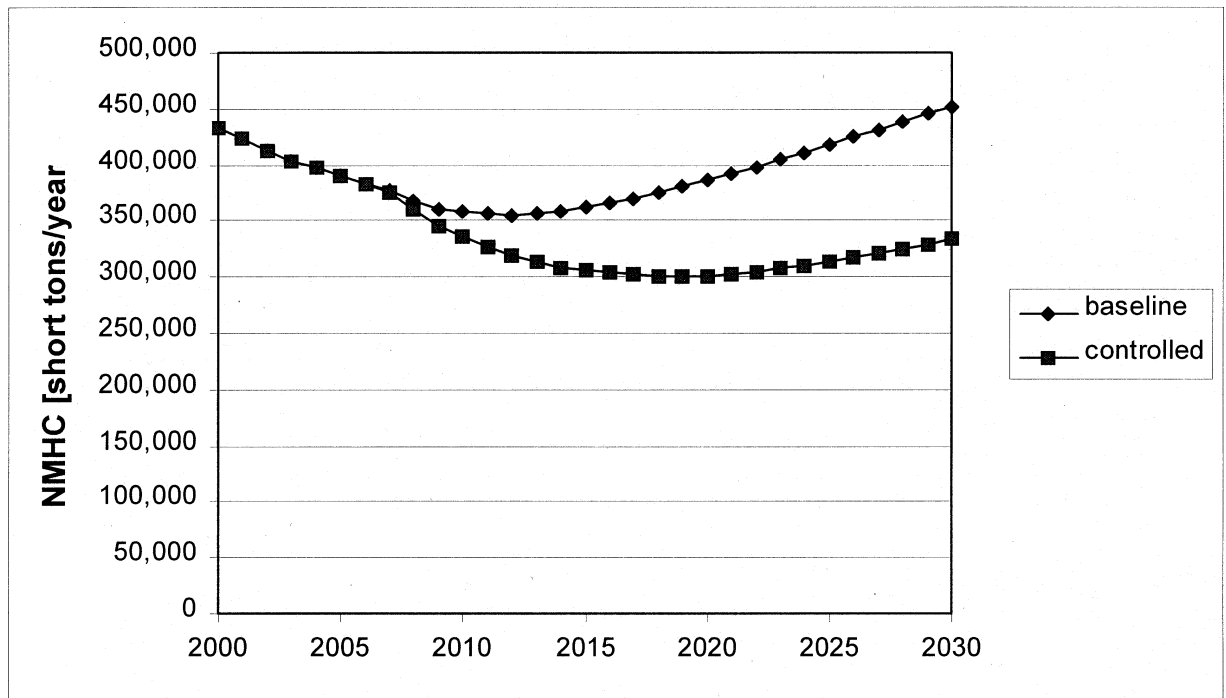


Figure II.D-3: Projected Nationwide Heavy-Duty Vehicle NMHC Emissions

TABLE II.D-3.—ESTIMATED
REDUCTIONS IN NMHC

Calendar year	NMHC reduction [thousand short tons]
2007	2
2010	21
2015	54
2020	83
2030	115

TABLE II.D-4.—ESTIMATED
REDUCTIONS IN CO

Calendar year	CO reduction [thousand short tons]
2007	56
2010	317
2015	691
2020	982
2030	1,290

TABLE II.D-5.—ESTIMATED REDUC-
TIONS IN SO_x DUE TO LOW SULFUR
FUEL

Calendar year	SO _x reduction [thousand short tons]
2007	79
2010	107
2015	117
2020	126
2030	142

4. Additional Emissions Benefits

This subsection looks at tons/year emission inventories of CO, SO_x, and air toxics from HDEs. Although we are not including stringent standards for these pollutants in this action, we believe the standards will result in reductions in CO, SO_x, and air toxics. Here, we present our anticipated benefits.

a. CO Reductions

In 2007, HDVs are projected to contribute to approximately 5 percent of national CO and 9 percent of CO from mobile sources. Although it does not include new CO emission standards, today's action would nevertheless be expected to result in a considerable reduction in CO emissions from heavy-duty vehicles. CO emissions from heavy-duty diesel vehicles, although already very low, would likely be reduced by an additional 90 percent due to the operation of emissions control systems that will be necessary to achieve today's new standards for hydrocarbons and particulate matter. CO emissions from heavy-duty gasoline vehicles would also likely decline as the NMHC emissions are decreased. Table II.D-4 presents the projected reductions in CO emissions from HDVs.

b. SO_x Reductions

HDVs are projected to emit approximately 0.5 percent of national SO_x and 8 percent of mobile source SO_x in 2007. We are requiring significant reductions in diesel fuel sulfur to enable certain emission control devices to function properly. We expect SO_x emissions to decline as a direct benefit of low sulfur diesel fuel. The majority of these benefits will be from heavy-duty highway diesel vehicles; however, some benefits will also come from highway fuel burned in other applications such as light-duty diesel vehicles and nonroad engines. As discussed in greater detail in the section on PM reductions, the amount of sulfate particles (direct and indirect) formed as a result of diesel exhaust emissions will decline for all HD diesel engines operated on low sulfur diesel fuel, including the current on-highway HD diesel fleet, and those non-road HD diesel engines that may operate on low sulfur diesel fuel in the future. Table II.D-5 presents our estimates of SO_x reductions resulting from the low sulfur fuel.

c. Air Toxics Reductions

This FRM establishes new non-methane hydrocarbon standards for all heavy-duty vehicles and a formaldehyde standard for complete heavy-duty vehicles. Hydrocarbons are a broad class of chemical compounds containing carbon and hydrogen. Many forms of hydrocarbons, such as formaldehyde, are directly hazardous and contribute to what are collectively called "air toxics." Air toxics are pollutants known to cause or suspected of causing cancer or other serious human health effects or ecosystem damage. The Agency has identified at least 20 compounds emitted from on-road gasoline vehicles that have toxicological potential, 19 of which are emitted by diesel vehicles, as well as an additional 20 compounds which have been listed as toxic air contaminants by California ARB.^{81 82} This action also will reduce emissions of diesel exhaust and diesel particulate matter (see Section II.B for a discussion of health effects).

Our assessment of heavy-duty vehicle (gasoline and diesel) air toxics focuses on the following compounds with cancer potency estimates that have significant emissions from heavy-duty vehicles: benzene, formaldehyde, acetaldehyde, and 1,3-butadiene. These compounds are an important, but limited, subset of the total number of air toxics that exist in exhaust and evaporative emissions from heavy-duty vehicles. The reductions in air toxics quantified in this section represent only a fraction of the total number and amount of air toxics reductions expected from the new hydrocarbon standards.

For this analysis, we estimate that air toxic emissions are a constant fraction of hydrocarbon exhaust emissions from future engines. Because air toxics are a

⁸¹ National Air Quality and Emissions Trends Report, 1997, (EPA 1998), p. 74.

⁸² California Environmental Protection Agency (1998) Report to the Air Resources Board on the Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant. Appendix III, Part A: Exposure Assessment. April 1998.

subset of hydrocarbons, and new emission controls are not expected to preferentially control one type of air toxic over another, the selected air toxics chosen for this analysis are expected to decline by the same

percentage amount as hydrocarbon exhaust emissions. We have not performed a separate analysis for the new formaldehyde standard since compliance with the hydrocarbon standard should result in compliance

with the formaldehyde standard for all petroleum-fueled engines. The RIA provides more detail on this analysis. Table II.D-6 shows the estimated air toxics reductions associated with the reductions in hydrocarbons.

TABLE II.D-6.—ESTIMATED REDUCTIONS IN AIR TOXICS (SHORT TONS)

Calendar year	Benzene	Formaldehyde	Acetaldehyde	1,3-Butadiene
2007	24	181	67	14
2010	356	1,670	608	135
2015	965	4,720	1,720	384
2020	1,340	7,080	2,600	567
2030	1,960	10,200	3,730	823

E. Clean Heavy-Duty Vehicles and Low-Sulfur Diesel Fuel are Critically Important for Improving Human Health and Welfare

Despite continuing progress in reducing emissions from heavy-duty engines, emissions from these engines continue to be a concern for human health and welfare. Ozone continues to be a significant public health problem, and affects not only people with impaired respiratory systems, such as asthmatics, but healthy children and adults as well. Ozone also causes damage to plants and has an adverse impact on agricultural yields. Particulate matter, like ozone, has been linked to a range of serious respiratory health problems, including premature mortality, aggravation of respiratory and cardiovascular disease, aggravated asthma, acute respiratory symptoms, and chronic bronchitis. Importantly, EPA has concluded that diesel exhaust is likely to be carcinogenic to humans by inhalation at occupational and environmental levels of exposure.

Today's action will reduce NO_x, VOC, CO, PM, and SO_x emissions from these heavy-duty vehicles substantially. These reductions will help reduce ozone levels nationwide and reduce the frequency and magnitude of predicted exceedances of the ozone standard. These reductions will also help reduce PM levels, both by reducing direct PM emissions and by reducing emissions that give rise to secondary PM. The NO_x and SO_x reductions will help reduce acidification problems, and the NO_x reductions will help reduce eutrophication problems. The PM and NO_x standard enacted today will help improve visibility. All of these reductions are expected to have a beneficial impact on human health and welfare by reducing exposure to ozone, PM, diesel exhaust and other air toxics and thus reducing the cancer and noncancer effects associated with exposure to these substances.

III. Heavy-Duty Engine and Vehicle Standards

In this section, we describe the vehicle and engine standards we are finalizing today to respond to the serious air quality needs discussed in Section II. Specifically, we discuss:

- The CAA and why we are finalizing new heavy-duty standards.
- The technology opportunity for heavy-duty vehicles and engines.
- Our new HDV and HDE standards, and our phase-in of those standards.
- Why we believe the stringent standards being finalized today are feasible in conjunction with the low sulfur gasoline required under the recent Tier 2 rule and the low sulfur diesel fuel being finalized today.
- The effects of diesel fuel sulfur on the ability to meet the new standards, and what happens if high sulfur diesel fuel is used.
- Plans for future review of the status of heavy-duty diesel NO_x emission control technology.

A. Why Are We Setting New Heavy-Duty Standards?

We are finalizing new heavy-duty vehicle and engine standards and related provisions under section 202(a)(3) of the CAA, which authorizes EPA to establish emission standards for new heavy-duty motor vehicles. (See 42 U.S.C. 7521(a)(3).) Section 202(a)(3)(A) requires that such standards "reflect the greatest degree of emission reduction achievable through the application of technology which the Administrator determines will be available for the model year to which such standards apply, giving appropriate consideration to cost, energy, and safety factors associated with the application of such technology." Section 202(a)(3)(B) allows EPA to take into account air quality information in revising such standards. Because heavy-duty engines contribute greatly to a number of serious air pollution problems, especially the

health and welfare effects of ozone, PM, and air toxics, and because millions of Americans live in areas that exceed the national air quality standards for ozone or PM, we believe the air quality need for tighter heavy-duty standards is well founded. This, and our belief that a significant degree of emission reduction from heavy-duty vehicles and engines is achievable, giving appropriate consideration to cost, energy, and safety factors, through the application of new diesel emission control technology, further refinement of well established gasoline emission controls, and reductions of diesel fuel sulfur levels, leads us to believe that new emission standards are warranted.

B. Emission Control Technologies for Heavy-Duty Vehicles and Engines

For the past 30 or more years, emission control development for gasoline vehicles and engines has concentrated most aggressively on exhaust emission control devices. These devices currently provide as much as or more than 95 percent of the emission control on a gasoline vehicle. In contrast, the emission control development work for diesels has concentrated on improvements to the engine itself to limit the emissions leaving the combustion chamber.

However, during the past 15 years, more development effort has been put into diesel exhaust emission control devices, particularly in the area of PM control. Those developments, and recent developments in diesel NO_x control devices, make the widespread commercial use of diesel exhaust emission controls feasible. Through use of these devices, we believe emissions control similar to that attained by gasoline applications will be possible with diesel applications. However, without low sulfur diesel fuel, these technologies cannot be implemented on heavy-duty diesel applications. Low sulfur diesel fuel will at the same time

also allow these technologies to be implemented on light-duty diesel applications.

As discussed at length in the preamble to our proposal, several exhaust emission control devices have been or are being developed to control harmful diesel exhaust pollutants. Of these, we believe that the catalyzed diesel particulate trap and the NO_x adsorber are the most likely candidates to be used to meet the very low diesel exhaust emission standards adopted today on the variety of applications in the heavy-duty diesel market. While other technologies exist that have the potential to provide significant emission reductions, such as selective catalytic reduction systems for NO_x control, and development of these technologies is being pursued to varying degrees, we believe that the catalyzed diesel particulate trap and the NO_x adsorber will be the only likely broadly applicable technology choice by the makers of engines and vehicles for the national fleet in this timeframe. However, as discussed in detail in the Final RIA, we strongly believe that none of these technologies can be brought to market on diesel engines and vehicles

unless the kind of low sulfur diesel fuel adopted in this rule is available.

As for gasoline engines and vehicles, improvement continues to be made to gasoline emissions control technology. This includes improvement to catalyst designs in the form of improved washcoats and improved precious metal dispersion. Much effort has also been put into improved cold start strategies that allow for more rapid catalyst light-off. This can be done by retarding the spark timing to increase the temperature of the exhaust gases, and by using air-gap manifolds, exhaust pipes, and catalytic converter shells to decrease heat loss from the system.

These improvements to gasoline emission controls will be made in response to the California LEV-II standards and the federal Tier 2 standards.⁸³ These improvements should transfer well to the heavy-duty gasoline segment of the fleet. With such migration of light-duty technology to heavy-duty vehicles and engines, we believe that considerable improvements to heavy-duty gasoline emissions can be realized, thus allowing vehicles to meet the much more stringent standards adopted today.

The following discussion provides more detail on the technologies we

believe are most capable of meeting very stringent heavy-duty emission standards. The goal of this discussion is to describe the emission reduction capability of these emission control technologies and their critical need for diesel fuel sulfur levels as low as those being finalized today. But first, we present the details of the new emission standards being finalized today.

C. What Engine and Vehicle Standards Are We Finalizing?

1. Heavy-Duty Engine Exhaust Emissions Standards

a. FTP Standards⁸⁴

The emission standards finalized today for heavy-duty engines are summarized in Table III.C-1. For reasons explained below, the phase-in schedule for these standards differs from the proposed schedule. We are also finalizing an incentive provision to encourage the early introduction of engines meeting these new standards. This incentive provision is explained in section III.D. In addition, we have altered our Averaging, Banking, and Trading (ABT) provisions from what was proposed. The final ABT provisions are discussed in detail in section VI.

TABLE III.C-1.—FULL USEFUL LIFE HEAVY-DUTY ENGINE EXHAUST EMISSIONS STANDARDS AND PHASE-INS FOR INCOMPLETE VEHICLES

		Standard (g/bhp-hr)	Phase-In by Model Year ^a			
			2007	2008	2009	2010
Diesel	NO _x	0.20	50%	50%	50%	100%
	NMHC	0.14	50%	50%	50%	100%
	PM	0.01	100%	100%	100%	100%
Gasoline	NO _x	0.20	0%	50%	100%	100%
	NMHC	0.14	0%	50%	100%	100%
	PM	0.01	0%	50%	100%	100%

^a Percentages represent percent of sales.

With respect to PM, this new standard represents a 90 percent reduction for most heavy-duty diesel engines from the current PM standard. The current PM standard for most heavy-duty engines, 0.10 g/bhp-hr, was implemented in the 1994 model year; the PM standard for urban buses implemented in that same year was 0.05 g/bhp-hr; these standards are not changing when other standards change in the 2004 model year timeframe. The new PM standard of

0.01 g/bhp-hr being finalized today is projected to require the addition of highly efficient PM traps to diesel engines, including those diesel engines used in urban buses; it is not expected to require the addition of any new hardware for gasoline engines.

With respect to NMHC and NO_x, these new standards represent significant reductions from the 2004 diesel engine standard which is either 2.4 g/bhp-hr NO_x+NMHC, or 2.5 g/bhp-

hr NO_x+NMHC with a cap on NMHC of 0.5 g/bhp-hr. We generally expect that 2004 diesel engines will meet those standards with emission levels around 2.2 g/bhp-hr NO_x and 0.2 g/bhp-hr NMHC. Like the PM standard, the new NO_x standard is projected to require the addition of a highly efficient NO_x emission control system to diesel engines which, with help from the PM trap, will need to be optimized to control NMHC emissions. For gasoline

⁸³ See Chapter IV.A of the final Tier 2 Regulatory Impact Analysis, contained in Air Docket A-97-10, and McDonald, Joseph, and Jones, Lee, "Demonstration of Tier 2 Emission Levels for Heavy Light-Duty Trucks," SAE 2001-01-1957.

⁸⁴ The Phase 1 heavy-duty rule recently promulgated by EPA specified two supplemental sets of standards for heavy-duty diesel engines. (See

65 FR 59896, October 6, 2000.) Manufacturers of heavy-duty diesel engines must meet these supplemental standards, the Supplemental Emission Test (SET, formerly referred to as the Supplemental Steady-State (SSS) test) and the Not-to-Exceed (NTE) standards, beginning in model year 2007, in addition to meeting the preexisting standards, which must be met using the preexisting

federal test procedure (FTP). For the purposes of this preamble, we refer to the standards met using the preexisting FTP as the FTP standards, though the SET and NTE test procedures have now been added to the regulations establishing the various federal test procedures for heavy-duty diesel engines.

engines, the 2005 model year standard recently finalized in the Phase 1 heavy-duty rule is 1.0 g/bhp-hr NO_x+NMHC. (See 65 FR 59896, October 6, 2000.) There is a direct trade off between NO_x and NMHC emissions with a gasoline engine, but we would generally expect NO_x levels over 0.5 g/bhp-hr and NMHC levels below that. Regardless of the NO_x and NMHC split, today's standards represent significant reductions for 2008 and later engines that will require substantial improvement in the effectiveness of heavy-duty gasoline emission control technology.

We proposed a new formaldehyde standard of 0.016 g/bhp-hr for both heavy-duty diesel and gasoline engines. However, we have decided not to finalize those standards. We proposed the formaldehyde (HCHO) standard because it is a hazardous air pollutant that is emitted by heavy-duty engines and other mobile sources. In the proposal, we stated our belief that formaldehyde emissions from gasoline and diesel engines are and will remain inherently low, but having the standard would ensure that excess emissions would not occur. Several commenters took issue with our proposed standard claiming that the benefits were nonexistent, that we should address toxic emissions in our toxics rulemaking, and that we had shown neither its technological feasibility nor its measurability. After further consideration we do believe that the proposed formaldehyde standard is not necessary because the NMHC standard we are promulgating today will almost certainly result in formaldehyde emissions well below our proposed formaldehyde standard. As a result, other comments on this issue such as those concerning technological feasibility and measurability are no longer relevant to this rule. We will continue to evaluate this issue to ensure that formaldehyde emissions do not become a problem in the future and may take action to consider standards if warranted.

We believe a phase-in of the diesel NO_x standard is appropriate. With a phase-in, manufacturers are able to introduce the new technology on a portion of their engines, thereby gaining valuable experience with the technology prior to implementing it on their entire fleet. Also, we are requiring that the NO_x, and NMHC standards be phased-in together for diesel engines. That is, engines will be expected to meet both of these new standards, not just one or the other. We are requiring this because the standard finalized in the Phase 1 heavy-duty rule is a combined NMHC+NO_x

standard. With separate NO_x and NMHC phase-ins, say 50/50/50/100 for NO_x and 100 percent in 2007 for NMHC, the 2.5 gram engines being phased-out would have a 2.5 gram NO_x+NMHC standard and a new 0.14 gram NMHC standard with which to comply. While this could be done, we believe that it introduces unnecessary compliance complexity to the program.

In our NPRM, we requested comment on a range of possible phase-in schedules for NO_x including anything from our primary proposal of 25/50/75/100 percent phase-in to a possible requirement for 100 percent compliance in the 2007 model year. We have determined that a 50/50/50/100 percent phase-in schedule is the most appropriate schedule for several reasons.

Some commenters argued that we should require 100 percent compliance in the 2007 model year because of the 0.20 gram standard was both technologically feasible and critical given the nation's air quality needs. Other commenters were concerned that 100 percent compliance to the 0.20 gram NO_x standard in the first year of the program was ill advised as it would provide little opportunity for industry to "field test" new NO_x control technologies. These commenters also expressed concern over workload burdens on industry members needing to redesign all of their new engines and vehicles in one year. Some commenters were concerned that a 25/50/75/100 percent phase-in schedule would introduce competitiveness issues whereby those vehicles equipped with new NO_x control technology may be less attractive to some buyers than vehicles without the technology, making them difficult for manufacturers to sell.

We set standards and implementation schedules based on many factors including technological feasibility, cost, energy, and safety. Considering these factors, we believe that industry should be provided the flexibility of having a phase-in of the new NO_x standard. As discussed in section III.E below, we believe the 0.20 gram NO_x standard is feasible in the 2007 time frame. However, we believe a phase-in is appropriate for a couple of reasons. First, the phase-in will provide industry with the flexibility to roll out the NO_x control technology on only a portion of their fleet. This will allow them to focus their resources on that half of their fleet being brought into compliance in 2007. This ability to focus their efforts will increase both the efficiency and the effectiveness of those efforts. Second, a phase-in allows industry the ability to introduce the new technology on those

engines it believes are best suited for a successful implementation which, in turn, provides a valuable opportunity to refine that technology on only a portion of their product line prior to the next push toward full implementation.

Another concern with respect to our proposed phase-in schedule was raised by several commenters and pertains to its interaction with the final implementation schedule for the new supplemental requirements (the Supplemental Emission Test, SET, and the Not-to-Exceed, NTE). These requirements, finalized in the Phase 1 heavy-duty final rule, will be implemented in the 2007 model year on all heavy-duty diesel engines. (See 65 FR 59896, October 6, 2000.) Under a 25/50/75/100 percent phase-in schedule of new diesel engine emission requirements, 25 percent of engines in the 2007 model year would meet 0.20 and 0.01 g/bhp-hr NO_x and PM, while 75 percent would meet 2.5 and 0.01 g/bhp-hr NO_x and PM. Further, all of those engines would be required, beginning in the 2007 model year, to meet the supplemental requirements based on the FTP emission standards to which they were certified. A 25/50/75/100 percent phase-in schedule would change the supplemental requirements for those 25 percent of engines in the 2008 model year that would have to change to meet the new 50 percent compliance requirement. This change would be required even though the supplemental requirements on those 25 percent of engines were first implemented only one model year earlier, in model year 2007. Commenters have questioned whether this is consistent with section 202(a)(3)(c) of the Clean Air Act, which requires that standards for heavy-duty vehicles and engines apply for no less than three model years without revision. Under this argument, the supplemental requirements implemented in the 2007 model year must be allowed three model years of stability, meaning that no changes can be required to those standards until the 2010 model year.

The final phase-in schedule, 50/50/50/100 percent, addresses any concerns about violating the stability requirement of the Act and addresses the technology and lead time benefits of a phase-in as discussed above.⁸⁵ While this phase-in does not provide certain commenters with their goal of 100 percent implementation of very low NO_x engines in 2007, we believe it is

⁸⁵ EPA need not determine, at this time, whether the 25/50/75/100 percent phase-in schedule violates section 202(a)(3)(c), as the 50/50/50/100 percent phase-in schedule clearly does not and is available to all manufacturers.

appropriate for the technology, cost, and other reasons described above. This 50/50/100 percent phase-in schedule does provide a more rapid implementation of low NO_x engines and, more importantly, provides more air quality benefits in 2007 than would our proposed phase-in schedule. We are also finalizing provisions that would encourage manufacturers to introduce clean technology, both diesel and gasoline, earlier than required in return for greater flexibility during the later years of our phase-in. These optional early incentive provisions are analogous to those included in our light-duty Tier 2 rule and are discussed in more detail in section III.D. We have also revised our Averaging, Banking, and Trading program to increase flexibility as discussed further in section VI.

For gasoline engines, we proposed 100 percent compliance in the 2007 model year. However, since the proposal was published, we have set new standards for heavy-duty gasoline engines that take effect in the 2005 model year. Therefore, the three year stability requirement of the CAA requires that today's new standards not apply until the 2008 model year at the earliest. Further, while we had not proposed a phase-in for gasoline standards, based on comments received we believe that a phase-in should be provided. The phase-in will allow manufacturers to implement improved gasoline control technologies on their heavy-duty gasoline engines in the same timeframe as they implement those technologies on their Tier 2 medium-duty passenger vehicles (MDPV). This consistency with Tier 2 is discussed in more detail below in section III.C.2 on vehicle standards. Note that the gasoline engine phase-in schedule is the same as but separate from the gasoline vehicle phase-in schedule discussed below. As we have done for diesel engines, we have also revised our Averaging, Banking, and Trading program for gasoline engines to increase flexibility as discussed further in section VI.

For a discussion of why we believe these standards are technologically feasible in the time frame required, refer to section III.E below and for a more detailed discussion refer to the RIA contained in the docket. The averaging, banking, and trading (ABT) provisions associated with today's standards are discussed in Section VI of this preamble. The reader should refer to that section for more details.

b. Supplemental Provisions for HD Diesel Engines (SET & NTE)

In addition to the new FTP standards for HD diesel engines contained in

today's final action, we are also finalizing the supplemental emission standards we proposed to apply to the new HDDEs, with a number of changes as discussed in this section. The supplemental provisions will help ensure that HD diesel engines achieve the expected in-use emission reductions over a wide range of vehicle operation and a wide range of ambient conditions, not only the test cycle and conditions represented by the traditional FTP. The Agency has historically relied upon the FTP and the prohibition of defeat devices to ensure that HDDE emission control technologies which operate during the laboratory test cycle continue to operate in-use. The supplemental provisions are a valuable addition to the FTP and the defeat device prohibition to ensure effective in-use emission control. The supplemental provisions for HD diesel engines consist of two principal requirements, the supplemental emission test and associated standards (SET),⁸⁶ and the not-to-exceed test and associated standards (NTE). The supplemental emission standards finalized today for heavy-duty diesel engines are summarized in Table III.C-2.

TABLE III.C-2.—FULL USEFUL LIFE HEAVY-DUTY DIESEL ENGINE SUPPLEMENTAL EXHAUST EMISSIONS STANDARDS

Supplemental test	Requirements for NO _x , NMHC, PM
Supplemental emission test.	1.0 × FTP standard (or FEL).
Not-to-exceed test	1.5 × FTP standard (or FEL).

The SET and NTE test procedures were recently adopted for 2007 on-highway HD diesel engines. (See 65 FR 59896, October 6, 2000.) In the recent HD Phase 1 rulemaking which promulgated the SET and NTE, the supplemental provisions were finalized in the context of the emission control technology expected to be used to meet the 2004 FTP standards, *i.e.*, injection timing strategies and cooled EGR. In this final action, we are finalizing a number of changes to the supplemental provisions to address specific technical issues raised by commenters and which result from the expected application of high efficiency exhaust emission control

⁸⁶ In the Phase 1 rulemaking, the Supplemental Emission Test was referred to as the supplemental steady state test. As discussed in the Phase 1 rule, the supplemental steady state test is based on and is consistent with the European Commissions "EURO III ESC" test. (See 65 FR 59915.) In this final rule we have renamed the supplemental steady state test the Supplemental Emission Test (SET).

devices on HD diesel engines and vehicles to meet today's new standards. These changes are minor in nature and will not impact the emission reductions we expect from the Phase 2 standards. These changes are discussed in the following sections. Additional discussion regarding the supplemental provisions for HDDEs is contained in the RIA and the Response to Comments (RTC) for this final rule, as well as in Section III.E of this preamble ("Feasibility of the New Engine and Vehicle Standards").

i. Supplemental Emission Test

We are finalizing supplemental emission test provisions for HD diesel engines and vehicles certified to the new FTP standards contained in this final rule. The SET emission standard is equal to 1.0 times the FTP standard or FEL for HD diesel engines. Emission results from this test must meet the numerical standards for the FTP. The SET requirements are phased-in beginning with the 2007 model year, consistent with the phase-in of the new FTP standards. The supplemental emission test duty cycle consists of 13 modes of speed and torque, primarily covering the typical highway cruise operating range of heavy-duty diesel engines. The emission results from each of the modes are weighted by defined factors in the regulations, and the final weighted emission value for each pollutant must meet the SET standard. In addition, several of the 13 individual modes are in the NTE control zone, and must meet the applicable NTE requirements. The SET test is a laboratory test performed using an engine dynamometer under the same conditions which apply to the FTP, as specified in the regulations. (See 40 CFR 86.1360.)

The regulations for the SET in model year 2007 as they apply to the 2004 FTP emission standards contain additional steady-state test point emission limits. The Phase 1 supplemental requirements define a "Maximum Allowable Emission Limit" (MAEL) which the engines must comply with. The Phase 1 regulations allowed EPA to randomly select up to three steady-state test points prior to certification which the manufacturer would test to show compliance with the MAEL. These test points are referred to as "mystery points". In this final rule we have eliminated the MAEL for engines certified to the Phase 2 standards. The MAEL assures that an engine is calibrated to maintain emission control similar to the SET test under steady state conditions across the engine map, not just at the pre-defined 13 test points

which comprise the SET test. For Phase 1 engines the MAEL was necessary to ensure this potential for gaming did not occur because the difference between the FTP standard and the NTE standard could be large, for example, 0.625 g/bhp-hr for NMHC + NO_x. However, for Phase 2 engines the NTE requirements are a mere 0.10 g/bhp-hr NO_x greater than the FTP standard. Considering this small increment, we have eliminated the MAEL for Phase 2 engines because it is redundant with the NTE. For the same reasons, we have eliminated the certification “mystery points” for engines complying with today’s diesel engine standards.

ii. Not-to-Exceed

We are also finalizing revisions to the not-to-exceed emission standards for HD diesel engines certified to the Phase 2 FTP standards contained in this final rule. These NTE procedures apply under engine operating conditions within the range specified in the NTE test procedure that could reasonably be expected to be seen in normal vehicle operation and use. (See 40 CFR 86.1370.) The NTE procedure defines limited and specific engine operating regions (*i.e.*, speed and torque conditions) and ambient operating conditions (*i.e.*, altitude, temperature, and humidity conditions) which are subject to the NTE emission standards. Emission results from this test procedure must be less than or equal to 1.5 times the FTP standards (or FEL) for NO_x, NMHC, and PM. The new NTE requirements are phased-in starting with the 2007 model year, consistent with the new FTP standards.

The Not-To-Exceed (NTE) provisions were recently finalized for HDDEs certified to the 2004 FTP emission standards with implementation beginning in model year 2007. (See 65 FR 59896, October 6, 2000.) The NTE approach establishes an area (the “NTE control area”) under the torque curve of an engine where emissions must not exceed a specified value for any of the regulated pollutants.⁸⁷ The NTE requirements would apply under engine operating conditions that could reasonably be expected to be seen in normal vehicle operation and use which occur during the conditions specified in the NTE test procedure. (See 40 CFR 86.1370.) This test procedure covers a

specific range of engine operation and ambient operating conditions (*i.e.*, temperature, altitude, and humidity). The NTE control area, emissions standards, ambient conditions and test procedures for HDDEs are described in the regulations.

The NTE multiplier promulgated in the previous final rulemaking for HD diesel engines certified to the 2004 FTP standards is $1.25 \times$ FTP standard (*e.g.*, 1.25×2.5 g/bhp-hr NMHC+NO_x and 1.25×0.1 g/bhp-hr PM). We believe the NTE cap finalized today ($1.5 \times$ the Phase 2 FTP standards or FEL) allows sufficient headroom above the FTP standard to accommodate the technical challenges necessary to meet the NTE standard which must be met over a broader range of ambient conditions, a shorter time period, and a wider variety of operating conditions, than the FTP or the SET. While the 1.5 NTE multiplier we are finalizing is greater than what we proposed, in absolute terms the NTE requirement for Phase 2 engines is much smaller than for Phase 1 engines (*i.e.*, the magnitude of the cap in g/bhp-hr emissions), and the Phase 2 NTE cap will help ensure the emission reductions we expect from the Phase 2 standards will occur in-use. The NTE requirements have been modified from what we proposed based on our assessment of the emission performance of the exhaust emission control devices that will be used to meet the new FTP standards (*e.g.*, catalyzed particulate traps and NO_x adsorbers). Under the program finalized today, an NTE limit of $1.5 \times$ the NO_x FEL would apply to 2007 and later model year engines certified with FELs less than 1.5 g/bhp-hr NO_x. As discussed throughout this notice, the stringent 2007 PM standard, 0.01 g/bhp-hr, can be met with the use of catalyzed particulate traps. Because of the very low particulate matter emissions which will be emitted by engines meeting the PM standard, this final rule also establishes a minimum PM NTE requirement for engines certified with FELs below 0.01 g/bhp-hr at $1.5 \times$ the FTP standard, not the FEL. Based on our assessment of the expected exhaust emission control devices and their performance, the NTE standard of $1.5 \times$ FTP standard is both technologically feasible and appropriate. A detailed discussion of the feasibility of the NTE requirements is contained in the RIA for this final rule.

Today’s action allows the NTE deficiency provisions we recently finalized for 2007 HDDEs meeting the 2004 FTP standards to be used by HDDEs meeting the standards contained in today’s final rule (See 40 CFR 86.007–11(a)(4)(iv) in the regulations,

and 65 FR 59914 of the Phase 1 rule for a detailed discussion of the NTE deficiencies.). These deficiency provisions are similar to the deficiency provisions which currently apply to LD and HD on-board diagnostic systems. This will allow the Administrator to accept a HDDE as compliant with the NTE even though some specific requirements are not fully met. This provision will be available for manufacturers through 2013, though it will be more limited after 2009 as described below. In the Phase 1 rule, the Agency finalized deficiency provisions which were allowed through model year 2009. In this rule, it is appropriate to extend the availability of the NTE deficiency provisions beyond 2009. Given the nature of the phase-in requirements in this rule, manufacturers may be introducing new engine families certified to the Phase 2 NO_x and NMHC standards as late as model year 2010, and these families may need limited access to a NTE deficiency for a few years after their introduction. Therefore, we have extended the availability of deficiencies through model year 2013, but with one constraint. Given the considerable lead time available, we have limited the number of deficiencies to three per engine family for 2010 through 2013.

In addition, we have made a number of changes to the NTE requirements to address specific technical issues which arise from the application of high efficiency exhaust emission control devices to HDDEs. These provisions will only be summarized here. A detailed discussion is contained in the RIA and the RTC for this final rule. These changes include: engine start-up provisions; exhaust emission control device warm-up provisions; modifications of the NTE control zone; and adjustments to the NTE minimum emissions sample time.

Under this final rule, the NTE requirements will not apply during engine start-up conditions. EPA intended to include the provision excluding start-up provisions from the NTE requirements under the Phase 1 rulemaking, and it was discussed in the preamble for both the Phase 1 proposal and final rule. However, this provision was inadvertently left out of the regulations. We have corrected this in today’s rule for both Phase 1 and Phase 2 engines. In addition, with the application of advanced exhaust emission control devices, an exhaust emission control device warm-up provision is a necessary criterion for the NTE. Specifically, until the exhaust gas temperature on the outlet side of the exhaust emission control device(s)

⁸⁷ Torque is a measure of rotational force. The torque curve for an engine is determined by an engine “mapping” procedure specified in the Code of Federal Regulations. The intent of the mapping procedure is to determine the maximum available torque at all engine speeds. The torque curve is merely a graphical representation of the maximum torque across all engine speeds.

achieves 250 degrees Celsius, the engine is not subject to the NTE. Additional discussion of this provision is contained in the RIA.

We have made three changes to the NTE engine control zone. First, we have expanded the NTE engine control zone for engines certified to the new 0.01 g/bhp-hr PM standard. The NTE requirements as specified in the regulations for engines certified to the 2004 FTP standards provide specific "PM carve-outs" to the NTE control zone. These carve-outs define an area of the engine operating regime (speed and torque area) to which the NTE does not apply for PM emissions. (See 65 FR 59961.) The PM only carve-outs were specified because, under certain engine operating regions, the NTE requirements for PM could not be met with the technology projected to be used to meet the 2004 FTP standards. However, as discussed in the RIA, the advanced PM trap technology that will be used to meet the PM standard contained in today's final rule is very efficient at controlling PM emissions across the entire NTE control zone. Due to the high PM reduction capabilities of catalyzed PM traps, there is no need for the PM specific carve-outs. Therefore, we have eliminated the NTE PM carve-outs for Phase 2 engines. Second, we have added a provision which would allow a manufacturer to exclude defined regions of the NTE engine control zone from NTE compliance if the manufacturer could demonstrate that the engine, when installed in a specified vehicle(s), is not capable of operating in such regions. Finally, we have added a provision which would allow a manufacturer to petition the Agency to limit testing in a defined region of the NTE engine control zone during NTE testing. This optional provision would require the manufacturer to provide the Agency with in-use operation data which the manufacturer could use to define a single, continuous region of the NTE control zone. This single area of the control zone must be specified such that operation within the defined region accounts for 5 percent or less of the total in-use operation of the engine, based on the supplied data. Further, to protect against gaming by manufacturers, the defined region must generally be elliptical or rectangular in shape, and share a boundary with the NTE control zone. If approved by EPA, the regulations then disallow testing with sampling periods in which operation within the defined region constitutes more than 5.0 percent of the time-weighted operation within the sampling period.

We have also changed the minimum emissions sample time approach for NTE testing to address technical issues specific to the advanced exhaust emission control devices anticipated to be used to meet the NTE requirements. We proposed that the minimum emission sample time for the NTE was 30 seconds, which is what we recently finalized for engines certified to the Phase 1 standards. This short sample time was sufficient to ensure that momentary spikes in emissions (*e.g.*, such as could occur in a two or three second time frame) could not be isolated for determining compliance with the NTE (*e.g.*, an NTE test must be no shorter than a 30 second average). However, the use of highly efficient exhaust emission control devices complicates the minimum sample time requirements because of the potential for short-duration emission increases during regeneration events. We have adjusted the minimum sample time requirements to address this issue as follows (a detailed discussion of the need for this change is contained in the RIA). The regulations specify that the NTE sample time can be as short as 30 seconds provided no regeneration events occur within the sample period. However, if a regeneration event is included in the sample time, the sample time must include the period of time from the start of one regeneration event to the start of the next regeneration event, for each regeneration included in the sample. A regeneration event is determined by the engine manufacturer. This second provision regarding the minimum NTE sample time also cannot be shorter than 30 seconds. This sample time provision applies to any HDDE engine equipped with an exhaust emission control device which requires discreet regeneration events, regardless of the nature of the regeneration (*e.g.*, NO_x regeneration, desulfation).

c. Crankcase Emissions Control

Crankcase emissions are the pollutants that are emitted in the gases that are vented from an engine's crankcase. These gases are also referred to as "blowby gases" because they result from engine exhaust from the combustion chamber "blowing by" the piston rings into the crankcase. These gases are vented to prevent high pressures from occurring in the crankcase. Our emission standards have historically prohibited crankcase emissions from all highway engines except turbocharged heavy-duty diesel engines. The most common way to eliminate crankcase emissions has been to vent the blowby gases into the engine air intake system, so that the gases can

be recombusted. We made the exception for turbocharged heavy-duty diesel engines in the past because of concerns about fouling that could occur by routing the diesel particulates (including engine oil) into the turbocharger and aftercooler. Our concerns are now alleviated by newly developed closed crankcase filtration systems, specifically designed for turbocharged heavy-duty diesel engines. These new systems (discussed more fully in Section III.E below and in Chapter III of the Final RIA) are already required for new on-highway diesel engines under the EURO III emission standards.

In today's action, we are eliminating the exception for turbocharged heavy-duty diesel engines starting in the 2007 model year. Manufacturers will be required to control crankcase emissions from these engines, preferably by routing them back to the engine intake or to the exhaust stream upstream of the exhaust emission control devices. However, in response to the manufacturers' comments, we are finalizing the crankcase control requirement to allow manufacturers to treat crankcase emissions from these engines the same as other exhaust emissions (*i.e.*, we provide a performance requirement and leave the design to the manufacturer). Under this allowance, manufacturers could potentially discharge some or all of the crankcase emissions to the atmosphere, but only if they were able to keep the combined total of the crankcase emissions and the other exhaust emissions below the applicable exhaust emission standards. They could do this by routing the crankcase gases into the exhaust stream downstream of the exhaust emission control devices, or by continuing the current practice of venting the gases to the engine compartment. But, they could take either of these approaches only if they make sure that the combined total of the crankcase emissions and the other exhaust emissions are below the applicable exhaust emission standards. Also, the manufacturer would have to ensure that the crankcase emissions were readily measurable during laboratory and in-use field testing.⁸⁸ Despite this allowance made at the request of commenters, given the low levels of today's final standards we believe that manufacturers will have to close the crankcases of all of their

⁸⁸ During laboratory testing, the crankcase emissions would need to be vented in a controlled manner so that they could be routed into the dilution tunnel to ensure their proper measurement and inclusion in the tested emission level.

engines by either routing the crankcase emissions into the engine intake or by routing them into the exhaust upstream of the exhaust emission control devices.

d. On-Board Diagnostics (OBD)

The Phase 1 heavy-duty final rule put into place OBD requirements for heavy-duty diesel and gasoline engines weighing 14,000 pounds or less. (See 65 FR 59896, October 6, 2000.) In that rule, the OBD thresholds for malfunction identification are based on multiples of the applicable FTP emission standards to which the engine is certified. Given the structure of the 2004 FTP emission standards (2005 FTP emission standards for gasoline engines), which are combined NMHC+NO_x standards, the OBD thresholds are based on a multiple of the combined FTP standards. However, the structure of the 2007 FTP standards (2008 for gasoline engines) finalized today is not a combined NMHC+NO_x standard, but is instead a separate NO_x and a separate NMHC standard.

Therefore, today's final rule is revising the existing section of the regulations to link OBD thresholds to whatever the appropriate standards are whether they are the combined FTP standards or the new separate FTP standards finalized today. This is consistent with the intent of our OBD requirements since inception—that the OBD thresholds be based on the FTP standards to which the vehicle or engine has been certified.

We are also revising the phase-in for the OBD requirements finalized in the Phase 1 rule. (See 65 FR 59896.) In that rule, OBD systems were required to phase-in on a schedule of 60/80/100 percent beginning in the 2005 model year. At least one commenter claimed that the OBD phase-in may require multiple changes to OBD systems in consecutive years, because OBD systems are tied to the FTP standards to which they are certified.⁸⁹ We have decided,

⁸⁹ EPA does not believe there would be any legal stability concern even if we had kept the OBD phase-in as finalized in the Phase 1 rule. However, EPA agrees with the commenter that the phase-in as finalized in the Phase 1 rule would have complicated compliance unnecessarily.

for diesel engine OBD systems, to revise the 60/80/100 percent phase-in to 50/50/100 percent beginning in the 2005 model year. This revised phase-in not only alleviates the commenter's concerns, but also makes the OBD phase-in consistent with the implementation of new emission standards.

In addition, we have decided, for gasoline engine OBD systems, to revise the 60/80/100 percent phase-in to 60/80/80/100 percent beginning in the 2005 model year.⁹⁰ As with the new diesel OBD phase-in, this gasoline engine OBD phase-in alleviates the commenter's concerns, and it also makes the gasoline OBD phase-in more consistent with the implementation of new emission standards while maximizing the percentage of gasoline engines designed to meet the OBD requirements.

We also received comments suggesting that we commit to making any necessary changes to the OBD requirements based on the outcome of future rulemaking efforts by the California Air Resources Board (ARB). While we cannot make any such commitment, nor do we believe the commenter truly would want us to commit to making changes solely because ARB made changes, we do intend to continue our normal practice of working closely with ARB and harmonizing our OBD requirements where appropriate. Of course, any changes to our OBD requirements could only be done via rulemaking.⁹¹

2. Heavy-Duty Vehicle Exhaust Emissions Standards⁹²

a. FTP Standards

The emission standards being finalized today for heavy-duty gasoline

⁹⁰ For those manufacturers choosing compliance Options 1 or 2 as part of the Phase 1 program, the gasoline engine OBD phase-in will become 40/60/80/80/100 percent beginning in model year 2004. (See 65 FR 59896, October 6, 2000.)

⁹¹ This comment also pertained to gasoline vehicle-based OBD systems. Our statements made here pertain to those requirements as well but are not repeated below in section III.2.c.

⁹² As noted above, vehicle and engine standards apply to all vehicles and engines, even if they are alternative fueled vehicles and engines.

vehicles are summarized in Table III.C–3. We have already required that all complete heavy-duty gasoline vehicles, whether for transporting passengers or for work, be chassis certified. (See 65 FR 59896, October 6, 2000.) Current federal regulations do not require that complete diesel vehicles over 8,500 pounds be chassis certified; instead, our regulations have traditionally required certification of their engines. Today's final rule allows, as an option, chassis certification of complete heavy-duty diesel vehicles under 14,000 pounds. This option is discussed in more detail later in this section.

The Tier 2 final rule created a new vehicle category called “medium-duty passenger vehicles.”⁹³ These vehicles, both gasoline and diesel, are required to meet requirements of the Tier 2 program, which carries with it a chassis certification requirement. As a result, diesel medium-duty passenger vehicles must certify using the chassis certification test procedure.⁹⁴ Today's heavy-duty vehicle based standards, or chassis standards, for 2008 and later model year heavy-duty gasoline vehicles would apply to the remaining complete gasoline vehicles under 14,000 pounds and those complete diesel vehicles under 14,000 pounds choosing the chassis certification option; these complete vehicles are typically used for commercial, non-passenger applications. The standards shown in Table III.C–3 are, we believe, comparable in stringency to the diesel and gasoline engine standards shown in Table III.C–1.

⁹³ Medium-duty passenger vehicles are defined as any complete vehicle between 8,500 and 10,000 pounds GVWR designed primarily for the transportation of persons. The definition specifically excludes any vehicle that (1) has a capacity of more than 12 persons total or, (2) is designed to accommodate more than 9 persons in seating rearward of the driver's seat or, (3) has a cargo box (e.g., pick-up box or bed) of six feet or more in interior length. (See the Tier 2 final rulemaking, 65 FR 6698, February 10, 2000.)

⁹⁴ The Tier 2 final rule did make a limited allowance for engine certification of diesel MDPVS through the 2007 model year. The reader should refer to the Tier 2 final rule for details on that allowance. (See 65 FR 6750, February 10, 2000.)

TABLE III.C-3.—FULL USEFUL LIFE HEAVY-DUTY VEHICLE EXHAUST EMISSIONS STANDARDS AND PHASE-INS FOR COMPLETE VEHICLES ^a
[Grams/mile]

Weight range (GVWR)		Standard (g/mi)	Phase-in by model year ^b	
			2008	2009
8,500 to 10,000 lbs	NO _x	0.2	50%	100%
	NMHC	0.195		
	HCHO	0.032		
	PM	0.02		
10,001 to 14,000 lbs	NO _x	0.4		
	NMHC	0.230		
	HCHO	0.040		
	PM	0.02		

^a Does not include medium-duty passenger vehicles.

^b Percentages represent percent of sales.

These NO_x standards represent a 78 percent reduction and a 60 percent reduction from the standards for 8,500–10,000 pound and 10,000–14,000 pound vehicles, respectively, finalized for the 2005 model year. The 2005 model year standards are equivalent to the California LEV-I NO_x standards of 0.9 g/mi and 1.0 g/mi, respectively. The NO_x standards shown in Table III.C-3 are consistent with the CARB LEV-II NO_x standards for low emission vehicles (LEVs) in each respective weight range. The NO_x standard is slightly higher for the 10,000 to 14,000 pound vehicles for several reasons: these vehicles are tested at a heavier payload; they generally have a larger frontal area which creates more drag on the engine and requires it to work harder; and their in-use duty cycle tends to be more severe. The increased weight results in using more fuel per mile than vehicles tested at lighter payloads; therefore, they tend to emit slightly more grams of pollutant per mile than lighter vehicles.⁹⁵

The NMHC standards finalized today represent a 30 percent reduction from the 2005 standards for 8500–10,000 and 10,000–14,000 pound vehicles. The 2005 model year standards require such vehicles to meet NMHC standard levels of 0.28 g/mi and 0.33 g/mi, respectively (equal to the California LEV-I nonmethane organic gases (NMOG) standard levels). These new NMHC standards are consistent with the CARB LEV-II NMOG standards for LEVs in each respective weight class. The

NMHC standard for 10,000–14,000 pound vehicles is higher than for 8,500–10,000 pound vehicles for the same reason as stated above for the higher NO_x standard for such vehicles.

The formaldehyde (HCHO) standards shown in Table III.C-3 are not the standards we proposed. The standards we are finalizing are equivalent to the California LEV-II LEV category standards. This approach is being taken to maintain consistency with the approach taken on NO_x and NMHC standards. Although we are not finalizing formaldehyde standards for engine certified systems, because all the exhaust emission standards for complete vehicles are consistent with the CARB LEV II standards, we believe it is appropriate to maintain the formaldehyde standard for gasoline vehicles. Formaldehyde is a hazardous air pollutant that is emitted by heavy-duty vehicles and other mobile sources, and we are finalizing these formaldehyde standards to prevent excessive formaldehyde emissions.

These standards are especially important for any methanol-fueled vehicles because formaldehyde is chemically similar to methanol and is one of the primary byproducts of incomplete combustion of methanol. Formaldehyde is also emitted by vehicles using petroleum fuels (i.e., gasoline or diesel fuel), but to a lesser degree than is typically emitted by methanol-fueled vehicles. We expect that petroleum-fueled vehicles able to meet the NMHC standards should comply with the formaldehyde standards with large compliance margins. Based upon our analysis of the similar Tier 2 standards for passenger vehicles, we believe that formaldehyde emissions from petroleum-fueled vehicles when complying with the new PM, NMHC and NO_x standards should be as much as 90 percent below the

standards.⁹⁶ Thus, to reduce testing costs, we are finalizing a provision that permits manufacturers of petroleum-fueled vehicles to demonstrate compliance with the formaldehyde standards based on engineering analysis. This provision requires manufacturers to make a demonstration in their certification application that vehicles having similar size and emission control technology have been shown to exhibit compliance with the applicable formaldehyde standard for their full useful life. This demonstration is expected to be similar to that required to demonstrate compliance with the Tier 2 formaldehyde standards.

The PM standard is 80 percent lower than the CARB LEV-II LEV category PM standard of 0.12 g/mi, which actually applies only to diesel vehicles. Note that the PM standard shown in Table III.C-3 represents not only a stringent PM level, but a new standard for federal HDVs where none existed before. Both the California LEV II program for heavy-duty diesel vehicles and the federal Tier 2 standards for over 8,500 pound gasoline and diesel vehicles designed for transporting passengers contain PM standards. The PM standard finalized today is consistent with the light-duty Tier 2 bins 7 and 8 level of 0.02 g/mi.

The timing for our final gasoline vehicle standards differs from what we had proposed. Our proposal had no phase-in, requiring 100 percent compliance in the 2007 model year. However, since the proposal was published, we have set new standards for heavy-duty gasoline complete vehicles that take effect in the 2005 model year. Therefore, the three year stability requirement of the CAA requires that today's new standards not apply until the 2008 model year at the earliest. Further, based on comments

⁹⁵ Engine standards, in contrast, are stated in terms of grams per unit of work rather than grams per mile. Therefore, engine emission standards need not increase with weight because heavier engines do not necessarily emit more per unit of work produced. In contrast, heavier vehicles, due to their greater mass, tend to emit more per mile due to the increased load placed on the engine which requires the engine to do more work to travel each mile.

⁹⁶ See the Tier 2 Response to Comments document contained in Air Docket A-97-10.

received, we believe that a phase-in should be provided. The phase-in will allow manufacturers to implement improved gasoline control technologies on their heavy-duty gasoline vehicles in the same timeframe as they implement those technologies on their Tier 2 medium-duty passenger vehicles (MDPV). The MDPVs generally use the same engines and emission control systems as do the heavy-duty versions of those vehicles. MDPVs must comply with our light-duty Tier 2 program at 50 percent beginning in the 2008 model year and then 100 percent in the 2009 model year. As a result of this MDPV phase-in, and the stability requirements of the CAA, and because we believe it provides the greatest emission control considering costs, we are finalizing a gasoline phase-in of 50/100 percent beginning in the 2008 model year. Commenters suggested a 40/80/100 percent phase-in beginning in the 2008 model year, but we believe that a 50/100 percent phase-in allows appropriate leadtime and synergy with the MDPV requirements of our Tier 2 program. It is worth clarifying that this phase-in excludes California complete heavy-duty vehicles, which are already required to be certified to the California emission standards. It also excludes vehicles sold in any state that has adopted California emission standards for complete heavy-duty vehicles. It would be inappropriate to allow manufacturers to "double-count" the vehicles by allowing them to count those vehicles both as part of their compliance with this phase-in and for compliance with California requirements. We would handle heavy-duty engines similarly if California were to adopt different emission standards than those being established by this rule.

We are also finalizing provisions that would encourage manufacturers to introduce clean technology earlier than required in return for greater flexibility during the later years of our phase-in. These optional early incentive provisions are analogous to those included in our light-duty Tier 2 rule and are discussed in more detail in section III.D.

As we have done for diesel and gasoline engines, we have revised our Averaging, Banking, and Trading program for gasoline vehicles and engines to increase flexibility as discussed further in section VI. The reader should refer to that section for more details. Note that the gasoline vehicle phase-in schedule is the same as but separate from the gasoline engine phase-in schedule discussed above. For a discussion of why we believe these

standards are technologically feasible in the time frame required, refer to section III.E below, and for a more detailed discussion refer to the RIA contained in the docket.

We are also allowing complete heavy-duty diesel vehicles under 14,000 pounds to certify to the heavy-duty vehicle standards. The issue of chassis certification of diesels was raised as part of the Phase 1 rule. At that time, manufacturers expressed little interest in such a provision. Because the heavy-duty diesel industry is largely not a vertically-integrated industry, in that one company makes the engine and another makes the vehicle, chassis certification is not an immediately attractive or practical option for diesel engine manufacturers. Nonetheless, some manufacturers have begun to express interest in diesel chassis certification.⁹⁷ Also, the California Air Resources Board allows complete diesel vehicles to chassis certify. We like the idea of diesel chassis certification because it allows us to more easily evaluate such vehicles in-use. A chassis certified diesel could be acquired easily by EPA and tested in its vehicle configuration without the need to remove the engine for an engine test.

Therefore, while we fully expect that manufacturers will continue to certify the engines intended for complete diesel vehicles to the engine standards, we will allow the option to chassis certify such vehicles. Any chassis-certified complete diesel vehicles must meet the applicable Phase 2 emission standards for complete vehicles (i.e., this option is not available to diesels certified to the Phase 1 standards). In addition, while complete diesel vehicles would count against the phase-in requirements for diesel engines, they would not be allowed in the Averaging, Banking, and Trading program. Therefore, a chassis-certified diesel vehicle can neither use nor earn ABT credits, but counts as part of the 50 percent phase-in. Further, complete diesels choosing the chassis certification option would be required to comply with our federal OBD vehicle-based requirements for monitoring of exhaust emission control devices, even if choosing the option to demonstrate OBD compliance using the California OBD II requirements. Lastly, diesel vehicles choosing this option would be certified under subpart S which applies to chassis certified complete vehicles, but the evaporative emissions provisions of that subpart would not apply for diesel vehicles.

⁹⁷ See memorandum from Todd Sherwood to Air Docket A-99-06, dated December 6, 2000, Item #IV-E-47.

b. Supplemental Federal Test Procedure

We did not propose new supplemental FTP (SFTP) standards for heavy-duty vehicles. The SFTP standards control off-cycle emissions in a manner somewhat analogous to the NTE requirements for engines. We believe that the SFTP standards are an important part of our light-duty program just as we believe the NTE requirements will be an important part of our heavy-duty diesel engine program. Although we did not propose SFTP standards for heavy-duty vehicles, we stated an intention to do so via a separate rulemaking. We requested comment on such an approach, and on appropriate SFTP levels for heavy-duty vehicles along with supporting data.

We received unanimous support from industry commenters to address SFTP standards for heavy-duty vehicles in a separate rulemaking. In our Tier 2 final rule, we stated that we are currently contemplating a new SFTP rulemaking that would consider "Tier 2" SFTP standards for all Tier 2 vehicles, including MDPVs. California is also interested in developing more stringent SFTP standards within the context of their LEV II program and we are coordinating with California on these new SFTP standards. Given our concern over "off cycle" emissions, we believe it is appropriate that SFTP standards apply to all chassis certified vehicles, heavy-duty and light-duty. As part of the SFTP rule being contemplated, we expect to examine not only those issues stated in the Tier 2 rule (e.g., the SFTP test cycles and different SFTP standards for different vehicles sizes) but also the issue of heavy-duty SFTP standards.

c. On-Board Diagnostics (OBD)

The Phase 1 heavy-duty rule finalized OBD requirements for heavy-duty diesel engines, heavy-duty gasoline engines, and heavy-duty complete vehicles weighing 14,000 pounds or less. (See 65 FR 59896, October 6, 2000.) In that rulemaking, the final regulatory language stated the OBD catalyst thresholds for complete vehicles as multiples of a combined NMHC+NO_x emission standard. However, the emission standards for complete vehicles are not combined, as are the engine standards in that final rule. Therefore, the OBD catalyst thresholds for complete vehicles were not stated properly in the applicable sections of the regulations.

Today's final rule corrects that regulatory error by revising the appropriate regulatory language to link the OBD thresholds to a separate, rather than combined, set of FTP exhaust

emission standards. This is consistent with the Phase 1 heavy-duty proposal which correctly linked the proposed OBD thresholds to the separate FTP exhaust emission standards. (See 64 FR 58472, October 29, 1999.) It is also consistent with the preamble to the Phase 1 final rule, which stated the catalyst monitor threshold correctly. This change makes the OBD thresholds for complete vehicle certifications consistent with the structure used since implementation of the federal OBD requirements. (See 58 FR 9468, February 19, 1993.)

Consistent with the changes already discussed in section III.C.1, we are also revising the phase-in for complete vehicle OBD requirements finalized in the Phase 1 rule. (See 65 FR 59896.) In that rule, OBD systems were required to phase-in on a schedule of 60/80/100 percent beginning in the 2005 model year. At least one commenter pointed out that the OBD phase-in may require multiple changes to OBD systems in consecutive years because OBD systems are tied to the FTP standards to which they are certified. We have decided, for gasoline vehicle OBD systems, to revise the 60/80/100 percent phase-in to 60/80/80/100 percent beginning in the 2005 model year.⁹⁸ This revised OBD phase-in alleviates the commenter's concerns, and it makes the gasoline OBD phase-in more consistent with the implementation of new emission standards while maximizing the percentage of gasoline vehicles designed to meet the OBD requirements.

3. Heavy-Duty Evaporative Emissions Standards

We are finalizing new evaporative emission standards for heavy-duty vehicles and engines. The new standards are shown in Table III.C-4. These standards will apply to heavy-duty gasoline-fueled vehicles and engines, and methanol-fueled heavy-duty vehicles and engines. Consistent with existing standards, the standard for the two day diurnal plus hot soak test sequence would not apply to liquid petroleum gas (LPG) fueled and natural gas fueled HDVs.

⁹⁸ For those manufacturers choosing compliance Options 1 or 2 as part of the Phase 1 program, the gasoline vehicle OBD phase-in will become 40/60/80/80/100 percent beginning in model year 2004. (See 65 FR 59896.)

TABLE III.C-4.—NEW HEAVY-DUTY EVAPORATIVE EMISSIONS STANDARDS ^a
[Grams per test]

Category	3 day diurnal + hot soak	Supplemental 2 day diurnal + hot soak ^b
8,500–14,000 lbs	1.4	1.75
>14,000 lbs	1.9	2.3

^a To be implemented on the same schedule as the gasoline engine and vehicle exhaust emission standards shown in Tables III.C-1 and III.C-3. These new standards do not apply to medium-duty passenger vehicles, and do not apply to diesel fueled vehicles and engines.

^b Does not apply to LPG or natural gas fueled HDVs.

These new standards represent more than a 50 percent reduction in the numerical standards as they exist today. The Phase 1 heavy-duty rule made no changes to the numerical value of the standard, but it did put into place new evaporative emission test procedures for heavy-duty complete gasoline vehicles.⁹⁹ (See 65 FR 59896, October 6, 2000.) For establishing evaporative emission levels from complete heavy-duty vehicles, the standards shown in Table III.C-4 presume the test procedures required in the Phase 1 heavy-duty rule.

The new standards for 8,500 to 14,000 pound vehicles are consistent with the Tier 2 standards for medium-duty passenger vehicles (MDPV). MDPVs are of consistent size and have essentially identical evaporative emission control systems as the remaining work-oriented HDVs in the 8,500 to 10,000 pound weight range. Therefore, the evaporative emission standards should be equivalent. We are requiring those same standards for the 10,000 to 14,000 pound HDVs because, historically, the evaporative emission standards have been consistent throughout the 8,500 to 14,000 pound weight range. We believe that the HDVs in the 10,000 to 14,000 pound range are essentially equivalent in evaporative emission control system design as the lighter HDVs; therefore,

⁹⁹ The test procedure changes codify a commonly approved waiver allowing heavy-duty gasoline vehicles to use the light-duty driving cycle for demonstrating evaporative emission compliance. The urban dynamometer driving schedule (UDDS) used for heavy-duty vehicles is somewhat shorter than that used for light-duty vehicles, both in terms of mileage covered and minutes driven. This results in considerably less time for canister purge under the heavy-duty procedure than under the light-duty procedure. We recognize this discrepancy and have routinely provided waivers under the enhanced evaporative program that allow the use of the light-duty procedures for heavy-duty certification testing. This is consistent with CARB's treatment of equivalent vehicles.

continuing this historical approach is appropriate.

We are finalizing slightly higher evaporative emission standards for the over 14,000 pound HDVs because of their slightly larger fuel tanks and for non-fuel emissions related to larger vehicle sizes. This is consistent with past evaporative emission standards. The levels chosen for the over 14,000 pound HDVs maintains the same ratio relative to the 8,500 to 14,000 pound HDVs as exists with current evaporative standards. To clarify, the current standards for the 3 day diurnal test are 3 and 4 grams/test for the 8,500 to 14,000 and the over 14,000 pound categories, respectively. The ratio of 3:4 is maintained for the new 2008 standards, 1.4:1.9.

The new standard levels are slightly higher than the California LEV-II standard levels. The California standard levels are 1.0 and 1.25 for the 3-day and the 2-day tests, respectively. However, federal vehicles are certified using the higher-volatility federal test fuel.¹⁰⁰ Arguably, the federal and California evaporative emission standards are equivalent in stringency despite the difference in standard levels. We believe that our standards are appropriate for federal heavy-duty vehicles.

We are requiring that the new evaporative emission standards be implemented on the same schedule as the gasoline engine and vehicle exhaust standards shown in Tables III.C-1 and III.C-3. This will allow manufacturers to plan any needed changes to new vehicles at the same time, although it is not necessary that the exhaust and evaporative standards be phased-in on the same vehicles and engines. Also, we are finalizing the revised durability provisions finalized in the Tier 2 rulemaking, which require durability demonstration using fuel containing at least 10 percent alcohol. Alcohol can break down the materials used in evaporative emission control systems. Therefore, a worst case durability demonstration would include a worst case alcohol level in the fuel (10 percent) because in some areas of the country there is widespread use of alcohol fuels.

D. Incentives for Early Introduction of Clean Engines and Vehicles

In our proposal, we requested comment on alternative phase-in approaches that could provide attractive implementation options to

¹⁰⁰ The federal test fuel specification for fuel volatility, the Reid Vapor Pressure, is 8.7 to 9.2 psi. The California test fuel specification is 6.7 to 7.0 psi.

manufacturers without compromising air quality. We requested comment on a “declining standard” approach and a “cumulative phase-in” approach. We received only limited comment on those approaches with no commenters expressing particularly strong support for them. We did receive numerous comments suggesting that we provide some form of incentive for manufacturers to introduce clean technology engines earlier than required by the base program. We are finalizing the approach discussed here as an incentive for manufacturers to introduce clean diesel engines earlier than the 2007 model year (or the 2008 model year for gasoline engines and vehicles).

In our Tier 2 rule, we stated our belief that providing inducements to manufacturers to certify vehicles early to very low levels is appropriate. We believe that such inducements may help pave the way for greater and/or more cost effective emission reductions from future vehicles. We believe the program discussed here provides a strong incentive for manufacturers to maximize their development and introduction of the best available vehicle and engine emission control technology. This, in turn, provides a stepping stone to the broader introduction of this technology soon thereafter. Early production of cleaner vehicles enhances the early benefits of our program. If a manufacturer can be induced to certify to the new standards by the promise of reasonable extra credits, the benefits of that decision to the program may last for many years.

The incentive program finalized today is analogous to the provisions set forth in the final Tier 2 rule. We are finalizing provisions that permit manufacturers to take credit for diesel engines certified to this rule’s final standards prior to the 2007 model year (prior to the 2008 model year for gasoline engines or vehicles) in exchange for making fewer diesel engines certified to these standards in or after the 2007 model year (2008 for gasoline engines or vehicles). In other words, a clean engine sold earlier than required displaces the requirement to sell a similar engine

later. Note that the emission standards must be met to earn the early introduction credit. That is, emission credits earned under averaging, banking, and trading cannot be used to demonstrate compliance. Therefore, the early introduction engine credit is an alternative to the ABT program in that any early engines or vehicles can earn either the engine credit or the ABT emission credit, but not both. The purpose of the incentive is to encourage introduction of clean technology engines earlier than required in exchange for added flexibility during the phase-in years.

Any early engine credits earned for a diesel-fueled engine would, of course, be predicated on the assurance by the manufacturer that the engine would indeed be fueled with low sulfur diesel fuel in the marketplace. We expect this would occur through selling such engines into fleet applications, such as city buses, school buses, or any such well-managed centrally-fueled fleet. For this reason, we believe that any engines sold within this early incentive program would be sold primarily in urban areas where more centrally-fueled fleets exist. Because of the difficulty associated with low sulfur diesel fuel availability prior to mid-2006, we believe it is necessary and appropriate to provide a greater incentive for early introduction of clean diesel technology. Therefore, we will count one early diesel engine as 1.5 diesel engines later. This extra early credit for diesel engines means that fewer clean diesel engines than otherwise would be required may enter the market during the years 2007 and later. But, more importantly, it means that emission reductions would be realized earlier than under our base program. We believe that providing incentives for early emission reductions is a worthwhile goal for this program. Therefore, we are finalizing these provisions for manufacturers willing to make the early investment in cleaner engines. For gasoline engines and vehicles, the early engine credit will be a one-for-one credit because the gasoline needed by the engine or vehicle will be readily available.

We are providing this early introduction credit to diesel engines that meet all of today’s final standards (0.20 g/bhp-hr NO_x, 0.14 g/bhp-hr NMHC, and 0.01 g/bhp-hr PM). We are also providing this early introduction credit to diesel engines that pull-ahead compliance with only the 0.01 g/bhp-hr PM standard. However, a PM-only early engine can offset only PM compliant engines during the phase-in years, not NO_x, NMHC, and PM compliant engines.

An important aspect of the early incentive provision is that it must be done on an engine or vehicle count basis. That is, a diesel engine meeting new standards early counts as 1.5 such diesel engines later and a gasoline engine or vehicle early counts as one gasoline engine or vehicle later. This contrasts with a provision done on an engine percentage basis which would count one percent of diesel engines early as 1.5 percent of diesel engines later. Basing the incentive on an engine count will alleviate any possible influence of fluctuations in engine and vehicle sales in different model years.

Another important aspect of this program is that it is limited to engines sold prior to the 2007 model year (2008 for gasoline). In other words, diesel engines sold in the 2007 through 2009 model years that exceed the required 50 percent phase-in will not be considered “early” introduction engines and will, therefore, receive no early introduction credit. The same is true for gasoline engines and vehicles sold in the 2008 model year. However, such engines and vehicles will still be able to generate ABT credits. Note that early gasoline vehicles can count for later gasoline vehicles, and early gasoline engines can count for later gasoline engines, but early gasoline vehicles cannot be traded for later gasoline engines and vice versa.

Table III.D–1 shows an example for a diesel engine manufacturer and how it might use this incentive provision on an assumed fleet of 100 engine sales growing at one percent per year beginning in the 2004 model year.

TABLE III.D–1.—EXAMPLE ENGINE INTRODUCTION UNDER OUR EARLY INCENTIVE PROGRAM

	2004	2005	2006	2007	2008	2009	2010
Total Sales	100	101	102	103	104	105	106
Clean Engines under Base program	0	0	0	52	52	53	106
Clean Engines under Incentive Program	4	4	4	46	46	47	106

The four engines sold early in each of model years 2004 through 2006 generate a total credit of 18 engines ($4 \times 3 \times 1.5 = 18$). This allows the manufacturer to reduce its compliant engine count in each of model years 2007 through 2009 by six engines ($18/3 = 6$). This helps the manufacturer by reducing total costs through requiring fewer total engines at the low-emitting, clean engine level. But, more importantly, it introduces clean technology engines early and, by 2010 in this example, generates from four to six years of emission reductions that otherwise would not have occurred.

As further incentive to introduce clean engines and vehicles early, we are also finalizing a provision that would give manufacturers an early introduction credit equal to two engines during the phase-in years. This "Blue Sky" incentive would apply for diesel engines meeting one-half of today's final NO_x standard while also meeting the NMHC and PM standards. For gasoline engines, the same early introduction double engine credit would be available to engines sold prior to 2008 and meeting one-half the NO_x standard while also meeting the NMHC, PM, and evaporative emission standards. For

gasoline vehicles, the double engine credit would be available to those vehicles certified early to the California SULEV levels and today's PM and evaporative emission standards.¹⁰¹ Due to the extremely low emission levels to which these Blue Sky series engines and vehicles would need to certify, we believe that the double engine count credit is appropriate. Table III.D-2 shows the emission levels that would be required prior to the 2007 model year for diesel engines and the 2008 model year for gasoline vehicles and engines to earn any early introduction engine credits.

TABLE III.D-2.—EMISSION LEVELS AND CREDITS AVAILABLE FOR EARLY INTRODUCTION ENGINES

Category	Must meet ^a	Early engine credit ^b
Early Diesel PM-only ^c	Phase 2 PM & Phase 1 NO _x + NMHC	1.5-to-1
Early Diesel Engine ^c	All Phase 2 Standards	1.5-to-1
Early Gasoline Engine or Vehicle—Exhaust	Phase 2 Exhaust Standards	1-to-1
Early Gasoline Engine or Vehicle—Evap	Phase 2 Evaporative Standards	1-to-1
Blue Sky Series Diesel ^c or Gasoline Engine	0.10 g/bhp-hr NO _x & All other Phase 2 Standards ^d	2-to-1
Blue Sky Series Gasoline Vehicle	0.02 g/mi PM & California SULEV Level Standards ^d	2-to-1

^a Phase 1 refers to standards required by 65 FR 59896, October 6, 2000; Phase 2 refers to today's final standards.

^b Engine count credits must be earned prior to the phase-in years of 2007 for diesel and 2008 for gasoline.

^c Early diesel engines must also meet the Phase 2 crankcase emissions requirements.

^d For gasoline engines and vehicles, these must also meet the Phase 2 evaporative emission standards.

Alternative fueled vehicles and engines can also play a significant role in this incentive program. Any alternative fueled diesel-cycle engine certified to today's final standards prior to the 2007 model year can generate a 1.5 diesel-cycle engine count credit during the diesel phase-in years. Likewise, any alternative fueled Otto-cycle engine certified to today's final standards prior to the 2008 model year can generate one Otto-cycle engine count credit. Many commenters suggested that EPA should do more than was put forward in our proposal to encourage the introduction of alternative fuel technologies. To the extent that alternative fueled vehicles and engines are cleaner than diesels and gasolines, they may have an advantage within today's program. We believe that this program and its structure provides significant incentives for manufacturers to introduce alternative fueled vehicles and engines.

One final aspect of the incentive program is its interaction with our Tier 2 program. The Tier 2 final rule allows some MDPVs to be equipped with engine-certified diesel engines through

the 2007 model year. Any such engines are required to comply with the diesel engine standards that apply during the given model year. Given that they are certified as heavy-duty diesel engines, any such engines that meet today's final diesel standards prior to the 2007 model year would be allowed within today's incentive program provided they in no way generate any emission or engine count credits within the Tier 2 program. Further, any MDPVs, whether gasoline or diesel, certified on a chassis dynamometer and being counted in any way as part of the Tier 2 program, cannot be used as part of today's incentive program because they are not considered heavy-duty vehicles.

E. Feasibility of the New Engine and Vehicle Standards

For more detail on the information and analyses supporting our assessment of the technological feasibility of today's standards, please refer to the Final RIA in the docket for this rule. The following discussion summarizes the more detailed discussion found in the Final RIA and in the Summary and Analysis of Comments document.

1. Feasibility of Stringent Standards for Heavy-Duty Diesel

The designers and manufacturers of diesel engines have made substantial progress over the last 20 years reducing NO_x emissions by 60 percent and PM emissions by almost 90 percent through better engine design. We believe that, in response to our Phase 1 heavy-duty rule, industry will have implemented all promising engine-based emission reduction technologies in order to meet the 2.5 g/bhp-hr NO_x+NMHC standard and the 0.1 g/bhp-hr PM standard. To get the substantial PM and NO_x reductions from diesel engines needed to solve the air quality problems identified in section II, we believe a new technology solution will be required. That solution is the application of high efficiency exhaust emission control technologies (catalysts) to diesel engines, analogous to the application of catalyst technologies to passenger cars in the 1970s. These high efficiency catalyst technologies, enabled by the use of diesel fuel with sulfur content at or below 15 ppm, can reduce NO_x and PM emissions by more than 90 percent. This dramatic reduction in emissions will

¹⁰¹ The California SULEV levels are, for 8,500 to 10,000 pound vehicles, 0.1 g/mi NO_x, 0.100 g/mi NMOG, 0.008 g/mi HCHO, and 0.06 g/mi PM; and

for 10,000 to 14,000 pound vehicles, 0.2 g/mi NO_x, 0.117 g/mi NMOG, 0.010 g/mi HCHO, and 0.06 g/mi PM. With the exception of the PM standards,

these emission levels are half or roughly half of this rule's final gasoline vehicle standards.

enable diesel powered vehicles to reach emission levels well below today's gasoline emission levels. As detailed in the sections below, these technologies are rapidly being developed and will be available for application to diesel powered vehicles by, or even before, the 2007 model year provided the low sulfur diesel fuel required today is widely available.

a. Meeting the PM Standard

Diesel PM consists of three primary constituents: Unburned carbon particles (soot), which make up the largest portion of the total PM; the soluble organic fraction (SOF), which consists of unburned hydrocarbons that have condensed into liquid droplets or have condensed onto unburned carbon particles; and sulfates, which result from oxidation of fuel and oil derived sulfur in the engine's exhaust. Several exhaust emission control devices have been developed to control harmful diesel PM constituents—the diesel oxidation catalyst (DOC), and the many forms of diesel particulate filters, sometimes called PM traps. DOCs have been shown to be durable in use, but they effectively control only the SOF portion of the total PM which, on a modern diesel engine constitutes only 10 to 30 percent of the total PM. Therefore, the DOC on its own would only offer a modest reduction in PM emissions, and would not be able to meet the PM standard set here.

Diesel particulate filters were first investigated some twenty years ago as a means to capture solid particles in diesel exhaust. A variety of approaches to this technology have been developed most of which provide excellent mechanical filtration of the solid particles that make up the bulk of diesel PM (60 to 80 percent). The collected PM, mostly carbon particles, must then be “burned off” of the filter before the filter becomes plugged. This burning off of collected PM (oxidation of the stored PM, releasing CO₂) is referred to as “regeneration,” and can occur either:

- On a periodic basis by using base metal catalysts (including fuel-borne base metal catalysts) or an active regeneration system such as an electrical heater, a fuel burner, or a microwave heater; or,
- On a continuous basis by using precious metal catalysts.

Diesel particulate traps that regenerate on a periodic basis (referred to here as either uncatalyzed or base metal catalytic PM traps) demonstrated high PM trapping efficiencies many years ago, but the level of the applicable PM standard was such that it could be met through less costly “in-cylinder” control

techniques. Un-catalyzed diesel particulate filters will not be able to meet the 0.01 g/bhp-hr PM standard finalized today as they are only moderately effective at controlling the SOF fraction of the particulate. In addition, they require active regeneration technology which must be engaged frequently making the systems expensive to operate (increasing fuel consumption) and less reliable.

We believe the kind of PM trap that would be able to meet the PM standard in a reliable, durable, cost effective manner, and the type of trap that will prove to be the industry's technology of choice, is one capable of regenerating on an essentially continuous basis. In addition these PM traps will be able to achieve very low PM emissions because:

- They are highly efficient at controlling the solid carbon portion of PM;
- Unlike uncatalyzed filters, they are highly efficient at oxidizing the SOF of diesel PM;
- They employ precious metals to produce conditions that reduce the temperature at which regeneration occurs, thereby allowing for passive regeneration under normal operating conditions typical of a diesel engine;¹⁰²
- Because they regenerate continuously, they have lower average backpressure thereby reducing potential fuel economy impacts; and,
- Because of their passive regeneration characteristics, they need no extra burners or heaters like what would be required by an active regeneration system, thereby reducing potential failures and fuel economy impacts.

These catalyzed PM traps are able to provide in excess of 90 percent control of diesel PM when operated on diesel fuel with sulfur levels at or below 15 ppm. However, as discussed in detail in the RIA, the catalyzed PM trap cannot regenerate properly with current fuel sulfur levels, as such sulfur levels poison the catalytic function of the PM trap inhibiting the necessary NO to NO₂ reaction to the point of stopping trap

¹⁰² For PM trap regeneration without precious metals, exhaust metals, exhaust temperatures in excess of 650°C must be obtained. At such high temperatures, carbon will burn (oxidize to CO₂) provided sufficient oxygen is present. Although the largest heavy-duty diesels may achieve exhaust temperatures of 650°C under some operating conditions, smaller diesel engines, particularly light-duty and light heavy-duty diesel engines, will rarely achieve such high temperatures. For example, exhaust temperatures on the HDE Federal Test Procedure cycle typically range from 100°C to 450°C. Precious metal catalyzed traps use platinum to oxidize NO in the exhaust to NO₂, which is capable of oxidizing carbon at temperatures as low as 250°C to 300°C.

regeneration.¹⁰³ Also, because SO₂ is so readily oxidized to SO₃, the 0.01 g/bhp-hr PM standard cannot be achieved with fuel sulfur levels above 15 ppm because of the resultant increase in sulfate PM emissions (“sulfate make”).¹⁰⁴

More than one exhaust emission control manufacturer is known to have or be developing these precious metal catalyzed, passively regenerating PM traps and to have them in broad field test programs in areas where low sulfur diesel fuel is currently available. In field trials since 1994, they have demonstrated highly efficient PM control and good durability with some units accumulating in excess of 360,000 miles of field use.¹⁰⁵ The experience gained in these field tests also helps to clarify the need for low sulfur diesel fuel. In Sweden, where below 10 ppm diesel fuel sulfur is readily available, more than 3,000 catalyzed diesel particulate filters have been introduced into retrofit applications without a single failure. These retrofit applications include intercity trains, airport buses, mail trucks, city buses and garbage trucks.¹⁰⁶ The field experience in areas where sulfur is capped at 50 ppm has been less definitive. In regions without extended periods of cold ambient conditions, such as the United Kingdom, field tests on 50 ppm sulfur cap fuel have been positive, matching the durability at 10 ppm, but would be unable to meet a 0.01 g/bhp-hr PM standard due to a substantial increase in sulfate PM. However, field tests on 50 ppm sulfur fuel in Finland where colder winter conditions are often encountered (similar to northern parts of the United States) have experienced a failure rate of 10 percent, due to trap plugging. This 10 percent failure rate has been attributed to insufficient trap regeneration due to fuel sulfur in combination with low ambient temperatures.¹⁰⁷ Other possible reasons for the high failure rate in Finland when contrasted with the Swedish experience appear to be unlikely. The Finnish and Swedish fleets were substantially similar, with both fleets consisting of transit buses powered by Volvo and Scania engines in the 10 to 11 liter range. Further, the buses were operated in city areas and none of the vehicles were operated in northern extremes such as north of the

¹⁰³ Cooper and Thoss, Johnson Matthey, SAE 890404.

¹⁰⁴ See the RIA for more detail on the relationship of fuel sulfur to sulfate make.

¹⁰⁵ Allansson, *et al.* SAE 2000-01-0480.

¹⁰⁶ Allansson, *et al.* SAE 2000-01-0480.

¹⁰⁷ Letter from Dr. Barry Cooper to Don Kopinski, US EPA, Air Docket A-99-06.

Arctic Circle.¹⁰⁸ Given that the fleets in Sweden and Finland were substantially similar, and given that ambient conditions in Sweden are expected to be similar to those in Finland, we believe that the increased failure rates noted here are due to the higher fuel sulfur level in a 50 ppm cap fuel versus a 10 ppm cap fuel.¹⁰⁹ Testing on an even higher fuel sulfur level of 200 ppm was conducted in Denmark on a fleet of 9 vehicles. In less than six months all of the vehicles in the Danish fleet had failed due to trap plugging.¹¹⁰ We believe that this real world testing clearly indicates that increasing diesel fuel sulfur levels limit trap regeneration, leading to plugging of the PM trap even at fuel sulfur levels as low as 50 ppm.

From these results, we can further conclude that lighter applications (such as large pick-up trucks and other light heavy-duty applications), having lower exhaust temperatures than heavier applications, may experience similar failure rates even in more temperate climates and would, therefore, need lower sulfur fuel even in the United Kingdom. These results are understood to be due to the effect of sulfur on the trap's ability to create sufficient NO₂ to carry out proper trap regeneration. Without the NO₂, the trap continues to trap the PM at high efficiency, but it is unable to oxidize, or regenerate, the trapped PM. The possible result is a plugged trap. This vulnerability of the catalyzed diesel particulate filter due to sulfur in the fuel and the consequences of trap plugging are discussed fully in section III.F and the RIA.

Several commenters raised concerns with our use of the extensive fleet experience in Europe, to draw conclusions about the necessary sulfur reductions required in order to ensure PM trap durability. Their concerns focused generally around the fact that these fleets were made up of retrofit applications, and that the nature of the fleet operation did not represent a controlled experiment (ideally all things would have been equal except for the fuel sulfur level). While we

acknowledge these limitations in the data, we believe they still provide reasonable evidence of the need for low sulfur diesel fuel. The diversity of applications, climates, fuel properties, NO_x emission levels, and sulfur levels help to show the relative robustness of the technology. Further, we believe the PM trap manufacturer's analysis of the failure mode (*i.e.*, that cold ambient conditions coupled with diminished NO to NO₂ conversion due to sulfur led to the failures that were experienced) is the most likely explanation of the observed phenomena. Sulfur in diesel fuel is known to inhibit the oxidation of NO to NO₂ (as described in section III.F) leading to reduced ability to regenerate the PM filter, especially under low ambient conditions. For our detailed response to comments surrounding catalyzed diesel particulate filter durability refer to the RTC document.

Several progressive refineries have begun to produce diesel fuel with sulfur content less than 15 ppm for limited markets in the United States. The availability of this low sulfur diesel fuel makes it possible to introduce diesel particulate filters into these limited markets today. International Truck and Engine Corporation ("International") has announced its intent to commercialize its Green Diesel Engine Technology™ in 2001 coupled with less than 15 ppm sulfur fuel to achieve our proposed MY 2007 NMHC and PM emissions standards six years in advance of the requirement. International's ability to bring a catalyzed diesel particulate filter technology to commercialization in such a short period highlights the advanced state of this technology.¹¹¹

Modern catalyzed PM traps have been shown to be very effective at reducing PM mass. In addition, recent data show that they are also very effective at reducing the overall number of emitted particles when operated on low sulfur fuel. Hawker, *et al.*, found that a modern catalyzed PM trap reduced particle count by over 95 percent, including some of the smallest measurable particles (<50 nm), at most of the tested conditions. The lowest observed efficiency in reducing particle number was 86 percent. No generation of particles by the PM trap was observed under any tested conditions.¹¹² Kittelson, *et al.*, confirmed that ultrafine particles can be reduced by a factor of

ten by oxidizing volatile organics, and by an additional factor of ten by reducing sulfur in the fuel. Catalyzed PM traps efficiently oxidize nearly all of the volatile organic PM precursors, and elimination of as much fuel sulfur as possible will substantially reduce the number of ultrafine PM emitted from diesel engines. The combination of catalyzed PM traps with low sulfur fuel is expected to result in very large reductions in both PM mass and the number of ultrafine particles.

The data currently available show that catalyzed particulate filters can provide significant reductions in PM. Catalyzed particulate filters, in conjunction with low sulfur fuel, have been shown to be more than 90 percent efficient over the FTP and at most SET modes.¹¹³ Testing completed as part of the Diesel Emission Control Sulfur Effects (DECSE) program has demonstrated that a heavy duty diesel engine can achieve less than 0.01 g/bhp-hr PM emissions over the supplemental emission test when equipped with a catalyzed diesel particulate filter and operated on diesel fuel with sulfur content less than 15 ppm.¹¹⁴ Further testing at NVFEL has demonstrated that FTP PM emissions can likewise be controlled below 0.01 g/bhp-hr provided less than 15 ppm sulfur diesel fuel is used with a catalyzed PM trap.¹¹⁵ Based upon these test results, extensive field experience throughout the world and International Truck and Engine Corporation's commitment to produce vehicles with this technology in 2001, we conclude that the 0.01 g/bhp-hr FTP PM standard is feasible and that it represents the lowest emission level possible having given consideration to cost, energy and safety factors.

With regard to the NTE PM requirements, there is the potential for sulfate production during some operating modes covered by the NTE which would likely exceed the FTP PM standard. However, the NTE PM standard is equal to 1.5 × FTP standard. Even though the FTP standard of 0.01 g/bhp-hr PM is very low, the small additional head room provided by a

¹⁰⁸ Telephone conversation between Dr. Barry Cooper, Johnson Matthey, and Todd Sherwood, EPA, Air Docket A-99-06.

¹⁰⁹ The average temperature in Helsinki, Finland, for the month of January is 21°F. The average temperature in Stockholm, Sweden, for the month of January is 26°F. The average temperature at the University of Michigan in Ann Arbor, Michigan, for the month of January is 24°F. The temperature reported here are from www.worldclimate.com based upon the Global Historical Climatology Network (GHCN) produced jointly by the National Climatic Data Center and Carbon Dioxide Information Analysis Center at Oak Ridge National Laboratory (ORNL).

¹¹⁰ Letter from Dr. Barry Cooper to Don Kopinski US EPA, Air Docket A-99-06.

¹¹¹ International Truck and Engine Corporation's comments on the proposed 2007 heavy duty vehicle standards, Air Docket A-99-06, page 2.

¹¹² Hawker, P., *et al.*, Effect of a Continuously Regenerating Diesel Particulate Filter on Non-Regulated Emissions and Particle Size Distribution, SAE 980189.

¹¹³ Demonstration of Advanced Emission Control Technologies Enabling Diesel-Powered Heavy-Duty Engines to Achieve Low Emission Levels, Manufacturers of Emissions Controls Association, June 1999.

¹¹⁴ Testing for the DECSE program was conducted on 3 ppm and 30 ppm diesel fuel. A straight-line fit to the results between 3 ppm and 30 ppm shows that a 15 ppm cap fuel would have emissions less than 0.01 g/bhp-hr. Diesel Emission Control Sulfur Effects (DECSE) Program, Phase I Interim Data Report No. 4: Diesel Particulate Filters—Final Report, January 2000.

¹¹⁵ Memorandum from Charles Schenk, EPA, to Air Docket A-99-06, "Summary of EPA PM Efficiency Data," May 8, 2000.

NTE multiplier of 1.5 will be sufficient to enable PM trap equipped HDDEs to meet the NTE provisions, even when operated on 15 ppm sulfur fuel. This is supported by data generated as part of the DECSE test program, as well as data generated at our own laboratory, as discussed in greater detail in the RIA.¹¹⁶ As discussed in the RIA, the expanded ambient condition requirements of the NTE test procedure will have little effect on the PM reduction capabilities of a PM trap. The SET PM requirements have also been demonstrated in our laboratory and are supported by the DECSE test program. A detailed discussion is contained in the RIA. Based on this information and assessment, we conclude that the PM supplemental requirements will be feasible in the 2007 time frame.

b. Meeting the NO_x Standard

NO_x emissions from gasoline-powered vehicles are controlled to extremely low levels through the use of the three-way catalyst technology first introduced in the 1970s. Today, an advancement upon this well-developed three-way catalyst technology, the NO_x adsorber, has shown that it too can make possible extremely low NO_x emissions from lean-burn engines such as diesel engines. The potential of the NO_x adsorber catalyst is limited only by its need for careful integration with the total vehicle system (as was done for three-way catalyst equipped passenger cars in the 1980s and 1990s) and by poisoning of the catalyst from sulfur in the fuel. Just as the Tier 2 rulemaking enables advanced three-way catalyst equipped vehicles to meet ultra low NO_x emission levels through the use of low sulfur gasoline, today's rulemaking will enable NO_x adsorbers through substantial reductions in diesel fuel sulfur levels. The NO_x adsorber has already been commercially introduced in a number of stationary and mobile source applications.

NO_x Adsorbers in Power Generation

NO_x adsorber catalysts were first introduced in the power generation market less than five years ago. Since then, NO_x adsorber systems in stationary source applications have enjoyed considerable success. In 1997, the South Coast Air Quality Management District of California determined that a NO_x adsorber system provided the "Best Available Control Technology" NO_x limit for gas turbine

power systems.¹¹⁷ Average NO_x control for these power generation facilities is in excess of 92 percent.¹¹⁸ A NO_x adsorber catalyst applied to a natural gas fired powerplant has demonstrated better than 99 percent reliability for more than 21,000 hours of operation while controlling NO_x by more than 90 percent.¹¹⁹

NO_x Adsorbers in Lean-Burn Gasoline Vehicles

The NO_x adsorber's ability to control NO_x under oxygen rich (fuel lean) operating conditions has led the industry to begin applying NO_x adsorber technology to lean-burn engines in mobile source applications. NO_x adsorber catalysts have been developed and are now in production for lean-burn gasoline vehicles in Japan, including several vehicle models sold by Toyota Motor Corporation.¹²⁰ The 2000 model year saw the first U.S. application of this technology with the introduction of the Honda Insight, certified to the California LEV-I ULEV category standard. These lean burn gasoline applications are of particular interest because they are similar to diesel vehicle applications in terms of NO_x storage under lean exhaust conditions and the need for periodic NO_x regeneration under transient driving conditions. The substantial experience already gained and continuing to be gained from NO_x adsorber use in lean-burn gasoline vehicles provides a firm basis from which diesel NO_x adsorber development is proceeding.

NO_x Adsorbers in Light-Duty Diesel Vehicles

This rapid development pace of the NO_x adsorber technology is not limited to gasoline applications but includes markets where low sulfur diesel fuel is already available or has been mandated to coincide with future emission standards. In Japan, Toyota Motor Corporation has recently announced that it will begin introducing vehicles using its Diesel Particulate—NO_x Reduction (DPNR) system in 2003. This

system uses a NO_x adsorber catalyst applied on the surface of a diesel particulate filter, providing greater than 80 percent reductions in both PM and NO_x. Toyota notes however, that DPNR requires fuel with low sulfur content in order to maintain high efficiency for a long duration.¹²¹ In Europe, both Daimler Chrysler and Volkswagen, driven by a need to meet stringent Euro IV emission standards, have published results showing how they would apply the NO_x adsorber technology to their diesel-powered passenger cars. Volkswagen reports that it has already demonstrated NO_x emissions of 0.137 g/km (0.22 g/mi), a 71 percent reduction, on a diesel powered Passat passenger car equipped with a NO_x adsorber catalyst.¹²²

US DOE Research Programs

The U.S. Department of Energy (DOE) has funded several test programs at national laboratories and in partnership with industry to investigate NO_x adsorber technology. At Oak Ridge National Laboratory, DOE researchers have shown that a NO_x adsorber and a laboratory regeneration system can reduce NO_x by more than 90 percent when used on a diesel powered Mercedes A-class passenger car. Following 600 miles of driving with 150 ppm sulfur fuel, the system performance degraded considerably.¹²³ While the system was not production ready, it does demonstrate that very high efficiencies are achievable with advanced emission control systems operating on low sulfur fuel.¹²⁴ With additional system development over the next several years we are confident that the remaining design challenges such as long-term durability will be solved.

EPA NVFEL Current Technology Evaluation Program

As part of an effort to evaluate the rapidly developing state of this technology, the Manufacturers of Emission Control Association (MECA) provided four different NO_x adsorber catalyst formulations to EPA for

¹¹⁶ Diesel Emission Control Sulfur Effects (DECSE) Program—Phase II Interim Data Report No. 4, Diesel Particulate Filters—Final Report, January 2000, Table C1, www.ott.doe.gov/decse.

¹¹⁷ Letter from Barry Wallerstein, Acting Executive Officer, SCAQMD, to Robert Danziger, Goal Line Environmental Technologies, dated December 8, 1997, www.glet.com.

¹¹⁸ Reyes and Cutshaw, SCONO_x Catalytic Absorption System, December 8, 1998, www.glet.com.

¹¹⁹ Danziger, R. *et al.* 21,000 Hour Performance Report on SCONO_x, 15 September 2000, Air Docket A-99-06.

¹²⁰ Toyota requires that their lean burn gasoline engines equipped with NO_x adsorbers are fueled on premium gasoline in Japan, which has an average sulfur content of 6 ppm. (See Item IV-E-31 in Air Docket A-99-06.)

¹²¹ Revolutionary Diesel Aftertreatment System Simultaneously Reduces Diesel Particulate Matter and Nitrogen Oxides, Toyota Motor Corporation press release, July 25, 2000, contained in Air Docket A-99-06.

¹²² Pott, E., *et al.*, "Potential of NO_x-Trap Catalyst Application for DI-Diesel Engines," Air Docket A-99-06.

¹²³ Diesel Vehicle Emission Control Sulfur Effects Project at Oak Ridge National Laboratory, Phase 1 Overview. Pete Devlin, DOE Office of Transportation Technologies, March 29, 2000, Air Docket A-99-06.

¹²⁴ Diesel Emission Control Sulfur Effects (DECSE) Program Phase II Summary Report: NO_x Adsorber Catalysts, October 2000, Air Docket A-99-06.

evaluation. Testing of these catalysts at NVFEL revealed that all four formulations were capable of reducing NO_x emissions by more than 90 percent over the broad range of operation in the supplemental emission test (SET) procedure as summarized in Figure III-1. At operating conditions representative of "road-load" operation for a heavy duty on-highway truck, the

catalysts showed NO_x reductions as high as 99 percent resulting in NO_x emissions well below 0.1 g/bhp-hr from an engine-out level of nearly 5 g/bhp-hr.¹²⁵ Testing on the FTP has shown

¹²⁵ For more information on testing conducted at NVFEL, refer to the in-depth discussion given in the RIA, and to the initial test report contained in Air Docket A-99-06, Item IV-A-29.

similarly good results, with hot start FTP NO_x emissions reduced by more than 90 percent. These results demonstrate that significant NO_x reductions are possible over a broad range of operating conditions with current NO_x adsorber technology, as typified by the FTP and the SET.

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NO_x Adsorber Results Supplemental Emission Test Composite

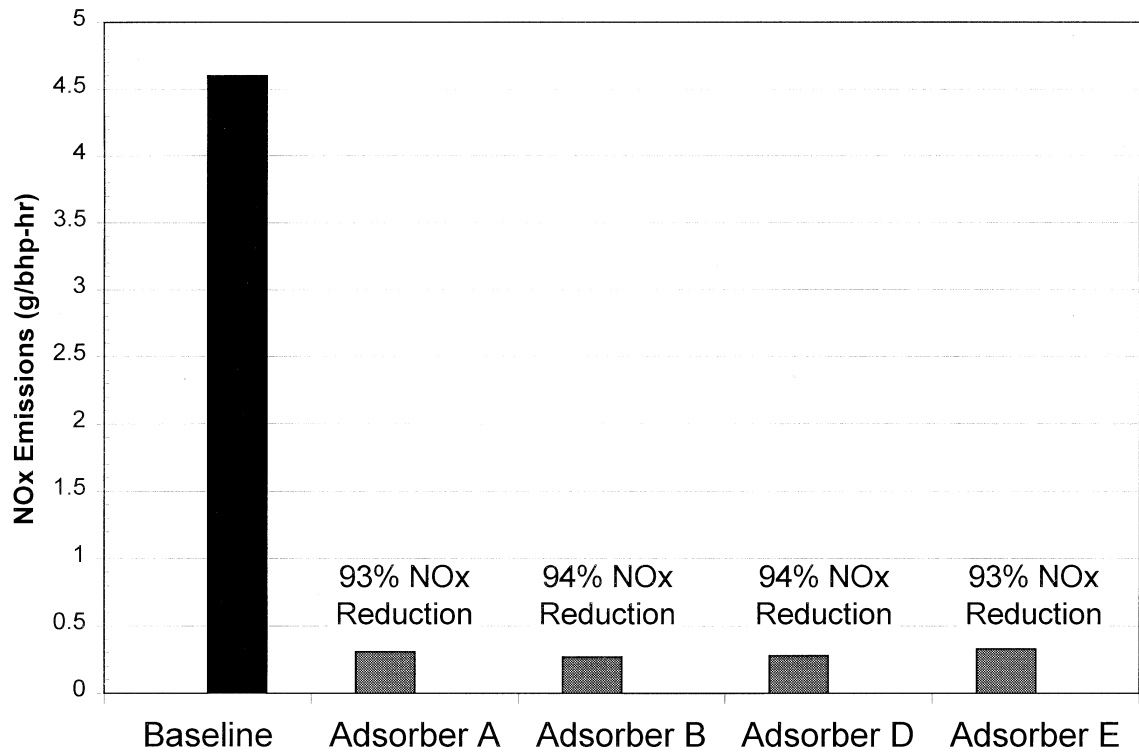


Figure III-1. NVFEL NO_x Adsorber SET Composite Results

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This large body of evidence that NO_x adsorbers are highly effective, that they can be applied to diesel engines (as further described in the RIA), and that there is a clear and strong prospect for their further development, causes us to conclude that NO_x adsorbers will provide at least one feasible path to the NO_x standards we have set today. Further, we can conclude from this development experience that the 0.20 g/bhp-hr NO_x standard represents the lowest standard achievable by the year 2007, having given appropriate consideration to cost, energy, and safety as described elsewhere in sections III and V of this document and in the RIA.

Remaining Engineering Development

The considerable success in demonstrating NO_x adsorber technology in laboratory settings, as outlined above, clearly shows that the technology is currently capable of achieving the NO_x standard level. There are several engineering challenges that will be addressed in going from this level of demonstration to implementation of durable and effective emission control systems on production vehicles. One of these technical challenges involves changes to the way diesel engines will need to operate in order to take full advantage of the NO_x adsorber, representing a shift from current day engine operation. Working within the engine design and operating principles expected for 2004 model year engines, optimization of the total system (matching exhaust temperatures to the operating window of NO_x adsorbers and controlling exhaust air to fuel ratios), will be essential to getting the best performance from the NO_x adsorber. We have estimated in the RIA that diesel engine manufacturers collectively will need to invest \$385 million in order to implement this change. In addition to the generic need to optimize operation to match the NO_x adsorber performance, industry will further need to address NO_x adsorber desulfation and its associated issues because some sulfur will still remain in the fuel and the engine's lubricating oil.

Clear engineering paths to address these problems can be described today, several years in advance of when they will need to be applied. The primary thing that must occur is to eliminate most of the sulfur from diesel fuel. The fuel sulfur standard set today in this rulemaking overcomes this obstacle. The second set of system engineering steps needed to accomplish both NO_x regeneration and desulfation are already being laid out in test programs conducted by DOE in the DECSE Phase II program and in our own test program

at the National Vehicle and Fuel Emissions Laboratory. The DECSE Phase II program clearly demonstrates that, through changes in "in-cylinder" operation, diesel exhaust conditions can be generated that are optimized for NO_x storage (fuel lean operation), NO_x regeneration (fuel rich operation), or desulfation (hot, fuel rich operation). This in-cylinder approach, discussed more fully in the RIA, represents a likely technical solution for light heavy-duty vehicles which are expected to already have the necessary EGR and common rail fuel system technologies need for this approach by the 2004 model year. Testing at NVFEL shows yet another engineering path to optimizing the NO_x control system external to the combustion system. This approach segregates the exhaust into separate streams external to the engine and manipulates exhaust conditions by changing exhaust mass flow (through valves) and by adding supplemental fuel with an electronic fuel injector. This approach means that exhaust temperatures and air to fuel ratios can be controlled external to the engine allowing great flexibility to control and optimize NO_x regeneration and sulfur regeneration events. This approach may prove to be a good solution for heavy heavy-duty vehicles because of the freedom it allows for optimization of both the engine operation and the aftertreatment operation with fewer tradeoffs with regards to fuel consumption and engine durability. A complete description of this approach and its merits is given in the RIA.

Each of the engineering paths described here shows a means for compliance with the NO_x standard given further optimization and development and, given past experiences with the introduction of new technologies, other approaches are likely to be devised as well. Given industry's demonstrated ability to develop solutions to similar issues with gasoline three-way catalysts and gasoline-based NO_x adsorber technologies, we are confident that the NO_x emission control system can be designed for the long life required for heavy-duty diesel operation. We are not alone in this evaluation of NO_x adsorber development, as evidenced by the strong endorsement of the technology by many in the industry.¹²⁶ For example,

¹²⁶ Letter from Steven Suttle, Corning, Inc., to Margo Oge, EPA, dated October 23, 2000, Item IV-G-59; letter from Martin Lassen, Johnson Matthey, to Margo Oge, EPA, dated October 19, 2000, Item IV-G-55; letter from John Mooney, Engelhard Corporation, to Margo Oge, EPA, dated October 3, 2000, Item IV-G-38; MECA press release dated October 3, 2000, Item IV-G-53; and Department of

one letter we have received stated, "We believe all NO_x Adsorber development issues have been identified and the technology is proceeding according to schedule. We have identified development paths leading toward production optimization and do not see insurmountable technical barriers. We are confident in our ability and experience in applying the science of surface chemistry and catalysis to achieve our objective."¹²⁷

NTE NO_x Limits

The broad NO_x reduction capability of the NO_x adsorbers will also enable the NTE NO_x requirements to be met. As discussed previously, we have established an NTE NO_x standard of 1.5 × FTP standard, or 0.30 g/bhp-hr NO_x, which is 0.10 g/bhp-hr above the FTP standard. The NMHC+NO_x NTE standard for 2004 technology HDDEs is 1.25 × 2.5 g/bhp-hr NMHC + NO_x, or 3.125 g/bhp-hr, which is 0.625 g/bhp-hr above the 2004 FTP standard. As discussed in the RIA for this final rule, we would expect that the majority of the NTE standard for a 2004 technology engine would be comprised of NO_x emissions, perhaps as much as 3.0 g/bhp-hr (with the remainder, 0.125 g/bhp-hr, being HC). Based on available data, including data from our NVFEL test facility, we believe a NO_x adsorber system will be capable of a 90 percent or greater emission reduction across the entire NTE control zone, for the test conditions covered by the NTE test procedure, by model year 2007. A 90 percent reduction from the "base" NO_x NTE level of 3.0 g/bhp-hr would result in a tailpipe emission rate of 0.30 g/bhp-hr, which is 1.5 times the 2007 FTP NO_x standard. As discussed in the RIA, we have demonstrated NO_x reductions on the order of 90 percent or greater across the NTE control zone in our test program at NVFEL. A complete description of the NO_x adsorber testing completed at NVFEL is provided in the final RIA and in the docket associated with this rule. This testing was performed at standard laboratory conditions; however, we do not expect the expanded ambient conditions required for NTE compliance to have a significant impact on the performance of the exhaust emission control systems. Additional discussion of this issue is contained in the RTC and the RIA for this rule.

Energy, dated September 6, 2000, Item IV-G-28; all contained in Docket A-99-06.

¹²⁷ Letter from John J. Mooney, Director, Technical Development and Business Groups, Engelhard Corporation, to Margo Oge, Director, OTAQ, EPA, dated October 3, 2000, Item IV-G-38, Docket A-99-06.

Sulfur Trap

The preceding discussion of NO_x adsorbers assumes that SO_x (SO₂ and SO₃) emissions will be “trapped” on the surface of the catalyst, effectively poisoning the device and requiring a “desulfation” (sulfur removal event) to recover catalyst efficiency. We believe that, at the 15 ppm cap fuel sulfur level, this strategy will allow effective NO_x control with moderately frequent desulfation and with a modest fuel consumption of one percent. We believe this fuel consumption impact will be more than offset by reduced reliance on current, more fuel inefficient NO_x control strategies (see discussion in Section III.G for estimates of overall fuel economy impacts). In the NPRM for this rulemaking, we sought comment on the potential of a separate SO_x trap catalyst to control sulfur poisoning of the NO_x adsorber catalyst. As detailed further in the final RIA and RTC documents, we believe that even if a separate SO_x trap system were used, fuel sulfur levels would have to be 15 ppm or lower in order for the NO_x adsorber technology to function properly over the life of a heavy-duty vehicle.

Urea SCR Technology

SCR Technology has been put forward by some as another means of meeting stringent NO_x standards. For reasons discussed below we do not believe that it provides an adequate basis for establishing the feasibility of today's emission standards. Selective Catalytic Reduction (SCR), like the NO_x adsorber technology, was first developed for stationary applications and is currently being refined for the transient operation found in mobile applications. With the SCR system, a urea solution is injected upstream of the catalyst which breaks down the urea into ammonia and carbon dioxide. The ammonia is used as a NO_x reductant across the SCR catalyst producing N₂ and water. Catalysts containing precious metals (platinum) can be used at the inlet and outlet of SCR systems designed for mobile applications to improve low temperature NO_x reduction performance and to oxidize any ammonia that may pass through the SCR, respectively. SCR systems using these oxidation catalysts and being developed for mobile applications are more often called “compact SCR” systems. Generally, reference to SCR throughout this preamble should be taken to mean compact SCR. The use of these platinum catalysts enables SCR systems to achieve NO_x reductions at lower temperatures (as required for diesel engine applications), but

introduces sensitivity to sulfur in much the same way as for diesel particulate filter technologies. Sulfur in diesel fuel inhibits low temperature performance and results in high sulfate-make, leading directly to higher particulate emissions. For a further discussion of SCR system sensitivity to sulfur in diesel fuel, and of its need for low sulfur diesel fuel, refer to Section III.F.

Urea SCR catalysts, like NO_x adsorbers, need low sulfur diesel fuel to achieve high NO_x conversion efficiencies and to control sulfate PM emissions. If low sulfur fuel is required, SCR NO_x control may be possible in some applications by 2007. However we believe there are significant barriers to its general use for meeting the 2007 standards. SCR systems require vehicles to carry a supply of urea. The infrastructure for delivering urea at the diesel fuel pump would need to be in place for these devices to be feasible in the marketplace; and before development of the infrastructure could begin, the industry would have to decide upon a standardized method of delivery for the urea supply.

In addition to this, there would need to be adequate safeguards in place to ensure the urea is used throughout the life of the vehicle since, given the added cost of urea and the fact that urea depletion would not normally affect driveability, there would be an incentive not to refill the urea tank. This could lead to considerable uncertainties regarding the effectiveness of SCR, even if EPA were to promulgate the regulations that likely would be needed to require the regular replenishment of urea. Some commenters have suggested that this is the key issue with regard to urea SCR systems. One commenter further concludes that this issue could be addressed by designing engines with on-board diagnostic systems utilizing a NO_x sensor that would observe a loss of NO_x control. When observed, the engine would be designed to reduce power gradually until a 50 percent loss of power was realized. This power loss would serve to encourage the user to replenish the urea tank.¹²⁸ While such an approach may be possible, it raises concerns for public safety as poor engine performance could lead to inadequate power for safe merging onto highways and other related driving situations. We remain hesitant to base a national program on such technology when important issues such as driver training on the need to refill the urea tank and the consequences of failure to

do so cannot be appropriately controlled. This approach would seem to suggest a need for EPA-mandated spot checks of individual vehicles to ensure compliance with the NO_x standard. How such a program would work and the burden that it might place on small business entities was not addressed in the comments. In testimony given at the public hearing held for this rulemaking in Los Angeles, the California Trucking Association raised concerns about the appropriateness of putting this regulatory burden on truckers when a simpler technology such as a diesel NO_x adsorber was available instead.¹²⁹ Without measures similar to these, we would expect that a substantial number of users would not remember to fill their urea tanks. Since failure to provide urea for a vehicle would lead to a total loss of NO_x control for that vehicle, we would need to model the loss of NO_x control to be expected from an SCR based program. Such a loss in NO_x control most likely would be appreciable and, in effect, the NO_x standard would not be met on a fleetwide basis.

We believe that these significant obstacles would prevent the widespread or general availability of SCR for use as a NO_x control strategy to meet the 0.20 g/bhp-hr NO_x standard. These problems may, however, be resolved in some niche applications; for example, certain well-managed centrally-fueled fleets. Because of the many obstacles to ensure in-use NO_x control with the SCR, we do not believe that feasibility of the 0.20 g/bhp-hr NO_x standard can be based upon SCR technology. For further discussion of urea SCR's need for low sulfur diesel fuel, refer to section III.F of this preamble.

Summary

Based on the discussion above, we believe that NO_x exhaust emission control technology, in combination with low sulfur diesel fuel of 15 ppm or lower, is capable of meeting the very stringent NO_x standards finalized today. The certainty provided by this rulemaking that low sulfur diesel fuel will be available in the future, and the emission standards finalized today that necessitate advanced NO_x controls, should lead to rapid development of these technologies. The NO_x adsorber technology has shown remarkable advancement in the last five years, both in stationary source applications and

¹²⁸ API Comments on the 2007 Heavy Duty Engine/Diesel Sulfur Proposed Rule, August 14, 2000, Air Docket A-99-06, IV-D-343.

¹²⁹ Testimony of Stephanie Williams—Director of Environmental Affairs, California Trucking Association at EPA public hearing June 27, 2000, Air Docket A-99-06, IV-F-190.

lean-burn gasoline applications, and now for heavy-duty diesel engines. Given this rapid progress, the availability of low sulfur diesel fuel, the identification of engineering paths to resolving the technological issues, and the lead time provided by today's rulemaking, we believe that applying NO_x adsorbers to heavy-duty diesel engines will provide the emission reductions needed to comply with the 2007 HD NO_x standards. This can be done in a cost effective way, with little or no fuel economy impact, and no special concerns of safety.

c. Meeting the NMHC Standard

Historically control of non-methane hydrocarbon (NMHC) emissions on diesel engines has been relatively simple, when compared to gasoline engines, due to the net fuel lean (abundant oxygen) operation typical of diesel engines. In fact, due to this operating characteristic, diesel engine NMHC levels have often been significantly below the mandated levels. The introduction of catalytic NO_x control and the subsequent need to operate under alternately net lean and net rich conditions is likely to make NMHC control more difficult.

Meeting the NMHC standards under the lean operating conditions typical of the biggest portion of NO_x adsorber operation should not present any special challenges to diesel manufacturers. Since the devices discussed above—catalyzed particulate filters and NO_x adsorbers, contain platinum and other precious metals to oxidize NO to NO₂, they are also very efficient oxidizers of hydrocarbons. NMHC emission reductions of greater than 95 percent have been shown in these devices over the transient FTP and SET modes.¹³⁰ Given that typical engine-out NMHC is expected to be in the 0.20 g/bhp-hr range for engines meeting the 2004 standards, this level of NMHC reduction will mean that under lean conditions emission levels will be well below the standard.

However, the NO_x regeneration strategies for the NO_x adsorber technology may prove difficult to control precisely, leading to a possible increase in HC emissions under the rich operating conditions required for NO_x regeneration. Even with precise control of the regeneration cycle, HC slip may prove to be a difficult problem due to the need to regenerate the NO_x adsorber under net rich conditions (excess fuel)

rather than the stoichiometric (fuel and air precisely balanced) operating conditions typical of a gasoline three-way catalyst. It seems likely therefore, that in order to meet the HC standards we have set, an additional clean up catalyst may be necessary. A diesel oxidation catalyst, like those applied historically for HC and partial PM control, can reduce HC reductions (including toxic HCs) by more than 80 percent.¹³¹ This amount of additional control along with optimized NO_x regeneration strategies will ensure very low HC emissions. With such a downstream clean-up device to control HC slip during the periodic NO_x regeneration event, the HC standard we have set here can be met. For a complete description of how the clean up catalyst functions in conjunction with the NO_x adsorber technology, please refer to the complete system description given below in section III.E.1.e and to the final RIA.

Given industry's extensive experience with diesel oxidation catalysts, the long lead time provided by this rulemaking and the availability of less than 15 ppm sulfur diesel fuel, we conclude, having given consideration to cost, energy impacts and safety, that the NMHC standard is feasible.

d. Meeting the Crankcase Emissions Requirements

The most common way to eliminate crankcase emissions has been to vent the blow-by gases into the engine air intake system, so that the gases can be recombusted. Until today's rulemaking, we have required that crankcase emissions be controlled only on naturally aspirated diesel engines. We have made an exception for turbocharged heavy-duty diesel engines because of concerns in the past about fouling that could occur by routing the diesel particulates (including engine oil) into the turbocharger and aftercooler. However, this is an environmentally significant exception since most heavy-duty diesel trucks use turbocharged engines, and a single engine can emit over 100 pounds of NO_x, NMHC, and PM from the crankcase over its lifetime.

Given the available means to control crankcase emissions, we have eliminated this exception. We anticipate that the heavy-duty diesel engine manufacturers will be able to control crankcase emissions through the use of closed crankcase filtration systems or by routing unfiltered blow-by gases directly

into the exhaust system upstream of the emission control equipment. However, the provision has been written such that if adequate control can be had without "closing" the crankcase then the crankcase can remain "open." Compliance would be ensured by adding the emission from the crankcase ventilation system to the emissions from the engine control system downstream of any emission control equipment.

We expect that in order to meet the stringent tailpipe emission standards set here, that manufacturers will have to utilize closed crankcase approaches as described here. Closed crankcase filtration systems work by separating oil and particulate matter from the blow-by gases through single or dual stage filtration approaches, routing the blow-by gases into the engine's intake manifold and returning the filtered oil to the oil sump. These systems are required for new heavy-duty diesel vehicles in Europe starting in 2000. Oil separation efficiencies in excess of 90 percent have been demonstrated with production ready prototypes of two stage filtration systems.¹³² By eliminating 90 percent of the oil that would normally be vented to the atmosphere, the system works to reduce oil consumption and to eliminate concerns over fouling of the intake system when the gases are routed through the turbocharger. Mercedes-Benz currently utilizes this type of system on virtually all of its heavy-duty diesel engines sold in Europe. An alternative approach would be to route the blow-by gases into the exhaust system upstream of the catalyzed diesel particulate filter which would be expected to effectively trap and oxidize the engine oil and diesel PM. This approach may require the use of low sulfur engine oil to ensure that oil carried in the blow-by gases does not compromise the performance of the sulfur-sensitive emission control equipment.

e. The Complete System

We expect that the technologies described above would be integrated into a complete emission control system as described in the final RIA. The engine-out emissions will be balanced with the exhaust emission control package in such a way that the result is the most beneficial from a cost, fuel economy and emissions standpoint. The engine-out exhaust characteristics will also have a role in assisting the exhaust emission control devices used. The NO_x

¹³⁰ "The Impact of Sulfur in Diesel Fuel on Catalyst Emission Control Technology," report by the Manufacturers of Emission Controls Association, March 15, 1999, pp. 9 & 11.

¹³¹ Demonstration of Advanced Emission Control Technologies Enabling Diesel-Powered Heavy-Duty Engines to Achieve Low Emission Levels, Manufacturers of Emissions Controls Association, June 1999.

¹³² Letter from Marty Barris, Donaldson Corporation, to Byron Bunker US EPA, March 2000. Air Docket A-99-06.

adsorber, for instance, will require periods of oxygen-depleted exhaust flow in order to accomplish NO_x regeneration and to allow for sulfur control using desulfation events. This may be most efficiently done by reducing the air-fuel ratio that the engine is operating under during the regeneration to reduce the oxygen content of the exhaust, or alternatively by partitioning the exhaust flow such that only a small portion of the exhaust flow is used for NO_x regeneration, thereby reducing the amount of oxygen needing to be depleted through fuel addition. Further, it is envisioned that the PM device will be integrated into the exhaust system upstream of the NO_x reduction device. This placement would allow the PM trap to take advantage of the engine-out NO_x as an oxidant for the particulate, while removing the particulate so that the NO_x exhaust emission control device will not have to deal with large PM deposits which may cause a deterioration in performance. Further it allows the NO_x adsorber to make use of the upstream PM filter as a pre-catalyst to oxidize some NO to NO₂ and to partially oxidize the reductant (diesel fuel or exhaust hydrocarbons) to a more desirable reductant form such as CO before entering the NO_x adsorber. Of course, there is also the possibility of integrating the PM and NO_x exhaust emission control devices into a single unit to replace a muffler and save space (Toyota's DNPR system being an example of this approach).¹³³ The final component in any of these system configurations is likely to be some form of clean up catalyst which can provide control of HC slip during NO_x regeneration as well as H₂S slip during SO_x regeneration. Particulate free exhaust may also allow for new options in EGR system design to optimize its efficiency.

We expect that the emission reduction efficiency of the exhaust emission control system will vary across the NTE zone as a function of exhaust temperature and space velocity.¹³⁴ Consequently, to maintain the NTE emission cap, the engine-out emissions would have to be calibrated with exhaust emission control system performance characteristics in mind. This would be accomplished by lowering engine-out emissions where the exhaust emission control system was less efficient, for example by

retarding fuel injection timing or increasing the EGR rate. Conversely, where the exhaust emission control system is very efficient at reducing emissions, the engine-out emissions could be tuned for higher emissions and better fuel economy. These trade-offs between engine-out emissions and exhaust emission control system performance characteristics are similar to those of gasoline engines with three-way catalysts in today's light-duty vehicles and can be overcome through similar system based engineering solutions. Managing and optimizing these trade-offs will be crucial to effective implementation of exhaust emission control devices on diesel applications.

2. Feasibility of Stringent Standards for Heavy-Duty Gasoline

Gasoline emission control technology has evolved rapidly in recent years. Emission standards applicable to 1990 model year vehicles required roughly 90 percent reductions in exhaust NMHC and CO emissions and a 75 percent reduction in NO_x emissions compared to uncontrolled emissions. Today, some vehicles' emissions are well below those necessary to meet the current federal heavy-duty gasoline standards, the 2004 heavy-duty gasoline standards, and the California Low-Emission Vehicle standards for medium-duty vehicles. The continuing emissions reductions have been brought about by ongoing improvements in engine air-fuel management hardware and software plus improvements in exhaust system and catalyst designs.

We believe that the types of changes being seen on current vehicles have not yet reached their technological limits and continuing improvement will allow them to meet today's standards. The RIA describes a range of specific emission control techniques that we believe could be used. There is no need to invent new technologies, although there will be a need to apply existing technology more effectively and more broadly. The focus of the effort will be in the application and optimization of these existing technologies.

In our light-duty Tier 2 rule, we have required that gasoline sulfur levels be reduced to a 30 ppm average, with an 80 ppm maximum. This sulfur level reduction is the primary enabler for the Tier 2 standards. Similarly, we believe that the gasoline sulfur reduction, along with refinements in existing gasoline emission control technology, will be sufficient to allow heavy-duty gasoline vehicles and engines to meet the emission standards sought by today's rule.

However, we recognize that the emission standards are stringent, and considerable effort will have to be undertaken. For example, we expect that every engine will have to be recalibrated to improve upon its cold start emission performance. Manufacturers will have to migrate their light-duty calibration approaches to their heavy-duty offerings to provide cold start performance in line with what they will have to achieve to meet the Tier 2 standards.

We also project that today's new heavy-duty gasoline standards would require the application of advanced engine and catalyst systems similar to those projected for their light-duty counterparts. Historically, manufacturers have introduced technology on light-duty gasoline applications and then applied those technologies to their heavy-duty gasoline applications. Today's standards will allow manufacturers to take this same approach. In other words, we expect that manufacturers will meet today's new standards through the application of technology developed to meet light-duty Tier 2 standards for 2004.

Improved calibration and systems management will be critical in optimizing the performance of the engine with the advanced catalyst system. Precise air/fuel control must be tailored for emissions performance and must be optimized for all types of driving. Calibration refinements may also be needed for EGR system optimization and to reduce cold start emissions through methods such as spark timing retard. We also project that electronic control modules with expanded capabilities will be needed on some vehicles and engines.

We also expect increased use of other technologies in conjunction with those described above. We expect some increased use of air injection to improve upon cold start emissions. We may also see air-gap manifolds, exhaust pipes, and catalytic converter shells as a means of improving upon catalyst light-off times thereby reducing cold start emissions. Other, non-catalyst related improvements to gasoline emission control technology include higher speed computer processors which enable more sophisticated engine control algorithms and improved fuel injectors providing better fuel atomization thereby improving fuel combustion.

Catalyst system durability is, and will always be, a serious concern. Historically, catalysts have deteriorated when exposed to very high temperatures. This has long been a concern especially for heavy-duty work

¹³³ Revolutionary Diesel Aftertreatment System Simultaneously Reduces Diesel Particulate Matter and Nitrogen Oxides, Toyota Motor Corporation press release, July 25, 2000, Air Docket A-99-06.

¹³⁴ The term, "space velocity," is a measure of the volume of exhaust gas that flows through a device.

vehicles. However, catalyst manufacturers continue to make strides in the area of thermal stability and we expect that improvements in thermal stability will continue for the next generation of catalysts.

We believe that, by optimizing all of these technologies, manufacturers will be able to achieve today's standards. Advanced catalyst systems have already shown potential to reduce emissions to close to these levels. Some current California vehicles are certified to levels below 0.20 g/mi NO_x. California tested an advanced catalyst system on a vehicle loaded to a test weight comparable to a heavy-duty vehicle test weight and achieved NO_x and NMOG levels of 0.1 g/mi and 0.16 g/mi, respectively. The California vehicle with the advanced catalyst had not been optimized as a system to take full advantage of the catalyst's capabilities.

The compliance flexibility provisions can also be an important tool for manufacturers in implementing a new standard. The program allows manufacturers to transition to the more stringent standards by introducing emissions controls over a longer period of time, as opposed to a single model year. Manufacturers plan their product introductions well in advance. With the compliance flexibilities, manufacturers can better manage their product lines so that the new standards don't interrupt their product introduction plans. Also, the program allows manufacturers to focus on higher sales volume vehicles first and use credits for low sales volume vehicles.

3. Feasibility of the New Evaporative Emission Standards

The new evaporative emission standards appear to be feasible now. Many designs have been certified that already meet these standards. A review of 1998 model year certification data indicates that five of eight evaporative system families in the 8,500 to 14,000 pound range comply with the new 1.4 g/test standard, while all evaporative system families in the over 14,000 pound range comply with the new 1.9 g/test standard.

The new evaporative emission standards should not require the development of new materials but may, in some cases, require new application of existing materials. Low permeability materials and low loss connections and seals are already used to varying degrees on current vehicles, but that practice may become more widespread. Today's new standards would likely ensure their consistent use and discourage manufacturers from switching to cheaper materials or designs to take

advantage of the large safety margins they have had under current standards.

There are two approaches to reducing evaporative emissions for a given fuel. One is to minimize the potential for permeation and leakage by reducing the number of hoses, fittings and connections. The second is to use less permeable hoses and lower loss fittings and connections. Manufacturers are already employing both approaches.

Most manufacturers are moving to "returnless" fuel injection systems. Through more precise fuel pumping and metering, these systems eliminate the return line in the fuel injection system. The return line carries unneeded fuel from the fuel injectors back to the fuel tank. Because the fuel injectors are in such close contact with the hot engine, the fuel returned from the injectors to the fuel tank has been heated. This returned fuel is a significant source of fuel tank heat and vapor generation. The elimination of the return line also reduces the total length of hose on the vehicle through which vapors can permeate, and it reduces the number of fittings and connections through which fuel can leak.

Low permeability hoses and seals, and low loss fittings are available and are already used on many vehicles. Fluoropolymer materials can be added as liners to hose and component materials to yield large reductions in permeability over such conventional materials as monowall nylon. In addition, fluoropolymer materials can greatly reduce the adverse impact of alcohols in gasoline on permeability of evaporative components, hoses and seals.

F. Need for Low Sulfur Diesel Fuel

The following discussion will build upon the brief sulfur sensitivity points made earlier in this section by providing a more in-depth discussion of sulfur's effect on the diesel exhaust emission control technologies. In order to evaluate the effect of sulfur on diesel exhaust control technologies, we used three key factors to categorize the impact of sulfur in fuel on emission control function. These factors were efficiency, reliability, and fuel economy. Taken together these three factors lead us to believe that diesel fuel sulfur levels of 15 ppm will be required in order to make feasible the heavy-duty vehicle emission standards. Brief summaries of these factors are provided below. A more in-depth review is given in the following subsections and in the final RIA.

The efficiency of emission control technologies to reduce harmful pollutants is directly affected by sulfur

in diesel fuel. Initial and long term conversion efficiencies for NO_x, NMHC, CO and diesel PM emissions are significantly reduced by catalyst poisoning and catalyst inhibition due to sulfur. NO_x conversion efficiencies with the NO_x adsorber technology in particular are dramatically reduced in a very short time due to sulfur poisoning of the NO_x storage bed. In addition, total PM control efficiency is negatively impacted by the formation of sulfate PM. As explained in detail in the following sections, all of the advanced NO_x and PM technologies described here have the potential to make significant amounts of sulfate PM under operating conditions typical of heavy-duty vehicles. We believe that the formation of sulfate PM will be in excess of the total PM standard, unless diesel fuel sulfur levels are at or below 15 ppm. Based on the strong negative impact of sulfur on emission control efficiencies for all of the technologies evaluated, we believe that 15 ppm represents an upper threshold of acceptable diesel fuel sulfur levels.

Reliability refers to the expectation that emission control technologies must continue to function as required under all operating conditions for the life of the vehicle. As discussed in the following sections, sulfur in diesel fuel can prevent proper operation of both NO_x and PM control technologies. This can lead to permanent loss in emission control effectiveness and even catastrophic failure of the systems. Sulfur in diesel fuel impacts reliability by decreasing catalyst efficiency (poisoning of the catalyst), increasing diesel particulate filter loading, and negatively impacting system regeneration functions. Among the most serious reliability concerns with sulfur levels greater than 15 ppm are those associated with failure to properly regenerate. In the case of the NO_x adsorber, failure to regenerate will lead to rapid loss of NO_x emission control as a result of sulfur poisoning of the NO_x adsorber bed. In the case of the diesel particulate filter, sulfur in the fuel reduces the reliability of the regeneration function. If regeneration does not occur, catastrophic failure of the filter could occur. It is only by the availability of low sulfur diesel fuels that these technologies become feasible. The analysis given in the following section makes clear that diesel fuel sulfur levels will need to be under 15 ppm in order to ensure robust operation of the technologies under the variety of operating conditions anticipated to be experienced in the field.

Fuel economy impacts due to sulfur in diesel fuel affect both NO_x and PM

control technologies. The NO_x adsorber sulfur regeneration cycle (desulfation cycle) can consume significant amounts of fuel unless fuel sulfur levels are very low. The larger the amount of sulfur in diesel fuel, the greater the adverse effect on fuel economy. As sulfur levels increase above 15 ppm, the adverse effect on fuel economy becomes more significant, increasing above one percent and doubling with each doubling of fuel sulfur level. Likewise, PM trap regeneration is inhibited by sulfur in diesel fuel. This leads to increased PM loading in the diesel particulate filter and increased work to pump exhaust across this restriction. With low sulfur diesel fuel, diesel particulate filter regeneration can be optimized to give a lower (on average) exhaust backpressure and thus better fuel economy. Thus, for both NO_x and PM technologies the lower the fuel sulfur level the lower the operating costs of the vehicle.

1. Catalyzed Diesel Particulate Filters and the Need for Low Sulfur Fuel

Diesel particulate filters (PM traps) function to control diesel PM through mechanical filtration of PM from the diesel exhaust stream and then oxidation of the stored PM (trap regeneration). Through oxidation in the catalyzed diesel particulate filter the stored carbonaceous PM is converted to CO₂ and released into the atmosphere. Failure to oxidize the stored PM leads to accumulation in the trap, eventually causing the trap to become so full that it severely restricts exhaust flow through the device, leading to trap or vehicle failure.

As discussed earlier in this section, uncatalyzed diesel particulate filters require exhaust temperatures in excess of 650° C in order for the collected PM to be oxidized by the oxygen available in diesel exhaust. That temperature threshold for oxidation of PM by exhaust oxygen can be decreased to 450° C through the use of base metal catalytic technologies. For a broad range of operating conditions typical of in use operation, diesel exhaust is significantly cooler than 400° C. If oxidation of the trapped PM could be assured to occur at exhaust temperatures lower than 300° C, then diesel particulate filters would be expected to be robust for most applications and operating regimes. Oxidation of PM (regeneration of the trap) at such low exhaust temperatures can occur by using oxidants which are more readily reduced than oxygen. One such oxidant is NO₂.

NO₂ can be produced in diesel exhaust through the oxidation of the nitrogen monoxide (NO), created in the

engine combustion process, across a catalyst. The resulting NO₂-rich exhaust is highly oxidizing in nature and can oxidize trapped diesel PM at temperatures as cool as 250°C.¹³⁵ Some platinum group metals are known to be good catalysts to promote the oxidation of NO to NO₂. Therefore in order to ensure passive regeneration of the diesel particulate filters, significant amounts of platinum group metals (primarily platinum) are being used in the wash-coat formulations of advanced diesel particulate filters. The use of platinum to promote the oxidation of NO to NO₂ introduces several system vulnerabilities affecting both the durability and the effectiveness of the catalyzed diesel particulate filter when sulfur is present in diesel exhaust. The two primary mechanisms by which sulfur in diesel fuel limits the robustness and effectiveness of diesel particulate filters are inhibition of trap regeneration, through inhibition of the oxidation of NO to NO₂, and a dramatic loss in total PM control effectiveness due to the formation of sulfate PM. Unfortunately, these two mechanisms trade-off against one another in the design of diesel particulate filters. Changes to improve the reliability of regeneration by increasing catalyst loadings lead to increased sulfate emissions and, thus, loss of PM control effectiveness. Conversely, changes to improve PM control by reducing the use of platinum group metals and, therefore, limiting "sulfate make" leads to less reliable regeneration. We believe the only means of achieving good PM emission control and reliable operation is to reduce sulfur in diesel fuel, as shown in the following subsections.

a. Inhibition of Trap Regeneration Due to Sulfur

The passively regenerating diesel particulate filter technologies rely on the generation of a very strong oxidant, NO₂, to ensure that the carbon captured by the PM trap's filtering media is oxidized under the exhaust temperature range of normal operating conditions. This prevents plugging and failure of the PM trap. NO₂ is produced through the oxidation of NO in the exhaust across a platinum catalyst. This oxidation is inhibited by sulfur poisoning of the catalyst surface.¹³⁶ This inhibition limits the total amount of NO₂ available for oxidation of the trapped diesel PM, thereby raising the

minimum exhaust temperature required to ensure trap regeneration. Without sufficient NO₂, the amount of PM trapped in the diesel particulate filter will continue to increase and can lead to excessive exhaust back pressure, low engine power, and even catastrophic failure of the diesel particulate filter itself.

The failure mechanisms experienced by diesel particulate filters due to low NO₂ availability vary significantly in severity and long term consequences. In the most fundamental sense, the failure is defined as an inability to oxidize the stored particulate at a rate fast enough to prevent net particulate accumulation over time. The excessive accumulation of PM over time blocks the passages through the filtering media, making it more restrictive to exhaust flow. In order to continue to force the exhaust through the now more restrictive filter, the exhaust pressure upstream of the filter must increase. This increase in exhaust pressure is commonly referred to as increasing "exhaust backpressure" on the engine.

The increase in exhaust backpressure represents increased work being done by the engine to force the exhaust gas through the increasingly restrictive particulate filter. Unless the filter is frequently cleansed of the trapped PM, this increased work can lead to reductions in engine performance and increases in fuel consumption. This loss in performance may be noted by the vehicle operator in terms of poor acceleration and generally poor driveability of the vehicle. In some cases, engine performance can be so restricted that the engine stalls, stranding the vehicle. This progressive deterioration of engine performance as more and more PM is accumulated in the filter media is often referred to as "trap plugging." Trap plugging also has the potential to cause engine damage. If the exhaust backpressure gets high enough to open the exhaust valves prematurely, the exhaust valves can then strike the piston causing catastrophic engine failure. Whether trap plugging occurs, and the speed at which it occurs, will be a function of many variables in addition to the fuel sulfur level; these variables include the vehicle application, its duty cycle, and ambient conditions. However, if the fuel sulfur level is sufficiently high to prevent trap regeneration in any real world conditions experienced, trap plugging can occur. This is not to imply that any time a vehicle is refueled once with high sulfur fuel trap plugging will occur. Rather, it is important to know that the use of fuel with sulfur levels higher than 15 ppm significantly

¹³⁵ Hawker, P. *et al.*, Experience with a New Particulate Trap Technology in Europe, SAE 970182.

¹³⁶ Hawker, P. *et al.*, Experience with a New Particulate Trap Technology in Europe, SAE 970182.

increases the chances of particulate filter failure.

Catastrophic failure of the filter can occur when excessive amounts of PM are trapped in the filter due to a lack of NO₂ for oxidation. This failure occurs when excessive amounts of trapped PM begin to oxidize at high temperatures (combustion-like temperatures of over 1000° C) leading to a "run-away" combustion of the PM. This can cause temperatures in the filter media to increase in excess of that which can be tolerated by the particulate filter itself. For the cordierite material commonly used as the trapping media for diesel particulate filters, the high thermal stresses caused by the high temperatures can cause the material to crack or melt. This can allow significant amounts of the diesel particulate to pass through the filter without being captured during the remainder of the vehicle's life. That is, the trap is destroyed and PM emission control is lost. Further the high temperatures generated during this event can destroy the downstream catalyst components, such as the NO_x adsorber, rendering them ineffective as well.

Full field test evaluations and retrofit applications of these catalytic trap technologies are occurring in parts of Europe where low sulfur diesel fuel is already available.¹³⁷ The experience gained in these field tests helps to clarify the need for low sulfur diesel fuel. In Sweden and some European city centers where below 10 ppm diesel fuel sulfur is readily available, more than 3,000 catalyzed diesel particulate filters have been introduced into retrofit applications without a single failure. Given the large number of vehicles participating in these test programs, the diversity of the vehicle applications which included intercity trains, airport buses, mail trucks, city buses and garbage trucks, and the extended time periods of operation (some vehicles have been operating with traps for more than 5 years and in excess of 300,000 miles¹³⁸), there is a strong indication of the robustness of this technology on 10 ppm low sulfur diesel fuel. The field experience in areas where sulfur is capped at 50 ppm has been less definitive. In regions without extended periods of cold ambient conditions, such as the United Kingdom, field tests on 50 ppm cap low sulfur fuel have also been positive, matching the durability at 10 ppm, although sulfate PM emissions

are much higher. However, field tests on 50 ppm fuel in Finland, where colder winter conditions are sometimes encountered (similar to many parts of the United States), showed a significant number of failures (~10 percent) due to trap plugging. This 10 percent failure rate has been attributed to insufficient trap regeneration due to fuel sulfur in combination with low ambient temperatures.¹³⁹ Other possible reasons for the high failure rate in Finland when contrasted with the Swedish experience appear to be unlikely. The Finnish and Swedish fleets were substantially similar, with both fleets consisting of transit buses powered by Volvo and Scania engines in the 10 to 11 liter range. Further, the buses were operated in city areas and none of the vehicles were operated in northern extremes such as north of the Arctic Circle.¹⁴⁰ Given that the fleets in Sweden and Finland were substantially similar, and given that ambient conditions in Sweden are expected to be similar to those in Finland, we believe that the increased failure rates noted here are due to the higher fuel sulfur level in a 50 ppm cap fuel versus a 10 ppm cap fuel.¹⁴¹ Testing on an even higher fuel sulfur level of 200 ppm was conducted in Denmark on a fleet of 9 vehicles. In less than six months all of the vehicles in the Danish fleet had failed due to trap plugging.¹⁴² The failure of some fraction of the traps to regenerate when operated on fuel with sulfur caps of 50 ppm and 200 ppm is believed to be primarily due to inhibition of the NO to NO₂ conversion as described here. Similarly the increasing frequency of failure with higher fuel sulfur levels is believed to be due to the further suppression of NO₂ formation when higher sulfur level diesel fuel is used.

As shown above, sulfur in diesel fuel inhibits NO oxidation leading to increased exhaust backpressure, reduced fuel economy, compromised reliability, and potentially engine

damage. Therefore, we believe that, in order to ensure reliable and economical operation over a wide range of expected operating conditions, diesel fuel sulfur levels should be at or below 15 ppm. With these low sulfur levels we believe, as demonstrated by experience in Europe, that catalyzed diesel particulate filters will prove to be both durable and effective at controlling diesel particulate emissions. We did receive comments from the refining industry suggesting that PM filters could work on fuel sulfur levels as high as 50 ppm. The commenters pointed to some specific test programs where fuel with an approximate average sulfur level of 30 ppm was used as evidence of the robustness of the technology on higher sulfur fuels. While we do not deny that it is possible to operate some vehicles in limited applications over defined driving cycles on fuel as high as 30 ppm, we do not believe that this limited data should be the basis for a national program. The reality that some vehicles do fail on 50 ppm cap fuel, as demonstrated by the Finish fleet results mentioned above, shows that durability is not assured with the use of higher sulfur diesel fuel. We believe that the evidence, as a whole, shows that oxidation of NO to NO₂ will be poisoned due to these higher fuel sulfur levels with a resulting significant possibility of PM trap failures that is too great a concern for us to feel confident about a fuel sulfur level higher than 15 ppm.

b. Loss of PM Control Effectiveness

In addition to inhibiting the oxidation of NO to NO₂, the sulfur dioxide (SO₂) in the exhaust stream is itself oxidized to sulfur trioxide (SO₃) at very high conversion efficiencies by the precious metals in the catalyzed particulate filters. The SO₃ serves as a precursor to the formation of hydrated sulfuric acid (H₂SO₄+H₂O), or sulfate PM, as the exhaust leaves the vehicle tailpipe. Virtually all of the SO₃ is converted to sulfate under dilute exhaust conditions in the atmosphere as well in the dilution tunnel used in heavy-duty engine testing. Since virtually all sulfur present in diesel fuel is converted to SO₂, the precursor to SO₃, as part of the combustion process, the total sulfate PM is directly proportional to the amount of sulfur present in diesel fuel. Therefore, even though diesel particulate filters are very effective at trapping the carbon and the SOF portions of the total PM, the overall PM reduction efficiency of catalyzed diesel particulate filters drops off rapidly with increasing sulfur levels due to the formation of sulfate PM downstream of the trap.

¹³⁷ Through tax incentives 50 ppm cap sulfur fuel is widely available in the United Kingdom and 10 ppm sulfur is available in Sweden and in certain European city centers.

¹³⁸ Allansson, et al. SAE 2000-01-0480

¹³⁹ Letter from Dr. Barry Cooper, Johnson Matthey, to Don Kopinski, US EPA, Air Docket A-99-06.

¹⁴⁰ Telephone conversation between Dr. Barry Cooper, Johnson Matthey, and Todd Sherwood, EPA, Air Docket A-99-06.

¹⁴¹ The average temperature in Helsinki, Finland, for the month of January is 21° F. The average temperature in Stockholm, Sweden, for the month of January is 21° F. The average temperature at the University of Michigan in Ann Arbor, Michigan, for the month of January is 24° F. The temperatures reported here are from www.worldclimate.com based upon the Global Historical Climatology Network (GHCN) produced jointly by the National Climatic Data Center and Carbon Dioxide Information Analysis Center at Oak Ridge National Laboratory (ORNL).

¹⁴² Letter from Dr. Barry Cooper to Don Kopinski US EPA, Air Docket A-99-06.

SO₂ oxidation is promoted across a catalyst in a manner very similar to the oxidation of NO, except it is converted at higher rates, with peak conversion rates in excess of 50 percent. The SO₂ oxidation rate for a platinum based oxidation catalyst typical of the type which might be used in conjunction with, or as a washcoat on, a catalyzed diesel particulate filter can vary significantly with exhaust temperature. At the low temperatures typical of some urban driving and the heavy-duty federal test procedure (HD-FTP), the oxidation rate is relatively low, perhaps no higher than ten percent. However at the higher temperatures that might be more typical of highway driving conditions and the Supplemental Emission Test (also called the EURO III or 13 mode test), the oxidation rate may increase to 50 percent or more. These high levels of sulfate make across the catalyst are in contrast to the very low SO₂ oxidation rate typical of diesel exhaust (typically less than 2 percent). This variation in expected diesel exhaust temperatures means that there will be a corresponding range of sulfate production expected across a catalyzed diesel particulate filter.

The US Department of Energy in cooperation with industry conducted a study entitled DECSE to provide insight into the relationship between advanced emission control technologies and diesel fuel sulfur levels. Interim report number four of this program gives the total particulate matter emissions from a heavy-duty diesel engine operated with a diesel particulate filter on several different fuel sulfur levels. A straight line fit through this data is presented in Table III.F-1 below showing the expected total direct PM emissions from a heavy-duty diesel engine on the supplemental emission test cycle.¹⁴³ The data can be used to estimate the PM emissions from heavy-duty diesel engines operated on fuels with average fuel sulfur levels in this range.

TABLE III.F-1.—ESTIMATED PM EMISSIONS FROM A HEAVY-DUTY DIESEL ENGINE AT THE INDICATED FUEL SULFUR LEVELS

Fuel sulfur [ppmm]	Supplemental emission test performance	
	Tailpipe PM ^b [g/bhp-hr]	PM increase relative to 3 to 3 ppm sulfur
3	0.003	.....
7 ^a	0.006	100%
15 ^a	0.009	200%
30	0.017	470%
150	0.071	2300%

^a The PM emissions at these sulfur levels are based on a straight-line fit to the DECSE data; PM emissions at other sulfur levels are actual DECSE data. (Diesel Emission Control Sulfur Effects (DECSE) Program—Phase II Interim Data Report No. 4, Diesel Particulate Filters-Final Report, January 2000, Table C1.) Although DECSE tested diesel particulate filters at these fuel sulfur levels, they do not conclude that the technology is feasible at all levels, but they do note that testing at 150 ppm is a moot point as the emission levels exceed the engine's baseline emission level.

^b Total exhaust PM (soot, SOF, sulfate).

Table III.F-1 makes it clear that there are significant PM emission reductions possible with the application of catalyzed diesel particulate filters and low sulfur diesel fuel. At the observed sulfate PM conversion rates, the DECSE program results show that the 0.01 g/bhp-hr total PM standard is feasible for diesel particulate filter equipped engines operated on fuel with a sulfur level at or below 15 ppm. The results also show that diesel particulate filter control effectiveness is rapidly degraded at higher diesel fuel sulfur levels due to the high sulfate PM make observed with this technology. It is clear that PM reduction efficiencies are limited by sulfur in diesel fuel and that, in order to realize the PM emissions benefits sought in this rule, diesel fuel sulfur levels must be at or below 15 ppm. The data further indicates that were the fuel sulfur level set at a 30 ppm average, as some commenters suggested, the PM emissions from the controlled vehicles would be nearly three times the emissions from a vehicle operating on fuel with a 7 ppm average.

c. Increased Maintenance Cost for Diesel Particulate Filters Due to Sulfur

In addition to the direct performance and durability concerns caused by sulfur in diesel fuel, it is also known that sulfur can lead to increased maintenance costs, shortened maintenance intervals, and poorer fuel economy for particulate filters. Diesel particulate filters are highly effective at capturing the inorganic ash produced from metallic additives in engine oil.

This ash is accumulated in the filter and is not removed through oxidation, unlike the trapped carbonaceous PM. Periodically the ash must be removed by mechanical cleaning of the filter with compressed air or water. This maintenance step is anticipated to occur on intervals of well over one hundred thousand miles. However, sulfur in diesel fuel increases this ash accumulation rate through the formation of metallic sulfates in the filter, which increases both the size and mass of the trapped ash. By increasing the ash accumulation rate, the sulfur shortens the time interval between the required maintenance of the filter and negatively impacts fuel economy.

2. Diesel NO_x Catalysts and the Need for Low Sulfur Fuel

All of the NO_x exhaust emission control technologies discussed previously in Section III are expected to utilize platinum to oxidize NO to NO₂ to improve the NO_x reduction efficiency of the catalysts at low temperatures or as in the case of the NO_x adsorber, as an essential part of the process of NO_x storage. This reliance on NO₂ as an integral part of the reduction process means that the NO_x exhaust emission control technologies, like the PM exhaust emission control technologies, will have problems with sulfur in diesel fuel. In addition, NO_x adsorbers have the added problem that the adsorption function itself is poisoned by the presence of sulfur. The resulting need to remove the stored sulfur (desulfate) leads to a need for extended high temperature operation which can deteriorate the NO_x adsorber. These limitations due to sulfur in the fuel affect the overall performance and feasibility of the technologies.

a. Sulfur Poisoning (Sulfate Storage) on NO_x Adsorbers

The NO_x adsorber technology relies on the ability of the catalyst to store NO_x as a nitrate (MNO₃) on the surface of the catalyst, or adsorber (storage) bed, during lean operation. Because of the similarities in chemical properties of SO_x and NO_x, the SO₂ present in the exhaust is also stored by the catalyst surface as a sulfate (MSO₄). The sulfate compound that is formed is significantly more stable than the nitrate compound and is not released and reduced during the NO_x release and reduction step (NO_x regeneration step). Since the NO_x adsorber is essentially 100 percent effective at capturing SO₂ in the adsorber bed, the sulfur build up on the adsorber bed occurs rapidly. As a result, sulfate compounds quickly occupy all of the NO_x storage sites on the catalyst

¹⁴³ Note that direct emissions are those pollutants emitted directly from the engine or from the tailpipe depending on the context in which the term is used, and indirect emissions are those pollutants formed in the atmosphere through chemical reactions between direct emissions and other atmospheric constituents.

thereby rendering the catalyst ineffective for NO_x storage and subsequent NO_x reduction (poisoning the catalyst).

The stored sulfur compounds can be removed by exposing the catalyst to hot (over 650°C) and rich (air-fuel ratio below the stoichiometric ratio of 14.5 to 1) conditions for a brief period.¹⁴⁴ Under these conditions, the stored sulfate is released and reduced in the catalyst.¹⁴⁵ While research to date on this procedure has been very favorable with regards to sulfur removal from the catalyst, it has revealed a related vulnerability of the NO_x adsorber catalyst. Under the high temperatures used for desulfation, the metals that make up the storage bed can change in physical structure. This leads to lower precious metal dispersion, or "metal sintering," (a less even distribution of the catalyst sites) reducing the effectiveness of the catalyst.¹⁴⁶ This degradation of catalyst efficiency due to high temperatures is often referred to as thermal degradation. Thermal degradation is known to be a cumulative effect. That is, with each excursion to high temperature operation, some additional degradation of the catalyst occurs.

One of the best ways to limit thermal degradation is by limiting the accumulated number of desulfation events over the life of the vehicle. Since the period of time between desulfation events is expected to be determined by the amount of sulfur accumulated on the catalyst (the higher the sulfur accumulation rate, the shorter the period between desulfation events) the desulfation frequency is expected to be proportional to the fuel sulfur level. In other words for each doubling in the average fuel sulfur level, the frequency and accumulated number of desulfation events are expected to double. We believe, therefore, that the diesel fuel sulfur level must be set as low as possible in order to limit the frequency and duration of desulfation events. Without control of fuel sulfur levels below 15 ppm, we can no longer conclude with any confidence that sulfur poisoning can be controlled without unrecoverable thermal degradation. Some commenters have

suggested that the NO_x adsorber technology could meet the NO_x standard using diesel fuel with a 30 ppm average sulfur level. This would imply that the NO_x adsorber could tolerate as much as a four fold increase in desulfation frequency (when compared to an expected seven to 10 ppm average) without any increase in thermal degradation. This conclusion is inconsistent with our understanding of the technology that, with each desulfation event, some thermal degradation occurs. Therefore, we believe that diesel fuel sulfur levels must be at or below 15 ppm in order to limit the number and frequency of desulfation events. Limiting the number and frequency of desulfation events will limit thermal degradation and, thus, enable the NO_x adsorber technology to meet the NO_x standard.

Sulfur in diesel fuel for NO_x adsorber equipped engines will also have an adverse effect on fuel economy. The desulfation event requires controlled operation under hot and net fuel rich exhaust conditions. These conditions, which are not part of a normal diesel engine operating cycle, can be created through the addition of excess fuel to the exhaust. This addition of excess fuel causes an increase in fuel consumption. We have developed a spreadsheet model that estimates the frequency of desulfation cycles from published data and then estimates the fuel economy impact from this event.¹⁴⁷ Table III-F.2 shows the estimated fuel economy impact for desulfation of a NO_x adsorber at different fuel sulfur levels assuming a desired 90 percent NO_x conversion efficiency. The estimates in the table are based on assumed average fuel sulfur levels associated with different sulfur level caps. Note that, although we can estimate the fuel consumption penalty of operation on diesel fuel sulfur levels higher than 15 ppm, this analysis does not consider the higher degree of thermal degradation due to the more frequent desulfation events which are required for operation on these higher sulfur levels.

TABLE III.F-2.—ESTIMATED FUEL ECONOMY IMPACT FROM DESULFATION OF A 90% EFFICIENT NO_x ADSORBER

Fuel sulfur cap (ppm)	Average fuel sulfur (ppm)	Fuel economy penalty (in percent)
500	350	27
50	30	2

¹⁴⁴ Dou, Danan and Bailey, Owen, "Investigation of NO_x Adsorber Catalyst Deactivation," SAE 982594.

¹⁴⁵ Guyon M. et al, "Impact of Sulfur on NO_x Trap Catalyst Activity—Study of the Regeneration Conditions", SAE 982607.

¹⁴⁶ though it was favorable to decompose sulfate at 800°C, performance of the NSR (NO_x Storage Reduction catalyst, *i.e.* NO_x Adsorber) catalyst decreased due to sintering of precious metal.—Asanuma, T. *et al.*, "Influence of Sulfur Concentration in Gasoline on NO_x Storage—Reduction Catalyst", SAE 1999-01-3501.

¹⁴⁷ Memo from Byron Bunker, to docket A-99-06, "Estimating Fuel Economy Impacts of NO_x Adsorber De-Sulfurization."

TABLE III.F-2.—ESTIMATED FUEL ECONOMY IMPACT FROM DESULFATION OF A 90% EFFICIENT NO_x ADSORBER—Continued

Fuel sulfur cap (ppm)	Average fuel sulfur (ppm)	Fuel economy penalty (in percent)
25	15	1
15	7	<1
5	2	<<<1

The table highlights that the fuel economy penalty associated with sulfur in diesel fuel is noticeable even at average sulfur levels as low as 15 ppm and increases rapidly with higher sulfur levels. It also shows that the use of a NO_x adsorber with a 15 ppm sulfur cap fuel would be expected to result in a fuel economy impact due to the need for desulfation of the catalyst of less than one percent, absent other changes in engine design. However, as discussed in Section G below, we anticipate that other engine modifications could be made to offset this fuel economy impact. For example, a NO_x control device in the exhaust system could allow use of fuel saving engine strategies, such as advanced fuel injection timing, that could be used to offset the increased fuel consumption associated with the NO_x adsorber. The result is that low sulfur fuel enables the NO_x adsorber which, in turn, enables fuel saving engine modifications. The total emission control system fuel economy impact, which we estimate to be zero under a 15 ppm cap program, is discussed below in Section III.G.

Future improvements in the NO_x adsorber technology are expected and needed if the technology is to provide the environmental benefits we have projected today. Some of these improvements are likely to include improvements in the means and ease of removing stored sulfur from the catalyst bed. However because the stored sulfate species are inherently more stable than the stored nitrate compounds (from stored NO_x emissions), we expect that a separate release and reduction cycle (desulfation cycle) will always be needed in order to remove the stored sulfur. Therefore, we believe that fuel with a sulfur level at or below 15 ppm sulfur will be necessary in order to control thermal degradation of the NO_x adsorber catalyst and to limit the fuel economy impact of sulfur in diesel fuel.

b. Sulfate Particulate Production and Sulfur Impacts on Effectiveness of NO_x Control Technologies

The NO_x adsorber technology relies on a platinum based oxidation function

in order to ensure high NO_x control efficiencies. As discussed more fully in section III.F.1, platinum based oxidation catalysts form sulfate PM from sulfur in the exhaust gases significantly increasing PM emissions when sulfur is present in the exhaust stream. The NO_x adsorber technology relies on the oxidation function to convert NO to NO₂ over the catalyst bed. For the NO_x adsorber this is a fundamental step prior to the storage of NO₂ in the catalyst bed as a nitrate. Without this oxidation function the catalyst will only trap that small portion of NO_x emissions from a diesel engine which is NO₂. This would reduce the NO_x adsorber effectiveness for NO_x reduction from in excess of 90 percent to something well below 20 percent. The NO_x adsorber relies on platinum to provide this oxidation function due to the need for high NO oxidation rates under the relatively cool exhaust temperatures typical of diesel engines. Because of this fundamental need for a catalytic oxidation function, the NO_x adsorber inherently forms sulfate PM when sulfur is present in diesel fuel, since sulfur in fuel invariably leads to sulfur in the exhaust stream.

The Compact-SCR technology, like the NO_x adsorber technology, uses an oxidation catalyst to promote the oxidation of NO to NO₂ at the low temperatures typical of much of diesel engine operation. As discussed above, there are substantial questions regarding the ability of SCR systems to be implemented successfully to meet the requirements finalized today. By converting a portion of the NO_x emissions to NO₂ upstream of the ammonia SCR reduction catalyst, the overall NO_x reductions are improved significantly at low temperatures. Without this oxidation function, low temperature SCR NO_x effectiveness is dramatically reduced making compliance with the NO_x standard impossible. As discussed previously in Section III, platinum group metals are known to be good catalysts to promote NO oxidation, even at low temperatures.¹⁴⁸ Therefore, future Compact-SCR systems would need to rely on a platinum oxidation catalyst in order to provide the required NO_x emission control. This use of an oxidation catalyst in order to enable good NO_x control means that Compact SCR systems will produce significant amounts of sulfate PM when operated on anything but the lowest fuel sulfur levels due to the oxidation of SO₂ to

sulfate PM promoted by the oxidation catalyst.

Without the oxidation catalyst promoted conversion of NO to NO₂, neither of these NO_x control technologies can meet the NO_x standard set here. Therefore each of these technologies will require low sulfur diesel fuel to control the sulfate PM emissions inherent in the use of oxidation catalysts. The NO_x adsorber technology may be able to limit its impact on sulfate PM emissions by releasing stored sulfur as SO₂ under rich operating conditions. The Compact-SCR technology, on the other hand, has no means to limit sulfate emissions other than through lower catalytic function or lowering sulfur in diesel fuel. The degree to which the NO_x emission control technologies increase the production of sulfate PM through oxidation of SO₂ to SO₃ varies somewhat from technology to technology, but it is expected to be similar in magnitude and environmental impact to that for the PM control technologies discussed previously in section III.F.1, since both the NO_x and the PM control catalysts rely on precious metals to achieve the required NO to NO₂ oxidation reaction.

Thus, we believe that diesel fuel sulfur levels will need to be at or below 15 ppm in order to apply any of these NO_x control technologies. Without this low sulfur fuel, the NO_x control technologies are expected to create PM emissions well in excess of the PM standard regardless of the engine-out PM levels. Again, as noted with the PM control technologies, test results to date on catalysts with high oxidation potential indicate that were the fuel sulfur level set with a 30 ppm average, as some commenters suggested, the PM emissions from the controlled vehicles would increase nearly three fold over the level expected from fuel with a 7 ppm average, the average fuel sulfur level we would expect from a 15 ppm cap fuel (see Table III.F.1).

3. What About Sulfur in Engine Lubricating Oils?

Current engine lubricating oils have sulfur contents which can range from 2,500 ppm to as high as 8,000 ppm by weight. Since engine oil is consumed by heavy-duty diesel engines in normal operation, it is important that we account for the contribution of oil derived sulfur in our analysis of the need for low sulfur diesel fuel. One way to give a straightforward comparison of this effect is to express the sulfur consumed by the engine as an equivalent fuel sulfur level. This approach requires that we assume

specific fuel and oil consumption rates for the engine. Using this approach, estimates ranging from two to seven ppm diesel fuel sulfur equivalence have been made for the sulfur contribution from engine oil.^{149 150} If values at the upper end of this range accurately reflect the contribution of sulfur from engine oil to the exhaust this would be a concern as it would represent 50 percent of the total sulfur in the exhaust under a 15 ppm diesel fuel sulfur cap (with an average sulfur level assumed to be approximately seven ppm). However, we believe that this simplified analysis, while valuable in demonstrating the need to investigate this issue further, overstates the likely sulfur contribution from engine oil by a significant amount due to its inclusion of engine oil lost through the open crankcase system in the estimate of oil consumption to the exhaust.

Current heavy-duty diesel engines operate with open crankcase ventilation systems which "consume" oil by carrying oil from the engine crankcase into the environment. This consumed oil is correctly included in the total oil consumption estimates, but should not be included in estimates of oil entering the exhaust system for this analysis, since as currently applied this oil is not introduced into the exhaust. At present we estimate that the majority of lube oil consumed by an engine meeting the 0.1 g/bhp-hr PM standard is lost through crankcase ventilation, rather than through the exhaust. Based on assumed engine oil to PM conversion rates and historic soluble organic fraction breakdowns we have estimated the contribution of sulfur from engine oil to be less than two ppm fuel equivalency. With our action to close the crankcase, coupled with the use of closed crankcase ventilation systems that separate in excess of 90 percent of the oil from the blow-by gases, we believe that this very low contribution of lube oil to sulfur in the exhaust can be maintained. For a further discussion of our estimates of the sulfur contribution from engine oil refer to the final RIA in the docket.

G. Fuel Economy Impact of High Efficiency Control Technologies

The high efficiency emission control technologies expected to be applied in order to meet the NO_x and PM standards involve wholly new system components integrated into engine designs and calibrations, and as such

¹⁴⁸ Platinum group metals include platinum, palladium, rhodium, and other precious metals.

¹⁴⁹ Whitacre, Shawn. "Catalyst Compatible" Diesel Engine Oils, DECSE Phase II, Presentation at DOE/NREL Workshop "Exploring Low Emission Diesel Engine Oils." January 31, 2000.

may be expected to change the fuel consumption characteristics of the overall engine design. After reviewing the likely technology options available to the engine manufacturers, we believe that the integration of the engine and exhaust emission control systems into a single synergistic emission control system will lead to heavy-duty vehicles which can meet demanding emission control targets without increasing fuel consumption beyond today's levels.

1. Diesel Particulate Filters and Fuel Economy

Diesel particulate filters are anticipated to provide a step-wise decrease in diesel particulate (PM) emissions by trapping and oxidizing the diesel PM. The trapping of the very fine diesel PM is accomplished by forcing the exhaust through a porous filtering media with extremely small openings and long path lengths.¹⁵¹ This approach results in filtering efficiencies for diesel PM greater than 90 percent but requires additional pumping work to force the exhaust through these small openings. The additional pumping work is anticipated to increase fuel consumption by approximately one percent.¹⁵² However, we believe this fuel economy impact can be regained through optimization of the engine—PM trap—NO_x adsorber system, as discussed below.

2. NO_x Control Technologies and Fuel Economy

NO_x adsorbers are expected to be the primary NO_x control technology introduced in order to provide the reduction in NO_x emissions envisioned in this rulemaking. NO_x adsorbers work by storing NO_x emissions under fuel lean operating conditions (normal diesel engine operating conditions) and then by releasing and reducing the stored NO_x emissions over a brief period of fuel rich engine operation. This brief periodic NO_x release and reduction step is directly analogous to the catalytic reduction of NO_x over a gasoline three-way catalyst. In order for this catalyst function to occur the engine exhaust constituents and conditions must be similar to normal gasoline exhaust constituents. That is, the exhaust must be fuel rich (devoid of excess oxygen) and hot (over 250°C). Although it is anticipated that diesel engines can be made to operate in this way, it is

¹⁵⁰ This estimate assumes that a heavy-duty diesel engine consumes 1 quart of engine oil in 2,000 miles of operation, consumes fuel at a rate of 1 gallon per 6 miles of operation and that engine oil sulfur levels range from 2,000 to 8,000 ppm.

¹⁵¹ Typically, the filtering media is a porous ceramic monolith or a metallic fiber mesh.

assumed that fuel economy while operating under these conditions will be worse than normal. We have estimated that the fuel economy impact of the NO_x release and reduction cycle would, all other things being equal, increase fuel consumption by approximately one percent. Again, we believe this fuel economy impact can be regained through optimization of the engine—PM trap—NO_x adsorber system, as discussed below.

In addition to the NO_x release and regeneration event, another step in NO_x adsorber operation may affect fuel economy. As discussed earlier, NO_x adsorbers are poisoned by sulfur in the fuel even at the low sulfur levels mandated here. As discussed in the RIA, we anticipate that the sulfur poisoning of the NO_x adsorber can be reversed through a periodic “desulfation” event. The desulfation of the NO_x adsorber is accomplished in a similar manner to the NO_x release and regeneration cycle described above. However it is anticipated that the desulfation event will require extended operation of the diesel engine at rich conditions.¹⁵³ This rich operation will, like the NO_x regeneration event, require an increase in the fuel consumption rate and will cause an associated decrease in fuel economy. With a 15 ppm fuel sulfur cap, we are projecting that fuel consumption for desulfation would increase by one percent or less, which we believe can be regained through optimization of the engine-PM trap-NO_x adsorber system as discussed below.

While NO_x adsorbers require non-power producing consumption of diesel fuel in order to function properly and, therefore, have an impact on fuel economy, they are not unique among NO_x control technologies in this way. In fact NO_x adsorbers are likely to have a very favorable NO_x to fuel economy trade-off when compared to other NO_x control technologies like cooled EGR and injection timing retard that have historically been used to control NO_x emissions. Today, most diesel engines rely on injection timing control (retarding injection timing) in order to meet the 4.0 g/bhp-hr NO_x emission standard. For 2004 model year compliance, we expect that engine manufacturers will use a combination of cooled EGR and injection timing control to meet the 2.0 g/bhp-hr NO_x standard. Because of the more favorable fuel economy trade-off for NO_x control with

EGR when compared to timing control, we have forecast that less reliance on timing control will be needed in 2004. Therefore, fuel economy will not be changed even at this lower NO_x level.

NO_x adsorbers have a significantly more favorable NO_x to fuel economy trade-off when compared to cooled EGR or timing retard alone, or even when compared to cooled EGR and timing retard together.¹⁵⁴ Current NO_x adsorber data show greater than 90 percent reduction in NO_x emissions over the SET, while only increasing fuel consumption by a very reasonable two percent. Further the data show that, for significant portions of the engine's typical operating range, NO_x control in excess of 98 percent is possible even with engine-out emissions as high as 5 g/bhp-hr.¹⁵⁵ Therefore, we expect manufacturers to take full advantage of the NO_x control capabilities of the NO_x adsorber and project that they will decrease reliance on technologies with a less favorable emissions to fuel economy trade-off, especially injection timing retard, when operating at conditions where the NO_x adsorber performance is significantly greater than 90 percent. We would therefore predict that the fuel economy impact currently associated with NO_x control from timing retard would be decreased by at least three percent. In other words, through the application of advanced NO_x emission control technologies, which are enabled by the use of low sulfur diesel fuel, we expect the NO_x trade-off with fuel economy to continue to improve significantly when compared to today's technologies. This will result in both much lower NO_x emissions, and potentially overall improvements in fuel economy. Improvements could easily offset the fuel consumption of the NO_x adsorber itself and, in addition, the one percent fuel economy loss projected to result from the application of PM filters. Consequently, we are projecting no fuel economy penalty to result from this rule.

3. Emission Control Systems for 2007 and Net Fuel Economy Impacts

We anticipate that, in order to meet the stringent NO_x and PM emission standards set today, the engine manufacturers will integrate engine-based emission control technologies and

¹⁵⁴ Zelenka, P. *et al*, Cooled EGR—A Key Technology for Future Efficient HD Diesels, SAE 980190, Society of Automotive Engineers 1998. Figure 2 from this paper gives a graphical representation of how new technologies (including exhaust emission control technologies) can shift the trade-off between NO_x emissions and fuel economy.

¹⁵⁵ “2007 Diesel Emission Test Program, Initial Test Report,” December 11, 2000, Air Docket A-99-06, Item IV-A-29.

post-combustion emission control technologies into a single systems-based approach that will fundamentally shift historic trade-offs between emissions control and fuel economy. As outlined in the preceding two sections, individual components in this system will introduce new constraints and opportunities for improvements in fuel efficient control of emissions. Having considered the many opportunities to fundamentally improve these relationships, we believe that it is unlikely that fuel economy will be lower than today's levels and, in fact, may improve through the application of these new technologies and this new systems approach. Therefore, for our analysis of economic impacts in Section V, no penalty or benefit for changes to fuel economy are considered.

H. Review of the Status of Heavy-Duty Diesel NO_x Emission Control Technology

In the NPRM, we provided a detailed technical evaluation of test data and other information that concluded that the proposed program would be technologically feasible for all heavy-duty engines. During the public comment period, we received many comments as well as additional information about the likely status and capability of emission control technology development in the 2007 time frame. To this information we have added our own updated evaluation of test data as well as technical information developed by ourselves and others.

Based on this information, and as discussed in Sections III.E and III.F above, we now have an even higher degree of confidence that manufacturers will be able to meet the new heavy-duty standards. Manufacturers of heavy-duty gasoline engines will apply essentially the same technology that is being developed for light-duty trucks under the Tier 2 program and should not have major problems doing so, especially given the significant available lead time. Regarding diesels, although the technological challenges are somewhat greater than for gasoline engines, we believe that manufacturers will achieve the engine standards adopted today for 2007 and later years, in conjunction with the low sulfur diesel fuel we are also requiring.

As we discussed earlier, there are two primary technologies that diesel engine manufacturers expect to use to meet the standards adopted in today's rule, and they are at different stages of commercial development. Catalyzed diesel PM trap technologies are in widespread fleet testing today, we have

shown that there are no serious impediments to the widespread application of this technology to heavy-duty diesel engines that can meet our new standards by 2007, if not earlier. Diesel NO_x adsorber technology, the emission control technology we believe will be used for heavy-duty diesel engines to meet the very low NO_x emission standards adopted today, is less developed relative to PM control technology. Still, as we discussed earlier, we have identified a clear technological pathway to compliance with the NO_x standards using NO_x adsorber technology. While we do not anticipate major obstacles in commercializing these systems by 2007, it is important that the various parties in the industry continue to make good progress in their development of NO_x adsorber technology for heavy-duty diesel engines.

As a mechanism for monitoring and evaluating this technological progress, we believe it will be important to publicly reassess the status of heavy-duty diesel NO_x adsorber systems on an ongoing basis. To accomplish this, we will conduct regular biennial reviews of the status of heavy-duty NO_x adsorber technology. For each review, we will collect and analyze information from engine manufacturers, NO_x adsorber manufacturers, our own testing, and other sources. At the end of each review cycle, we will release (and post on the Web) a report discussing the status of the technology and any implications for the heavy-duty engine emission control program. We will release the first report by December 31, 2002 and subsequent reports at the end of each second year through December 31, 2008. This biennial process is similar to that used by the State of California to monitor and evaluate their emission control programs.

IV. Our Program for Controlling Highway Diesel Sulfur

With today's action, we are requiring substantial reductions in highway diesel fuel sulfur levels nationwide, because sulfur significantly inhibits the ability of the diesel emission control devices to function which are necessary to meet the emission standards finalized today. With the highway diesel fuel sulfur standard we are finalizing today, we have concluded that there will be technology available to achieve the reductions required by the stringent emission standards we are implementing for model year 2007 and later heavy-duty engines.

In developing the provisions of the fuel program being adopted today, we identified several goals that we want the

program to achieve. First, we must ensure that there will be an adequate supply of highway diesel fuel for all vehicles. Second, we must ensure that low sulfur diesel fuel will be readily available nationwide for the 2007 and later model year heavy-duty vehicles that need it. Finally, we want to ensure a smooth transition to low sulfur fuel.

In the NPRM, we proposed that refiners be required to start producing all of their highway diesel fuel at the 15 ppm sulfur level beginning in 2006. We also requested comment on a range of options for transitioning to the low sulfur diesel fuel over time. With regard to the programmatic goals noted above, the proposed approach, which would have required all highway diesel fuel to meet the 15 ppm sulfur standard in 2006, guaranteed availability of the low sulfur diesel fuel throughout the nation. However, many commenters stated concerns that the proposed program would not ensure adequate overall supplies of highway diesel fuel, especially if some refiners chose not to continue producing highway diesel fuel to avoid the changes needed to meet the low sulfur levels.

The final diesel fuel program we are adopting today includes flexibilities for the refining industry as a whole, as well as additional flexibilities for refiners experiencing hardship circumstances. First, the program gives refiners a temporary compliance option for low sulfur diesel fuel beginning in mid-2006. The final program also includes additional flexibilities for refineries located in certain western states (the Geographic Phase-In Area (GPA)¹⁵⁶), provisions for qualifying small refiners, and a general hardship provision for which any refiner may apply under certain conditions. These flexibilities ensure that the vast majority of refiners nationwide can fully comply at the earliest possible date while avoiding an excessive burden on a subset of refiners. The following section details each of the requirements of the highway diesel fuel program for refiners and importers, summarizes the analyses we have performed on the impacts of the temporary compliance option being adopted today, and describes additional information we have received that supports the changes made to the proposed program. Section VII provides additional information about the

¹⁵⁶ As defined in the Tier 2 final rulemaking (see 65 FR 6698, February 10, 2000), the GPA encompasses the states of Alaska, Colorado, Idaho, Montana, New Mexico, North Dakota, Utah and Wyoming. Note that minor changes to this area are currently under consideration. Any such changes subsequent to today's rule are intended to be carried over into today's rule as well.

compliance and enforcement provisions that will accompany these requirements.

We believe the highway diesel fuel program we are adopting today meets all of the programmatic goals noted above. We believe that the final program will ensure that the overall supply of highway diesel fuel will be sufficient for all vehicles. To the extent there may have been supply concerns with a complete fuel turnover to low sulfur diesel in 2006 as some commenters have suggested, the flexibilities for refiners contained in the final program will serve as a "safety valve" by allowing up to 25 percent of the highway diesel fuel to remain at the current 500 ppm sulfur standard and providing additional time, if needed, for some refiners to fully convert over to low sulfur fuel. The combination of flexibilities provided to refiners in today's final rule should eliminate any concerns about the potential for supply shortfalls of highway diesel fuel. The final diesel fuel program is carefully structured so that we are confident there will be widespread availability of low sulfur fuel across the nation for 2007 and later model heavy-duty vehicles. In this way, the important health benefits of this program to people throughout the country can be achieved expeditiously, at a reasonable cost, while minimizing the burden on the affected industries.

This section also summarizes our technical feasibility analysis of the low sulfur highway diesel fuel program, and the impact of the program on other fuel properties and specialty fuels. Finally, the following section describes how state programs will be affected by today's action including a provision that allows the State of Alaska the option of developing an alternative transition plan for implementing low sulfur fuel.

A. Highway Diesel Sulfur Standards for Refiners and Importers

The requirements of the highway diesel fuel sulfur control program will become effective in time to be available with the introduction of the first heavy-duty engines meeting the model year 2007 and later engine standards we are adopting today. The following paragraphs describe the requirements, standards, and deadlines that apply to refiners and importers of highway diesel fuel and the options available to all refiners.

1. Standards and Deadlines That Refiners and Importers Must Meet

As described earlier in Section III.H. above, the new standards being adopted today for heavy-duty engines will begin with the 2007 model year. With today's action, we are adopting specific dates

when fuel intended to be marketed as low sulfur diesel fuel must be produced at the refinery, distributed at the terminal level, and marketed at the retail level. Refiners and importers are required to produce highway diesel fuel meeting the 15 ppm sulfur standard beginning June 1, 2006.¹⁵⁷ At the terminal level, highway diesel fuel sold as low sulfur fuel is required to meet the 15 ppm sulfur standard beginning July 15, 2006. For retail stations and wholesale purchaser-consumers, highway diesel fuel sold as low sulfur fuel must meet the 15 ppm sulfur standard by September 1, 2006.

In the NPRM, we proposed a set of compliance dates slightly earlier than the dates contained in today's final rule. Under the proposal, refiners, terminals and retailers would have had to begin producing low sulfur diesel fuel by April 1, 2006, May 1, 2006 and June 1, 2006, respectively. Several commenters pointed out that the April introduction date for refiners occurred at the same time refiners would be changing over from winter to summer gasoline to comply with Reid Vapor Pressure (RVP) requirements. They recommended that the introduction of low sulfur diesel fuel be delayed for a couple of months to provide refiners and the distribution system the opportunity to focus on the two conversions separately and ensure that each occurs as designed. Commenters also suggested that we extend the time period between the refinery and downstream deadlines to better allow for the time it may take the distribution system to make a complete transition to the 15 ppm sulfur level.

In response to these concerns, today's action provides a few additional months for introduction of the low sulfur diesel fuel compared to the NPRM and provides an additional month between the refinery and retail compliance dates, to provide a smoother transition through the distribution system. We believe the additional time provides appropriate relief for the refiners, while still assuring that low sulfur diesel fuel will be available at the retail level no later

¹⁵⁷ Highway diesel fuel (referred to as motor vehicle diesel fuel in the regulatory language to be consistent with language in existing laws and regulations) includes any diesel fuel or any distillate product that is used, intended for use, or made available for use as a fuel in highway diesel vehicles or engines that are subject to the standards finalized today. However, kerosene or other distillates such as JP-8 are only considered to be highway diesel fuel and thus subject to our program at the point in the production or distribution system that they are either designated as such, or otherwise used, intended for use, or made available for use in highway diesel vehicles. Thus, if refiners do not designate these other distillates as highway diesel fuel, they are not subject to the 15 ppm sulfur standard.

than September 1, 2006. This schedule will allow manufacturers to introduce 2007 and later model year diesel engines and vehicles as early as September 1, 2006. While a slight delay from the dates of the proposal, the Agency does not believe this delay will place any undue burden on the engine manufacturers. Historically, new heavy-duty vehicle models were introduced on or around January 1 (of the same calendar year as the model year). Only recently, manufacturers have begun introducing some model lines earlier, particularly light heavy-duty vehicles.

In the NPRM, we proposed that all highway diesel fuel be required to comply with the 15 ppm sulfur standard starting in 2006. Today's program includes a combination of flexibilities available to refiners to ensure a smooth transition to low sulfur highway diesel fuel. Refiners can take advantage of a temporary compliance option, including an averaging, banking and trading component, beginning in June 2006 and lasting through 2009, with credit given for early compliance before June 2006. Under this option, up to 20 percent of highway diesel fuel may continue to be produced at the existing 500 ppm sulfur maximum standard, though it must be segregated from 15 ppm fuel in the distribution system, and may only be used in pre-2007 model year heavy-duty vehicles. We are providing additional hardship provisions for small refiners to minimize their economic burden in complying with the 15 ppm sulfur standard and giving additional flexibility to refiners subject to the Geographic Phase-in Area (GPA) provisions of the Tier 2 gasoline sulfur program, which will allow them the option of staggering their gasoline and diesel investments. Finally, we are adopting a general hardship provision for which any refiner may apply on a case-by-case basis under certain conditions. These hardship provisions, coupled with the temporary compliance option, will provide a "safety valve" allowing up to 25 percent of highway diesel fuel produced to remain at 500 ppm for these transitional years to effectively address the concerns over highway diesel fuel supply.

It should be noted that the requirements of the fuel program described below apply to refiners and importers only.¹⁵⁸ We are not adopting any retailer availability requirements

¹⁵⁸ As described above, distributors and retailers marketing low sulfur diesel fuel have deadlines for compliance with the sulfur standards, as well as other requirements such as pump labeling. Section VII of today's action provides further details on the downstream requirements for distributors and retailers.

with these provisions. In other words, we are not requiring that diesel retailers sell the 15 ppm fuel. Rather, retailers may sell 15 ppm sulfur diesel fuel, 500 ppm sulfur diesel fuel, or both. We believe the program being adopted today for refiners and importers will ensure that adequate supplies of low sulfur diesel fuel are available throughout the nation. The voluntary compliance and hardship provisions have been designed with a required level of production that we believe will ensure that 15 ppm fuel is distributed widely through pipelines and at terminals throughout the country without the need for a retailer availability requirement. Our analysis supporting the design of these provisions can be found in Chapter IV of the RIA for today's action.

2. Temporary Compliance Option for Refiners and Importers

We believe there are several advantages to allowing some flexibility in the early years of the program such that not all of the highway diesel fuel pool must be converted to low sulfur diesel fuel at one time. First, some commenters expressed concerns over adequate supplies of highway diesel fuel if the entire pool converted to low sulfur diesel fuel in 2006, because they believe some refiners might produce less total highway diesel fuel volume or choose to leave the highway diesel fuel market altogether. Allowing the temporary compliance option lowers this concern because a portion of the highway diesel pool can remain at the current 500 ppm sulfur standard, if necessary, providing additional time for the market to adjust. This portion of the highway diesel pool that refiners choose to delay will likely be the portion that is more costly for them to desulfurize and, thus, most likely to raise concerns with respect to shortfalls. Second, a temporary compliance option can benefit refiners by reducing the fuel production costs in the early years of the program, because refiners are able to spread out their capital investments. The option also benefits refiners by spreading out the industry-wide

demand for engineering and construction resources over several years, and also by allowing more time between the gasoline sulfur and diesel sulfur compliance dates. Third, refiners that are able to delay investment could attain lower costs for such equipment as technology improvements are realized during that time and as refiners see how well the desulfurization technologies achieve the 15 ppm sulfur standard.

The primary emissions benefits of low sulfur highway diesel fuel are the emissions reductions that will occur over time as new vehicles designed to meet the emission standards adopted today are introduced into the vehicle fleet. Consequently, in the NPRM we requested comment on several options that would allow refiners and importers to phase in the production of low sulfur highway diesel fuel. With today's action, we are adopting a temporary compliance option for refiners and importers that will allow them to produce less than 100 percent of their highway diesel fuel at the 15 ppm sulfur level. Refiners and importers may choose to participate in the compliance option on a refinery-by-refinery basis. A refiner must demonstrate compliance with the compliance option on an annual basis. Refiners with special financial hardships have additional flexibility provisions, which are described further in Section IV.C.

We believe today's temporary compliance option in combination with the hardship provisions discussed in Section IV.C. has the potential to provide flexibility to more than half of all U.S. refineries by allowing up to 25 percent¹⁵⁹ of the highway diesel fuel volume in the country to continue to be produced at the current sulfur level of 500 ppm. We estimate that refiners will be able to save as much as \$1.7 billion over the duration of the optional compliance program compared to the proposed requirement that all highway diesel fuel comply with 15 ppm sulfur in 2006. Much, but not all, of this potential savings will be offset by increased costs in the distribution

system. We project that in total a small overall savings should result from refiners taking advantage of the temporary compliance option.

Under the temporary compliance option finalized today, a refinery may produce up to 20 percent of its total highway diesel fuel at the existing highway diesel fuel sulfur standard of 500 ppm, determined on an annual basis. The remaining 80 percent of the highway diesel fuel produced at that refinery during the year must meet a sulfur standard of 15 ppm.¹⁶⁰ As part of this temporary compliance option, a PADD-based averaging, banking, and trading (ABT) program will be available. Figure IV-1 presents the five PADDs into which the United States is divided.¹⁶¹ For example, a refinery could produce more than 80 percent of its highway diesel fuel as low sulfur diesel fuel and generate credits based on the volume of highway diesel fuel produced at 15 ppm that exceeded the 80 percent requirement. Within that same PADD (within the limits noted below for California, Alaska, Hawaii, and any state with an EPA-approved waiver from the federal program), these credits may be averaged with another refinery owned by that refiner, banked for use in future years, or sold to another refinery.

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¹⁶⁰ We are aware that today there are refiners that produce one grade of diesel fuel for both highway and off-highway purposes, where dye is added by parties downstream if it is to be sold as off-highway diesel fuel. To the extent possible, we do not want to interfere with this practice. Consequently, for purposes of determining compliance with these optional requirements, a refiner producing all 15 ppm fuel may include the entire volume it produces in the calculation. Furthermore, a refiner producing all 500 ppm fuel must count any diesel fuel produced with a sulfur content of 500 ppm or less unless it has been dyed by the refiner to be used as nonroad diesel fuel. A refiner would only include kerosene in its volume calculation if the kerosene is less than 500 ppm sulfur content and the kerosene is blended at the refinery into non-dyed fuel with a sulfur content of less than 500 ppm.

¹⁶¹ The Department of Energy divides the United States into five Petroleum Administrative Districts for Defense, or PADDs. The states encompassed by each of the five PADDs are defined in the Code of Federal Regulations at Title 40, § 80.41.

¹⁵⁹ Up to 5 percent of which is small refiner production.

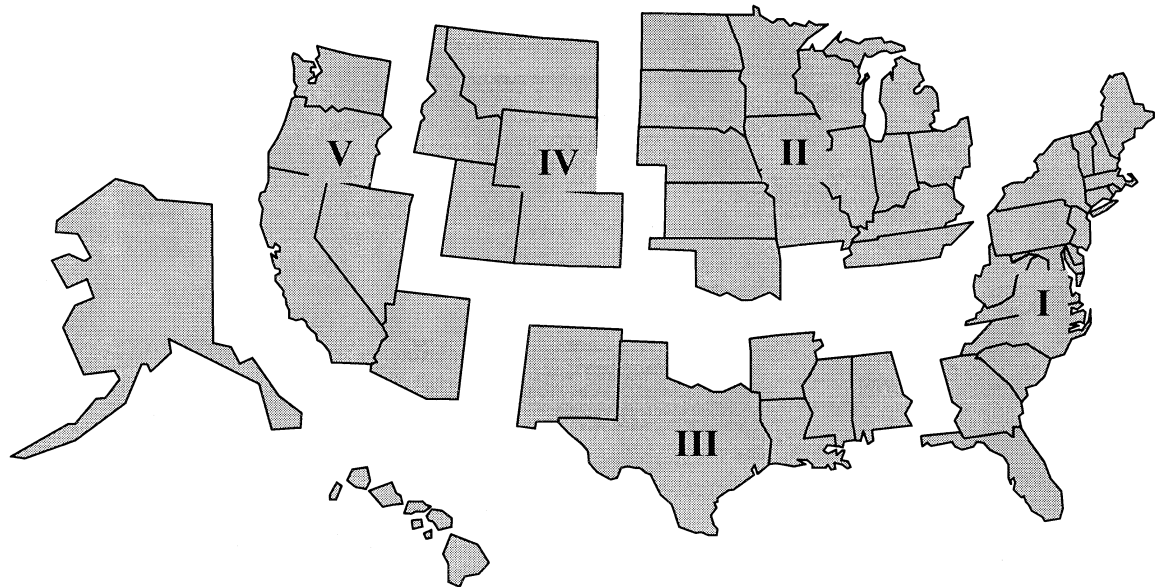


Figure IV-1. Petroleum Administrative Districts for Defense (PADDs)

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Also, a refinery may produce less than 80 percent of its highway diesel fuel at the 15 ppm sulfur level, as long as it obtains enough credits from another refinery within the PADD to offset the volume of 500 ppm sulfur fuel produced that exceeded the 20 percent of highway diesel fuel allowed to be produced at the 500 ppm sulfur level. As noted above, any credit trading will be limited to those refineries within the same PADD (within the limits noted below for California, Alaska, Hawaii, and any state with an EPA-approved waiver from the federal program). This restriction is necessary to limit the possibility that any area of the country is dominated by refineries complying via purchases of credits and, thus, producing a small volume of low sulfur diesel fuel, which could lead to concerns that the low sulfur diesel fuel would not be sufficiently available throughout the country.

Based on an extensive analysis which incorporates the hardship provisions and GPA refiner provisions discussed in Section IV.B. and C., we have chosen a level of 80 percent to have confidence that there will be widespread availability of 15 ppm fuel throughout the United States. Given the requirements of today's program, we believe that all pipelines are likely to carry the 15 ppm fuel. Pipelines that may be able to carry only one grade of highway diesel fuel are likely to carry 15 ppm as the majority diesel fuel in the

market.¹⁶² Those that are able to carry more than one grade of highway diesel fuel will facilitate the distribution of the remaining 500 ppm fuel. In addition, to ensure widespread availability of low sulfur diesel fuel throughout the nation, we have found it necessary to set the 15 ppm production threshold high enough so that there is a sufficient geographic scattering of refineries producing low sulfur diesel fuel around the country. At a lower threshold, there could be isolated regions of the country where 15 ppm fuel would not be available in sufficient quantities.

We have analyzed the refinery/pipeline distribution system in the United States in the context of the small refiner hardship and other provisions of the rule and believe a 80 percent temporary compliance option level for 15 ppm is necessary to achieve widespread availability and avoid shortages in specific areas. At levels below an 80 percent level, we would have concerns over whether 15 ppm sulfur diesel fuel would be the primary highway diesel fuel distributed through pipelines and whether the low sulfur diesel fuel would be available to all areas of the country in sufficient quantities. The reader is directed to Chapter IV of the RIA for today's action for our complete analysis supporting the development of the temporary compliance option.

¹⁶² Today, many pipelines carry only one grade of distillate (e.g., only 500 ppm sulfur high diesel fuel) rather than both 500 ppm sulfur highway fuel and off-highway fuel which has even higher levels of sulfur (e.g., on the order of 3,000 ppm).

While we have set the minimum requirement under the compliance option at 80 percent, we believe most refineries will focus on production of one grade or the other. We expect that certain refineries will find it more economically advantageous to install the necessary equipment to produce all of their highway diesel fuel at the 15 ppm sulfur level and generate credits. Conversely, other refineries may find it advantageous to continue producing all of their highway diesel fuel at the 500 ppm sulfur fuel through the period of the compliance option, by obtaining credits to demonstrate compliance. This will provide additional time for those refiners that have not converted to low sulfur fuel. This will allow refiners to spread out their capital investments and provide more time to arrange for engineering and construction resources. In addition, the refiners that are able to delay investment could attain lower costs for such equipment as technology improvements are realized during that time and as refiners see how well the range of desulfurization technologies works to achieve the 15 ppm sulfur standard.

Foreign refiners may choose to participate in the temporary compliance option. For purposes of determining compliance with the low sulfur diesel requirements, foreign refiners must demonstrate compliance based on the amount of highway diesel fuel they import into the United States. Therefore, a given foreign refiner must demonstrate that at least 80 percent of the highway diesel fuel it imported into each PADD

meets a 15 ppm sulfur level, or show that it has enough credits from other refiners in the PADD into which it imported the fuel to cover the volume of fuel below the 80 percent requirement. Foreign refineries may also generate credits if they exceed the 80 percent requirement in a given PADD, and may sell those credits within the same PADD. A foreign refiner may also choose to not participate in the temporary compliance option and, as described below, let the fuel importer be the party which demonstrates compliance.

Importers of highway diesel fuel (i.e., companies that import fuel but are not solely refiners) may also participate in the temporary compliance option. Importers must demonstrate that at least 80 percent of the highway diesel fuel imported into each PADD (within the limits noted below for California, Alaska, Hawaii, and any state with an EPA-approved waiver from the federal program) meets a 15 ppm sulfur level, or show that they have enough credits from other refiners in the PADD into which the fuel is imported to cover the volume of fuel below the 80 percent requirement. Importers may also generate credits if they exceed the 80 percent requirement in a given PADD. Importers that import highway diesel fuel from foreign refiners that are participating in the temporary compliance option must exclude the volume of fuel purchased from those refiners in their compliance calculations or credit generation calculations.

Because we expect most refineries to choose to produce fuel either all at the 15 ppm sulfur level or all at the 500 ppm sulfur level, credits will be generated by some refiners and desired by others. Thus, the ABT program will play an important part in achieving overall compliance. The details of the ABT program are described below.

a. Generating Credits

Beginning on June 1, 2006 and continuing through December 31, 2009, refineries and importers may generate credits based on the volume of low sulfur diesel fuel produced above the required percentage (i.e., 80 percent). One credit will be generated for every gallon of highway diesel fuel produced at 15 ppm sulfur that exceeds the 80 percent requirement. Credits will be calculated on a calendar-year basis. For example, if a refinery produces 10 million gallons of highway diesel fuel in 2007, it must produce 80 percent of its highway diesel volume (8 million gallons) as low sulfur during 2007. If the refinery actually produces 100 percent of its highway diesel fuel as low sulfur

during 2007, it can generate credits based on the volume of the "extra" 20 percent of low sulfur fuel it produced above the required minimal percentage—that is, two million gallons of credits. Because the requirements for low sulfur fuel begin in the middle of 2006, a refinery will generate credits in 2006 based on the volume of low sulfur fuel produced beginning June 1, 2006 that exceeds 80 percent of the highway diesel fuel produced at its facility between June 1, 2006 and December 31, 2006. Once credits are generated by a refinery, they may be used by the refinery for averaging purposes with other refineries owned by the same refiner, traded to another refinery, or banked for use in future calendar year averaging or trading. Credits may only be used in the PADD in which they are generated, with the further limitations on credit generation and use in PADD V noted below for California, Alaska, and Hawaii.

Refineries may no longer generate credits after December 31, 2009. Beginning January 1, 2010, every refinery must either comply with the low sulfur diesel fuel requirements by (1) producing 100 percent of its highway diesel fuel at the 15 ppm sulfur level or (2) by using credits through May 31, 2010 to demonstrate compliance with the 100 percent requirement, provided that banked credits are available to the refinery (described in more detail below). Starting June 1, 2010, all refineries must produce 100 percent of their highway diesel fuel as low sulfur fuel (without the use of credits).

Finally, early credits, or credits from low sulfur fuel produced at a refinery prior to June 1, 2006, may be generated, but only under limited circumstances. Unlike in the Tier 2 program, where significant emission benefits accrued with the early introduction of low sulfur gasoline, very little emission benefit (only a small reduction in sulfate PM emissions from the in-use fleet) will result from the early introduction of 15 ppm diesel fuel. Consequently, the main purpose in allowing early credits under the diesel program is to smooth program implementation beginning June 1, 2006, by allowing a pool of credits to be available upon program startup. By allowing the generation of early credits, both purchasers and sellers of credits can have confidence in the legitimacy of the credits traded, which, in turn, allows for the purchaser to have increased confidence in their ability to rely on the ABT program for compliance. Consequently, beginning June 1, 2005 we will allow refineries to generate credits for any volume of highway diesel fuel produced which

meets the 15 ppm cap. Any refiner that chooses to do so may bank these credits for later use during the compliance option years, or may trade them to other refineries within the same PADD for use during the compliance option years. The one restriction placed on the generation of these credits is that refiners will have to demonstrate that the 15 ppm fuel produced early is segregated in the distribution system and not commingled with current 500 ppm sulfur fuel. Only that volume that the refiner verifies was actually sold as 15 ppm fuel at retail or into centrally-fueled fleets will be eligible for early credits.

Providing refiners with an incentive to produce diesel fuel complying with the 15 ppm cap earlier than required will not only instill confidence in the ABT program under the temporary compliance option, but will also provide both refiners and the distribution system the opportunity to gain valuable experience prior to the start of the program with producing and distributing fuel meeting the 15 ppm cap. We believe that allowing early credit generation for one year prior to the start of the program will provide the opportunity for the generation of sufficient early credits to provide refiners with the program implementation flexibility they will need. If we allowed early credits to be generated in this manner for a longer time period, we are concerned that the significant amounts of early credits that could be generated could compromise availability of 15 ppm fuel at the startup of the program. Use of these credits after June 1, 2006 could affect the availability of low sulfur highway diesel fuel across the country when the 2007 model year heavy-duty engines are introduced in the market, because the amount of 500 ppm fuel could significantly exceed the 20 percent threshold allowed under our temporary compliance option.

The only situation in which we will allow for the generation of credits prior to June 1, 2005 is if a refiner demonstrates that the fuel will be used in vehicles certified to meet the 2007 particulate matter standard being adopted today for heavy-duty engines (0.01 g/bhp-hr) or in vehicles with retrofit technologies that achieve emission levels equivalent to the 2007 NO_x or PM standard verified as part of a retrofit program administered by EPA or a state. (Refer to section I.C.7 for more discussion on retrofit programs.) Under this situation, we will have confidence that emission benefits are in fact accruing early, along with the fuel sulfur credits. The early credit provision of this fuel program will complement the provisions that encourage the

introduction of cleaner vehicles earlier than the 2007 model year, as discussed in Section III.D.

b. Using Credits

If a refinery does not meet the 80 percent minimum requirement for low sulfur highway diesel fuel with actual production at that refinery, the refinery will be able to use credits to demonstrate compliance with the 80 percent requirement. The use of credits is limited to credits generated by refineries within the same PADD (within the limits noted below for California, Alaska, Hawaii, and any state with an EPA-approved waiver from the federal program). Under the temporary compliance option, for every gallon of 500 ppm sulfur fuel produced by a refinery that exceeds the maximum allowed limit of 20 percent, the refinery must obtain one credit from another refinery within the same PADD or use banked credits (that were generated within the same PADD).

Although credits will not officially exist until the end of the calendar year (based on the generating refinery's actual low sulfur fuel production for that calendar year), refineries may contract with each other for credit sales prior to the end of the year, based on anticipated production. The actual trading of credits will not take place until the end of the year. All credit transfer transactions will have to be concluded by the last day of February after the close of the annual compliance period and each refinery must submit documentation (as described in Section VII.E.) demonstrating compliance with the appropriate volume of low sulfur highway diesel fuel. For example, a refinery that wishes to purchase credits from another refinery to comply with the 2007 required percentage of low sulfur fuel can do so based on the generating refinery's projections of low sulfur fuel production. By the end of February 2008, both the credit-purchasing refinery and the credit-selling refinery must reconcile the validity of the credits, and demonstrate compliance with the 80 percent requirement. As noted earlier, at the beginning of the program, the initial compliance period will begin on June 1, 2006 and end on December 31, 2006. For this initial period, refineries must submit documentation, by February 28, 2007, demonstrating compliance with the appropriate levels of low sulfur highway diesel fuel for the period between June 1, 2006 and December 31, 2006.

Because there could be situations where a refinery planning to use credits to comply with the minimum

percentage of fuel required comes up short at the end of the year, we are adopting provisions that allow a limited amount of carryover, or "credit deficits." A refinery that does not meet the required percentage of low sulfur fuel production in a given year will be allowed to carry forward a credit deficit for one year, as long as the deficit does not exceed five percent of its annual highway diesel fuel production. However, the refinery will have to make up the credit deficit and come into compliance with the required low sulfur production percentage in the next calendar year, or the refinery will be in violation of the program requirements. This provision is intended to give some relief to refineries faced with an unexpected shutdown or that otherwise are unable to obtain sufficient credits to meet the required percentage of low sulfur fuel production.

With regard to credit trading, any person can act as a broker in facilitating credit transactions, whether or not such person is a refiner and/or importer, so long as the title to the credits are transferred directly from the refinery generating the credits to the refinery purchasing the credits. Whether credits are transferred directly from the generating refinery to the purchasing refinery, or through a broker, the refinery purchasing the credits should have sufficient information to fully assess the likelihood that credits are valid. Any credits that are traded to another refinery may, in turn, be traded to another refinery; however, the credits cannot be traded more than twice. We believe this provision is necessary because repeated transfers of credits would significantly reduce our ability to verify the validity of credits.

c. How Long Will Credits Last?

The goal of the ABT provisions is to provide additional flexibility to refiners in the early years of the low sulfur diesel fuel program. After the first few years of the program, there will be a significantly greater proportion of after-treatment-equipped vehicles in the fleet. It will be important to ensure a full transition to the new low sulfur fuel to prevent misfueling of those vehicles and preserve the environmental benefits of the program. Therefore, the ability of refineries to generate credits will end on December 31, 2009. Refineries will be allowed to use any available banked credits, including early credits, for fuel produced through May 31, 2010. Any remaining credits not used for the compliance period until May 31, 2010 will expire. Beginning June 1, 2010, all refineries must produce 100 percent of their highway diesel fuel at the 15 ppm

sulfur level without the use of credits, and the ABT program will end.

d. Additional Limitations on Credit Trading for Some States

At this time we are adopting a low sulfur highway diesel fuel program that will apply throughout the United States, with trading of credits limited to those refineries located within the same PADD. Although we are adopting a diesel fuel program that currently will apply nationwide, it is possible that the State of California, or some other state, may adopt in the future a different highway diesel fuel program than that adopted today.¹⁶³ To assure that adequate supplies of low sulfur diesel fuel will be available throughout all regions of the country, we are adopting provisions that do not allow refineries located in states with a state-approved 15 ppm highway diesel sulfur program to participate in the credit program. In other words, credit trading is limited only to those refineries complying with the federal program. For example, without such provisions, if California were to adopt its own state program requiring the production of 15 ppm diesel fuel, we are concerned that it might be possible for California refineries to generate enough credits such that areas outside of California in PADD V are dominated by the production of 500 ppm sulfur diesel fuel, with little or no 15 ppm fuel available. This would be problematic for the model year 2007 and later heavy-duty engines designed to be operated on low sulfur fuel. The reader is directed to Chapter IV of the RIA for today's action for our complete analysis supporting the development of the temporary compliance option.

As discussed in Section IV.F. of this preamble, the State of Alaska, which is a part of PADD V, will have the opportunity to develop, and submit to us for approval, an alternative transition plan for implementing the low sulfur highway diesel fuel program. Such a plan will allow Alaska to develop a transition program tailored to its isolated market. If, for some reason, Alaska does not submit an alternative plan, or we do not approve the plan submitted by Alaska, then the federal program described in today's action will apply. In the event we do not approve an alternative plan for Alaska, based on our analysis of the likely response of refineries in Alaska to the temporary compliance option and because its fuel distribution system is essentially isolated from the rest of PADD V, we are

¹⁶³ See Section IV.F. for a discussion of preemption of state diesel sulfur requirements.

concerned that all of the fuel offered for sale in Alaska could be 500 ppm sulfur fuel if refineries in Alaska were allowed to purchase credits from other PADD V refineries. For this reason, under today's program, refineries in Alaska will be allowed to generate credits as described earlier. However, they may only sell credits to, or purchase credits from, other refineries in or importers of fuel to Alaska. We believe this will provide assurance that low sulfur highway diesel fuel will be sufficiently available in Alaska and will also reduce the chance that credits from Alaska will result in significantly less low sulfur diesel fuel in PADD V areas outside of Alaska. Again, these default provisions of the national program will only be effective in the event that we do not approve an alternate transition plan for Alaska.

Hawaii is in a similar situation to Alaska with regard to fuel distribution. Hawaii, which is part of PADD V, is an isolated market and we have similar concerns with regard to whether low sulfur diesel fuel would be available in Hawaii if the two refineries currently operating were able to purchase credits from other PADD V refineries and produce all 500 ppm sulfur fuel. For this reason, under today's program, the refineries in Hawaii will be allowed to generate credits as described earlier. However, they may only sell credits to, or purchase credits from, other refineries in or importers of fuel to Hawaii. We believe this will ensure that low sulfur highway diesel fuel will be available in Hawaii.

3. What Information Must Refiners/Importers Submit to Us?

To ensure a smooth transition to the program and to evaluate compliance once the program has begun, we are requiring refiners and importers to submit a variety of information to us. Section VII.E of this document and the regulatory language for today's action provide detailed description of the information that must be submitted and the dates when such submittals are due.¹⁶⁴

First, refiners and importers that currently or in 2006 expect to produce or supply highway diesel fuel are required to register with us by December 31, 2001. This will inform us on the universe of refiners that we expect to participate in the highway diesel market once the program begins.

Second, to help facilitate the market for credit trading under the temporary

compliance option, any refiner or importer planning to produce or import highway diesel in 2006, is required to submit to us an annual pre-compliance report. Refiners and importers are required to submit these annual pre-compliance reports from 2003 through 2005. These reports must contain estimates of the volumes of 15 ppm sulfur fuel and 500 ppm sulfur fuel that will be produced at each refinery, and, for those refineries planning to participate in the trading program, a projection of how many credits will be generated or must be used by each refinery. These pre-compliance reports must also contain information outlining each refinery's timeline for compliance and provide information regarding engineering plans (e.g., design and construction), the status of obtaining any necessary permits, and capital commitments for making the necessary modifications to produce low sulfur highway diesel fuel. Based on the information submitted by refiners and importers, we plan to issue an annual report that summarizes, in a way that protects the confidentiality of individual refiners and importers, the information contained in the pre-compliance reports. Our annual report will provide information, summarized and aggregated on a PADD basis, describing the volumes of 15 ppm and 500 ppm highway diesel planned to be produced, and estimates of the number of credits that refineries expect to generate or use. We believe this information will be important to refiners as they make plans for complying with the temporary compliance option. For example, this information will be useful in giving refiners a better indication of the potential market for credits and availability of credits in their PADD. To prevent the release of confidential information, our annual report will not contain any information on individual refinery compliance plans.

Third, refiners and importers are required to submit annual compliance reports that demonstrate compliance with the requirements of this final rule. The first annual compliance report is due by the end of February 2007 (for the period of June 1, 2006 through December 31, 2006) and is required annually through February 2011. The reports must show, on a refinery basis, the volumes of 15 ppm and 500 ppm sulfur highway diesel fuel produced at each refinery during the compliance period, the number of credits used (or generated) at each refinery to demonstrate compliance with the 80 percent requirement for low sulfur diesel fuel, and the sources of the

credits used. The information submitted in the annual compliance reports must be segregated by PADD.

4. Impacts of the Highway Diesel Fuel Program

Based on analyses we have performed, as described in more detail below, we believe the temporary compliance provisions contained in today's final rule will assure adequate supplies of highway diesel fuel, will provide flexibility for refiners, and should result in lower costs for both refiners and consumers. In addition, we believe the temporary compliance provisions as adopted today will ensure sufficient availability of low sulfur highway diesel fuel to new vehicle owners who need it without the need for a retailer availability requirement, and should not lead to significant levels of misfueling and the associated loss of emission benefits. We have analyzed each of these issues in developing the final fuel program. A summary of our analyses and the conclusions we have drawn are discussed below. A detailed description of these analyses are contained in the RIA for today's action. In addition, a complete list of the comments related to a possible phase-in program and our response to those comments is included in the Response to Comments document for this final rule.

a. Ensures Adequate Supplies of Highway Diesel Fuel

We received several comments on the NPRM fuel program that suggested there would be a shortfall in the amount of highway diesel supply if all of the highway diesel fuel were required to meet a 15 ppm sulfur limit beginning in 2006. As described later in Section V.C., in response to these comments we analyzed the capability of the entire diesel fuel refining industry in the U.S. to adjust to the low sulfur fuel requirements. Based on this analysis, we believe that supplies of highway diesel fuel will be sufficient even if all highway diesel fuel were required to comply with the 15 ppm standard in 2006. The temporary compliance option included in today's rule is intended as a "safety valve" that, along with the hardship provisions discussed in Section IV.C., will further help to ensure adequate supplies of highway diesel fuel beginning in 2006.

In performing the analysis of diesel fuel supply, we examined all diesel fuel refiners (including those that currently make only off-highway diesel fuel but not highway diesel fuel) to assess the likelihood of their investing in the production of 15 ppm highway diesel

¹⁶⁴ As described in Sections IV.B., IV.C. and VII.E., small refiners and GPA refiners have special supplementary reporting requirements relating to the optional program they are participating in.

fuel. Using a refinery cost model, we made projections of the likely response by refineries to today's low sulfur requirements by estimating the cost for each refinery to produce low sulfur diesel fuel. The results of our analysis show that the overall supply of highway diesel fuel will continue to be adequate to meet market demands as refiners are required to start producing low sulfur highway diesel fuel. Most refineries that currently produce highway diesel fuel will produce about the same volume of low sulfur diesel fuel once the program takes effect. However, several refineries could economically expand their current highway diesel fuel production by shifting some of their off-highway production today, and a few others currently producing only off-highway diesel fuel could economically shift to some highway diesel production. Consequently, our analysis indicates that there is ample capability in the refining industry to continue to economically supply sufficient quantities of highway diesel fuel when today's program goes into effect. For a fuller discussion of this analysis, see Section V of this preamble and Chapter IV of the RIA.

If any potential for highway diesel fuel shortfalls exists by requiring all fuel to meet 15 ppm sulfur in 2006, as CRA's analysis suggests, we believe that allowing some continued supply of 500 ppm, as we are doing under the temporary compliance option and hardship provisions contained in today's action, addresses this concern. Since the final rule allows some transition period before the entire highway diesel pool is required to meet the 15 ppm sulfur standard, some refiners will not need to change their current operations and will be able to continue producing 500 ppm fuel during these years. Those refiners that delay production of low sulfur diesel fuel until the later years of the program will tend to be the refiners with the highest cost to comply and, thus, refiners that would otherwise have the greatest tendency not to invest and thereby impact supply. Refiners that begin producing low sulfur diesel fuel in the later years of the program will also be able to take advantage of ongoing improvements in desulfurization technology. Together, these factors will help avoid or reduce any potential losses in highway diesel fuel production when the program requires full compliance with low sulfur diesel fuel.

b. Ensures Widespread Availability of Low Sulfur Diesel Fuel

A major concern we noted in the NPRM regarding a fuel phase-in

program was ensuring the widespread availability of low sulfur diesel fuel. Without an assurance of widespread availability, there would be concerns whether the 2007 and later model year heavy-duty vehicles that were designed to operate on low sulfur fuel would be able to purchase it in all parts of the country. If such vehicles were fueled with 500 ppm diesel fuel, the emission control systems could be irreversibly damaged and any benefit of the new emission standards could be eliminated (see Section III.F. above). Therefore, in setting the requirements for the temporary compliance option, we have analyzed the likelihood that fuel will be widely available so that 2007 and later model year heavy-duty vehicles will be able to find low sulfur fuel in all local markets across the country. To achieve this goal, we believe there need to be assurances that refineries producing 15 ppm fuel are sufficiently scattered throughout each of the PADDs and that most pipelines will carry 15 ppm fuel (either as the only highway diesel fuel or in addition to 500 ppm highway fuel).

In determining what fraction of highway diesel fuel would need to be low sulfur under the temporary compliance option provision, taking into account the potential impact of the hardship provisions, we used a refinery cost model to estimate the costs of producing 15 ppm fuel for all refineries. We then assumed that the refineries with the lowest costs would convert to 15 ppm fuel and assumed the other refineries would purchase credits and continue producing 500 ppm fuel through the compliance option period. We then overlaid the information on which refineries were estimated to be producing 15 ppm fuel with the highway diesel fuel distribution system in the United States. We examined different levels for the temporary compliance option beginning as low as 20 percent and ranging as high as 90 percent. The results of the analysis show that at temporary compliance option levels for 15 ppm below 80 percent, there are local regions of the country where we believe there would likely be shortages of low sulfur diesel fuel. The areas where we believe there would be shortages are either (1) served by pipelines that we believe would not carry 15 ppm fuel, because the refineries serving those pipelines are projected to produce primarily 500 ppm; or (2) dominated by refineries we believe would continue producing 500 ppm fuel under the temporary compliance option and are not currently capable of receiving significant supplies of a

second grade of diesel fuel through other reasonable means. At the 80 percent level, we believe that all pipelines will carry low sulfur diesel fuel, since there are a sufficient number of refineries scattered across the country producing low sulfur diesel fuel and at sufficient volumes for pipelines to choose to carry it. We also believe that the program ensures that low sulfur diesel fuel will be sufficiently available to retail outlets at a reasonable cost either at a local terminal or by trucking the fuel a limited distance.

As noted earlier, we are not adopting any retailer availability requirements with today's fuel program. Given the amount of low sulfur diesel fuel required under today's temporary compliance option, we believe the distribution system will make low sulfur diesel fuel widely available without any requirements on retail outlets to supply low sulfur diesel fuel.

c. Provides Lower Costs to Refineries

One benefit of the temporary compliance option being adopted today is that a significant number of refiners will have the ability to delay the date when they convert their highway diesel fuel production to 15 ppm, allowing the refining industry to stretch out its engineering and construction resources. Given the flexibilities being adopted today, we believe that many large refineries, and other refineries for which diesel desulfurization is least expensive, will make the commitment to convert their entire highway diesel pool to 15 ppm sulfur in 2006 and sell credits to other refineries that will continue to produce all of their fuel at the 500 ppm sulfur level. Using a refinery cost model to estimate how refineries will respond to the temporary compliance option requirements, we believe that more than half of the refineries will delay capital investment by buying credits and continue producing 500 ppm sulfur diesel fuel under the temporary compliance option and small refiner hardship provisions. We estimate that refiners will be able to save as much as \$1.7 billion over the transition period compared to a requirement that all highway diesel fuel comply with 15 ppm sulfur in 2006. As noted earlier, much of this potential savings will be offset by increased costs in the distribution system. Nevertheless, we project that in total, an overall savings of approximately \$0.65 billion could result.

d. Misfueling Concerns Should Be Minimized

By allowing a 500 ppm and 15 ppm sulfur highway diesel fuels to be in the

market at the same time, there is the possibility that model year 2007 and later heavy-duty vehicles will be misfueled with 500 ppm sulfur fuel, either accidentally or intentionally. As discussed above, if such vehicles are fueled with 500 ppm diesel fuel, the emission control systems could be irreversibly damaged and any benefit of the new emission standards could be eliminated. To minimize the possibility of misfueling, we are adopting labeling requirements that apply to both retail stations and vehicle manufacturers. Under these provisions, labels will be applied at the diesel fuel pumps at retail stations and at the fuel tank inlet on the vehicle. The labels must indicate that only 15 ppm sulfur highway diesel fuel may be used in 2007 and later model year heavy-duty vehicles. The labeling requirements for fuel pumps and vehicles are described in detail in Sections VII.C. and VI.G., respectively.

Given the program being adopted today, we believe that intentional misfueling will not be a serious problem. The main incentive vehicle owners may have for using 500 ppm sulfur fuel would likely be cost savings. In general, producing 500 ppm sulfur should be cheaper than producing 15 ppm fuel. However, given the requirements adopted today, we believe there should not be a large cost differential between the 15 ppm sulfur fuel and the 500 ppm sulfur fuel at retail outlets. Under the credit trading program, to produce 500 ppm fuel, most refiners will have to purchase credits from other refiners producing 15 ppm fuel, increasing the cost of the 500 ppm fuel, while decreasing the cost of the 15 ppm fuel. At the refinery gate, the cost of both fuels should be approximately the same. In addition, given the amount of 15 ppm fuel required under the temporary compliance option, 15 ppm fuel will be distributed through

essentially the entire pipeline system. The distribution of 500 ppm fuel, on the other hand, will be more limited, due to its much lower volume. We expect that the 500 ppm fuel will be distributed by truck in the areas nearby refineries producing this fuel and through a few major pipelines to a limited number of major fuel consuming areas. Overall, the better economies of scale of transporting 15 ppm fuel should compensate for any additional handling cost due to the need to more carefully avoid contamination with higher sulfur fuels. For these reasons, we expect the price to consumers of 500 ppm sulfur fuel to be generally close to that of 15 ppm sulfur fuel and, therefore, there should not be a significant economic incentive to misfuel with 500 ppm sulfur fuel. Finally, because vehicle owners will likely void the manufacturer's warranty if they misfuel with 500 ppm sulfur fuel, they will have an additional incentive not to misfuel. Owners of heavy-duty vehicles make significant investments in these vehicles and will not want to take the chance of voiding their warranty for a relatively small savings in fuel cost.

In addition to our concern about intentional misfueling, we also have some concerns about accidental misfueling during the optional compliance program years. This concern is lessened to some extent because of the limited amount of 500 ppm sulfur fuel that will be available, the short duration of the optional compliance program, the knowledgeable owners and operators of trucks and most importantly, the labels that will be required on both the vehicle and the fuel pumps. Thus, we do not expect either type of misfueling to be a significant problem.

e. Summary

In summary, today's program has been structured to ensure a smooth

transition to low sulfur highway diesel fuel. We believe this will allow the refining industry the ability to spread out capital investments and provide more time for the market to transition to the low sulfur diesel fuel. This, in turn, will help to mitigate any potential for concerns about highway diesel fuel supply shortfalls. We also believe the provisions included in the program will continue to provide assurance that adequate supplies of low sulfur highway diesel fuel will be available throughout the nation for the 2007 and later model year heavy-duty vehicles that will require the fuel to comply with the emission standards. Moreover, because the flexibilities included in the program should reduce the economic impact on refiners, we will also expect there to be a reduction in the costs to highway diesel fuel users.

B. What Provisions Apply in the Geographic Phase-in Area?

1. What Is the Geographic Phase-in Area and How Was it Established?

In the low sulfur gasoline rule, we established the GPA provision which provides temporarily less stringent standards for gasoline sold in certain parts of the West and Alaska (40 CFR 80.215). A map of the area is shown in Figure IV-2, below.¹⁶⁵ As described in the preamble to the low sulfur gasoline final rule, we used two criteria to develop and evaluate the GPA approach: (1) Relative environmental need and (2) the ability of U.S. refiners and the distribution system to provide compliant gasoline.

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¹⁶⁵ Alaska, Colorado, Idaho, Montana, New Mexico, North Dakota, Utah, and Wyoming. Note that minor changes to this area are currently under consideration. Any such changes subsequent to today's rule are intended to be carried over into today's rule as well.

the GPA gasoline program while still achieving significant environmental benefits. We expect this provision will have little long-term impact on the environmental benefits of the Tier 2/ Gasoline Sulfur program, while providing for considerable near-term implementation flexibility and improved feasibility of the highway diesel fuel program.

Refiners that produce both gasoline and highway diesel fuel and are subject to the GPA gasoline sulfur program may choose to stagger their desulfurization investments for the two fuels. Refiners that comply with the low sulfur diesel fuel standard by June 1, 2006 for all of their highway diesel fuel production may receive a two-year extension of their interim GPA gasoline standards for 2006, that is through December 31, 2008. In addition to allowing refiners the opportunity to spread out their desulfurization investments, we believe this provision will encourage the production of 15 ppm diesel fuel by some refiners producing fuel for the GPA, which will further help to ensure the new fuel is widely available for new vehicles throughout the area. Although the GPA gasoline program applies to both refiners and importers, the extension of the GPA gasoline program under today's program applies only to refiners. This reflects the fact that only refiners have to make capital investments to comply with the diesel sulfur standard.

To receive the two-year extension of the GPA standards, a U.S. refinery must by June 1, 2006 produce 100 percent of its highway diesel fuel at 15 ppm sulfur (including refineries that supply only a fraction of their gasoline production to the GPA). In addition, the refinery must maintain a production volume of 15 ppm highway diesel fuel that is at least 85 percent of the baseline highway diesel volume that was produced at that refinery on average during calendar years 1998 and 1999. We believe that it is very important that the extension of a GPA refinery's interim gasoline sulfur standard be linked to a substantial environmental benefit from the production of 15 ppm diesel fuel in 2006. We have established a minimum volume requirement to prevent the extension of the GPA gasoline program from applying in situations where a refinery changes its refinery product slate to produce very little highway diesel fuel—even though this production is at 15 ppm sulfur. We believe the 85 percent level is sufficient to reflect a substantial investment in desulfurization technology. At the same time the 85 percent level should allow for any reasonable variation in

production of highway diesel fuel that would be expected to occur in typical situations between now and 2006, particularly given the continued growth of the highway diesel market.

Similarly, a foreign refinery that meets the same conditions as a domestic GPA refiner may also sell gasoline into the GPA that meets a less stringent sulfur standard during 2007 and 2008.¹⁶⁷ That is, a foreign refinery that by June 1, 2006 sells 100 percent of the highway diesel fuel it imports into the U.S. as 15 ppm fuel (and that maintains the 85 percent of baseline volume requirement) may sell somewhat higher-sulfur gasoline into the GPA in 2007 and 2008. The actual gasoline sulfur standard during this period, as with domestic refiners, would be based on the foreign refinery's gasoline sulfur baseline.

If a situation arises where a GPA refinery did not produce highway diesel fuel in 1998 or 1999 but later begins to produce 15 ppm diesel fuel, use of the GPA gasoline phase-in extension will require case-by-case EPA approval. In its application for such approval, a refinery must show us that the loss of emission reductions will not be significant and must propose an appropriate minimum production volume. In evaluating such a proposed minimum volume, we may consider, among other factors, the typical ratio between highway diesel and gasoline production for other refineries in the industry. Again, the reason for the two-year extension of the gasoline interim program is to allow the GPA refinery to spread out its capital investments while increasing the quantity of 15 ppm fuel being produced. We expect that GPA refineries using this option will make a substantive capital investment in diesel desulfurization and have thus set this minimum 15 ppm diesel production volume limit.

Since refiners participating in this program are required to produce 100 percent of their highway diesel at 15 ppm, those that choose this option cannot participate in the highway diesel temporary compliance option, and, therefore, are not permitted to generate credits on the low sulfur diesel fuel that they produce. If, after June 1, 2006, a foreign refinery is not producing 100 percent of its highway diesel fuel imported into the U.S. at 15 ppm sulfur in the required volume, it forfeits the two-year extension or any remaining

portion of the extension of its interim gasoline program.

3. *How Do Refiners Apply for an Extension of the GPA Gasoline Program?*

Any refinery that seeks an extension of its GPA gasoline standards must apply to us as a part of its registration, due by December 31, 2001. In this application, the refinery must indicate its intention to produce 100 percent of its highway diesel fuel at 15 ppm (and at a volume at least 85 percent of the highway diesel fuel volume it produced on average during calendar years 1998 and 1999) by June 1, 2006.

4. *Required Reporting for GPA Refiners*

As described in Section VII.E below, refiners that plan to use the extension of the GPA gasoline standard must report their plans and progress several times over the course of the program. In addition to their initial registration and application discussed above, a refinery must submit pre-compliance reports in 2003, 2004, and 2005, describing its progress toward the capacity to produce 100 percent of its highway diesel fuel at 15 ppm sulfur (at a volume at least 85 percent of its baseline volume). Then, by July 1, 2006, such a refinery must confirm to us that by June 1, 2006 it was producing 100 percent of its highway diesel fuel at 15 ppm, at the appropriate volume.¹⁶⁸ After the diesel sulfur program is underway in 2006, the refinery must provide us with annual compliance reports by the end of February of 2007, 2008, and 2009 (i.e., until after the end of the extended interim gasoline sulfur program for GPA refiners on December 31, 2008).

C. *Hardship Provisions for Qualifying Refiners*

This section describes various provisions for certain qualifying refiners, both domestic and foreign, that may face hardship circumstances.

1. *Hardship Provisions for Qualifying Small Refiners*

In developing our diesel sulfur program, we evaluated the need and the ability of refiners to meet the 15 ppm standard as expeditiously as possible. This analysis is described in detail in Chapter IV of the RIA. As a part of this analysis, we found that while the majority of refiners would be able to meet the needed air quality goals in the

¹⁶⁷ Prior to 2007, foreign refiners can participate in the GPA program through importers. Under today's provisions for 2007 and 2008, importers are not eligible and foreign refiners can participate directly as refiners.

¹⁶⁸ If the refiner was not producing 15 ppm fuel for all its highway diesel production at that refinery by June 1, 2006, the July 1, 2006 letter must confirm that the refiner is forfeiting the "automatic" two-year extension of that refinery's interim gasoline program.

2006 time frame, there would be some refiners that would face particularly challenging circumstances which would cause them to have more difficulty, in comparison to the industry as a whole, in meeting the standards.

We believe it is feasible and necessary for the vast majority of the program to be implemented reasonably quickly to achieve the air quality benefits as soon as possible. To do otherwise would be to base the time frame of the entire program on the lowest common denominator. Thus, we have provided special flexibility provisions for a subset of refiners that qualify as "small refiners," which represent about five percent of the overall highway diesel volume. As described in more detail below, and in the Regulatory Impact Analysis (Chapter VIII of the RIA), we concluded that refineries owned by small businesses face unique hardship circumstances, compared to larger companies.

a. Qualifying Small Refiners

The primary reason for special small refiner provisions is that small businesses generally lack the resources available to large companies which enable the large companies (including those large companies that own small volume refineries) to raise capital for investing in desulfurization equipment. The small businesses are also likely to have more difficulty in securing loans, competing for engineering resources, and completing construction of the needed desulfurization equipment in time to meet the standards adopted today which begin in 2006. In addition, the implementation of the low sulfur diesel program will occur in the same general time frame as the implementation of the low sulfur gasoline program, since most of those small refiners that are covered by the interim standards under the Tier 2/ Gasoline Sulfur program (40 CFR Part 80, Subpart H) are also covered by today's diesel fuel sulfur program.

The emissions benefits of the low sulfur diesel program are needed as soon as possible—to allow the implementation of new emission reduction requirements on heavy-duty engines and vehicles and, thus, to reduce ozone, particulate matter, and other harmful air pollutants. Since our analysis showed that small businesses in particular face hardship circumstances, we are adopting temporary provisions that will provide refineries owned by small businesses additional time to meet the ultimate 15 ppm sulfur cap or balance investments of this program with those related to the Tier 2/Gasoline Sulfur program. This

approach allows us to achieve the earliest implementation date for advanced technology diesel vehicles (i.e., the 2007 model year) and the needed emission reductions they will bring.

We believe that the temporary flexibilities described below are an effective way to begin the broad implementation of the standards as expeditiously as is feasible and thereby achieve significant air quality benefits in an expeditious manner. This section describes the special provisions we are offering small businesses to mitigate the impacts of our program on them and generally explains the analysis we undertook of those impacts. Please refer to the Response to Comments document for a detailed discussion of comments we received on these provisions, and to the RIA for a more detailed discussion of our analysis of small refiner circumstances.

As explained in the discussion of our compliance with the Regulatory Flexibility Act in Section X.B. and in the Regulatory Flexibility Analysis in Chapter VIII of the RIA, we considered the impacts of our proposed regulations on small businesses. We have historically, as a matter of practice, considered the potential impacts of our regulations on small businesses. We believe that the temporary flexibilities we are adopting for small refiners contributed to our development of a framework to achieve significant environmental benefits from lower sulfur diesel in the most expeditious manner that is reasonably practicable.

A large part of the analysis of small business impacts conducted for this rulemaking was performed in conjunction with a Small Business Advocacy Review (SBAR) Panel we convened, pursuant to the Regulatory Flexibility Act as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA). In the SBREFA amendments, Congress stated that "uniform Federal regulatory requirements have in numerous instances imposed unnecessary and disproportionately burdensome demands including legal, accounting, and consulting costs upon small businesses . . . with limited resources[.]" and directed agencies to consider the impacts of certain actions on small entities. The final report of the Panel is available in the docket. Through the SBREFA process, the Panel provided information and recommendations regarding:

- The significant economic impact of the proposed rule on small entities;
- Any significant alternatives to the proposed rule which would ensure that

the objectives of the proposal were accomplished while minimizing the economic impact of the proposed rule on small entities;

- The projected reporting, recordkeeping, and other compliance requirements of the proposed rule; and,
- Other relevant federal rules that may duplicate, overlap, or conflict with the proposed rule.

In addition to our participation in the SBREFA process, we conducted our own outreach, fact-finding, and analysis of the potential impacts of our regulations on small businesses. Some of the small refiners with whom we and the Panel met indicated their belief that their businesses may close due to the substantial costs, capital and other impacts of meeting the 15 ppm diesel fuel standard without either additional time or flexibility with respect to gasoline sulfur compliance. Based on these discussions and analyses, the Panel and we agree that small refiners would likely experience a significant and disproportionate financial hardship in reaching the objectives of our diesel fuel sulfur program. However, the Panel also noted that the burden imposed upon the small refiners by our sulfur requirements varied from refiner to refiner and could not be alleviated with a single provision. We agree with the Panel and are offering qualifying small refiners three options to choose from in moving toward compliance with the low sulfur diesel fuel requirements.

For today's action, we have structured a selection of temporary flexibilities for qualifying small refiners, both domestic and foreign, based on the factors described below. Generally, we structured these provisions to address small refiner hardship while expeditiously achieving air quality benefits and ensuring that the low sulfur diesel fuel coincides with the introduction of 2007 model year diesel vehicles.

First, the compliance deadlines in the program, combined with flexibility for small refiners, will quickly achieve the air quality benefits of the program, while helping to ensure that small refiners will have adequate time to raise capital for new or revamped equipment. Most small refiners have limited additional sources of income beyond refinery earnings for financing the equipment necessary to produce low sulfur diesel. Because these small refiners typically do not have the financial backing that larger and generally more integrated companies have, they can benefit from additional time to secure capital financing from their lenders.

Second, we believe that allowing time for refinery sulfur-reduction technologies to be proven out by larger refiners before small refiners have to put them in place will reduce the risks incurred by small refiners that utilize these technologies to meet the standards. The added time will likely allow for lower costs of these improvements in desulfurization technology (e.g., better catalyst technology or lower-pressure hydrotreater technology). Because of the poorer economies of scale and the higher relative capital and operating costs faced by small refiners, more time for technology development and commercialization will limit the economic consequences for small refiners. Small refiners are disadvantaged by the economies of scale that exist for the larger refining companies—capital costs and per-barrel fixed operating costs are generally higher for small refiners.

Third, providing small refiners more time to comply will increase the availability of engineering and construction resources. Since most large and small refiners must install additional processing equipment to meet the sulfur requirements, there will be a tremendous amount of competition for technology services, engineering manpower, and construction management and labor. Our analysis shows that there are limits to the price elasticity of these resources. In addition, vendors will be more likely to contract their services with the major companies first, as their projects will offer larger profits for the vendors.

Finally, because the gasoline and diesel sulfur requirements will occur in approximately the same time frame, small refiners that produce both fuels will have a greater difficulty than most other refiners in securing the necessary financing. Hence, any effort that increases small refiners' ability to stagger investments for low sulfur gasoline and diesel will facilitate compliance with the two programs.

Providing these options to assist small refiners experiencing hardship circumstances enables us to go forward with the 15 ppm sulfur standard beginning in 2006. Without this flexibility, the benefits of the 15 ppm standard would possibly not be achieved as quickly. By providing temporary relief to those refiners that need additional time, we are able to adopt a program that expeditiously reduces diesel sulfur levels in feasible manner for the industry as a whole. In addition, we believe the volume of diesel that will be affected by this hardship provision is marginal. We

estimate that small refiners contribute approximately five percent of all domestic diesel fuel production.

b. How Do We Define Small Refiners?

The following definition of small refiner is based closely on our small refiner definition in the Tier 2/Gasoline Sulfur rule. We define a refiner that meets both of the following criteria as a "small refiner" for purposes of this rule:

- No more than 1,500 employees corporate-wide, based on the average number of employees for all pay periods from January 1, 1999 to January 1, 2000.
- A corporate crude oil capacity less than or equal to 155,000 barrels per calendar day (bpcd) for 1999.

In determining the total number of employees and crude oil capacity, a refiner must include the number of employees and crude oil capacity of any subsidiary companies, any parent company and subsidiaries of the parent company, and any joint venture partners. We define a subsidiary of a company to mean any subsidiary in which the company has a 50 percent or greater ownership interest. This definition of small refiner is the same definition used under the recently promulgated Tier 2/Gasoline Sulfur program (40 CFR 80.225), except that we have included additional regulatory language to clarify our interpretation of the term "subsidiary" and we have updated the time period used to determine the employee number and crude oil capacity criteria to reflect data for the most recent calendar years. This approach is consistent with the Small Business Administration's regulations, which specify that, where the number of employees is used as a size standard, the size determination is to be based on the average number of employees for all pay periods during the preceding 12 months (13 CFR 121.106).

The gasoline sulfur standards and the diesel sulfur standards will impact small refiners in approximately the same time frame. For this reason, we will consider any refiner that we approve as meeting the small refiner definition under the gasoline sulfur program (40 CFR 80.235) to be a small refiner under the highway diesel sulfur rule as well without further demonstration.

In addition, a company that after January 1, 2000 either acquires or reactivates a refinery that was shutdown or non-operational between January 1, 1999 and January 1, 2000 may also apply for small refiner status. Such an application needs to be submitted to us no later than June 1, 2003. In this case, we will judge eligibility under the employment and crude oil capacity

criteria based on the most recent 12 consecutive months unless data provided by the refiner indicates that another period of time is more appropriate. Companies with refineries built after January 1, 2000 are not eligible for the small refiner hardship provisions.

If a refiner with approved small refiner status later exceeds the 1,500 employee threshold or the corporate crude oil capacity of 155,000 bpcd without merger or acquisition, it may keep its small refiner status. This is to avoid stifling normal company growth and is subject to our finding that the company did not apply for and receive the small refiner status in bad faith. On the other hand, if a refiner with approved small refiner status later exceeds the small refiner criteria through merger or acquisition, its refineries must forfeit their small refiner status and begin complying with the national standards by January 1 of the next calendar year. For example, if a small refiner with two refineries purchases a third refinery in 2007 and that purchase causes the refiner to exceed the employee or corporate crude oil capacity thresholds for small refiner status, then that refiner must forgo its small refiner status and begin complying with the national standards by January 1, 2008 at all its refineries.

c. What Options Are Available for Small Refiners?

All refiners producing highway diesel fuel are able to take advantage of the temporary compliance option discussed in Section IV.A. Diesel producers that also market gasoline in the GPA may receive additional flexibility under today's rule (Section IV.B.). As an alternative, refiners that seek and are granted small refiner status may choose from the following three options under the diesel sulfur program. These three options have evolved from concepts on which we requested and received comment in the proposal. In most cases, we believe that small refiners will find these options preferable to either the broader diesel fuel temporary compliance option or the GPA provision discussed above.

500 ppm Option. A small refiner may continue to produce and sell diesel fuel meeting the current 500 ppm sulfur standard for four additional years, until May 31, 2010, provided that it reasonably ensures the existence of sufficient volumes of 15 ppm fuel in the marketing area(s) that it serves.

Small Refiner Credit Option. A small refiner that chooses to produce 15 ppm fuel prior to June 1, 2010 may generate and sell credits under the broader

temporary compliance option. Since a small refiner has no requirement to produce 15 ppm fuel under this option, any fuel it produces at or below 15 ppm sulfur will qualify for generating credits.

Diesel/Gasoline Compliance Date Option. For small refiners that are also subject to the Tier 2/Gasoline sulfur program (40 CFR Part 80, Subpart H), the refiner may choose to extend by three years the duration of its applicable interim gasoline standards, provided that it also produces all its highway diesel fuel at 15 ppm sulfur beginning June 1, 2006.

All refiners producing diesel fuel are required to provide us with basic data on their progress toward compliance in 2003–2005 under the pre-compliance reporting requirements described above in Section IV.A. As a part of their pre-compliance reports, small refiners must provide a limited amount of additional information specific to the option they choose. We discuss each option, and the special pre-compliance reporting requirements for each option, in the next paragraphs and in Section VII.E below.

i. 500 ppm Option

The 500 ppm option is available for any refiner that qualifies as a small refiner. Under this option, small refiners may continue selling highway diesel fuel with sulfur levels meeting the current 500 ppm standard for four additional years, provided that they supply information showing that sufficient alternate sources of 15 ppm diesel fuel in their market area will exist for fueling new heavy-duty highway vehicles. Under this option, small refiners may supply current 500 ppm highway diesel fuel to any markets for use only in vehicles with older (pre-2007) technology until May 31, 2010. In other words, small refiners that choose this option may delay production of highway diesel fuel meeting the 15 ppm standard for four years.

This 500 ppm option for small refiners is similar to the option provided to all refiners under the temporary compliance option described in Section IV.A above in that it allows a refiner to continue producing and selling the current 500 ppm fuel for a period of time. However, this option differs from the broader compliance option in that small refiners may produce and sell 100 percent of their highway fuel at 500 ppm without needing to buy credits. In contrast, under the broader temporary compliance option, refiners must buy credits to produce any volume of 500 ppm fuel over 20 percent of their total highway diesel production.

At the retail level, retailers will not be subject to any availability requirements and thus may sell 500 ppm fuel, 15 ppm highway fuel, or both (as is the case under the broader diesel temporary compliance option described in Section IV.A). All parties in the diesel fuel distribution system will have to maintain the segregation of 15 ppm fuel and 500 ppm fuel and only 15 ppm fuel may be sold for use in model year 2007 and later heavy-duty diesel vehicles.

As a part of their pre-compliance reporting due June 1, 2003 (see Section IV.A. above), any small refiners taking advantage of this 500 ppm option must show that sufficient sources of 15 ppm fuel will likely exist in the area served by the small refiner in the absence of production of 15 ppm fuel by that refiner.¹⁶⁹ A small refiner could approach this showing in different ways. For example, depending on the circumstances, the refiner might point to the presence of other refiners in the area that are expected to produce 15 ppm fuel, or to the refiner's proximity to a major pipeline that will be carrying 15 ppm fuel. Similarly, the refiner might show that its market share in the area's highway diesel market will be too small to significantly affect the volume of 15 ppm fuel regardless of the small refiner's actions.

Another approach could be to indicate practical steps that the refiner itself is prepared to take to help ensure that 15 ppm diesel fuel will be available. One commenter suggested a plan to add a separate tank and expand its fuel loading rack for handling 15 ppm diesel fuel that would be supplied by a different refiner—thus making low sulfur fuel available, at least at the wholesale level, at its refinery gate even though it produced no 15 ppm fuel.

Because of the wide distribution of 15 ppm fuel that we believe will occur under the industry-wide optional compliance program discussed in Section IV.A. above, we expect that few if any small refiners wishing to use the 500 ppm option will find it difficult to make the showing that 15 ppm fuel will exist in the area. If we do not take action on this showing within four months of receiving a refiner's 2003 pre-compliance report (i.e., by October 1, 2003 at the latest), the refiner's showing will be considered approved.

¹⁶⁹ If circumstances arise that cause the availability of 15 ppm fuel in the refiner's market area to decline, the refiner must provide a supplemental showing in its pre-compliance reports due in June 1, 2004 and/or June 1, 2005. As with the 2003 report, we will either approve or disapprove these additional showings within four months or, if we take no action, the showing will be deemed approved.

Finally, we are providing this option so that small refiners may use the temporary flexibility provided by the 500 ppm option as a pathway toward compliance with the 15 ppm standard and not as an opportunity for those refiners to greatly expand their production of fuel meeting the 500 ppm sulfur standard. To help ensure that any significant expansion of refining capacity that a small refiner undertakes in the future will be accompanied by an expansion of desulfurization capacity, we are limiting the volume of 500 ppm sulfur fuel that a small refiner may produce under this option to a baseline level. Specifically, small refiners selecting this 500 ppm option must limit the volume they produce of highway diesel fuel meeting the 500 ppm sulfur standard to the lesser of the following values: (1) 105 percent of the average highway diesel volume it produced from crude oil in calendar years 1998 and 1999 or (2) the average highway diesel volume it produced from crude oil in calendar years 2004 and 2005. Any volume of 500 ppm highway diesel fuel (averaged over the previous 12 consecutive months) that exceeds this limitation after 2006 must comply with the diesel sulfur standards that apply to other refiners under the broader program (i.e., the standards described in Section IV.A. above, including the 80% requirement of the temporary compliance option).

ii. Small Refiner Credit Option

We believe that the relative difficulty for small refiners to comply with today's program warrants compliance flexibility for these refiners. At the same time, we want to encourage all refiners to produce low sulfur diesel fuel as early and in as many geographic areas as possible. As an incentive for small refiners to invest in desulfurization capacity, those that choose to produce 15 ppm fuel earlier than required under the 500 ppm option may generate credits for each gallon of diesel fuel produced that meets the 15 ppm standard. This includes the ability to generate credits prior to the start of the program on June 1, 2006 under the provisions described in Section IV.A.1.a. They could then sell these credits to other refiners for use in the broader optional diesel fuel compliance program described above in Section IV.A, helping to offset some low sulfur diesel fuel production costs.

Under this option, credits may be generated based on the volume of any diesel fuel that meets the 15 ppm standard. Refiners may then sell their remaining highway diesel fuel under the 500 ppm option above.

Pre-compliance reporting for small refiners choosing this Small Refiner Credit option is identical to that for the 500 ppm option (that is, if the small refiner is also producing 500 ppm highway diesel fuel), with the additional requirement that the refiner also report on any credits it expects to generate and sell. If the quantity of 15 ppm fuel that the refiner is preparing to produce is significant, this factor may be useful in making the necessary showing that 15 ppm fuel will be available in the refiner's market area.

iii. Diesel/Gasoline Compliance Date Option

The Tier 2/Gasoline Sulfur program included a special provision that applies for refiners that qualify as small refiners (40 CFR Part 80, Subpart H). Under that program, each small refiner is assigned an interim gasoline sulfur standard for each of its refineries. This interim standard for each refinery is established based on the baseline sulfur level of that refinery. The standards are designed to require each small refiner to either make a partial reduction in their gasoline sulfur levels or, if they already produce low sulfur fuel, to maintain their current levels. The interim program lasts for four years, 2004 through 2007, and the refiner can apply for an extension of up to three years. After the interim program expires, small refiners must produce the same low sulfur gasoline as other refiners.

Today's diesel sulfur program takes effect in the same time frame as the small refiner interim program for low sulfur gasoline. To avoid the need for simultaneous investments in both gasoline and diesel fuel desulfurization, several small refiners subject to both programs raised the concept of allowing those investments to be staggered in time. Because of the relative difficulty small refiners will face in financing desulfurization projects, especially for both diesel and gasoline desulfurization in the same time frame, we agree that this concept has merit and have adopted it for this rule. Under this concept, small refiners may extend the duration of their gasoline sulfur interim standards and, thus, potentially postpone some or all of their gasoline desulfurization investments while they work to achieve the low sulfur diesel standard "on time" in 2006. To the extent that small refiners choose this Diesel/Gasoline Compliance Date option, this provision will benefit the overall diesel program by increasing the availability of 15 ppm diesel fuel in the small refiners' market areas.

Specifically, this option provides that a small refiner can receive a three-year

extension of a refinery's interim gasoline standard, until January 1, 2011, if it meets two criteria: (1) It produces both gasoline and diesel fuel at a refinery and chooses to comply with the 15 ppm diesel fuel sulfur standard by June 1, 2006 for all its highway diesel production at that same refinery, and (2) it produces a minimum volume of 15 ppm fuel at that refinery that is at least 85 percent of the average volume of highway diesel fuel that it produced at that refinery during calendar years 1998 and 1999. We believe that it is very important that the extension of a small refiner's interim low sulfur gasoline standard be linked to a substantial environmental benefit from the production of low sulfur diesel fuel in 2006. We have established a minimum volume requirement to prevent the Diesel/Gasoline Compliance Date option from applying in situations where a refiner changes its refinery product slate to produce very little highway diesel fuel—even though this production is at a 15 ppm sulfur level—and yet receives an extension of its interim gasoline sulfur standard.¹⁷⁰ We believe the 85 percent level is sufficient to reflect a substantial investment in desulfurization technology. At the same time the 85 percent level should allow for any reasonable variation in production of highway diesel fuel that would be expected to occur in typical situations between now and 2006, particularly given the continued growth of the highway diesel market. Again, the three-year extension of the gasoline interim program is to allow small refiners to stretch out their capital investments while increasing the quantity of 15 ppm fuel being produced. We expect that small refiners using this option will make a substantive capital investment in diesel desulfurization and have thus set this minimum 15 ppm diesel volume limit.

We believe that the additional three-year extension of the interim gasoline sulfur standards provided today is warranted without any further action by small refiners, provided that they assume the financial burden of full low sulfur diesel compliance in 2006 (i.e., instead of choosing the flexibility of the

broader temporary compliance program). The diesel and gasoline desulfurization investments for those refiners can thus be staggered in time. We believe a three-year extension is appropriate due to the substantial investment in highway diesel fuel that these small refiners will be undertaking.

By July 1, 2006, small refiners that plan to use the Diesel/Gasoline Compliance Date option for one or more refineries must send a letter to us confirming that by June 1, 2006 they were producing 100 percent of their highway diesel fuel in compliance with the 15 ppm sulfur standard at their refinery(ies). These refiners must make similar confirmations each year through 2011 in their annual compliance reports (due by the end of February of each year)—until after the end of the extended interim low sulfur gasoline program for small refiners on December 31, 2010.

If a given small refiner was not producing 15 ppm fuel for all its highway diesel production at that refinery by June 1, 2006, the July 1, 2006 letter must confirm that the refiner is forfeiting the "automatic" three-year extension of that refinery's interim gasoline program (although the refiner may still apply for a case-by-case extension through the Tier 2/Gasoline Sulfur program under 40 CFR 80.260). In this case, we will consider a request that the refiner be allowed to use either the 500 ppm option or the Small Refiner Credit option, or both, provided that information addressing the conditions of these options as described above are included in the July 1, 2006 letter. If the refiner does not request the use of the 500 ppm option or the Small Refiner Credit option, the letter must confirm that the refiner is complying with the diesel sulfur requirements applicable to refiners that are not small refiners.

The Tier 2/Gasoline Sulfur program includes a general hardship provision for which refiners may apply. (Today's program also includes a similar provision). Depending on the nature of its hardship, a small refiner that applies for this general hardship provision under the gasoline program may be granted a "tailor-made" interim gasoline sulfur program different from the "default" program established in the rule. If such a small refiner were then to be covered by today's diesel fuel requirements and chose this Diesel/Gasoline Compliance Date option, we will allow it an extension of its special interim program for gasoline (as established under the general hardship provision) for three years beyond the scheduled end date (although no later than December 31, 2010) so long as it

¹⁷⁰ If a situation arises where a small refiner did not produce highway diesel fuel in 1998 or 1999 but later begins to produce 15 ppm diesel fuel, use of the Diesel/Gasoline Compliance Date option will require case-by-case EPA approval. In its application for such approval, a refiner must show us that the net loss of emission reductions will not be significant and must propose an appropriate minimum production volume. In evaluating such a proposed minimum volume, we may consider, among other factors, the typical ratio between highway diesel and gasoline production for small-to-medium sized refineries in the industry.

met the 15 ppm diesel fuel standard and production volume requirements in 2006.

As with the other two options, refiners expecting to use the Diesel/Gasoline Compliance Date option and thus to produce their highway diesel fuel exclusively at 15 ppm fuel will have to report certain information beginning in 2003. As a part of their pre-compliance reporting due June 1, 2003 (see Section IV.A. above), any small refiners taking advantage of this option must provide information showing that diesel desulfurization plans are on track. The information supplied under this requirement must include, but will not be limited to, the following: (1) Status of applying for and receiving any necessary air pollution control permits, (2) financing that is in place or being sought, and (3) the status of engineering or construction contracts. As a part of the pre-compliance reporting due in 2004 and 2005, the refiner must provide more complete information as it becomes available to update its earlier report (e.g., the status of beginning or completing construction of desulfurization equipment).

iv. Relationship of the Options to Each Other

By definition, since a small refiner must produce 100 percent of its highway diesel as 15 ppm under the Diesel/Gasoline Compliance Date option, that option is not compatible with either the 500 ppm option or the Small Refiner Credit option. Thus a refiner choosing the Diesel/Gasoline Compliance Date option may not choose either of the other two options. However, the 500 ppm option and the Small Refiner Credit option are compatible with each other, and so a refiner may choose either or both of these options.

d. How Do Small Refiners Apply for Small Refiner Status?

Refiners that are not small refiners under the gasoline sulfur program but that are seeking small refiner status under the diesel sulfur program must apply to us as a part of their registration for the general diesel sulfur program, due no later than December 31, 2001. The application must include the following information:¹⁷¹

- The name and address of each location at which any employee of the company, including any parent

companies or subsidiaries,¹⁷² worked during the 12 months preceding January 1, 2000;

- The average number of employees at each location, based on the number of employees for each of the company's pay periods for the 12 months preceding January 1, 2000;
- The type of business activities carried out at each location; and
- The total crude oil refining capacity of its corporation. We define total capacity as the sum of all individual refinery capacities for multiple-refinery companies, including any and all subsidiaries, as reported to the Energy Information Administration (EIA) for 1999, or in the case of a foreign refiner, a comparable reputable source, such as professional publication or trade journal.¹⁷³ Refiners do not need to include crude oil capacity used in 1999 through a lease agreement with another refiner in which it has no ownership interest.

The crude oil capacity information reported to the EIA or comparable reputable source is presumed to be correct. However, in cases where a company disputes this information, we will allow 60 days after the company submits its application for small refiner status for that company to petition us with detailed data it believes shows that the EIA or other source's data was in error. We will consider this data in making a final determination about the refiner's crude oil capacity.

We will consider any refiner that was granted small refiner status under the Tier 2/Gasoline Sulfur program to also qualify as a small refiner under today's program, provided that it also produced highway diesel fuel in 1999. Such a refiner only needs to indicate as a part of its registration for this program that it is covered by the gasoline sulfur small refiner program and that it expects to be eligible for any small refiner options available in today's diesel program.

2. Farmer Cooperative Refiners Will Benefit From the Flexible Provisions Available to Other Refiners

Some refineries in the U.S. are owned by farmer cooperatives. In the NPRM, we asked for comment on whether it would be appropriate to extend hardship relief to farmer cooperatives, similar to the flexibility options for small refiners. Representatives of farmer cooperative refiners have commented to us that as refiners they face unique

challenges under a diesel fuel sulfur program. As described in more detail below and in the Response to Comments document, we have carefully considered the situation of farmer cooperative refiners. We have concluded that while there are clearly differences in how farmer cooperative refiners are organized and are financed compared to other refiners, we are not able to make a determination that farmer cooperative refiners, as a class, face unique economic hardship. As discussed further below, we believe that the combination of flexibilities built into today's diesel program will be valuable to farmer cooperative refiners. To the extent any of the farmer cooperative refiners face economic hardship in complying with the diesel sulfur program, this determination can best be made on a case-by-case basis for each farmer cooperative refiner, as discussed further below.

As is the case for all refiners, we believe that farmer cooperative refiners will be able to benefit significantly from the several flexibility provisions discussed elsewhere in Section IV of this preamble. As we mentioned above, the farmer cooperative refiner with the smallest refinery appears to meet the criteria for status as a "small refiner," and thus will likely be eligible for the special provisions discussed earlier (Section IV.C.1. above). The second smallest refinery owned by a farmer cooperative is located and markets all or most of its gasoline within the geographic GPA and, as such, is eligible for GPA low sulfur gasoline extension described in Section IV.B. above (if it meets the production and volume requirements for 15 ppm fuel). Alternatively, this refinery could participate in the temporary compliance option for diesel fuel described in Section IV.A. above.

The two other farmer cooperative refiners (as well as any other refiner) may participate in the temporary compliance option for diesel fuel and the averaging, banking, and trading provisions described above (Section IV.A.), potentially allowing them to postpone diesel desulfurization investments. If needed, any of the farmer cooperative refiners may also apply for case-by-case hardship relief (Section IV.C.3. below). Through such a case-by-case review, we will be in a better position to make a determination of whether a particular farmer cooperative refiner faced an economic hardship situation, as we would then have available to us specific financial information about each cooperative owner. If we determine that a cooperative refiner faced an economic

¹⁷¹ See the Section VII.E below and regulatory language associated with this rule for detailed requirements for registration and application for small refiner status.

¹⁷² "Subsidiary" here covers entities of which the parent company has 50 percent or greater ownership.

¹⁷³ We will evaluate each foreign refiner's documentation of crude oil capacity on an individual basis.

hardship situation, we could then tailor any temporary hardship provisions to best suit the needs of that refiner. Given this combination of options and "safety valves" built into the diesel sulfur program, and the factors discussed below, we do not believe it is necessary to provide special provisions specifically for farmer cooperative refiners as a class.

Farmer cooperatives that own refineries, like all farmer cooperatives, are organized as a means for individual farmers (or local cooperatives owned by individual farmers) to collectively gain benefits in important aspects of their farming businesses—in this case, the production and distribution of the fuel needed for their operation. It should also be noted that the diesel fuel produced by farmer cooperative refiners is sold not only to farmers, but also to the wholesale petroleum market, for sale at service stations, truck stops, or fleets. Individual farmers and others become members of local cooperatives that provide a range of products and services to their members. These local cooperatives in turn often form the membership of larger, regional cooperatives, including those that own three of the four farmer cooperative refineries in the U.S.

Refiners that are also cooperative businesses are significantly different from other refiners in several respects. The key aspect is that several avenues for accessing capital used by many other refiners (in this case, the capital needed to carry out diesel fuel desulfurization projects in their refineries) are not available to, or are not practical for, cooperative refiners. In particular, farmer cooperatives, unlike publicly-held corporations, are generally not permitted to raise equity capital in the securities markets (that is, by selling stock). At the same time, the equity financing provided by the membership, usually a modest amount assessed from each member as a condition of membership, provides a return for the members only to the extent that the members purchase the products or services of the cooperative. Conventional investors that do not regularly patronize the cooperative have little incentive to provide investment from the outside, since their investment will not appreciate in value.

For farmer cooperatives, money for capital projects is generally raised internally as equity from members and as loans from banks or other financial institutions. In this sense, farmer cooperative refiners are similar to privately-held refining companies, which are also unable to raise capital by selling public stock. In the case of

farmer cooperatives, equity capital is raised either by assessment of the members or, more often, by retaining a portion of the cooperative's earnings that would otherwise be distributed to the members (on the basis of how much business they have done with the cooperative). The amount of equity available to the cooperative, as well as the earning prospects of the cooperative, usually determine whether financial institutions will lend additional capital, how much money will be lent, and what terms the cooperative will have to agree to. For example, when a cooperative's equity is low and/or the farm economy is stressed (and thus the prospects for strong earnings performance by the cooperative are diminished) cooperatives can have difficulty competing among other potential borrowers for loans for large capital projects.

While the unique structural and financial characteristics of farmer cooperative refiners can present special challenges to these refiners, their status as cooperatives can also provide advantages not shared by other refiners. The same federal and state laws and regulations that place limitations on the financial avenues available to cooperatives also tend to include special provisions only available to cooperatives. These include special treatment for cooperatives under securities laws, antitrust laws, contractual marketing laws, and restrictive corporate entity laws, some or all of which may come into play in efforts to capitalize refinery desulfurization projects.

Also, the relatively large regionally-based cooperatives that own refineries have a variety of other business interests as well. This broader business base, which involves not only the refining and distribution of fuels but also a variety of other agricultural supply, processing, and related operations, may often provide an advantage to these larger cooperative refiners as compared to competing refiners that have little or no business beyond refining and fuel marketing. Finally, the three larger farmer cooperative refiners have developed several economic relationships among one another—including joint refinery ownership, a joint refinery operating agreement, and a joint fuel distribution and marketing organization—that together create greater options for financing than are available to many other refiners.

Based on the compliance option provisions in this action we do not believe that farmer cooperative refiners as a class face a disproportionate economic burden in complying with the

diesel sulfur program. However, certain cooperative refiners may face additional economic obstacles, therefore the potential need exists for some financial assistance to farmer cooperative refiners from U.S. government programs. During interagency review, concerns were discussed relating to the uniqueness of the structure of farmer cooperative refineries and the key issue of accessing capital was identified. The U.S. Department of Agriculture (USDA) has indicated an interest and willingness to review its existing authorities for the potential mechanisms to provide financial assistance to refiner cooperatives who do invest in desulfurization programs. Congress and USDA have long recognized the unique circumstances of farmers and rural communities by establishing programs to provide assistance. This assistance would be primarily in the form of guaranteed loans, which could provide a significant source of funding for cooperative refiners to make capital investment in desulfurization. However, USDA's loan program is subject to limitations, including a \$25 million annual cap on individual loans, so the cooperative refiners may have to acquire additional financing. EPA understands that USDA supports efforts, where appropriate, to provide assistance to farmer-owned cooperatives from other sources.

In conclusion, after reviewing this information, we have not been able to clearly distinguish a unique economic burden that today's program will place on farmer cooperative refiners, as a class, apart from other refiners, especially other refiners of similar size and/or those that are privately-held companies. However, as described above, several of the flexible provisions we have incorporated into the overall diesel sulfur program will be valuable to farmer cooperative refiners.

3. General Hardship Provisions

a. Temporary Waivers from Low Sulfur Diesel Requirements in Extreme Unforeseen Circumstances

In this final rule, we are adopting a provision which, at our discretion, will permit domestic or foreign refiners to seek a temporary waiver from the highway diesel sulfur standards under certain rare circumstances. This waiver provision is similar to provisions in the reformulated gasoline (RFG) and low sulfur gasoline regulations. It is intended to provide refiners short-term relief in unanticipated circumstances—such as a refinery fire or a natural disaster—that cannot be reasonably foreseen now or in the near future.

Under this provision, a refiner may seek permission to distribute highway diesel fuel that does not meet the applicable low sulfur standards for a brief time period. An approved waiver of this type could, for example, allow a refiner that has reached its maximum allowable production volume of 500 ppm sulfur fuel under the temporary compliance option to temporarily and modestly exceed that volume, so long as the other conditions described below were met. Such a request will be based on the refiner's inability to produce complying highway diesel fuel because of extreme and unusual circumstances outside the refiner's control that could not have been avoided through the exercise of due diligence. The request will also need to show that other avenues for mitigating the problem, such as purchase of credits toward compliance under the temporary compliance option, had been pursued and yet were insufficient.

As with other types of relief established in this rule, this type of temporary waiver will have to be designed to prevent fuel exceeding the 15 ppm standard from being used in 2007 and later vehicles. As with the small refiner hardship provisions described above, any such waiver must show that other sources of 15 ppm fuel exist in the refiner's market area to help reduce the risk that owners of 2007 and later diesel vehicles will have difficulty finding the 15 ppm fuel they need during the period of the waiver.

The conditions for obtaining a low sulfur diesel waiver are similar to those in the RFG and low sulfur gasoline regulations. These conditions are necessary and appropriate to ensure that any waivers that are granted are limited in scope, and that refiners do not gain economic benefits from a waiver. Therefore, refiners seeking a waiver must show that the waiver is in the public interest, that the refiner was not able to avoid the nonconformity, that it will make up the air quality detriment associated with the waiver, that it will make up any economic benefit from the waiver, and that it will meet the applicable diesel sulfur standards as expeditiously as possible.

b. Temporary Waivers Based on Extreme Hardship Circumstances

In addition to the provision for short-term relief in extreme unforeseen circumstances, we are adopting a provision for relief based on extreme hardship circumstances. In developing our diesel sulfur program, we considered whether any refiners would face particular difficulty in complying with the standards in the lead time

provided. As described earlier in this section, we concluded that refineries owned by small businesses will experience more difficulty in complying with the standards on time because they have less ability to raise the capital necessary for refinery investments, face proportionately higher costs because of poorer economies of scale, and are less able to successfully compete for limited engineering and construction resources. However, it is possible that other refiners that are not small refiners will also face particular difficulty in complying with the sulfur standards on time. Therefore, we are including in this final rule a provision which allows us, at our discretion, to grant temporary waivers from the diesel sulfur standards based on a showing of extreme hardship circumstances.

The extreme hardship provision allows any domestic or foreign refiner to request a waiver from the sulfur standards based on a showing of unusual circumstances that result in extreme hardship and significantly affect a refiner's ability to comply with the low sulfur diesel standards by June 1, 2006. An approved extreme hardship waiver may provide refiners with provisions similar to those for small refiners, or as with the waiver for extreme unforeseen circumstances, may provide a greater allowance for producing 500 ppm (for sale only for use in pre-2007 vehicles) during the period the temporary compliance option is in effect. As with other relief provisions established in this rule, any waiver under this provision must be designed to prevent fuel exceeding the 15 ppm standard from being used in 2007 and later vehicles.

By providing short-term relief to those refiners that need additional time because they face hardship circumstances, we can adopt an overall program that reduces diesel fuel sulfur beginning in 2006 for the majority of the industry. However, we do not intend for this waiver provision to encourage refiners to delay planning and investments they would otherwise make. We do not expect to grant temporary waivers that apply to more than approximately one percent of the national highway diesel fuel pool in any given year.

The regulatory language for today's action includes a complete list of the information that must be included in a refiner's application for an extreme hardship waiver. If a refiner fails to provide all the information, as specified in the regulations, as part of its hardship application, we can deem the application void. The following are some examples of the types of

information that must be contained in an application:

- The crude oil refining capacity and diesel fuel sulfur level at each of the refiner's refineries.

- Details on how the refiner plans to modify its current operation to achieve future diesel fuel sulfur levels.

- The anticipated timing for the overall project the refiner is proposing and key milestones to ultimately produce 100 percent of highway diesel fuel at the 15 ppm sulfur standard.

- The refiner's capital requirements for the proposed project

- Plans for financing the project and financial statements

- List of the areas where the refiner's diesel fuel will be sold.

We will consider several factors in our evaluation of the hardship waiver applications. Such factors will include whether a refinery's configuration is unique or atypical; the proportion of diesel fuel production relative to other refinery products; whether the refiner, its parent company, and its subsidiaries are faced with severe economic limitations (for example, a demonstrated inability to raise necessary capital or an unfavorable bond rating); steps the refiner has taken to attempt to comply with the standards, including efforts to obtain credits towards compliance. In addition, we will consider the total crude oil capacity of the refinery and its parent or subsidiary corporations, if any, in assessing the degree of hardship and the refiner's role in the diesel market. Finally, we will consider where the diesel fuel will be sold in evaluating the environmental impacts of granting a waiver.

This extreme hardship provision is intended to address unusual circumstances that should be apparent now or will emerge in the near future. Thus, refiners seeking additional time under this provision must apply for relief by June 1, 2002. Applicants for a hardship waiver must also submit a plan demonstrating how they will achieve the standards as quickly as possible. In submitting the plan, applicants must include a timetable for obtaining the necessary capital, contracting for engineering and construction resources, obtaining any necessary permits, and beginning and completing construction.

We will review and act on applications and, if a waiver is granted, will specify a time period, not to extend beyond May 31, 2010, for the waiver.

D. Technological Feasibility of the Low Sulfur Diesel Fuel Program

This section summarizes our assessment of the feasibility of refining

and distributing diesel fuel with a sulfur content of no more than 15 ppm. Based on this evaluation, we believe it is technologically feasible for refiners to meet the 15 ppm sulfur standard in the lead time provided. We are summarizing our analysis here and we refer the reader to the RIA for more details.

1. What Technology Will Refiners Use?

Conventional diesel desulfurization technologies have been available and in use for many years. Conventional hydrotreating technology involves combining hydrogen with the distillate (material falling into the boiling range of diesel fuel) at moderate pressures and temperatures and flowing the mixture through a fixed bed of catalyst.

We project that all refiners will be technically capable of meeting the 15 ppm sulfur cap with extensions of the same conventional hydrotreating which they are using to meet the current highway diesel fuel standard of 500 ppm sulfur. This extension will likely mean adding a second stage of conventional hydrotreating. Converting an existing one-stage hydrotreater into a two-stage hydrotreater will involve adding an additional reactor as well as other, more minor units to support the new desulfurization unit. These units could include hydrogen plants, sulfur recovery plants, amine plants and sour water scrubbing facilities. All of these units are already operating in refineries, but may have to be expanded or enlarged. We also project that all refiners will utilize recently developed, high activity catalysts, which increase the amount of sulfur that can be removed relative to the catalysts which were available when the current desulfurization units were designed and built.

While still utilizing this conventional hydrotreating technology, we expect that some refiners (roughly 20 percent of current production volume) will decide to invest in a completely new two-stage hydrotreater rather than revamp their current unit. This could occur because the current hydrotreater is too old or designed to operate at too low a pressure, or because the refiner desires to expand production of highway diesel fuel.

The sufficiency of conventional hydrotreating to meet a 15 ppm sulfur cap with current diesel fuel blendstocks is based primarily on information provided by several refining technology vendors.¹⁷⁴ The vendors all projected

that two-stage hydrotreating would be sufficient to meet a 15 ppm sulfur cap. However, their projections of hydrogen consumption and requisite reactor volume varied widely. Our projections for hydrogen consumption and reactor volume are near the lower end of the range and are essentially the same projections as were made in support of the proposed rule.

Many refiners commented that we had underestimated the cost of meeting the 15 ppm sulfur cap. They argued that higher pressure, thick walled reactors of greater volume would be needed and that hydrogen consumption would be much higher than we projected. With one exception, neither the refiners, nor the technology vendors provided any underlying catalyst performance data with which we could use to arbitrate between the varying projections. One vendor did submit catalyst performance data from a commercial unit processing a diesel fuel like that produced in the U.S. Such commercial data is very limited, as refiners are generally not currently producing diesel fuel at sulfur levels below 10 ppm with this technology from diesel fuel feedstocks typical of U.S. refiners. Some refiners are currently producing diesel fuel at sulfur levels below either 10 or 50 ppm. However, their diesel fuel blendstocks differ substantially in quality from those available in the U.S., so their experience cannot be extrapolated easily to producing sub-15 ppm sulfur diesel fuel in the U.S.

Based on our review of the limited catalyst performance data in the published literature and the one set of confidential data submitted, we believe that the projections of the more optimistic vendors are the most accurate for the 2006 timeframe. For example, the confidential commercial data indicated that five ppm sulfur levels could be achieved with two-stage hydrotreating a moderate hydrogen pressures despite the presence of a significant amount of light cycle oil (LCO). The key factor was the inclusion of a hydrogenation catalyst in the second stage, which saturated many of the poly-nuclear, aromatic rings in the diesel fuel, allowing the removal of sulfur from the most sterically hindered compounds. In addition, refiners that are able to defer production of 15 ppm diesel fuel through the purchase of credits will have the added benefit of being able to observe the operation of those hydrotreating units starting up in 2006. This should allow these refiners to be able to select from the best

technologies which are employed in the first phase of the program.

In addition, alternative technologies are presently being developed which could produce additional savings for refiners that are able to delay production of 15 ppm fuel until 2010. Phillips 66 Company, for example, just announced that they are developing a version of their S-Zorb technology for diesel fuel desulfurization. This technology has been selected by at least one major refiner (Marathon-Ashland) to meet the Tier 2/low sulfur gasoline requirements. In conjunction with a DOE research program, Phillips is designing and constructing a commercially sized S-Zorb diesel fuel unit at their Borger refinery. This unit is currently scheduled for start-up in 2004. We believe that this technology could reduce the cost of meeting the 15 ppm cap by roughly 25 percent.

2. Have These Technologies Been Commercially Demonstrated?

As mentioned above, conventional diesel desulfurization technologies have been available and in use for many years. U.S. refiners have roughly seven years of experience with this technology in producing highway diesel fuel with less than 500 ppm sulfur. Refiners in California also have the same length of experience with meeting the California 500 ppm cap on sulfur and an additional aromatics standard.¹⁷⁵ To meet both sulfur and aromatics standards, refineries in California are producing highway and nonroad diesel fuel with an average sulfur level of 150 ppm.

Some refiners in Europe are producing a very low-sulfur, low aromatics diesel fuel for use in the cities in Sweden (Class I Swedish Diesel) using two-stage hydrotreating. This "Swedish city diesel" is averaging under 10 ppm sulfur and under 10 volume percent aromatics. While clearly demonstrating the feasibility of consistently producing diesel fuel with less than 10 ppm sulfur from selected feedstocks, there are a few differences between the Swedish fuel and typical U.S. diesel fuel. First, the tight aromatics specification applicable to Swedish City diesel fuel usually requires the use of ring-opening or dearomatization catalysts in the second stage of the two-stage hydrotreating unit. Second, Swedish Class I diesel fuel also must meet a tight density specification. Third, it is not clear

¹⁷⁴ Technology vendors were invited to submit projections of technology and cost to two studies of the cost of diesel fuel desulfurization by Mathpro,

Inc. One study was performed for EMA, and the other for the National Petroleum Council.

¹⁷⁵ California allows refiners to use an engine test to certify an alternative fuel mixture which meets or exceeds the NO_x reducing performance of a 10 volume percent maximum aromatics and a 500 ppm maximum sulfur diesel fuel.

whether any refiner is producing a large fraction of their distillate production to this specification. Thus, the European experience demonstrates the efficacy of the two-stage process and its ability to produce very low sulfur diesel fuel. However, doing so without saturating most of the aromatics present and with heavier feedstock has only been demonstrated in pilot plants and not commercially. Even this pilot plant data has not been available for us to evaluate directly, due to vendors' competitiveness concerns.

Europe has adopted a 50 ppm cap sulfur standard for all diesel fuel which takes effect in 2005. Some countries, including England, have implemented tax incentives for refiners to produce this fuel sooner. The majority of diesel fuel in England already meets the 50 ppm specification. Refiners have reported no troubles with this technology. This diesel fuel is being produced in one-stage hydrotreaters. However, as mentioned above, European diesel fuel contains less heavier compounds than diesel fuel in the U.S., so the use of one-stage conventional hydrotreating to meet very low sulfur levels is applicable, but not sufficient to demonstrate feasibility in the U.S. Germany has also established a tax incentive, but for diesel fuel containing 10 ppm or less sulfur. One European technology vendor indicated that they have already licensed two desulfurization units to German refiners planning to produce diesel fuel to obtain this tax credit. Europe also is considering a 10 ppm sulfur cap to take effect later in the decade. However, no refiner is currently producing number two diesel fuel to this specification.

Phillips Petroleum is currently in the process of designing and constructing a commercial sized S-Zorb unit to produce sub-15 ppm diesel fuel at their Borger, Texas refinery. This plant is scheduled to begin commercial operation in 2004. This may not be in time to give refiners sufficient confidence in this novel process to rely on it to meet the 2006 deadline. However, this process, with its attendant hydrogen, cost, and global emission savings should be available for those refiners that are able to defer investment under the temporary compliance option and hardship provisions of today's rule. While we are confident that this and other technology will be available to meet the requirements of today's rule, EPA will work with the Department of Energy, refiners and technology providers to continue to monitor and analyze the progress in further developing and implementing this new diesel

desulfurization technology. This will allow us to improve our understanding of how this new technology can be employed to enhance the implementation of this program.

3. Feasibility of Distributing Low Sulfur Highway Diesel Fuel

We believe that with relatively minor changes and associated costs, the existing distribution system will be capable of adequately managing sulfur contamination during the transportation of 15 ppm highway diesel fuel from the refinery through to the end-user. Further, we believe that the existing system is capable of handling two grades of highway diesel fuel (500 ppm and 15 ppm sulfur cap) in a limited fashion during the transition period of the sulfur program at acceptable cost with the addition of storage tanks at a fraction of distributor facilities.

The following minor changes in distribution practices will be needed as a result of today's rule during the transition years of the fuel program when various hardship and optional compliance provisions are in effect and thereafter:

—To adequately separate shipments of highway diesel fuel from shipments of higher sulfur products, pipeline operators will need to increase the amount of highway diesel fuel that they downgrade to a lower value product.

—Instead of cutting the mixture of jet fuel and highway diesel fuel that results during pipeline shipments of these products into the highway diesel pool, pipeline operators will need to segregate this mixture and sell it into the nonroad diesel pool. This change will necessitate the addition at some terminals of small tanks to handle the mixture of jet fuel and highway diesel fuel.

—Terminal operators will need to perform additional quality control testing to ensure compliance with the 15 ppm sulfur cap.

We also recognize that tank truck operators will need to more carefully and consistently observe current industry practices to limit contamination during the transport of 15 ppm sulfur highway diesel fuel. However, because these practices already exist and need only to be better enforced by distributors, we continue to believe that this can be accomplished at insignificant cost. We believe that there will not be a significant increase in the volume of highway diesel fuel discovered to exceed the sulfur standard downstream of the refinery as a result of today's rule. Distributors will quickly optimize the distribution system using the means described above to avoid

creating additional volumes of out of specification product.

To accommodate two grades of highway diesel fuel during the transition period, additional storage tanks will need to be added at some refineries, terminals, bulk plants, and truck stops. There are significant costs associated with the addition of tanks which are fully accounted for during the transition period (see Section V). Commenters on the NPRM stated that in addition to the substantial economic burden that adding additional storage tanks would represent for some distributors, limitations in available space and permitting restrictions could preclude some distributors from installing additional tanks. This transition is also an added concern for those users of specialty fuels (i.e., military fuels, etc.) who currently compete for the limited storage tanks because these fuels must be segregated. We believe that the burden of adding new storage tanks to the system is made manageable by the fact that not all distributors will need to handle 500 ppm as well as 15 ppm sulfur highway diesel fuel during this time period. Marketplace forces will determine which facilities assume the additional burden of handling both grades of highway diesel fuel. Those facilities for which the addition of a storage tank would represent an unacceptable burden would opt not to serve the 500 ppm sulfur highway diesel market during the transition years.

We received several comments on the proposed rule that substantial uncertainties exist regarding the ability of the distribution system to adapt to the added hardship of limiting sulfur contamination of highway diesel fuel meeting a 15 ppm sulfur cap. These commenters noted that under today's rule other products in the distribution system would have a sulfur content of over 300 times the 15 ppm highway diesel fuel sulfur cap, and that unavoidable mixing of small quantities of these high sulfur products into highway diesel fuel could easily cause the 15 ppm sulfur cap to be exceeded. To illustrate the magnitude of the challenge, these commenters noted that currently the maximum sulfur content of any product that shares the distribution system with highway diesel fuel is no more than 10 times the current 500 ppm sulfur cap for highway diesel fuel.¹⁷⁶ Some commenters stated that the only way to adequately limit sulfur contamination in the distribution

¹⁷⁶ Nonroad diesel fuel has a sulfur cap of 5,000 ppm versus a 500 ppm for current highway diesel fuel.

of diesel fuel with a 15 ppm sulfur cap may be to create a completely segregated system (at an unacceptably high cost). These commenters stated that unavoidable contamination could cause many batches of highway diesel fuel to be noncompliant with the 15 ppm cap resulting in shortages and high costs. Some commenters stated that additional evaluation is needed to determine the capability of the distribution system to limit contamination to the very low levels necessitated by today's rule.

While we acknowledge that today's rule will pose a substantial new challenge to the distribution system, we believe that the additional measures outlined in this section will substantially address issues associated with adequately limiting sulfur contamination during the distribution of 15 ppm sulfur highway diesel fuel.¹⁷⁷ Its true that not all of the potential minute sources of sulfur contamination in the distribution sources have been identified and that the cumulative magnitude from these sources is uncertain. However, we believe that the contamination from such sources, while made more significant by the implementation of the 15 ppm sulfur cap, is not of a sufficient magnitude to jeopardize the feasibility of distributing low sulfur highway diesel fuel. We will work with the Department of Energy, refiners and others involved in diesel fuel distribution to analyze, compile data, and conduct additional research, where appropriate, to not only more fully understand all sources of contamination and deliverability in the distribution of diesel fuel below the 15ppm cap, but also their impact on the deliverability of other fuels, including specialty military fuels. This information will be used, in conjunction with information being developed on the operation of emission control devices (which are affected by exposure to sulfur), to monitor progress on the successful implementation of this final rule which depends on an integrated vehicle/fuel systems approach. Please refer to Section V.D. on the costs of today's rule to the distribution system, and to the Regulatory Impact Analysis and Response to Comments documents for additional discussion regarding the feasibility of distributing highway diesel fuel with a 15 ppm sulfur cap.

E. What Are the Potential Impacts of the Low Sulfur Diesel Program on Lubricity and Other Fuel Properties?

1. What Is Lubricity and Why Might It Be a Concern?

Engine manufacturers depend on diesel fuel lubricity properties to lubricate and protect moving parts within fuel pumps and injection systems for reliable performance. Unit injector systems and in-line pumps, commonly used in heavy-duty engines, are actuated by cams lubricated with crankcase oil, and have minimal sensitivity to fuel lubricity. However, rotary and distributor type pumps, commonly used in light and medium-duty diesel engines, are completely fuel lubricated, resulting in high sensitivity to fuel lubricity.

In the United States, there is no government or industry standard for diesel fuel lubricity. Thus, specifications for lubricity are determined by the market. Since the beginning of the 500 ppm sulfur highway diesel program in 1993, fuel system producers, engine and vehicle manufacturers, and the military have been working with the American Society for Testing and Materials (ASTM) to develop protocols and standards for diesel fuel lubricity in its D-975 specifications for diesel fuel. Although the ASTM has not yet adopted specific protocols and standards, we understand that refiners have been treating diesel fuel with lubricity additives on a batch to batch basis, when poor lubricity fuel is expected. In addition, the military has found that traditional corrosion inhibitor additives that it uses in its fuels have been highly effective in reducing fuel system component wear. Some commenters expressed concern about the impacts of a 15 ppm standard on fuel lubricity.

Experience has shown that it is very rare for a naturally high-sulfur fuel to have poor lubricity, although, most studies show relatively poor overall correlation between sulfur content and lubricity. Considerable research remains to be performed for a better understanding of the fuel components most responsible for lubricity. Consequently, we are uncertain about the potential impacts of the 15 ppm sulfur standard on fuel lubricity. There is evidence that the typical process used to remove sulfur from diesel fuel—hydrotreating—can impact lubricity depending on the severity of the treatment process and characteristics of the crude. Because refiners will likely rely on hydrotreating to achieve the proposed sulfur limit, there may be reductions in the concentration of those

components of diesel fuel which contribute to adequate lubricity. As a result, the lubricity of some batches of fuel may be reduced compared to today's levels, resulting in an increased need for the use of lubricity additives in highway diesel fuel. In response to the proposal, all comments submitted regarding lubricity either stated or implied that the proposed sulfur standard of 15 ppm would likely cause the refined fuel to have lubricity characteristics that would be inadequate to protect fuel injection equipment, and that mitigation measures such as lubricity additives would be necessary. However, the commenters suggested varied approaches for addressing lubricity. For example, some suggested that we need to establish a lubricity requirement by regulation, but others suggested that the current voluntary (market) system would be adequate. The Department of Defense recommended that we encourage the industry (ASTM) to adopt lubricity protocols and standards before the implementation date of the low sulfur fuel established by today's action. Other suggested approaches included incorporation of biodiesel as a solution to the lubricity issue, and the need to further examine the issues.

Blending small amounts of lubricity-enhancing additives increases the lubricity of poor-lubricity fuels to acceptable levels. These additives are available in today's market, are effective, and are in widespread use around the world. For example, in the U.S., we understand that refiners are treating diesel fuel with lubricity additives on a batch to batch basis, when poor lubricity fuel is expected. Other examples include Sweden, Canada, and the U.S. military. Since 1991, the use of lubricity additives in Sweden's 10 ppm sulfur Class I fuel and 50 ppm sulfur Class II fuel has resulted in acceptable equipment durability.¹⁷⁸ Since 1997, Canada has required that its 500 ppm sulfur diesel fuel not meeting a minimum lubricity be treated with lubricity additives. The U.S. military has found that the traditional corrosion inhibitor additives that it uses in its fuels have been highly effective in reducing fuel system component wear.

2. Today's Action on Lubricity: A Voluntary Approach

We have decided to not establish a lubricity standard in today's action, but have included a 0.2 cents per gallon cost in our calculations for the economic

¹⁷⁷ See the Response to Comments document for this rule.

¹⁷⁸ See letter from MTC to Michael P. Walsh, dated October 16, 2000. In public docket, document IV-G-42.

impact to account for the potential increased use of lubricity additives (see section V.D.2). We believe the best approach is to allow the industry and the market to address the lubricity issue in the most economical manner, while avoiding an additional regulatory scheme. A voluntary approach should provide adequate customer protection from engine failures due to low lubricity, while providing the maximum flexibility for the industry. This approach will be a continuation of current industry practices for diesel fuel produced to meet the current federal and California 500 ppm sulfur diesel fuel specifications, and benefits from the considerable experience gained since 1993. It will also include any new specifications and test procedures that we expect will be adopted by the American Society for Testing and Materials (ASTM) regarding lubricity of highway diesel fuel quality.

We do not believe that an EPA regulation for lubricity is appropriate for several reasons. First, the expertise and mechanism for a lubricity standard already exist in the industry. According to the comments, the industry has been working on a lubricity specification for ASTM D-975, and low cost remedies for poor lubricity have already been proven and are already being used around the world. Although some commenters expressed concerns that the ASTM process might move too slowly to establish a lubricity specification by 2006, we fully expect the refining industry, engine manufacturers and end users to work together to resolve any issues as part of their normal process in dealing with customer and supplier fuel quality issues. Today's action will increase the urgency of those working to establish an ASTM D-975 lubricity specification, and we believe they will do so in time for the production and distribution of the low sulfur highway diesel fuel. We will do our part to encourage the ASTM process be brought to a successful conclusion.

Second, we have no firm basis to justify a lubricity specification in today's action. One such basis might be adequate demonstration that a lubricity level below or above a certain specification would either cause emissions to increase, or hinder the operation of emission control equipment. However, we have no evidence that lubricity impacts emissions, or emission control equipment. This issue is primarily a concern about equipment performance. Equipment performance is more appropriately addressed by the industry rather than government regulation by this Agency.

Third, even if we had a statutory basis to justify a lubricity standard, we are concerned that establishing an EPA lubricity regulation would provoke the same disagreements that the industry is now engaged in its efforts to establish an ASTM D-975 specification. We are in no better position to judge those issues than the industry experts who are already involved. Further, once a specification is put into the regulations and the industry subsequently determines that the specification should be changed, based on new information or circumstances, the burden would be on us to amend the mandated specification by rulemaking. This is a significant burden to put on the Agency for an engine performance issue that can and should be resolved by the industry without government intervention.

Subsequent to the close of the comment period another issue related to lubricity concerns was raised to the Agency. These concerns related to potential incompatibilities in old vehicles of the new engine oils the industry hopes to develop for use in the new 2007 and later model year vehicles. Much of the ash in today's motor oil results from the need to control acidification of the engine oil (maintain total base number, or TBN control), which is in large part a function of the sulfur content of the fuel and the sulfuric acid that it forms. Without the ability to control acidification of the engine oil, engine wear increases significantly. The ash in the oil, however, will tend to shorten the maintenance intervals for particulate filters to remove built up ash on new 2007 and later model year vehicles. At the same time, engines operated on low sulfur fuel have much less need for TBN control and the high ash levels that result. Consequently, manufacturers are investigating with the lubricant industry the potential of lower ash oils for use in engines operated on low sulfur diesel fuel and equipped with particulate traps. If the new oil developed is not "backwards compatible" to sufficiently control acidification and wear in the pre-existing fleet of vehicles on the road that may still be operated on high sulfur diesel fuel for the first few years of the program, then two grades of motor oil would have to be on the market simultaneously. This has caused some stakeholders to raise vehicle performance and durability concerns that might result from using the new oil in the old vehicles—namely "mis-oiling."

Since the engine and lubricant industries still have a number of years to develop these new oil formulations, it is still premature to determine

whether or not the new oils will be backwards compatible and whether mis-oiling would raise any serious concerns. While this would not appear to be an air quality concern and as such something the Agency generally leaves up to the industry to resolve, we will nevertheless offer to work with the industry and industry associations on this issue over the coming years." EPA anticipates that engine manufacturers would likely provide engine labels to distinguish low ash oil from high ash oil because misoiling could result in engine damage.

3. What Are Today's Actions on Fuel Properties Other Than Sulfur?

We are not taking action today on any fuel properties other than sulfur. We have examined the impact of fuel properties other than sulfur, such as aromatics, on the materials used in engines and fuel supply systems. We do not believe there will be impacts on materials from such other fuel properties.

While there were some problems with leaks from fuel pump O-ring seals made of a certain material (Nitrile) after the introduction of 500 ppm sulfur diesel fuel in the United States in 1993, these issues have since been addressed by equipment manufacturers who switched to materials that are compatible with low aromatic fuels. The leakage from the Nitrile seals was determined to be due to low aromatics levels in some 500 ppm sulfur fuel, not the low sulfur levels. In the process of lowering the sulfur content of some fuel, some of the aromatics had also been removed. Normally, the aromatics in the fuel penetrate the Nitrile material and cause it to swell, thereby providing a seal with the throttle shaft. When low-aromatics fuel is used after conventional fuel has been used, the aromatics already in the swelled O-ring will leach out into the low-aromatics fuel. Subsequently, the Nitrile O-ring will shrink and pull away, thus causing leaks, or the stress on the O-ring during the leaching process will cause it to crack and leak. Not all 500 ppm sulfur fuels caused this problem, because the amount and type of aromatics varied. Fuel pumps using a different material (Viton) for the seals did not experience leakage. We believe that no additional problems will occur with a change of fuel from 500 to 15 ppm sulfur.

F. How Are State Programs Affected by the Low Sulfur Diesel Program?

1. State Preemption

Section 211(c)(4)(A) of the CAA prohibits states (and political

subdivisions of states) from prescribing or attempting to enforce controls or prohibitions respecting any fuel characteristic or component if EPA has prescribed a control or prohibition applicable to such fuel characteristic or component under section 211(c)(1). This preemption applies to all states except California, as explained in section 211(c)(4)(B). For states other than California, the Act provides two mechanisms for avoiding preemption. First, section 211(c)(4)(A)(ii) creates an exception to preemption for state prohibitions or controls that are identical¹⁷⁹ to the prohibition or control adopted by EPA. Second, states may seek EPA approval of SIP revisions containing fuel control measures, as described in section 211(c)(4)(C). We may approve such SIP revisions, and thereby “waive” preemption, only if it finds the state control or prohibition “is necessary to achieve the national primary or secondary ambient air quality standard which the plan implements.”

When we adopted the current highway diesel fuel sulfur standard of 500 ppm pursuant to our authority under section 211(c)(1) of the CAA in 1990, States were preempted from also doing so under the provisions of section 211(c)(4)(A). The 15 ppm highway diesel fuel sulfur standard promulgated today modifies the existing standard and, as a result, do not initiate any new preemption of state authority. Today’s action continues the explicit preemption under section 211(c)(4)(A) of state actions to prescribe or enforce highway diesel fuel sulfur controls. States other than California with highway diesel fuel sulfur control programs not already approved into their SIPs are preempted under Section 211(c)(4)(A) and will therefore need to obtain a waiver from us under the provisions described in section 211(c)(4)(C) for all state fuel sulfur control measures, unless the state control or prohibition is identical to ours.

Aside from the explicit preemption in Section 211(c)(4)(A), a court could also consider whether a state sulfur control is implicitly preempted under the Supremacy Clause of the U.S.

¹⁷⁹In evaluating whether a state fuel prohibition or control is “identical” to a prohibition or control adopted by us, we might consider but is not limited to the following factors in comparing the measures: (1) The level of an emission reduction or pollution control standard for any particular batch of diesel fuel; (2) the use of “per gallon” or “averaged” amounts in setting that level; (3) the lead time allowed to the affected industry for compliance; (4) the test method(s) and sampling requirements used in determining compliance; and (5) reporting and recordkeeping requirements.

Constitution. Courts have determined that a state law is preempted by federal law where the state requirement actually conflicts with federal law by preventing compliance with both federal and state requirements, or by standing as an obstacle to accomplishment of Congressional objectives. A court could thus consider whether a given state sulfur control is preempted, notwithstanding waiver of preemption under 211(c)(4)(C), if it places such significant cost and investment burdens on refiners that refiners cannot meet both state and federal requirements in time, or if the state control would otherwise meet the criteria for conflict preemption.

2. What Provisions Apply in Alaska?

There are important nationwide environmental and public health benefits that will be achieved with cleaner diesel engines and fuel, particularly from reduced particulate emissions, nitrogen oxides, and air toxics (as further discussed in section II). Therefore, it is also important to implement this program in Alaska. Any 2007 and later model year diesel vehicles in Alaska, or driven to Alaska, must be fueled with low sulfur highway diesel, or risk potential damage to the aftertreatment technologies or even the engines themselves. Although the engine standards established today are not based upon different technology and cost implications for Alaska as compared to the rest of the country, the low sulfur fuel program has different implications.

Unlike the rest of the nation, Alaska is currently exempt from the 500 ppm sulfur standard for highway diesel fuel and dye requirements. Since the beginning of the 500 ppm highway diesel fuel program, we have granted Alaska exemptions from meeting the sulfur standard and dye requirements, because of its unique geographical, meteorological, air quality, and economic factors. (These unique factors are discussed generally in this section, and in more detail in the RIA.) Because of these unique factors, we are establishing in today’s action an alternative option for implementing the low sulfur fuel program in Alaska.

We are providing the State of Alaska an opportunity to develop an alternative low sulfur transition plan. We intend to facilitate the development of this plan by working in close cooperation with the state and key stakeholders. This plan must ensure that sufficient supplies of low sulfur diesel fuel are available in Alaska to meet the demand of any new 2007 and later model year diesel vehicles. Given that Alaska’s

demand for highway diesel fuel is very low and only a small number of new diesel vehicles are introduced in Alaska each year, it may be possible to develop an alternative implementation plan for Alaska in the early years of the program that provides low sulfur diesel only in sufficient quantities to meet the demand from the small number of new diesel vehicles. This would give Alaska refiners more flexibility during the transition period because they would not have to desulfurize the entire highway diesel volume. Our goal in offering this additional flexibility is to transition Alaska into the low sulfur fuel program in a manner that minimizes costs, while still ensuring that the new vehicles receive the low sulfur fuel they need. We expect that the transition plan will begin to be implemented at the same time as the national program, but the state will have an opportunity to determine what volumes of low sulfur fuel must be supplied, and in what timeframes, in different areas of the state.

At a minimum, this transition plan must: (1) Ensure an adequate supply (either through production or imports) of 15 ppm fuel to meet the demand of any 2007 or later model year vehicles, (2) ensure sufficient retail availability of low sulfur fuel for new vehicles in Alaska, (3) address the growth of supply and availability over time as more new vehicles enter the fleet, (4) include measures to ensure segregation of the 15 ppm fuel and avoid contamination and misfueling, and (5) ensure enforceability. We anticipate that, to develop a workable transition plan, the state will likely work in close cooperation with refiners and other key stakeholders, including retailers, distributors, truckers, engine manufacturers, environmental groups, and other interested groups. For example, the state will likely rely on input from the trucking industry in determining the expected low sulfur fuel volume needed in Alaska, based on the anticipated number of new vehicles, and how this volume is expected to grow during the first few years of the program. Similarly, the state will likely rely on the Alaska refiners’ input regarding plans for supplying (either through production or imports) low sulfur fuel to meet the expected demand. Further, the state will likely rely on input and cooperation from retailers and distributors to determine at which locations the low sulfur fuel should be made available. Retailers offering low sulfur fuel will have to take measures to prevent misfueling, such as pump labeling, which must include

provisions that are at least as stringent as those required of retailers nationally by the regulations and as described in section VII. Similarly, all parties in the distribution system must ensure the low sulfur fuel remains segregated and must take measures to prevent sulfur contamination, in a manner that is at least as stringent as that required nationally by the regulations and as described in section VII.

If the state anticipates that the primary demand for low sulfur fuel will be along the highway system (e.g., to address truck traffic from the lower-48 states) in the early years of the program, then the initial stages of the transition plan could be focused in these areas. We believe it would be appropriate for the state to consider an extended transition schedule for implementing the low sulfur program in rural Alaska, as part of the state's overall plan, based on when they anticipate the introduction of a significant number of 2007 and later model year vehicles in the remote areas.

Under this approach, the state will be given the opportunity to develop such a transition plan, as an alternative to the national program, and submit it to us for approval. We intend to help facilitate the development of the plan, by working closely with the state and the relevant stakeholders so they will have an opportunity to address our concerns in their submittal. It is our intent that any flexibility that is available to small refiners nationwide (as described in Section IV) will also be available to small refiners in Alaska under an approved alternative transition plan. To ensure that refineries and other affected parties will have certainty regarding their regulatory requirements with adequate lead time, Alaska must submit this plan by April 1, 2002 (approximately one year after the effective date of today's rule). If Alaska submits such a plan to us within one year, and if it provides a reasonable alternative as described above, we will conduct a rulemaking with notice for public comment and then publish a final rule promulgating the new regulatory scheme for Alaska. Our intent is to issue such a final rule within one year of Alaska's submittal of the plan. However, if the state chooses not to submit an alternative plan, or if the plan it submits does not provide a reasonable alternative for Alaska as described above, then refiners and other regulated parties in Alaska will be subject to the national program, including the implementation schedule established in today's action, without further regulatory action.

a. Today's Action Regarding the 500 ppm Standard in Alaska

We are extending the existing temporary exemption from the current diesel fuel sulfur standard of 500 ppm for the areas of Alaska served by the Federal Aid Highway System (FAHS) to the effective date for the new standard (*i.e.*, June 1, 2006 at the refinery level; July 15, 2006 at the terminal level; and September 1, 2006 at all downstream locations). While Alaska submitted a petition for a permanent exemption from the 500 ppm standard for these areas, we are not taking further action on that petition. Our goal is to take action on that petition in a way that minimizes costs through Alaska's transition to the new low sulfur program. The cost of compliance could be reduced if Alaska refiners were given the flexibility to meet the low sulfur standard in one step, rather than two steps (*i.e.*, once for the current 500 ppm sulfur standard in 2004 when the temporary exemption expires, and again for the new 15 ppm standard in 2006).

As already discussed, we are allowing Alaska to develop an alternative transition plan for implementing the low sulfur diesel fuel program. During such a transition period, it is possible that both low sulfur diesel fuel (for 2007 and later model year vehicles) and higher sulfur (for older vehicles) highway fuels might be available in Alaska. To avoid the two-step sulfur program described above during an alternative transition period, we will consider additional extensions to the temporary exemption of the 500 ppm standard beyond 2006 (*e.g.*, for that portion of the highway diesel pool that is available for the pre-2007 vehicles) during Alaska's transition period. We will make a decision on any additional temporary extensions, if appropriate, in the context of the separate rulemaking taking action on the alternative transition plan submitted by Alaska.

As in previous actions to grant Alaska sulfur exemptions, we will not base any vehicle or engine recall on emissions exceedences caused by the use of high-sulfur (>500 ppm) fuel in Alaska during the period of the temporary sulfur exemption. Our in-use testing goals are to establish whether representative engines, when properly maintained and used, will meet emission standards for their useful lives. These goals are consistent with the requirements for recall outlined in Section 207(c)(1) of the CAA. Further, manufacturers may have a reasonable basis for denying emission related warranties where damage or failures are caused by the use of high sulfur fuel in Alaska.

The Engine Manufacturers Association commented that the level of protection provided to engine manufacturers under the current exemption for Alaska and the proposal, as described above, falls short of what is reasonable and necessary. It asserted that the use of high sulfur diesel fuel by an engine should raise a "rebuttable presumption" that the fuel has caused the engine failure, and that EPA should have the burden of rebutting that presumption. It also asserted that the emissions warranty is a regulatory requirement under Section 207, that only EPA has the authority to exclude claims based on the use of high sulfur diesel fuel. We understand and concur with the manufacturers' concerns about in-use testing of engines operated in an area exempt from fuel sulfur requirements. Consequently, we affirm that, for recall purposes, we will not seek to conduct or cause the in-use testing of engines we know have been exposed to high sulfur fuels. We will likely screen any engines used in our testing program to see if they have been operated in the exempt area. We believe we can readily obtain sufficient samples of engines without testing engines from exempt areas. Also, in any recall that we order, manufacturers have the option of requesting a public hearing. The use of engines that have seen high sulfur fuel will increase the likelihood of a recall hearing. We expect manufacturers to scrutinize any test engines for sulfur usage that were used to justify an ordered recall. In reviewing the warranty concerns of the Engine Manufacturers Association, we have determined that our position regarding warranties, as previously stated and described above, is consistent with section 207(a) and (b) of the CAA and does not require any new or amended regulatory language to implement.

Today's action also grants Alaska's request for a permanent exemption from the dye requirement of 40 CFR 80.29 and 40 CFR 80.446 for the entire state. The costs of complying with the low sulfur (both the current 500 ppm sulfur and new 15 ppm sulfur) diesel fuel requirements could be reduced significantly if Alaska were not required to dye the non-highway fuel. Dye contamination of other fuels, particularly jet fuel, is a serious potential problem. This is a serious issue in Alaska since the same transport and storage tanks used for jet fuel (which is more than half of Alaska's distillate market) are generally also used for other diesel products, including off-highway diesel products which are required to be dyed under the current

national program. This issue is discussed further in the RIA (Chapter VIII).

b. Why Are We Treating Alaska Uniquely?

Section 211(i)(4) of the Clean Air Act (CAA) provides that the states of Alaska and Hawaii may seek an exemption from the diesel fuel sulfur standard (500 ppm as specified in section 211(i)) in the same manner as provided in section 325 of the CAA. The requested exemption could be granted if EPA determines that compliance with such requirement is not feasible or is unreasonable due to unique geographical, meteorological, or economic factors of the territory, or other local factors as EPA considers significant.

On February 12, 1993, Alaska submitted a petition under section 325 of the CAA to exempt highway vehicle diesel fuel in Alaska from paragraphs (1) and (2) of section 211(i) of the CAA, except for the minimum cetane index requirement.¹⁸⁰ The petition requested that we temporarily exempt highway vehicle diesel fuel in communities served by the FAHS from meeting the sulfur content (500 ppm) specified in section 211(i) of the CAA and the dye requirement for non-highway diesel fuel of 40 CFR 80.29, until October 1, 1996. The petition also requested a permanent exemption from those requirements for areas of Alaska not reachable by the FAHS's remote areas. On March 22, 1994, (59 FR 13610), we granted the petition based on geographical, meteorological, air quality, and economic factors unique to Alaska.

On December 12, 1995, Alaska submitted a petition for a permanent exemption for all areas of the state served by the FAHS, that is, those areas covered only by the temporary exemption. On August 19, 1996, we extended the temporary exemption until October 1, 1998 (61 FR 42812), to give us time to consider comments to that petition that were subsequently submitted by stakeholders. On April 28, 1998 (63 FR 23241) we proposed to grant the petition for permanent exemption. Substantial public comments and substantive new information were submitted in response to the proposal. To give us time to consider those comments and new information, we extended the temporary exemption for another nine months until July 1, 1999 (September 16, 1998,

63 FR 49459). During this time period, we started work on a nationwide rule to consider more stringent diesel fuel requirements, particularly for the sulfur content (today's action). To coordinate the decision on Alaska's request for a permanent exemption with the new nationwide rule on diesel fuel quality, we extended the temporary exemption until January 1, 2004 (June 25, 1999, 64 FR 34126).

As discussed in the previous section, in today's action we are extending the temporary exemption from the 500 ppm diesel fuel sulfur standard to the effective date for the new nationwide 15 ppm diesel fuel sulfur standard in 2006. While it is important to implement in Alaska the cleaner diesel engines and fuel of today's action, our goal is to take action on the petition in a way that minimizes costs through Alaska's transition to the new low sulfur program. The cost of compliance could be reduced if Alaska refiners were given the flexibility to meet the low sulfur standard in one step (i.e., going straight from uncontrolled levels to the 15 ppm sulfur standard), rather than in two steps. We considered the prior public comments we received as a result of our previous notices and actions regarding exemptions from the 500 ppm sulfur standard for highway diesel fuel in Alaska (see RIA).

Unlike in the rest of the country, diesel fuel consumption for highway use in Alaska represents only five percent of the State's total distillate fuel consumption. Aviation and marine applications, power generation and heating consume most of the distillate, while Alaska's highway diesel vehicle fleet is relatively small, particularly outside the FAHS. The state estimates that there are less than 9000 diesel vehicles in the entire state, with less than 600 of these vehicles in all of rural Alaska. The state also indicates that new model vehicles are introduced into the Alaska market at a slower rate than elsewhere, thus Alaska does not need to transition its highway fuel to low sulfur as quickly as the rest of the nation.

Most of the fuel consumed in Alaska is produced by refineries located in Alaska. This is primarily because of the more severe cloud point specification needed for the extremely low temperatures experienced in much of Alaska during the winter and the high cost to import fuel that is produced elsewhere. There are four commercial refineries in Alaska. Only one of these refineries currently has any desulfurization capacity, which is relatively small. Consequently, because these refineries will have to reduce sulfur from uncontrolled levels to meet

the new 15 ppm standard established by today's action, these refineries could incur substantially higher costs than those in the rest of the nation. Given the very small highway diesel demand, however, it is doubtful that more than one or two Alaska refineries will choose to produce low sulfur highway fuel, and these refiners could even decide to import it from refineries outside of Alaska.

Further, Alaska's fuel distribution system faces many unique challenges. Unlike the rest of the country, because of its current exemption from the 500 ppm sulfur standard and dye requirements, Alaska does not currently segregate highway diesel fuel from that used for off-road, marine, heating oil, and other distillate uses. Therefore, the distribution system costs for segregating a low sulfur grade of diesel for highway uses will be significant. The existing fuel storage facilities limit the number of fuel types that can be stored. In addition to significant obstacles to expanding tankage in Alaska, the cost of constructing separate storage facilities, and providing separate tanks for transporting low sulfur diesel fuel (e.g., by barge or truck), could be significant. Most of Alaska's communities rely on barge deliveries, and ice formation on the navigable waters during the winter months restricts fuel delivery to these areas. Construction costs are 30 percent higher in Alaska than in the lower-48 states, due to higher costs for freight deliveries, materials, electrical, mechanical, and labor. There is also a shorter period of time during which construction can occur, because of seasonal extremes in temperature and the amount of daily sunlight.

The severe impacts to Alaska's fuel distribution system of implementing a low sulfur requirement for highway diesel fuel would likely occur whether we require the current 500 ppm standard or the new 15 ppm standard. The impacts to Alaska's refineries and fuel importers are greater at 15 ppm than at 500 ppm. It is likely that the refiners and fuel importers would have a significant incremental impact if we required Alaska to implement the 500 ppm diesel fuel sulfur standard in 2004 when the current exemption expires, and the 15 ppm diesel fuel sulfur standard in 2006 when the new national requirement becomes effective, rather than only once for the 15 ppm diesel fuel sulfur standard in 2006.

¹⁸⁰ Copies of information regarding Alaska's petition for exemption, subsequent requests by Alaska, public comments received, and actions by EPA are available in public docket A-96-26.

3. What Provisions Apply in American Samoa, Guam, and the Commonwealth of Northern Mariana Islands?

a. Today's Action Regarding the Highway Diesel Fuel Standard in the Territories

As we proposed, today's action excludes American Samoa, Guam and the Commonwealth of Northern Mariana Islands from the new diesel fuel sulfur requirement of 15 ppm and the 2007 heavy-duty diesel vehicle and engine emissions standards, and other requirements associated with those emission standards. The territories will continue to have access to 2006 heavy-duty diesel vehicle and engine technologies, at least as long as manufacturers choose to market those technologies. We will not, however, allow the emissions control technology in the territories to backslide from those available in 2006. If, in the future, manufacturers choose to market only heavy-duty diesel vehicles and engines with 2007 and later emission control technologies, we believe the market will determine when and if the territories will make the investment needed to obtain and distribute the low sulfur diesel fuel necessary to support these technologies.

This exclusion from emission standards does not apply to the new heavy-duty gasoline engine and vehicle emission standards, because low sulfur gasoline that complies with our regulations will be available, and so concerns about damage to engines and emissions control systems will not exist. This exclusion from emission standards also does not apply to light-duty diesel vehicles and trucks because gasoline vehicles and trucks meeting the emission standards and capable of fulfilling the same functions will be available. We believe that the market will determine when and if having access to new light-duty diesel technologies in the territories, in place of or in addition to gasoline technologies, is important enough to obtain and distribute the low sulfur diesel fuel needed to support those technologies.

As we also proposed, we are requiring all heavy-duty diesel motor vehicles and engines for these territories to be certified and labeled to the applicable requirements (either to the 2006 model year standards and associated requirements under the exclusion, or to the standards and associated requirements applicable for the model year of production under the nationwide requirements) and warranted, as otherwise required under the Clean Air Act and EPA regulations.

Special recall and warranty considerations due to the use of excluded high sulfur fuel are the same as those for Alaska during its exemption and transition periods (see the discussion in previous section). To protect against this exclusion being used to circumvent the emission requirements applicable to the rest of the United States (*i.e.*, continental United States, Alaska, Hawaii, Puerto Rico and the U.S. Virgin Islands) after 2006 by routing exempted (pre-2007 technology) vehicles and engines through one of these territories, we are restricting the importation of vehicles and engines from these territories into the rest of the United States. After the 2006 model year, diesel vehicles and engines certified under this exclusion to meet the 2006 model year emission standards for sale in American Samoa, Guam and the Commonwealth of the Northern Mariana Islands will not be permitted entry into the rest of the United States.

b. Why Are We Treating These Territories Uniquely?

Unlike the rest of the nation (except Alaska), these territories are currently exempt from the 500 ppm sulfur standard for highway diesel fuel. Section 325 of the CAA provides that upon request of Guam, American Samoa, the Virgin Islands, or the Commonwealth of the Northern Mariana Islands, we may exempt any person or source, or class of persons or sources, in that territory from any requirement of the CAA, with some specific exceptions. The requested exemption could be granted if we determine that compliance with such requirement is not feasible or is unreasonable due to unique geographical, meteorological, or economic factors of the territory, or other local factors as we consider significant.

Prior to the effective date of the current highway diesel sulfur standard of 500 ppm, the territories of American Samoa, Guam and the Commonwealth of Northern Mariana Islands petitioned us for an exemption under section 325 of the CAA from the sulfur requirement under section 211(i) of the CAA and associated regulations at 40 CFR 80.29. The petitions were based on geographical, meteorological, air quality, and economic factors unique to those territories. We subsequently granted the petitions.¹⁸¹

These U.S. territories are islands with limited transportation networks.

¹⁸¹ See 57 FR 32010, July 20, 1992 for American Samoa; 57 FR 32010, July 30, 1992 for Guam; and 59 FR 26129, May 19, 1994 for CNMI.

Combined, these three territories have only approximately 1300 registered diesel vehicles. Diesel fuel consumption in these vehicles represents just a tiny fraction of the total diesel fuel volume consumed on these islands; the bulk of diesel fuel is burned in marine, nonroad, and stationary applications. Consequently highway diesel vehicles are believed to have a negligible impact on the air quality in these territories, which, with minor exceptions, is very good.

All three of these territories lack internal petroleum supplies and refining capabilities and rely on long distance imports. Given their remote location from Hawaii and the U.S. mainland, most petroleum products are imported from East rim nations, particularly Singapore. Although Australia, the Philippines, and certain other Asian countries have or will soon require low sulfur diesel fuel, their sulfur limit is 500 ppm, not the new 15 ppm sulfur limit established by today's action for the United States. Compliance with low sulfur (15 ppm) requirements for highway fuel would require construction of separate storage and handling facilities for small quantities of a unique grade of diesel fuel for highway purposes, or use of low sulfur (15 ppm) diesel fuel for all purposes to avoid segregation. Either of these alternatives would require importation of the low sulfur fuel from Hawaii or the U.S. mainland, and would significantly add to the already high cost of diesel fuel in these territories, which rely heavily on United States support for their economies.

G. Refinery Air Permitting

Prior to making diesel desulfurization changes, some refineries may be required to obtain a preconstruction permit, under the New Source Review (NSR) program, from the applicable state/local air pollution control agency.¹⁸² We believe that today's program provides sufficient lead time for refiners to obtain any necessary NSR permits well in advance of the compliance date. Further, refiners will be able to stagger their construction of desulfurization projects, since many

¹⁸² Hydrotreating diesel fuel involves the use of process heaters, which have the potential to emit pollutants associated with combustion, such as NO_x, PM, CO and SO₂. In addition, reconfiguring refinery processes to add desulfurization equipment could increase fugitive VOC emissions. The emissions increases associated with diesel desulfurization will vary widely from refinery to refinery, depending on many source-specific factors, such as crude oil supply, refinery configuration, type of desulfurization technology, amount of diesel fuel produced, and type of fuel used to fire the process heaters.

refineries could take advantage of the temporary compliance option for low sulfur diesel fuel from 2006–2009, as described in Section IV.A. Although some refiners commented that obtaining air permits would be a factor in their ability to comply in the 2006 time frame, state/local agencies commented that they will make the issuance of permits a top priority, because they strongly support achieving the environmental objectives of the low sulfur highway diesel program. State/local agencies further commented that they are committed to working with all affected parties to expedite the processing and issuance of any necessary permits.

For the Tier 2/gasoline sulfur control program promulgated in December 1999, refiners had expressed concerns that permit delays might impede their ability to meet compliance dates. Although we believed that the Tier 2 program provided sufficient lead time for refiners to obtain permits, we committed to undertake several actions to minimize the possibility of any delays for refineries obtaining major NSR permits for gasoline desulfurization projects. These actions include providing federal guidance on emission control technologies¹⁸³ and the appropriate use of motor vehicle emission reductions (resulting from the use of low sulfur gasoline), where available, as emission offsets, as well as forming EPA permit teams to assist states in quickly resolving issues, where needed. These three items are discussed in more detail in the Tier 2 final rule (see 65 FR 6773, Feb. 10, 2000).

Given that today's diesel sulfur program provides more than five years of lead time, as well as an additional transitional period, we believe refiners will have ample time to obtain any necessary preconstruction permits. Nevertheless, we believe it is reasonable to continue our efforts under the Tier 2 program, as described above, to help states in facilitating the issuance of permits under the highway diesel sulfur program. For example, the guidance on BACT and LAER control technology that is currently under development for the gasoline sulfur program should have application for diesel desulfurization projects as well. We will plan to reevaluate this guidance to the extent that it may need to be revised or updated for application to highway diesel desulfurization projects. Similarly, we believe the concept of EPA permit teams for gasoline sulfur

projects could readily be extended to permits related to diesel projects as well. These teams will track the overall progress of permit issuance and will be available to assist state/local permitting authorities, refineries and the public upon request to resolve site-specific permitting questions. Further, in Tier 2, we announced our plan to issue guidance to help states determine whether and to what extent they may wish to use vehicle emissions reductions as offsets for refineries implementing gasoline desulfurization projects. We are currently in the process of evaluating public comments received on the draft guidance relating to the use of Tier 2 reductions as refinery offsets. Whatever resolution we determine is appropriate for this guidance in the Tier 2 context, we plan to apply a similar approach for diesel desulfurization projects as well. Finally, to facilitate the processing of permits, we encourage refineries to begin discussions with permitting agencies and to submit permit applications as early as possible.

V. Economic Impact

This Section discusses the projected economic impact and cost effectiveness of the emission standards and low-sulfur fuel requirement. Full details of our cost and cost effectiveness analyses can be found in the RIA.

A. Cost for Diesel Vehicles to Meet Emissions Standards

1. Summary of New System and Operating Costs

The technologies described in Section III represent significant technological advancements for controlling emissions, but also make clear that much effort remains to develop and optimize these new technologies for maximum emission-control effectiveness with minimum negative impacts on engine performance, durability, and fuel consumption. On the other hand, it has become clear that manufacturers have a great potential to advance beyond the current state of understanding by identifying aspects of the key technologies that contribute most to hardware or operational costs or other drawbacks and pursuing improvements, simplifications, or alternatives to limit those burdens. To reflect this investment in long-term cost savings potential, the cost analysis includes an estimated \$385 million in R&D outlays for heavy-duty engine designs and \$220 million in R&D for catalysts systems giving a total R&D outlay for improved emission control of more than \$600 million. The cost and technical feasibility analyses accordingly reflect

substantial improvements on the current state of technology due to these future developments.

Estimated costs are broken into additional hardware costs and life-cycle operating costs. The incremental hardware costs for new engines are comprised of variable costs (for hardware and assembly time) and fixed costs (for R&D, retooling, and certification). Total operating costs include the estimated incremental cost for low-sulfur diesel fuel, any expected increases in maintenance cost or fuel consumption costs along with any decreases in operating cost expected due to low-sulfur fuel. Cost estimates based on these projected technology packages represent an expected incremental cost of engines in the 2007 model year. Costs in subsequent years will be reduced by several factors, as described below. Separate projected costs were derived for engines used in three service classes of heavy-duty diesel engines. All costs are presented in 1999 dollars.

The costs of these new technologies for meeting the 2007 model year standards are itemized in the RIA and summarized in Table V.A–1. For light heavy-duty vehicles, the cost of an engine is estimated to increase by \$1,990 in the early years of the program reducing to \$1,170 in later years and operating costs over a full life-cycle to increase by approximately \$500 in the near term. For medium heavy-duty vehicles the cost of a new engine is estimated to increase by \$2,560 initially decreasing to \$1,410 in later years with life-cycle operating costs increasing by approximately \$900 in the near term. Similarly, for heavy heavy-duty engines, the vehicle cost in the first year is expected to increase by \$3,230 decreasing to \$1,870 in later years. Estimated additional life-cycle operating costs for heavy heavy-duty engines in the near term are approximately \$3,800. The higher incremental increase in operating costs for the heavy heavy-duty vehicles is due to the larger number of miles driven over their lifetime (714,000 miles on average) and their correspondingly high lifetime fuel usage. Emission reductions are also proportional to VMT and so are significantly higher for heavy heavy-duty vehicles.

We also believe there are factors that will cause cost impacts to decrease over time, making it appropriate to distinguish between near-term and long term costs. Research in the costs of manufacturing has consistently shown that as manufacturers gain experience in production, they are able to apply innovations to simplify machining and

¹⁸³ Best Available Control Technology (BACT) and Lowest Achievable Emission Rate (LAER) technology.

assembly operations, use lower cost materials, and reduce the number or complexity of component parts.¹⁸⁴ Our analysis, as described in more detail in the RIA, incorporates the effects of this learning curve by projecting that the variable costs of producing the low-emitting engines decreases by 20 percent starting with the third year of production (2009 model year) and by reducing variable costs again by 20

percent starting with the fifth year of production. Additionally, since fixed costs are assumed to be recovered over a five-year period, these costs are not included in the analysis after the first five model years. Finally, manufacturers are expected to apply ongoing research to make emission controls more effective and to have lower operating cost over time. However, because of the uncertainty involved in forecasting the

results of this research, we have conservatively not accounted for it in this analysis. Table V.A–1 lists the projected costs for each category of vehicle in the near-and long-term. For the purposes of this analysis, “near-term” costs are those calculated for the 2007 model year and “long term” costs are those calculated for 2012 and later model years.

TABLE V.A–1.—PROJECTED INCREMENTAL SYSTEM COST AND LIFE CYCLE OPERATING COST FOR HEAVY-DUTY DIESEL VEHICLES

[net present values in the year of sale, 1999 dollars]

Vehicle class	Model year	Hardware cost	Life-cycle operating cost ^{a b}
Light	near term	1,990	509
Heavy-duty	long term	1,170	537
Medium	near term	2,560	943
Heavy-duty	long term	1,410	996
Heavy	near term	3,230	3,785
Heavy-duty	long term	1,870	3,979

^a Incremental life-cycle operating costs include the incremental costs to refine and distribute low sulfur diesel fuel, the service cost of closed crankcase filtration systems, the maintenance cost for PM filters and the lower maintenance costs realized through the use of low sulfur diesel fuel (see discussion in Section V.C).

^b These costs are for new vehicles only and do not reflect any costs or savings for the existing fleet.

2. New System Costs for NO_x and PM Emission Control

Several new technologies are projected for complying with the 2007 model year emission standards. We are projecting that NO_x adsorbers and catalyzed diesel particulate filters will be the most likely technologies applied by the industry in order to meet the emissions standards. The fact that manufacturers will have several years before implementation of the new standards ensures that the technologies used to comply with the standards will develop significantly before reaching production. This ongoing development could lead to reduced costs in three ways. First, we expect research will lead to enhanced effectiveness for individual technologies, allowing manufacturers to use simpler packages of emission control technologies than we would predict given the current state of development. Similarly, we anticipate that the continuing effort to improve the emission control technologies will include innovations that allow lower-cost production. Finally, we believe that manufacturers will focus research efforts on any drawbacks, such as fuel economy impacts or maintenance costs, in an effort to minimize or overcome any potential negative effects.

We anticipate that in order to meet the standards, industry will introduce a

combination of primary technology upgrades for the 2007 model year. Achieving very low NO_x emissions will require continued development of NO_x emission control technologies and improvements in engine management to take advantage of the exhaust emission control system capabilities. The manufacturers are expected to take a systems approach to the problem of optimizing the engine and exhaust emission control system to realize the best overall performance possible. Since most research to date with exhaust emission control technologies has focused on retrofit programs, there remains room for significant improvements by taking such a systems approach. The NO_x adsorber technology in particular is expected to benefit from re-optimization of the engine management system to better match the NO_x adsorbers performance characteristics. The majority of the \$600 million dollars we have estimated for research is expected to be spent on developing this synergy between the engine and NO_x exhaust emission control systems. PM control technologies are expected to be less sensitive to engine operating conditions as they have already shown good robustness in retrofit applications with low-sulfur diesel fuel.

The NO_x adsorber system that we are anticipating will be applied in 2007 consists of a catalyst which combines traditional gasoline three-way conversion technology with a newly developed NO_x storage function, a reductant metering system and a means to control exhaust air fuel (A/F) ratio. The NO_x adsorber catalyst itself is a relatively new device, but is benefitting in its development from over 20 years of gasoline three-way catalyst development. In order for it to function properly, a systems approach that includes a reductant metering system and control of exhaust A/F ratio is also necessary. Many of the new air handling and electronic system technologies developed in order to meet the 2004 heavy-duty engine standards can be applied to accomplish the NO_x adsorber control functions as well. Some additional hardware for exhaust NO_x or O₂ sensing, for exhaust partitioning and for fuel metering will likely be required. The RIA also calculates an increase in warranty costs for this additional hardware. In total the new NO_x control technologies required in order to meet the 2007 emission standards are estimated to increase light heavy-duty engine costs by \$1,000, medium heavy-duty engine costs by \$1,310 and heavy heavy-duty engine costs by \$1,650 in the year 2007. In the year 2012 and

¹⁸⁴ See Chapter V of the final Tier 2 Regulatory Impact Analysis, contained in Air Docket A–97–10.

beyond the incremental costs are expected to decrease to \$590 for a light heavy-duty engine, \$690 for a medium heavy-duty engine and to \$930 for a heavy heavy-duty engine.

Catalyzed diesel particulate filters are experiencing widespread retrofit use in much of Europe as low-sulfur diesel fuel becomes readily available. These technologies are proving to be robust in their non-optimized retrofit applications requiring no modification to engine or vehicle control functions. We therefore anticipate that catalyzed diesel particulate filters can be integrated with new diesel engines with only a minimal amount of engine development. We do not anticipate that additional hardware beyond the diesel particulate filter itself and an exhaust pressure sensor for OBD will be required in order to meet the PM standard. However, in order to ensure trap durability under all possible operating conditions, some engine manufacturers may choose to provide backup regeneration technologies for their PM filter based systems. As detailed further in the RIA and the RTC documents, we do not anticipate that these redundant systems will add to variable costs. We estimate in 2007 that diesel particulate filter systems will add \$730 to the cost of a light heavy-duty vehicle, \$950 to the cost of a medium heavy-duty vehicle and \$1,190 to the cost of a heavy heavy-duty vehicle. By 2012 these costs are expected to decrease to \$425, \$530, and \$690 respectively. These cost estimates are comparable to estimates made by the Manufacturers of Emission Controls Association for these technologies.¹⁸⁵

The hydrocarbon (HC) exhaust standards set in this rulemaking will be challenging for both diesel and gasoline engine technologies. For diesel engines utilizing the NO_x adsorber based technology solution to control NO_x emissions, HC control due to imprecise NO_x regeneration control may be difficult. One way to ensure HC compliance will be to apply a separate diesel oxidation catalyst which can control HC emissions to the limits set here. These diesel oxidation catalysts are expected to add an additional cost to the system of \$206 for light heavy-duty vehicles, \$261 for medium heavy-duty vehicles, and \$338 for heavy heavy-duty vehicles.

We have eliminated the exemption that allowed turbo-charged heavy-duty diesel engines to vent crankcase gases

directly to the environment, so called open crankcase systems, and have projected that manufacturers will rely on engineered closed crankcase ventilation systems which filter oil from the blow-by gases. We estimate that the initial cost of these systems in 2007 will be \$37, \$42, and \$49 for light, medium and heavy heavy-duty diesel engines respectively. Additionally we expect a portion of the oil filtration system to be a service replacement oil filter which will be replaced on a 30,000 mile service interval with a service cost of \$10, \$12, and \$15 for light, medium, and heavy heavy-duty diesel engines respectively. These cost are summarized with the other cost for emission controls in Table V.A-1 and are included in the aggregate cost reported in Section V.D.

3. Operating Costs Associated With NO_x and PM Control

The RIA assumes that a variety of new technologies will be introduced to enable heavy-duty vehicles to meet the new emissions standards. Primary among these are advanced emission control technologies and low-sulfur diesel fuel. The many benefits of low-sulfur diesel fuel are described in Section III, and the incremental cost for low-sulfur fuel is described in Section V.C. The new emission control technologies are themselves not expected to introduce additional operating costs in the form of increased fuel consumption. Operating costs are estimated in the RIA over the life of the vehicle and are expressed as a net present value (NPV) in 1999 dollars for comparison purposes.

Total operating cost estimates include both the expected increases in maintenance and fuel costs (both the incremental cost for low-sulfur fuel and any fuel consumption penalty) due to the emission control systems application and the predicted decreases in maintenance cost due to the use of low-sulfur fuel. Our analysis projects some increase in operating costs due to the incremental cost of low-sulfur diesel fuel but no net increase in fuel consumption with the application of the new emission control technologies (see discussion in Section III.G). The net increase in operating costs are summarized in Table V.A-1. While we are using these incremental operating cost estimates for our cost effectiveness calculations, it is almost certain that the manufacturers will improve existing technologies or introduce new technologies in order to offset at least some of the increased operating costs.

We estimate that the low-sulfur diesel fuel required in order to enable these technologies will have an incremental

cost of approximately \$0.045/gallon in the near term increasing to \$0.050/gallon in the long term as discussed in Section V.C. The low-sulfur diesel fuel may also provide additional benefits by reducing the engine maintenance costs associated with corrosion due to sulfur in the current diesel fuel. These benefits, which are discussed further in Section V.C.5 and in the RIA, include extended oil change intervals due to the slower acidification rate of the engine oil with low-sulfur diesel fuel. Service intervals for the EGR system are also expected to increase due to lower-sulfur induced corrosion than will occur with today's higher-sulfur fuel. This lengthening of service intervals provides a significant savings to the end user. As described in more detail in the RIA we anticipate that low-sulfur diesel fuel will provide additional cost savings to the consumer of \$153 for light heavy-duty vehicles, \$249 for medium heavy-duty vehicles and \$610 dollars for heavy heavy-duty vehicles.

The operating costs for replacement filters in the closed crankcase filtration systems expressed as a net present value in the year of sale are estimated to be \$31 for light heavy-duty vehicles, \$59 for medium heavy-duty vehicles and \$218 for heavy heavy-duty vehicles for vehicles sold in 2007.

PM filter based technologies capture all forms of particulate in the exhaust including inorganic solid particles which can come from the engine oil or wear products of the engine. These inorganic particles (often call ash) must be periodically cleaned from the particulate filter. We have estimated the additional maintenance cost to clean the PM filter expressed as a net present value in the year of sale of \$55 for light heavy-duty vehicles, \$56 for medium heavy-duty vehicles and \$208 dollars for heavy heavy-duty vehicles, as detailed in the RIA.

Factoring the cost savings due to low sulfur diesel fuel into the additional cost for low-sulfur diesel fuel and the service cost of the closed crankcase ventilation system and the PM filter system yields an increase in vehicle operating costs expressed as a net present value in the year of sale of \$509 for a light heavy-duty vehicle, \$943 for a medium heavy-duty vehicle and \$3,785 for a heavy heavy-duty vehicle. These life cycle operating costs are also summarized in Table V.A-1. The net increase in operating cost can also be expressed as an average annual operating cost for each class of heavy-duty vehicle by dividing the total undiscounted operating costs by the average vehicle life assumed to be 9 years for light heavy-duty vehicles, and

¹⁸⁵ Letter from Bruce Bertelsen, Manufacturers of Emission Controls Association (MECA) to William Charmley, US EPA, December 17, 1998. The letter documents a MECA member survey of expected diesel particulate filter costs. Air Docket A-98-32 Item II-D-09.

11 years for medium and heavy heavy-duty engines. Expressed as an approximate annual per vehicle cost, the additional operating cost is estimated as \$80 for a light heavy-duty vehicle, \$130 for a medium heavy-duty vehicle, and \$510 for a heavy heavy-duty vehicle.

B. Cost for Gasoline Vehicles to Meet the New Emissions Standards

1. Summary of New System Costs

To perform a cost analysis for the final gasoline standards, we first determined a package of likely technologies that manufacturers could use to meet the standards and then determined the costs of those technologies. In making our estimates, we have relied on our own technology assessment which included publicly available information such as that developed by California, confidential information supplied by individual manufacturers, and the results of our own in-house testing.

In general, we expect that heavy-duty gasoline vehicles would (like Tier 2 light duty vehicles) be able to meet these standards through refinements of current emissions control components and systems rather than through the widespread use of new technology. More specifically, we anticipate a combination of technology upgrades such as the following:

- Improvements to the catalyst system design, structure, and formulation, plus an increase in average catalyst size and loading.
- Air and fuel system modifications including changes such as improved oxygen sensors, and calibration changes including improved precision fuel control and individual cylinder fuel control.
- Exhaust system modifications, possibly including air gapped components, insulation, leak free

exhaust systems, and thin wall exhaust pipes.

- Increased use of fully electronic exhaust gas recirculation (EGR).
- Increased use of secondary air injection.
- Use of ignition spark retard on engine start-up to improve upon cold start emission control.
- Use of low permeability materials and minor improvements to designs, such as the use of low-loss connectors, in evaporative emission control systems.

We expect that the technologies needed to meet the heavy-duty gasoline standards will be very similar to those required to meet the Tier 2 standards for vehicles over 8,500 pounds GVWR. Few heavy-duty gasoline vehicles currently rely on technologies such as close coupled catalysts and secondary air injection, but we expect they would to meet the new standards.

For each group we developed estimates of both variable costs (for hardware and assembly time) and fixed costs (for R&D, retooling, and certification). Cost estimates based on the current projected costs for our estimated technology packages represent an expected incremental cost of vehicles in the near-term. For the longer term, we have identified factors that would cause cost impacts to decrease over time. First, since fixed costs are assumed to be recovered over a five-year period, these costs disappear from the analysis after the fifth model year of production. Second, the analysis incorporates the expectation that manufacturers and suppliers would apply ongoing research and manufacturing innovation to making emission controls more effective and less costly over time. Research in the costs of manufacturing has consistently shown that as manufacturers gain experience in production and use, they are able to apply innovations to simplify machining and assembly operations, use

lower cost materials, and reduce the number or complexity of component parts.¹⁸⁶ These reductions in production costs are typically associated with every doubling of production volume. Our analysis incorporates the effects of this "learning curve" by projecting that a portion of the variable costs of producing the new vehicles decreases by 20 percent starting with the third year of production. We applied the learning curve reduction only once since, with existing technologies, there would be less opportunity for lowering production costs than would be the case with the adoption of new technology. We did not apply the learning curve reduction to precious metal costs, nor did we apply it for the evaporative standards.

We have prepared our cost estimates for meeting the new heavy-duty gasoline standards using a baseline of current technologies for heavy-duty gasoline vehicles and engines. Finally, we have incorporated what we believe to be a conservatively high level of R&D spending at \$2,500,000 per engine family where no California counterpart exists. We have included this large R&D effort because calibration and system optimization is likely to be a critical part of the effort to meet the standards. However, we believe that the R&D costs may be generous because the projection probably underestimates the carryover of knowledge from the development required to meet the light-duty Tier 2 and CARB LEV-II standards.

Table V.B-1 provides our estimates of the per vehicle cost for heavy-duty gasoline vehicles and engines. The near-term cost estimates in Table V.B-1 are for the first years that vehicles meeting the standards are sold, prior to cost reductions due to lower productions costs and the retirement of fixed costs. The long-term projections take these cost reductions into account.

TABLE V.B-1.—PROJECTED INCREMENTAL SYSTEM COST AND LIFE CYCLE OPERATING COST FOR HEAVY-DUTY GASOLINE VEHICLES

[Net Present Values in the year of sale, 1999 dollars]

Vehicle class	Model year	Incremental system cost	Life-cycle operating cost
Heavy-Duty	near term	\$198	\$0
Gasoline	long term	167	0

¹⁸⁶ See Chapter V of the final Tier 2 Regulatory Impact Analysis, contained in Air Docket A-97-10.

2. Operating Costs Associated With Meeting the Heavy-Duty Gasoline Standard

Low sulfur gasoline is a fundamental enabling technology which will allow heavy-duty gasoline vehicles to meet the very low emission standards being finalized today. The low sulfur gasoline required under the Tier 2 proposal will enable advanced exhaust emission control for heavy-duty vehicles as well. Today's final rule puts no additional requirements on gasoline sulfur levels and as such should not increase gasoline fuel costs. Additionally, the new technologies being employed in order to meet the new standards are not expected to increase fuel consumption for heavy-duty gasoline vehicles. In fact, there may be some small improvement in fuel economy from the application of improved fuel and air control systems on these engines. Therefore, in the absence of changes to gasoline specifications and with no decrease in fuel economy, we do not expect any increase in vehicle operating costs.

C. Cost of Fuel Change

We estimate that the overall net cost associated with producing and distributing 15 ppm diesel fuel, when those costs are allocated to all gallons of highway diesel fuel, will be approximately 5.0 cents per gallon in the long term, or an annual cost of roughly \$2.2 billion per year once the program is fully effective starting June 1, 2010. During the initial years under temporary compliance option, the overall net cost is projected to be 4.5 cents per gallon, or an annual cost of roughly \$1.7 billion per year.

This cost consists of a number of components associated with refining and distributing the new fuel. The majority of the cost is related to refining. From 2006–2010, refining costs are estimated to be approximately 3.3 cents per gallon of highway diesel fuel (4.1 cents per gallon for that portion produced to the 15 ppm standard), increasing to 4.3 cents per gallon once the program is fully in place. In annual terms, the 2006–2010 refining costs are expected to be about \$1.4 billion per year, increasing to about \$1.8 billion in 2011. These figures include the cost of producing slightly more volume of diesel fuel because: (1) Desulfurization decreases the energy density of the fuel and (2) slightly more highway diesel fuel is expected to be downgraded to nonroad diesel fuel in the distribution system.

A small cost of 0.2 cents per gallon is associated with an anticipated increase in the use of additives to maintain fuel

lubricity. Also, distribution costs are projected to increase by 1.0 cents per gallon during the initial years under the temporary compliance option, including the cost of distributing slightly greater volumes of fuel. Together, these two cost components only amount to about \$0.5 billion per year beginning in 2006. These costs drop to only about \$0.3 billion in 2011.

As discussed in Sections V.A. and V.C.5, operation with 15 ppm sulfur diesel fuel is expected to reduce average vehicle maintenance costs by approximately 1 cent on a per gallon basis. Beginning in 2011, this reduction in maintenance costs will total roughly \$400 million per year. All of these cost estimates are discussed in more detail below and in the RIA.

1. Refinery Costs

As explained in Section IV, EPA believes that refiners will meet the 15 ppm sulfur standard through an extension of the same hydrotreating technology which is used today to meet the current 500 ppm sulfur standard. Meeting the new standard will generally require refiners to install additional hydrotreating equipment. Most refiners are expected to add another hydrotreating reactor and other related equipment to their existing desulfurization unit. However, we project that some refiners, roughly 20 percent, will conclude that it is not economical to add onto their existing unit and will instead build an entirely new hydrotreater.

Consistent with our analysis for the NPRM, we estimate that a refinery's diesel fuel will have to average 7 ppm in order to consistently meet the 15 ppm standard. For the NPRM, we estimated the cost of producing highway diesel fuel with a 7 ppm average sulfur level for the average U.S. refinery. We received a number of comments on the NPRM which indicated that the cost for various refiners would differ dramatically, as would the cost of treating the various blendstocks which comprise highway diesel fuel. In response, we extended our refining cost model to be specific to each refinery in the U.S., based on a refinery's production volume and estimated composition of its highway diesel fuel. Using this model, we estimated each refinery's cost of producing 7 ppm sulfur highway diesel fuel and then aggregated these results to estimate a national average cost.

This analysis considers the fact that some diesel fuel blendstocks are more difficult to desulfurize than others. As indicated in some comments on the NPRM, this could lead refiners to shift

their blendstocks between highway diesel fuel and other distillate products in order to minimize costs. For example, our analysis found that the incremental cost of desulfurizing current highway diesel fuel can be more expensive for some refiners than the cost to other refiners of desulfurizing nonroad diesel fuel to meet the 15 ppm standard, despite the fact that the current sulfur level of nonroad diesel fuel is roughly 2500–3000 ppm.

We evaluated costs under two scenarios: (1) all current producers of highway diesel fuel continued to do so, and (2) some refiners increase production of highway diesel fuel and some refiners facing higher desulfurization costs leave the highway diesel fuel market. Our cost projections presented below are based on the first scenario. This is conservative, because in this scenario, some refineries currently produce relatively low volumes of highway diesel fuel and would face relatively high costs per gallon to desulfurize this same volume of fuel.

We project that the average refining cost to meet the 15 ppm cap standard will be 4.3 cents per gallon, including capital costs amortized at 7 percent per year before taxes, once the standard is fully in place in June, 2010. Refining costs will be lower, 4.1 cents per gallon of 15 ppm fuel (or 3.3 cents per gallon of all highway diesel fuel), during optional compliance provisions (2006–2010), because we expect that those refiners facing the lowest cost of meeting the standard in each PADD will invest to produce the new fuel. We project that refiners will invest \$3.8 billion in new equipment in order for about 80 percent of highway diesel fuel to meet the 15 ppm standard in 2006. An additional \$1.4 billion will be invested for the rest of the highway diesel fuel market to meet the new standard in 2010, for a total capital cost of \$5.2 billion. The average refinery is projected to spend about \$43 million in capital costs, and \$7 million per year in operating costs.

Table V.C–1 shows the range of average costs per refinery by PADD. Despite the varying size of refineries and differences in their available distillate blendstocks, the variations in the average cost between PADDs in either 2006 or 2010 are small, with the exception of PADD 4. PADD 4 average costs are 30–40 percent higher than the costs in the other PADDs.

TABLE V.C-1.—AVERAGE REFINING COSTS BY PADD (CENTS PER GALLON OF 15 PPM FUEL)

	2006	2010
PADD 1	4.4	4.7
PADD 2	4.3	4.5
PADD 3	3.8	3.9
PADD 4	5.1	5.3
PADD 5	4.2	4.5
U.S. Average	4.1	4.3

A number of other estimates of the cost of the 15 ppm sulfur standard were submitted as part of the comments. Mathpro used a notional refinery model to estimate the national average costs of the proposed standard for EMA. Charles River Associates (CRA), along with Baker and O'Brien, used the Prism refinery model to estimate the cost for each refinery in the U.S. for API. Finally, EnSys used the Oak Ridge National Laboratory PADD 3 refinery

model to estimate costs for DOE. Table V.C-2 summarizes these estimates after adjusting the projected costs to represent a 7 percent rate of return on investment before taxes (except for the CRA cost, which could not be adjusted).

TABLE V.C-2.—COMPARISON OF NATIONAL AVERAGE REFINING COST ESTIMATES
[7 percent rate of return on investment before taxes]

	Average cost (cents per gallon of 15 ppm fuel)	Capital cost (\$ billion)
EPA (Full program)	4.4	5.3
Methpro for EMA*	4.2–6.1	3.4–6.1
CRA for API (10% after tax rate of return)	6.2	—
EnSys for DOE (conservative technology)* †	5.1–6.0	3.9–6.5
EnSys for DOE (optimistic technology)* †	4.2–4.4	2.7–4.5

* Lower end of range assumes 100 percent revamped equipment; upper end assumes all new equipment.

† Costs are only for the Gulf Coast refining region, which have slightly lower per-gallon costs than the entire U.S., and about half the capital costs.

The costs estimated by Mathpro are the most similar to those estimated by EPA. This is primarily because the desulfurization technology projected to be used were similar in the two studies.

CRA projected the use of similar technology, but estimated that 40 percent of refiners would build new desulfurization units, versus our estimate of 20 percent. CRA also assumed that technology vendors are inherently optimistic in their projections and increased their projected costs by roughly 20 percent. CRA also projected that nonroad diesel fuel sulfur levels would be capped at 500 ppm. How this affected the projected cost of producing 15 ppm fuel is not clear. CRA assumed that this 500 ppm fuel would be produced by blending 8 ppm sulfur highway diesel fuel and 3000 ppm heating oil. Much of this production was assumed to occur due to mixing in the distribution system. An unknown amount of 500 ppm fuel was produced at refineries. Desulfurization costs are not linear, as shown by CRA's own study. Thus, any blending of 15 ppm sulfur highway diesel fuel with non-desulfurized heating oil at refineries was much more costly than simply hydrotreating nonroad diesel fuel to 500 ppm. It also required refiners to hydrotreat the most difficult blendstocks at a much higher cost. Because of these significant differences in both methodology and assumptions, it is not surprising that

CRA's costs would be higher than those estimated by Mathpro or ourselves.

EnSys's cost estimates require some explanation due to the number of scenarios they analyzed. EnSys did not estimate how many refiners would build new desulfurization units and how many would modify their current hydrotreaters, but simply presented costs if refiners took one approach or the other. Thus, the lower limits of the ranges shown in Table V.C-2 assume refiners modify their current hydrotreaters, while the upper limits assume that refiners would build new units. EnSys also projected costs for two separate sets of technologies. One set was considered conservative and relied on technologies that are already in commercial use. The other was considered to be optimistic and was similar to that projected to be used by EPA, Mathpro and CRA. EnSys' costs using the conservative technology are higher than our estimates. This is due to the fact that this technology involves greater capital investment and greater consumption of hydrogen. These greater costs are due to the fact that this technology is not just designed to reduce sulfur, but to reduce aromatic content, increase cetane levels and perform some cracking. EnSys' costs using the optimistic technology are much more similar to those of EPA and Mathpro, considering that EnSys' range of costs reflects both revamped and new desulfurization units and that EPA's

costs are dominated (80 percent) by revamped units.

Some of the variation in the costs projected by the various studies involves uncertainty in exactly what degree of hydrotreating will be necessary to meet the 15 ppm sulfur standard day in and day out with a variety of distillate feedstocks. As discussed in Section IV above, there is currently no commercial experience in the U.S. and only a limited amount of information in the public literature on the costs associated with reducing the sulfur level in diesel fuel to very low levels on an ongoing operational basis. Thus, any cost projections involve a significant amount of uncertainty.

2. Highway Diesel Fuel Supply

While API and many refiners did not question the feasibility of the 15 ppm standard, they did indicate that the cost would be higher than that projected by EPA. API believes that those refiners facing higher than average costs may decide to leave the highway diesel fuel market. They argue this is especially a possibility if they are faced with a sulfur standard below a 30 ppm average (or 50 ppm cap), which they believe will require very large investments for high pressure hydrotreating to maintain current highway diesel production volumes. API also believes that many refiners may reduce their production of highway diesel fuel, by switching the feedstocks (i.e., LCO) which are most difficult to desulfurize to other markets,

thus avoiding the higher investments associated with high pressure hydrotreating. If some refiners reduce highway diesel fuel production, that could present an opportunity for other refiners, who choose to make the investment, of higher prices for the new 15 ppm sulfur product.

This view is embodied by a study by Charles River Associates (CRA) and Baker and O'Brien which was commissioned by API. CRA polled refiners concerning their plans under a 15 ppm sulfur cap. Using the results of this survey, as well as other information, CRA projected refiners' costs of meeting the 15 ppm standard, as well as their likely production volumes. CRA concluded that U.S. refiners would likely reduce their highway diesel fuel production by an average of 12 percent, creating significant shortages and price spikes.

CRA's conclusions appear to have been strongly affected by their assumptions, as well as the refiner survey they conducted. For example, CRA assumed that the new sulfur standard would cause 10 percent more highway diesel fuel to be "lost" in the distribution system compared to today (i.e., downgraded to off-highway diesel fuel). We believe based on the analysis outlined in the RIA that 2.2 percent is a more accurate estimate, resulting in 9 percent more 15 ppm fuel being available than CRA estimated. This difference alone accounts for 75 percent of the potential national supply shortfall projected by CRA.

CRA also concluded, with little explanation, that 20 refineries producing highway diesel fuel today would not produce highway diesel fuel under the 15 ppm standard and that many more would reduce production. Given the lack of information provided in the study, it was not possible to evaluate CRA's criteria in selecting these 20 refineries, nor was it possible to determine how much of the shortfall was attributable to this conclusion. While CRA evaluated whether refiners currently producing highway diesel fuel would be likely to leave the market, they did not assess whether any refineries currently not producing highway diesel fuel might enter the market. EPA did conduct such an assessment. We found 2 refineries that produce essentially no highway diesel fuel today which could meet the new standard for less than 5 cents per gallon. Production from these refineries would increase highway diesel fuel production by 9 percent. We also found based on our assessment that 4 other refineries could produce highway diesel fuel from their off-highway diesel fuel

blendstocks for less than 5 cents per gallon. Production from these 6 refineries would increase highway diesel fuel production by 7 percent. Together with a more reasonable estimate of downgrades in the distribution system, this would more than compensate for any potential lost production, even as estimated by CRA.

CRA also implicitly assumed that the material it projected could be removed from the highway diesel market could be sold at a reasonable price. However, CRA did not analyze the impact of this additional supply on the prices which could be obtained in these markets, or even if these alternative markets could physically absorb all of this material. Much of this material is not diesel fuel, but poor quality blendstock. It is not clear that such material could be blended into non-highway diesel fuel and CRA did not analyze this likely problem. Our analyses, supported by a study by Muse, Stancil and Co., indicate that any substantial quantities of highway diesel fuel diverted to other markets will depress prices in those markets substantially.¹⁸⁷ Hydrotreating diesel fuel to meet the 15 ppm standard avoids these depressed prices, reducing the net cost of meeting the new standard. Since CRA only considered the cost to desulfurize highway diesel fuel, and ignored the added cost of dumping this fuel into markets with depressed prices, CRA's conclusions must be considered to be seriously flawed in this regard.

Furthermore, CRA ignored the fact that roughly 15 percent of today's highway diesel fuel is consumed in engines and furnaces not requiring this fuel. Any shortage of highway diesel fuel would lead many of these non-essential users to switch to nonroad diesel fuel or heating oil. Only limitations in the fuel distribution system would cause these users to continue to burn highway diesel fuel.

These problems with CRA's analysis, plus the lack of detail available concerning the specifics of the study, lead us to reject the study's conclusions that there will be significant supply shortfalls under a 15 ppm sulfur standard.

Finally, if any potential for highway diesel fuel shortfalls exists by requiring all fuel to meet 15 ppm sulfur in 2006, as CRA's analysis suggests, we believe that allowing some continued supply of 500 ppm, as we are doing under the temporary compliance option and hardship provisions contained in

today's action, addresses this concern. Since the final rule allows some transition period before the entire highway diesel pool is required to meet the 15 ppm sulfur standard, some refiners will not need to change their current operations and will be able to continue producing 500 ppm fuel during these years. Those refiners that delay production of low sulfur diesel fuel until the later years of the program will tend to be the refiners with the highest cost to comply and, thus, refiners that would otherwise have the greatest tendency not to invest and thereby impact supply. Refiners that begin producing low sulfur diesel fuel in the later years of the program will also be able to take advantage of ongoing improvements in desulfurization technology. Together, these factors will help avoid or reduce any potential losses in highway diesel fuel production when the program requires full compliance with low sulfur diesel fuel.

As mentioned above, EPA agrees that some refiners will face higher desulfurization costs than others. This is generally the case with any fuel quality regulation, since the crude oils processed by, as well as the configurations and product slates of individual refineries vary dramatically. As mentioned above and summarized in the RIA, we used our refining cost model to assess the likelihood that refiners would leave the highway diesel fuel market or reduce their production of highway diesel fuel. We also assessed the likelihood of other refiners entering this market. We found that a number of refiners appear to be in a position to expand their highway diesel fuel production capacity very economically relative to other refiners facing higher desulfurization costs. We also found that up to 2 refineries not now producing highway diesel fuel could easily enter the highway diesel fuel market at very competitive costs.

Some refiners may have an alternative market for their diesel fuel. In the extreme, a refiner would likely prefer to only shift his light cycle oil to other distillate products, like nonroad diesel fuel and No. 2 heating oil, retaining his other blendstocks in the higher value highway diesel fuel market. However, in many cases, a refiner cannot shift light cycle oil directly to a distillate product, because the resulting non-highway fuel would no longer meet applicable specifications, such as sulfur or cetane. In most cases, we expect that the refiner must shift highway diesel fuel to alternative markets in order to be able to obtain a reasonable price.

As mentioned above, Muse, Stancil, & Co. analyzed the ability of refiners to

¹⁸⁷ "Alternate Markets for Highway Diesel Fuel Components," Muse, Stancil & Co., for Southwest Research Institute, for U.S. EPA, September, 2000.

divert highway diesel fuel or its blendstocks to other distillate markets. Muse, Stancil found that this ability varied significantly by PADD. In PADDs II and IV, it would be difficult for refiners to move any appreciable quantity of highway diesel fuel to other markets. For example, compared to the value of highway diesel fuel today, the achievable value for the diverted material would decrease by 14 to 20 cents per gallon if refiners tried to move more than 5 percent of their highway diesel fuel to other markets. The loss in value was highest in these two PADDs, because growth in nonroad diesel fuel consumption is small or negative, the ability to reduce the consumption of highway diesel fuel by users other than highway vehicles was limited, and exports are only available through the Gulf or West Coasts with a large transportation cost of getting the material there.

In PADDs III and V, the loss of value was lower, at 4.5–5 cents per gallon and was the lowest in PADD I, 2 cents per gallon. This was primarily because of the ability to export high sulfur diesel fuel overseas. Generally, these losses in value apply if diesel fuel was being diverted to other distillate markets. If light cycle oil was being diverted, the value would drop an additional 3–3.5 cents per gallon.

At lower levels of diversion (e.g., 5 percent or less), the loss in value was much less, ranging from 1.6–5 cents per gallon across the five PADDs. However, the primary reason for this was the reduced use of highway diesel fuel by users other than highway vehicles, who do not require this fuel. Muse believed that such conversions were limited, but real and could represent roughly a third of the current use of highway diesel fuel in other than highway vehicles. If this occurs, then demand for highway diesel fuel drops at the same time. Thus, in this case, the total refining costs associated with the new sulfur standard will decline because the total amount of fuel; needing to be desulfurized will decrease.

The only area where refiners could easily divert substantial amounts of highway diesel fuel is PADD I. PADD I refiners currently produce a relatively low amount of highway diesel fuel and substantial amounts of high sulfur diesel fuel/heating oil are imported. Thus, refiners in PADD I facing relatively high costs of meeting the 15 ppm standard could shift some or all of their highway diesel fuel to other markets, reducing imports and not substantially affecting prices in this market.

In the end, refiners will make their decisions regarding investment based on their projections of demand of 15 and 500 ppm diesel fuel, the prices of these fuels and the prices available in alternative markets. At this time, we do not project that the specifics involved in this case (technology, cost, alternative markets) are significantly different from those which have existed in the past. The last time EPA regulated diesel fuel, the refining industry actually overbuilt desulfurization capacity for the current 500 ppm standard, as evidenced by the significant use in the nonroad market of diesel fuel produced to the current highway diesel sulfur standard of 500 ppm and the relatively low price of highway diesel fuel relative to nonroad diesel fuel. Some of this overproduction may have been due to limitations in the distribution system to distribute both highway and nonroad grades of diesel fuel. However, the refinery system as a whole was able to supply both highway diesel vehicles, plus the use of highway diesel fuel by other users. This was accomplished despite the fact that a number of small refiners did decide to switch from the highway diesel fuel market to the nonroad diesel fuel market, presumably for economic reasons.

3. Cost of Lubricity Additives

As discussed in Section IV, the refinery processes needed to achieve the sulfur standard have some potential to degrade the natural lubricity characteristics of the fuel. Consequently, an increase in the use of lubricity additives for diesel fuel may be anticipated over the amounts used today. As described in more detail in the Regulatory Impact Analysis in the Public Docket, we include in our fuel cost estimate an average cost of 0.2 cents per gallon for lubricity additives over the entire pool of low sulfur highway diesel fuel (the same cost estimate as used in the proposal). This estimate is comparable to an estimate made by Mathpro in a study sponsored by the Engine Manufacturers Association, and is consistent with the cost estimate submitted by Cummins in its comments.

Prior to the proposal, we contacted various producers of lubricity additives to get their estimates of what costs might be incurred for this increase in the use of lubricity additives. The cost estimates varied from 0.1 to 0.5 cents per gallon. The cost is likely to be a strong function of not only the additive type, but also the assumed treatment rate and the volume of fuel that needs to be treated, both of which will be, to some extent, a function of the sulfur cap. We requested comment on our cost

estimate, including whether there may be unique costs for the military to maintain the lubricity of their distillate fuels. We requested that comments addressing this issue include a detailed discussion of the volumes of fuel affected, current lubricity additive use, and the additional measures that might be needed (and associated costs) to maintain the appropriate level of fuel lubricity. In response to the proposal, we received few comments on the cost of lubricity additives, and none on the volumes of fuel affected, current lubricity additive use, or additional measures that might be needed to maintain the appropriate level of lubricity. In considering the comments, we have found no basis in today's action to use a different average cost estimate to treat low sulfur diesel for lubricity than that which was used in the proposal (0.2 cents per gallon). See more discussion in the Response to Comments Document in the Public Docket.

4. Distribution Costs

We estimate that as a result of today's rule, distribution costs will increase by 0.5 cents per gallon of highway diesel fuel supplied when the sulfur requirements are fully implemented beginning in the year 2010. During the initial years (2006 through May 31, 2010) we estimate that the increase in distribution costs will be 0.4 cents per gallon of highway diesel fuel supplied, with an additional 0.7 cents per gallon equivalent related to capital costs for additional storage tanks to handle two grades of highway diesel fuel.¹⁸⁸

In the proposal, we estimated that distribution costs would increase by 0.2 cents per gallon if the proposed requirement that the entire highway diesel fuel pool meet a 15 ppm sulfur cap beginning in 2006 be adopted. This cost was comprised of roughly 0.1 cents per gallon due to an increase in pipeline interface and testing costs, and 0.1 cents per gallon for distributing the additional volume of highway diesel fuel needed due to an anticipated decrease in fuel energy density as a side effect of reducing the sulfur content to the proposed 15 ppm cap. The case evaluated in the NPRM is most similar to that for the fully implemented sulfur program in this final rule.

We took advantage of additional information contained in the comments to the NPRM in formulating a more comprehensive estimate of the

¹⁸⁸ This cost is expressed in terms of the total volume of highway diesel fuel supplied, including the fuel which meets the 15 ppm sulfur cap and that which meets the 500 ppm sulfur cap.

distribution costs under today's rule. In some cases this involved adjusting an estimate for a parameter that factored into our calculation of costs in the NPRM. One important example is that we increased our estimate of the additional volume of highway diesel shipped by pipeline that would need to be downgraded to a lower-value product. This product downgrade is necessitated by mixing that takes place between products that abut each other while in the pipeline. The mixture is referred to as interface when it can be blended into another product and transmix when it must be returned to the refinery for reprocessing. In other cases, our reevaluation of distribution costs included the consideration of parameters that did not factor into the estimation of distribution costs in the proposed rule. For example, commenters to the NPRM brought to our attention that there would be additional costs associated with needed changes in the handling practices for interface volumes which result from shipments of jet fuel and highway diesel fuel that abut each other in the pipeline.

There are a number of common factors in the estimation of distribution costs during the initial period and after the sulfur requirements are fully implemented, such as the increase in interface volumes for pipeline shipments of highway diesel fuel. However, there are other factors that are unique to the estimation of costs during the initial years as well. For example, with two grades of highway diesel fuel in the distribution system at the same time there are costs associated with the need for additional storage tanks at some petroleum terminals and refineries. Our estimation of distribution costs under these two periods is discussed separately in the following sections. Where there is a commonality, the issue is discussed under the section on distribution costs for the fully implemented program.

a. Distribution Costs Under the Fully Implemented Program

Based on the considerations discussed below, we estimate that the increase in distribution costs under the fully implemented sulfur program will be 0.5 cents per gallon of highway diesel fuel supplied.

The cost of distributing the additional volume of highway diesel fuel needed to compensate for the lower energy density of highway diesel fuel that meets a 15 ppm sulfur cap is estimated at 0.17 cents per gallon of highway diesel fuel supplied. As in the NPRM, the cost of producing this additional volume was included in the calculation of refinery

costs (see Section V.C.1.). In the NPRM, we estimated that the cost of distributing highway diesel fuel was equal to the difference in price at the refinery rack and the retail price. For today's final rule, we based our estimate of distribution cost on a PADD by PADD evaluation of the difference in the price of highway diesel fuel at the refiner rack versus the retail price. The price differential for each PADD was weighted by the additional volume of fuel we anticipate will need to be produced in each PADD to arrive at an estimate of distributing the additional volume needed for the nation as a whole. We believe this approach provides a more accurate estimate of costs.

Based on additional information provided in the comments on the changes in pipeline interface practices that would result from today's rule, we adjusted our estimate of the increased volume of highway diesel fuel that would be downgraded to a lower-value product from 1.5 percent to 2.2 percent of highway diesel fuel supplied (see the RIA to this rule). As in the NPRM, the cost of producing this additional volume was included in the calculation of refinery costs (see Section V.C.1.). The cost of downgrading the increased volume of highway diesel fuel to a lower-value product is based on the difference in the cost of 15 ppm sulfur diesel fuel and the product to which the interface is downgraded. Under the fully implemented program, this downgrade would be made into the nonroad diesel pool. The cost of this increased volume of downgrade is estimated at approximately 0.14 cents per gallon of highway diesel supplied.

We identified that there would also be an increase in the economic impact for the existing volume of interface currently associated with pipeline shipments of highway diesel fuel. This is because the cost of downgrading the existing interface volume would be determined by the difference between the cost of 15 ppm sulfur fuel and nonroad diesel fuel rather than the difference in cost between current 500 ppm diesel fuel and nonroad diesel fuel as it is today. We estimate that the increase in the cost of downgrading the existing highway diesel interface would be 0.09 cents per gallon of highway diesel fuel supplied.

We anticipate that there may be minor costs in addition to those discussed above associated with optimizing the distribution system to adequately limit sulfur contamination. These costs could result from various minor changes to distribution practices and or hardware discovered to be needed by industry

while preparing to comply with today's rule. While it is not possible to specifically identify the nature of these changes, they could include the occasional replacement of a leaking valve or improvements in communication practices to facilitate batch changes in the pipeline system. There may also be some cost associated with the process that we anticipate the distribution industry will undertake to evaluate its readiness to comply with the requirements in today's rule. Such costs might result from testing to determine the level of contamination introduced through the use of various distribution hardware or practices. It is not possible to specifically identify the costs that might be associated with this optimization process. However, given the limited nature of the changes that might be needed and that the need for such changes would not be widespread, we believe that the associated costs would not pose a substantial burden. We estimate that the miscellaneous costs associated with optimizing the distribution system to limit sulfur contamination would be 0.025 cents per gallon of highway diesel fuel supplied (on average) during the period from when the sulfur program is fully implemented (2010) through the year 2020. These costs were amortized at a rate of 7% over the period of 2006 through 2020. The per gallon cost is somewhat higher during the initial years.

Commenters to the proposed rule stated that it is current practice for all of the interface generated when highway diesel fuel abuts jet fuel in the pipeline to be cut into highway diesel fuel. They pointed out that this practice would no longer be possible when all highway diesel fuel is required to meet a 15 ppm sulfur cap because of the relatively high sulfur content of jet fuel (as high as 3000 ppm).¹⁸⁹ They stated that the mixture of highway diesel fuel meeting a 15 ppm sulfur cap and jet fuel would need to be returned from the terminal to the refinery for reprocessing, at high cost (*i.e.* would need to be treated as transmix). While we agree that handling procedures for this mixture will need to change, we believe that it will not be necessary to treat it as transmix. We believe that there will be opportunity for the mixture to be sold from the terminal into the nonroad diesel pool. This will increase the cost associated with downgrading this mixture.

¹⁸⁹ During the initial years of the sulfur program, the current practice used to handle the interface between shipments of jet fuel and highway diesel fuel can be used for that portion of the highway diesel fuel that continues to meet a 500 ppm sulfur cap.

Expressed in terms of the volume of highway diesel fuel supplied, we estimate this cost at 0.07 cents per gallon. Additional storage tanks will be needed to handle the mixture at those terminals that currently do not handle nonroad diesel fuel. The cost of these tanks has been fully accounted for in the calculation of costs during the initial years of the program.

The additional quality control testing at the terminal level needed to ensure compliance with the 15 ppm sulfur cap would be the same during the initial years as after the requirements are fully implemented. We estimate that the cost of this additional testing would be as we projected in the proposal, 0.002 cent per gallon of highway diesel supplied (see the RIA to this rule).

We believe that there will not be a significant increase in the volume of highway diesel fuel discovered to exceed the sulfur standard downstream of the refinery as a result of today's rule. We believe this will be the case both during the initial years and after the sulfur requirements are fully implemented. We anticipate that distributors will quickly optimize their practices to avoid sulfur contamination. We also anticipate that distributors will gain some experience in reducing sulfur contamination in the distribution system through complying with the recently finalized Tier 2 low sulfur gasoline requirements (65 FR 6698, February 10, 2000). While outside the scope of this final rule, it is worth pointing out that potential difficulties in distributing 15 ppm diesel fuel would be lessened if the sulfur content of nonroad diesel fuel is reduced by a future rulemaking (as discussed in Section 8). We anticipate that the batches of highway diesel fuel that are discovered to exceed the 15 ppm sulfur cap will be coped with as follows:

- When possible, by blending highway diesel fuel that is below the 15 ppm cap with the out-of-specification batch to bring the resulting mixture into compliance. This practice will be more difficult than it is currently because the amount of fuel needed to blend the out-of-specification batch into compliance may increase. However, we expect it to continue to be the method of choice for handling out-of-specification highway diesel whenever possible.
- By downgrading the batch either to nonroad diesel fuel or to 500 ppm highway diesel during the initial years.
- By reprocessing the batch to meet the 15 ppm cap, but only in those infrequent instances where the previous options do not exist.

We do not believe that the cost of handling out-of specification highway diesel batches will increase significantly as a result of today's action.

Tank truck, tank wagon, and barge operators may need to more carefully and consistently observe current industry practices to limit contamination in some situations. However, these situations are more the exception than the rule and are of a limited nature. Consequently, we believe that this can be accomplished at an insignificant cost. Additional considerations exist for distributors during the initial years as discussed in the following section.

Please refer to the Response to Comments Document for an evaluation of the comments received on the increase in fuel distribution costs associated with today's rule, and to the RIA for a detailed discussion of the way in which we derived the our cost estimates.

b. Distribution Costs During the Initial Years

The factors that cause distribution costs to differ during the initial years include:

- Having a lesser volume of 15 ppm diesel fuel in the system reduces the costs associated with distributing 15 ppm fuel.
- Having an additional grade of highway diesel fuel in the system (500 ppm) creates additional pipeline interface volumes, and additional product downgrade costs.
- The need for additional equipment to handle an additional grade leads to additional costs that must be accounted for during the initial years.
- Having 500 ppm highway diesel fuel in the system allows some opportunity for the pipeline interface volumes associated with the shipment of 15 ppm fuel and jet fuel to be downgraded to 500 ppm diesel fuel rather than nonroad diesel fuel. This will reduce the cost associated with downgrading the subject interface volumes.

In calculating the distribution costs for the initial years of the program, we estimated that 60 percent of the 15 ppm highway diesel fuel shipped by pipeline will be carried in pipelines that choose not to carry 500 ppm diesel fuel. We estimated that the remaining 40 percent of 15 ppm highway diesel fuel shipped by pipeline would be carried in pipelines that carry 500 ppm as well as nonroad diesel fuel. For the sake of simplicity and to allow a comparison with distribution costs when the program is fully implemented, the

distribution costs during the initial years as discussed below are expressed in terms of the total volume of highway diesel fuel supplied. This includes 500 ppm as well as 15 ppm highway diesel fuel.

For the reasons outlined above, the following costs, which are also present under the fully implemented sulfur program, were adjusted to reflect the unique conditions during the initial years. During the initial years, the cost of distributing the additional volume of highway diesel fuel needed to compensate for lower energy density of 15 ppm sulfur fuel is estimated at 0.14 cents per gallon of highway diesel fuel supplied. The cost of the increased volume of highway diesel fuel that must be downgraded to a lower-value product is estimated at 0.1 cents per gallon of highway diesel supplied. We estimate that during the initial years of the program the increase in the cost of downgrading the existing highway diesel interface would be 0.08 cents per gallon of highway diesel fuel supplied. During the initial years, the cost of downgrading the interface between pipeline shipments of jet fuel and highway diesel fuel is estimated to increase by 0.03 cents per gallon of highway diesel fuel supplied. The cost of the additional tanks required at terminals to handle this interface is estimated at 0.009 cents per gallon of highway diesel fuel supplied. This tank cost was amortized over the period of the four-year transition period. We estimate that the miscellaneous costs associated with optimizing the distribution system to limit sulfur contamination would be 0.027 cents per gallon of highway diesel fuel supplied (on average) during the initial period (2006–2010).

As noted in the previous section, the additional quality control testing at the terminal level needed to ensure compliance with the 15 ppm sulfur cap would be the same during the initial years and after the requirements are fully implemented. We estimate that the cost of this additional testing would be as we projected in the proposal, 0.002 cent per gallon of highway diesel supplied.

The cost during the initial years of downgrading the additional interface volumes associated with having two grades of highway diesel fuel in part of the pipeline system is estimated at 0.004 cents per gallon of highway diesel full supplied.

The most substantial costs associated with the provisions during the initial years of the program are due to the need to handle an additional grade of highway diesel fuel in the distribution

system. Under the final program, the production of 500 ppm sulfur fuel will be much less than that of 15 ppm fuel. At the same time, most of the diesel vehicle fleet can burn 500 ppm fuel during the initial period. Because of its greater volume and the need to distribute it everywhere in the country, we expect that essentially all pipelines and terminals will handle 15 ppm fuel. In contrast, distribution of 500 ppm fuel will concentrate on those areas nearest the refineries producing that fuel, plus a few major pipelines serving major refining areas.

Regarding distribution to the final user, we expect that nearly all truck stops in areas where 500 ppm fuel is available will invest in piping and tankage to handle a second fuel. Because of the significant expense involved in adding a second tank, in these areas, we expect service stations will only carry one fuel or the other, as market demands dictate. Likewise, we

expect that centrally fueled fleets and card locks will only handle 15 ppm fuel. Under this scenario, sales of 500 ppm fuel are limited to only those vehicles which refuel at truck stops and service stations. This is somewhat conservative since some centrally fueled fleets may have the flexibility to inexpensively handle two fuels. Likewise, some card locks in a given area may be able to carry 15 ppm fuel and others 500 ppm fuel and still serve their clients at little extra cost. Still, given the above assumptions, we project that the 500 ppm fuel will have to be distributed to areas representing about 50 percent of the national diesel fuel demand. Also, as the fleet turns over to 2007 and later vehicles during the initial years, the amount of 500 ppm fuel produced will gradually decrease from just over 20 percent in 2007 to about 16 percent in 2010.

The tankage cost at refineries, terminals, pipelines and bulk plants

handling both fuels is estimated to be \$0.81 billion. The cost for truck stops to handle two fuels is roughly \$0.24 billion, for a total cost of \$1.05 billion. Amortized over all of the highway diesel fuel supplied during the initial four-years (15 ppm and 500 ppm) at 7 percent per annum, the cost per gallon is 0.7 cents.

5. Benefits of Low-Sulfur Diesel Fuel for the Existing Diesel Fleet

We estimate that the low-sulfur diesel fuel will provide additional benefits to the existing heavy-duty vehicle fleet as soon as the fuel is introduced. We believe these benefits will offer significant cost savings to the vehicle owner without the need for purchasing any new technologies. The RIA has catalogued a variety of benefits from the low-sulfur diesel fuel. These benefits are summarized in Table V.C-3.

TABLE V.C-3.—COMPONENTS POTENTIALLY AFFECTED BY LOWER SULFUR LEVELS IN DIESEL FUEL

Affected components	Effect of lower sulfur	Potential impact on engine system
Piston Rings	Reduce corrosion wear	Extended engine life and less frequent rebuilds.
Cylinder Liners	Reduce corrosion wear	Extended engine life and less frequent rebuilds.
Oil Quality	Reduce deposits and less need for alkaline additives.	Reduce wear on piston ring and cylinder liner and less frequent oil changes.
Exhaust System (tailpipe)	Reduces corrosion wear	Less frequent part replacement.
EGR	Reduces corrosion wear	Less frequent part replacement.

The actual value of these benefits over the life of the vehicle will depend upon the length of time that the vehicle operates on low-sulfur diesel fuel and the degree to which vehicle operators change engine maintenance patterns to take advantage of these benefits. For a vehicle near the end of its life in 2007 the benefits will be quite small. However for vehicles produced in the years immediately preceding the introduction of low-sulfur fuel the savings will be substantial. The RIA estimates that a heavy heavy-duty vehicle introduced into the fleet in 2006 will realize savings of \$610 over its life.

This savings could alternatively be expressed in terms of fuel costs as approximately 1 cent per gallon as discussed in the RIA. These savings will occur without additional new cost to the vehicle owner beyond the incremental cost of the low-sulfur diesel fuel, although these savings will require changes to existing maintenance schedules. Such changes seem likely given the magnitude of the savings and the nature of the regulated industry.

D. Aggregate Costs

Using current data for the size and characteristics of the heavy-duty vehicle

fleet and making projections for the future, the diesel per-engine, gasoline per-vehicle, and per-gallon fuel costs described above can be used to estimate the total cost to the nation for the emission standards in any year. Figure V.D-1 portrays the results of these projections.¹⁹⁰ All capital costs have been amortized.

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¹⁹⁰ Figure V.E-1 is based on the amortized engine, vehicle and fuel costs as described in the RIA. Actual capital investments, particularly important for fuels, would occur prior to and during the initial years of the program.

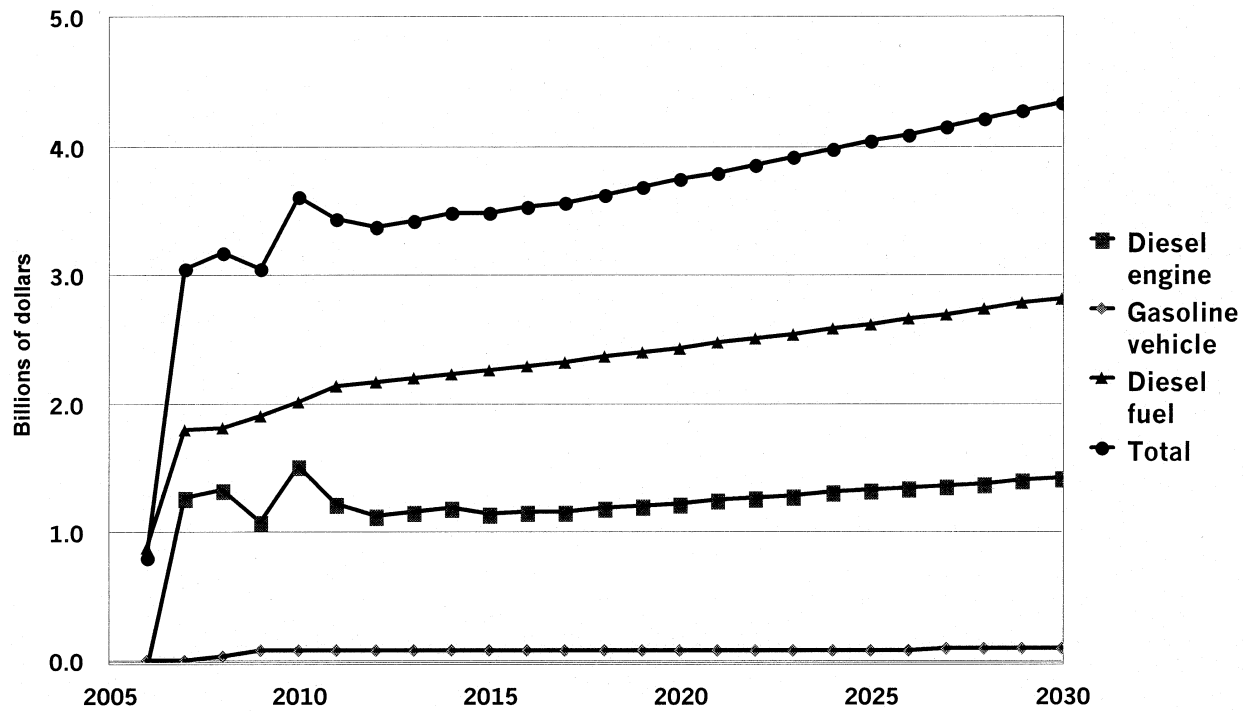


Figure V.D-1 Total Annualized Costs

As can be seen from the figure, the annual costs start out at less than 1.0 billion dollars in year 2006 and increase during the initial years to about \$3.6 billion in 2010. Thereafter, total annualized costs are projected to continue increasing due to the effects of projected growth in engine sales and fuel consumption. The RIA provides further detail regarding these cost projections.

Future consumption of 15 ppm diesel fuel may be influenced by a potential influx of diesel-powered cars and light trucks into the light-duty fleet. At the present time, virtually all cars and light trucks being sold are gasoline fueled. However, the possibility exists that diesels will become more prevalent in the car and light-duty truck fleet, since automotive companies have announced their desire to increase their sales of diesel cars and light trucks. For the Tier 2 rulemaking, the Agency performed a sensitivity analysis using A.D.Little's "most likely" increased growth scenario of diesel penetration into the light-duty vehicle fleet which culminated in a 9 percent and 24 percent penetration of diesel vehicles in the LDV and LDT markets, respectively, in 2015 (see Tier 2 RIA, Table III.A.-13). Were this scenario to play out, the increased number of diesel-powered cars and light-duty trucks would increase the societal costs (those costs, in total, paid by consumers) for the higher priced diesel fuel because more diesel fuel would be consumed. However, were more diesel vehicles to penetrate the light-duty fleet, less gasoline would be consumed than was estimated in our Tier 2 cost analysis. Also, diesel vehicles tend to get higher fuel economy. As a result, the effect of increased dieselization of the light-duty fleet will likely have little or no impact on the aggregate costs estimated for the standards being finalized in today's action.

E. Cost Effectiveness

One tool that can be used to assess the value of new standards for heavy-duty vehicles and engines is cost effectiveness, in which the costs incurred to reach the standards are compared to the mass of emission reductions. This analysis results in the calculation of a \$/ton value, the purpose of which is to show that the reductions from the engine and fuel controls being finalized today are cost effective, in comparison to alternative means of control. This analysis involves a comparison of our program not only to past measures, but also to other potential future measures that could be implemented. Both EPA and States have

already adopted numerous control measures, and remaining measures tend to be more expensive than those previously employed. As we and States tend to employ the most cost effective available measures first, more expensive ones must be adopted to achieve further emission reductions.

Comments we received in response to our Notice of Proposed Rulemaking on the subject of our cost effectiveness analysis are addressed in the Response to Comments Document.

1. What Is the Cost Effectiveness of This Program?

We have calculated the cost-effectiveness of our diesel engine/gasoline vehicle/diesel sulfur standards based on two different approaches. The first considers the net present value of all costs incurred and emission reductions generated over the life of a single vehicle meeting our standards. This per-vehicle approach focuses on the cost-effectiveness of the program from the point of view of the vehicles and engines which will be used to meet the new requirements. However, the per-vehicle approach does not capture all of the costs or emission reductions from our diesel engine/gasoline vehicle/diesel sulfur program since it does not account for the use of 15 ppm diesel fuel in current diesel engines. Therefore, we have also calculated a 30-year net present value cost-effectiveness using the net present value of costs and emission reductions for all in-use vehicles over a 30-year time frame. The baseline or point of comparison for this evaluation is the previous set of engine, vehicle, and diesel sulfur standards (in other words, the applicable 2006 model year standards).

As described earlier in the discussion of the cost of this program, the cost of complying with the new standards will decline over time as manufacturing costs are reduced and amortized capital investments are recovered. To show the effect of declining cost in the per-vehicle cost-effectiveness analysis, we have developed both near term and long term cost-effectiveness values. More specifically, these correspond to vehicles sold in years one and six of the vehicle and fuel programs. Chapter VI of the RIA contains a full description of this analysis, and you should look in that document for more details of the results summarized here.

The 30-year net present value approach to calculating the cost-effectiveness of our program involves the net present value of all nationwide emission reductions and costs for a 30 year period beginning with the start of the diesel fuel sulfur program and

introduction of model year 2007 vehicles and engines in year 2006. This 30-year timeframe captures both the early period of the program when very few vehicles that meet our standards will be in the fleet, and the later period when essentially all vehicles in the fleet will meet the new standards. We have calculated the 30-year net present value cost-effectiveness using the net present value of the nationwide emission reductions and costs for each calendar year. These emission reductions and costs are given for every calendar year in the RIA, in addition to details of the methodology we used to calculate the 30-year net present value cost-effectiveness.

Our per-vehicle and 30-year net present value cost-effectiveness values are given in Tables V.E-1 and V.E-2. Table V.E-1 summarizes the per-vehicle, net present value cost-effectiveness results for our diesel engine/gasoline vehicle/diesel sulfur standards using sales weighted averages of the costs (both near term and long term) and emission reductions of the various vehicle and engine classes affected. Table V.E-2 provides the same information from the program 30-year net present value perspective. It is based on the net present value of the 30 year stream of vehicle and fuel costs and NMHC+ NO_x and PM emission reductions, resulting in the 30-year net present value cost-effectiveness. Diesel fuel costs applicable to diesel engines have been divided equally between the adsorber and trap, since 15 ppm diesel fuel is intended to enable all technologies to meet our standards. In addition, since the trap produces reductions in PM and also operates as an enabling device for the NO_x adsorber, we have divided the total trap costs equally between compliance with the PM standard and compliance with the NO_x and NMHC standards.

Tables V.E-1 and V.E-2 also display cost-effectiveness values based on two approaches to account for the reductions in SO₂ emissions associated with the reduction in diesel fuel sulfur. While these reductions are not central to the program and are therefore not displayed with their own cost-effectiveness, they do represent real emission reductions due to our program. The first set of cost-effectiveness numbers in the tables simply ignores these reductions and bases the cost-effectiveness on only the NO_x, NMHC, and PM emission reductions from our program. The second set accounts for these ancillary reductions by crediting some of the cost of the program to SO₂. The amount of cost allocated to SO₂ is based on the cost-effectiveness of SO₂

emission reductions that could be obtained from alternative, potential future EPA programs. The SO₂ credit was applied only to the PM calculation, since SO₂ reductions are primarily a means to reduce ambient PM concentrations.

TABLE V.E-1.—PER-ENGINE^a COST EFFECTIVENESS OF THE STANDARDS FOR 2007 AND LATER MY VEHICLES

Pollutants	Discounted lifetime cost effectiveness per ton	Discounted lifetime cost effectiveness per ton with SO ₂ credit ^b
Near-term costs:		
NO _x +NMHC	\$2,125	\$2,125
PM	14,237	7,599
Long-term costs:		
NO _x +NMHC	1,621	1,621
PM	11,340	4,701

^a As described above, per-engine cost effectiveness does not include any costs or benefits from the existing, pre-control, fleet of vehicles that would use the 15 ppm diesel fuel.

^b \$446 credited to SO₂ (at \$4800/ton) for PM cost effectiveness.

TABLE V.E-2.—30-YEAR NET PRESENT VALUE^a COST EFFECTIVENESS OF THE STANDARDS

	30-year n.p.v. cost effectiveness per ton	30-year n.p.v. cost effectiveness per ton with SO ₂ credit ^b
NO _x +NMHC	\$2,149	\$2,149
PM	13,607	4,195

^a This cost effectiveness methodology reflects the total fuel costs incurred in the early years of the program when the fleet is transitioning from pre-control to post-control diesel vehicles. In 2007 <10% of highway diesel fuel is anticipated to be consumed by 2007 MY vehicles. By 2012 this increases to >50% for 2007 and later MY vehicles.

^b \$7.1 billion credited to SO₂ (at \$4800/ton).

2. Comparison With Other Means of Reducing Emissions

In comparison with other mobile source control programs, we believe that our program represents a cost effective strategy for generating substantial NO_x, NMHC, and PM reductions. This can be seen by comparing the cost effectiveness of today's program with a number of mobile source standards that EPA has adopted in the past. Table V.E-3 summarizes the cost effectiveness of several past EPA actions for NO_x+NMHC. Table V.E-4 summarizes the cost effectiveness of several past EPA actions for PM.

TABLE V.E-3.—COST EFFECTIVENESS OF PREVIOUS MOBILE SOURCE PROGRAMS FOR NO_x+NMHC

Program	\$/ton
Tier 2 vehicle/gasoline sulfur	1,340–2,260
2004 Highway HD diesel ...	212–414
Off-highway diesel engine ...	425–675
Tier 1 vehicle	2,054–2,792
NLEV	1,930
Marine SI engines	1,171–1,846
On-board diagnostics	2,313
Marine CI engines	24–176

Note: Costs adjusted to 1999 dollars.

TABLE V.E-4.—COST EFFECTIVENESS OF PREVIOUS MOBILE SOURCE PROGRAMS FOR PM

Program	\$/ton
Marine CI engines	5222–3881
1996 urban bus	12,264–19,622
Urban bus retrofit/rebuild	30,251
1994 highway HD diesel	20,900–24,467

Note: Costs adjusted to 1999 dollars.

We can see from these tables that the cost effectiveness of our diesel engine/gasoline vehicle/diesel sulfur standards falls within the range of these other programs for both NO_x+NMHC and PM. Our program overlaps the range of the recently promulgated standards for Tier 2 light-duty vehicles and gasoline sulfur shown in Table V.E-3. Our program also overlaps the cost-effectiveness of past programs for PM. It is true that some previous programs have been more cost efficient than the program we are finalizing today. However, it should be expected that the next generation of standards will be more expensive than the last, since the least costly means for reducing emissions is generally pursued first.

In evaluating the cost effectiveness of our diesel engine/gasoline vehicle/diesel sulfur program, we also considered whether the new standards are cost effective in comparison with possible stationary source controls. In the context of the Agency's rulemaking which would have revised the ozone and PM NAAQS,¹⁹¹ the Agency compiled a list of additional known technologies that could be considered in devising new emission reductions

¹⁹¹ This rulemaking was remanded to EPA by the D.C. Circuit Court on May 14, 1999. However, the analyses completed in support of that rulemaking are still relevant, since they were designed to investigate the cost effectiveness of a wide variety of potential future emission control strategies. An appeal is currently pending before the U.S. Supreme Court.

strategies.¹⁹² Through this broad review, over 50 technologies were identified that could reduce NO_x, VOC, or PM. The cost effectiveness of these technologies averaged approximately \$5,000/ton for VOC, \$13,000/ton for NO_x, and \$40,000/ton for PM. Although a \$10,000/ton limit was actually used in the air quality analysis presented in the NAAQS revisions rule, these values clearly indicate that, not only are future emission control strategies likely to be more expensive (less cost effective) than past strategies, but the cost effectiveness of our program falls well below the average of those choices, and is near the lower end of the range of potential future strategies.

In summary, we believe that the weight of the evidence from alternative means of providing substantial NO_x + NMHC and PM emission reductions indicates that our diesel engine/gasoline vehicle/diesel sulfur program is cost effective relative to other means of achieving air quality improvements. We believe this is true from the perspective of other mobile source control programs and from the perspective of other stationary source technologies that might be considered.

F. Does the Value of the Benefits Outweigh the Cost of the Standards?

While EPA uses relative cost-effectiveness as the principal economic policy criterion for these standards, further insight regarding the merits of the standards can be provided by benefit-cost analysis. The purpose of this section is to summarize the methods we used and results we obtained in conducting an analysis of the economic benefits of the HD Engine/Diesel Fuel program, and to compare these economic benefits with the estimated costs of the rule. In summary, the results of our analysis indicate that the economic benefits of the HD Engine/Diesel Fuel standards will exceed the costs of meeting the standards. The annual estimated benefits we were able to quantify were \$70.4 billion (1999\$).

1. What Was Our Overall Approach to the Benefit-Cost Analysis?

The basic question we sought to answer in the benefit-cost analysis was, "What are the net yearly economic benefits to society of the reduction in mobile source emissions likely to be

¹⁹² Regulatory Impact Analyses for the Particulate Matter and Ozone National Ambient Air Quality Standards and Proposed Regional Haze Rule," Appendix B, "Summary of control measures in the PM, regional haze, and ozone partial attainment analyses," Innovative Strategies and Economics Group, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, NC, July 17, 1997.

achieved by the final HD Engine/Diesel Fuel program?" In designing an analysis to address this question, we selected a future year for analysis (2030) that is representative of full-implementation of the program (i.e., when the US heavy-duty truck fleet is composed of virtually only compliant heavy-duty vehicles). We also adopted an analytical structure and sequence similar to that used in the "section 812 studies" to estimate the total benefits and costs of the full Clean Air Act.¹⁹³ Moreover, we used many of the same models and assumptions used in the section 812 studies as well as other Regulatory Impact Analyses (RIAs) prepared by the Office of Air and Radiation. One difference from previous RIAs, however, is that for particulate matter air quality modeling we used the Regulatory Modeling System for Aerosols and Deposition (REMSAD) model. This model was used in the most recent section 812 study to model air quality in the West. By adopting the major design elements, models, and assumptions developed for the section 812 studies and other RIAs, we have largely relied on methods which have already received extensive review by the independent Science Advisory Board (SAB), by the public, and by other federal agencies.

2. What Are the Significant Limitations of the Benefit-Cost Analysis?

Every benefit-cost analysis examining the potential effects of a change in environmental protection requirements is limited to some extent by data gaps, limitations in model capabilities (such as geographic coverage), and uncertainties in the underlying scientific and economic studies used to configure the benefit and cost models. Deficiencies in the scientific literature often result in the inability to estimate changes in health and environmental effects, such as potential increases in premature mortality associated with increased exposure to carbon monoxide. Deficiencies in the economics literature often result in the inability to assign economic values even to those health and environmental outcomes which can be quantified. While these general uncertainties in the underlying scientific and economics literatures are discussed in detail in the RIA and its supporting documents and references, the key uncertainties which have a

bearing on the results of the benefit-cost analysis of today's action are the following:

- The exclusion of potentially significant benefit categories (e.g., health and ecological benefits of reduction in hazardous air pollutants emissions);
- Errors in measurement and projection for variables such as population growth;
- Uncertainties in the estimation of future year emissions inventories and air quality;
- Uncertainties associated with the extrapolation of air quality monitoring data to some unmonitored areas required to better capture the effects of the standards on the affected population;
- Variability in the estimated relationships of health and welfare effects to changes in pollutant concentrations; and
- Uncertainties associated with the effect of potential future actions to limit emissions.

Despite these uncertainties, we believe the benefit-cost analysis provides a reasonable indication of the expected economic benefits of the HD Engine/Diesel Fuel program in 2030 under a set of assumptions. For the final HD Engine/Diesel Fuel benefit analysis, we adopt an approach similar to the Tier 2/Gasoline Sulfur RIA and the section 812 study. We first present an estimate for a primary set of benefit endpoints followed by a presentation of alternative calculations of key health and welfare endpoints to characterize uncertainty in this primary set.

One key area of uncertainty is the value of a statistical life (VSL) for risk reductions in mortality. The adoption of a value for the projected reduction in the risk of premature mortality is the subject of continuing discussion within the economic and public policy analysis community. There is general agreement that the value to an individual of a reduction in mortality risk tends to vary based on several factors, including the age of the individual, the type of risk, the level of control the individual has over the risk, the individual's attitude toward risk, and the health status of the individual. Age in particular may be an important difference between populations affected by air pollution mortality risks and populations affected by workplace risks. Premature mortality risks from air pollution tend to affect the very old more than the working age population. As such, any adjustments to VSL for age differences may have a large impact on total benefits. However, EPA prefers not to draw distinctions in the monetary value assigned to the lives

saved even if they differ in age, health status, socioeconomic status, gender or other characteristic of the adult population.

In the recent Tier 2/Gasoline Sulfur benefits analysis, we employed a value of statistical life years (VSLY) approach developed for the Section 812 studies in exploring the impact of age on VSL. However, since these earlier analyses were completed, the SAB Environmental Economics Advisory Committee (EEAC) issued a new advisory report which identifies significant additional limitations in this method. Specifically, the SAB EEAC notes that "inferring the value of a statistical life year, however, requires assumptions about the discount rate and about the time path of expected utility of consumption" (EPA-SAB-EEAC-00-013). They also note that "the theoretically appropriate method is to calculate [willingness to pay (WTP)] for individuals whose ages correspond to those of the affected population, and that it is preferable to base these calculations on empirical estimates of WTP by age."

SAB advised that the EPA "continue to use a wage-risk-based VSL as its primary estimate, including appropriate sensitivity analyses to reflect the uncertainty of these estimates," and that "the only risk characteristic for which adjustments to the VSL can be made is the timing of the risk" (EPA-SAB-EEAC-00-013). In developing our primary estimate of the benefits of premature mortality reductions, we have appropriately discounted over the lag period between exposure and premature mortality. However, an empirical basis that meets the SAB's standards of reliability for adjusting the current \$6 million VSL for many of these factors does not yet exist. A discussion of these factors is contained in the RIA and supporting documents. EPA recognizes the need for additional research by the scientific community to develop additional empirical support for adjustments to VSL for the factors mentioned above.

In accordance with the SAB advice, we use the VSL in our primary estimate and present alternative calculations of adjustment for age and other factors. Specifically, several studies conducted by Jones-Lee, et al. (1985, 1989, 1993) found a significant effect of age on the value of mortality risk reductions expressed by citizens in the United Kingdom. The results are supported by a recent analysis which asked samples of Canadian residents their values for reductions in mortality risk (Krupnick *et al.*, 2000). As alternative calculations, we apply the ratios based on the Jones-

¹⁹³ The section 812 studies include: (1) US EPA, Report to Congress: The Benefits and Costs of the Clean Air Act, 1970 to 1990, October 1997 (also known as the "Section 812 Retrospective Report"); and (2) the first in the ongoing series of prospective studies estimating the total costs and benefits of the Clean Air Act (see EPA report number: EPA-410-R-99-001, November 1999).

Lee, *et al.* (1989, 1993) studies to the estimated premature mortalities within the appropriate age groups to provide alternative age-adjusted estimates of the value of avoided premature mortalities.

In the same way, the presentation of the other alternative calculations for certain endpoints seeks to demonstrate how much the overall benefit estimate might vary based on the value EPA has given to a parameter (which has uncertainty associated with it) underlying the estimates for human health and environmental effect incidence and the economic valuation of those effects. These alternative calculations represent conditions that might occur; however, EPA has selected the best values supported by current scientific literature for use in the primary estimate. The alternate calculations include the following:

- Estimating PM-related premature mortality benefits based on different concentration-response (C-R) function estimates;
- Value of avoided premature mortality incidences based on VSLY;
- Consideration of reversals in chronic bronchitis treated as lowest severity cases;
- Estimate of ozone-related chronic asthma;¹⁹⁴
- Value of visibility changes in all Federal Class I areas;
- Value of visibility changes in US residential areas;
- Value of reduced household soiling damage;
- Alternative sensitivities of crops to ozone exposure from National Crop Loss Assessment Network estimates; and
- Avoided costs of reducing nitrogen loadings in three case study eastern estuaries and nine other eastern estuaries.

Unfortunately, it is not possible to combine all of the assumptions used in the alternate calculations to arrive at different total benefit estimates because, it is highly unlikely that the selected combination of alternative values would all occur simultaneously. Therefore, it is better to consider each alternative calculation individually to assess the sensitivity of total benefits to individual assumptions. For instance, estimating PM-related premature mortality benefits based on different concentration-response functions may be an important uncertainty. Specifically, the Harvard Six Cities study by Dockery *et al.* (1993) of the relationship between PM concentration and premature mortality

is a plausible alternative to the American Cancer Society (ACS)/Krewski *et al.* (2000) study used for the primary estimate of benefits. The SAB has noted that “the study had better monitoring with less measurement error than did most other studies” (EPA–SAB–COUNCIL–ADV–99–012, 1999). However, the Dockery *et al.* study had a more limited geographic scope (and a smaller study population) than the ACS/Krewski *et al.* study and the ACS/Krewski *et al.* study appears more likely to mitigate a key source of potential confounding. The Dockery *et al.* study did cover a broader age category (25 and older compared to 30 and older in the ACS study) and followed the cohort for a longer period (15 years compared to 8 years in the ACS study). For these reasons, the Dockery *et al.* study is considered to be a plausible alternative estimate of the avoided premature mortality incidences associated with this final rule. The alternative estimate for mortality can be substituted for the valuation component in our primary estimate of mortality benefits to observe how the net benefits of the program may be influenced by this assumption.

In addition to the estimate for the primary set of endpoints and alternative calculations of benefits, our RIA also presents an appendix with supplemental benefit estimates and sensitivity analyses of other key parameters in the benefits analysis that have greater uncertainty surrounding them due to limitations in the scientific literature. The following sensitivity analyses include alternative income elasticities of willingness to pay;¹⁹⁵ alternative discount rates;¹⁹⁶ alternative PM exposure lags preceding mortality; threshold analysis for PM mortality;¹⁹⁷ and other analyses.

¹⁹⁵ Income elasticity of WTP characterizes the relationship between changes in real income and changes in the WTP for a particular commodity. Income elasticity of WTP is measured as the percentage change in WTP for a one percent change in real income. For example, an income elasticity of 0.5 implies that a 10 percent increase in real income would lead to a 5 percent increase in WTP.

¹⁹⁶ The choice of a discount rate, and its associated conceptual basis, is a topic of ongoing discussion within the federal government. EPA adopted a 3 percent discount rate for its primary analysis in this case to reflect reliance on a “social rate of time preference” discounting concept. We have also calculated benefits and costs using a 7 percent rate consistent with an “opportunity cost of capital” concept to reflect the time value of resources directed to meet regulatory requirements. In this case, the benefit and cost estimates were not significantly affected by the choice of discount rate. Further discussion of this topic appears in EPA’s Guidelines for Preparing Economic Analyses (in press).

¹⁹⁷ The SAB has advised EPA that there is no current scientific basis for selecting a threshold for PM-related health effects considered in this analysis (EPA–SAB–Council–ADV–99–012, 1999).

Even with our efforts to fully disclose the uncertainty in our estimate, this uncertainty presentation method does not provide a definitive or complete picture of the true range of monetized benefits estimates. The set of alternative calculations is only representative of those benefits that we were able to quantify and monetize.

3. How Has the Benefit-Cost Analysis Changed From Proposal?

No quantitative benefits analysis was conducted for the proposal, although we outlined the methodology to be used for the final rule analysis. We summarized and responded to public comment regarding the methods in the Summary and Analysis of Comment document. Moreover, we have improved the methods that were presented at proposal. For the benefits assessment for the final rule, EPA updated the C-R functions for health endpoints (*e.g.*, Krewski *et al.*, 2000), updated the emissions inventory, and presented air quality information regarding urban and residential visibility. For the air quality inputs to the benefits analysis, we used the REMSAD model which offers improved chemistry, resolution, and other capabilities over the Source-Receptor Matrix discussed in the proposal. The model’s performance, including uncertainties, are discussed elsewhere in the RIA and technical support documents. In addition, we also updated our presentations of monetary benefits of the reduced premature mortality based on advice from the SAB.¹⁹⁸ All of the changes made since the proposal serve to improve the analysis.

4. What Are the Benefits in the Years Leading up to 2030?

The HD Engine/Diesel Fuel program has various cost and emission related components, as described earlier in this section. These components would begin at various times and in some cases would phase in over time. This means that during the early years of the program there would not be a consistent match between cost and benefits. This is especially true for the vehicle control portions of the program, where the full vehicle cost would be incurred at the time of vehicle purchase, while the fuel cost along with the emission reductions and benefits resulting from all these costs would occur throughout the lifetime of the vehicle. Because of this

¹⁹⁴ McDonnell, W.F., D.E. Abbey, N.Nishino, M.D. Lebowitz. Long-term Ambient Ozone Concentration and the Incidence of Asthma in Nonsmoking Adults: The Ahsmog Study. Environmental Research. A:80, 110–121. 1999.

¹⁹⁸ Full documentation of the SAB advice can be found at their website (www.epa.gov/sab) or in the docket under the following reference: EPA–SAB–EEAC–00–013, July 27, 2000. An SAB Report on EPA’s White Paper Valuing the Benefits of Fatal Cancer Risk Reduction.

inconsistency and our desire to more appropriately match the costs and emission reductions of our program, our analysis uses a future year when the fleet is nearly fully turned over (2030).

In the years before 2030, the benefits from the HD Engine/Diesel Fuel program will be less than those estimated here, because the compliant heavy-duty fleet will not be fully phased in. Annualized costs, on the other hand, reach nearly their full value within a few years of program initiation (once all phase-ins are completed). This can be seen by comparing the anticipated emission reductions described earlier in section II.D with the aggregate costs of section V.E. Thus, a benefit-cost ratio computed for the earlier years of the program would be expected to be lower than a ratio based on our 2030 analysis. On the other hand, since the estimated benefits are more than ten times the costs in 2030, the emission reduction and cost trends suggest that it is likely that annual benefits would exceed costs from a time early in the life of the program.¹⁹⁹

Furthermore, to the extent that a lower ratio of benefits to costs early in the program is the result of the mismatch of costs and benefits in time, a simple analysis of an individual year would be misleading. A more appropriate means of capturing the impacts of timing differences in benefits and costs would be to produce a net present value comparison of the costs and benefits over some period of years (an approach analogous to the aggregate

cost effectiveness presented in section V.F). Unfortunately, while this is relatively straight-forward for the costs, it is currently not feasible to do a multi-year analysis of the benefits as this would require a significant amount of air quality modeling to capture each year.

5. What Were the Results of the Benefit-Cost Analysis?

The benefit-cost analysis for the HD Engine/Diesel Fuel program reflects a single year "snapshot" of the yearly benefits and costs expected to be realized once the standards have been fully implemented and non-compliant vehicles have all been retired. As discussed in section V.F-4, the benefit-cost ratio would be expected to be lower than the results calculated here in the early years of the program.

Table V.F-1 presents EPA's primary estimate of the benefits of the rule, both the estimated reductions in incidences and the estimated economic value of those incidence reductions. In interpreting the results, it is important to keep in mind the limited set of effects we are able to monetize. Specifically, the table lists the avoided incidences of individual health and environmental effects, the pollutant associated with each of these endpoints, and the estimated economic value of those avoided incidences. For several environmental effects such as visibility, the concept of incidences or cases does not apply as it does for health effects; thus, for these categories economic

values are applied directly to air quality conditions. As the table indicates, we estimate that the HD Engine/Diesel Fuel program will produce about 5,500 fewer cases of chronic bronchitis, and we also see significant improvements in minor restricted activity days (with an estimated 9,838,500 fewer cases). Our estimate also incorporates significant reductions in impacts on children's health, showing reductions of 17,600 cases of acute bronchitis, 192,900 fewer cases of lower respiratory symptoms, and 193,400 fewer cases of upper respiratory symptoms in asthmatic children each year. In addition, today's rule is estimated to reduce 361,400 incidents of asthma attacks each year in asthmatics of all ages from reduced exposure to ozone and particles. Asthma is the most prevalent chronic disease among children and currently affects over seven percent of children under 18 years of age.

Total monetized benefits, however, are driven primarily by the estimated 8,300 fewer premature fatalities each year, which account for almost 89 percent of total benefits. We assume for this analysis that some of the incidences of premature mortality related to PM exposures occur in a distributed fashion over the five years following exposure. To take this into account in the valuation of reductions in premature mortality, we apply an annual three percent discount rate to the value of premature mortality occurring in years after our analysis year.

TABLE V.F-1.—EPA PRIMARY ESTIMATE OF THE ANNUAL QUANTIFIED AND MONETIZED BENEFITS ASSOCIATED WITH IMPROVED AIR QUALITY RESULTING FROM THE HD ENGINE/DIESEL FUEL RULE IN 2030 ^A

Endpoint	Pollutant	Avoided incidence ^{A C} (cases/year)	Monetary benefits ^{A D} (millions 1999\$)
Premature mortality ^B (adults, ages 30 and over)	PM ^B	8,300	\$62,580
Chronic bronchitis	PM	5,500	\$2,430
Hospital Admissions from Respiratory Causes	Ozone and PM	4,100	\$60
Hospital Admissions from Cardiovascular Causes	Ozone and PM	3,000	\$50
Emergency Room Visits for Asthma	Ozone and PM	2,400	<\$5
Acute bronchitis (children, ages 8–12)	PM	17,600	<\$5
Upper respiratory symptoms (asthmatic children, ages 9–11)	PM	193,400	\$10
Lower respiratory symptoms (children, ages 7–14)	PM	192,900	<\$5
Asthma attacks (asthmatics, all ages) ^E	Ozone and PM	361,400	B _a
Work loss days (adults, ages 18–65)	PM	1,539,400	\$160
Minor restricted activity days (adults, ages 18–65)	Ozone and PM	9,838,500	\$530
(adjusted to exclude asthma attacks).			
Other health effects ^E	Ozone, PM, CO, NMHC	U ₁ +U ₂ +U ₃ +U ₄	B ₁ +B ₂ +B ₃ +B ₄
Decreased worker productivity	Ozone		\$140
Recreational visibility (86 Class I Areas)	PM		\$3,260
Residential visibility	PM		B ₅
Household soiling damage	PM		B ₆
Materials damage	PM		B ₇
Nitrogen Deposition to Estuaries	Nitrogen		B ₈
Premature mortality ^B (adults, ages 30 and over)	PM ^B	8,300	\$62,580

¹⁹⁹ While emission reduction trends give a general indication of the likely trends in the benefits, there are sufficient non-linearities and interactions

among pollutants in the atmospheric chemistry used in our modeling that it is not possible to attempt a quantitative estimate of the benefits

simply from changes in the inventories in years that were not fully modeled.

TABLE V.F-1.—EPA PRIMARY ESTIMATE OF THE ANNUAL QUANTIFIED AND MONETIZED BENEFITS ASSOCIATED WITH IMPROVED AIR QUALITY RESULTING FROM THE HD ENGINE/DIESEL FUEL RULE IN 2030 ^A—Continued

Endpoint	Pollutant	Avoided incidence ^{A+C} (cases/year)	Monetary benefits ^{A+D} (millions 1999\$)
Chronic bronchitis	PM	5,500	\$2,430
Hospital Admissions from Respiratory Causes	Ozone and PM	4,100	\$60
Hospital Admissions from Cardiovascular Causes	Ozone and PM	3,000	\$50
Emergency Room Visits for Asthma	Ozone and PM	2,400	<\$5
Acute bronchitis (children, ages 8–12)	PM	17,600	<\$5
Upper respiratory symptoms (asthmatic children, ages 9–11)	PM	193,400	\$10
Lower respiratory symptoms (children, ages 7–14)	PM	192,900	<\$5
Asthma attacks (asthmatics, all ages) ^E	Ozone and PM	361,400	B _a
Work loss days (adults, ages 18–65)	PM	1,539,400	\$160
Minor restricted activity days (adults, ages 18–65)	Ozone and PM	9,838,500	\$530
(adjusted to exclude asthma attacks)			
Other health effects ^E	Ozone and PM	U ₁ +U ₂ +U ₃ +U ₄	B ₁ +B ₂ +B ₃ +B ₄
	CO, NMHC		
Decreased worker productivity	Ozone		\$140
Agricultural crop damage (6 crops)	Ozone		\$1,120
Commercial forest damage, (6 species in Eastern US)	Ozone		B ₉
Commercial forest damage, other	Ozone		B ₁₀
Other welfare effects ^E	Ozone, PM		B ₁₁ +B ₁₂ +B ₁₃ +B ₁₄
	CO, NMHC		
Monetized Total ^F			\$70,360+B

Notes:

^A Ozone-related benefits are only calculated for the Eastern US due to unavailability of reliable modeled ozone concentrations in the Western US, thus underestimating national ozone-related benefits. See RIA and technical support documents for details.

^B Premature mortality associated with ozone is not separately included in this analysis. It is assumed that the ACS/Krewski, *et al.* (2000) C–R function for premature mortality captures both PM mortality benefits and any mortality benefits associated with other air pollutants. Also note that the valuation assumes the 5 year distributed lag structure described earlier and a 3 percent discount rate over that lag period.

^C Incidences are rounded to the nearest 100.

^D Dollar values are rounded to the nearest 10 million. Monetary benefits account for growth in real GDP per capita between 1990 and 2030.

^E The U_i are the incidences and the B_i are the values for the unquantified category *i*. For some categories such as asthma attacks, we were able to quantify the reduction in incidence, but we present the monetization as an alternative calculation. A detailed listing of unquantified PM, ozone, CO, and NMHC related health and welfare effects is provided in Table V.F–2. NMHC shown here are also hazardous air pollutants listed in the Clean Air Act.

^F B is equal to the sum of all unmonetized categories, *i.e.* B_a+B₁+B₂+...+B_n.

This table also indicates with a “B” those additional health and environmental benefits which could not be expressed in quantitative incidence and/or economic value terms. A full listing of the benefit categories that could not be quantified or monetized in our estimate are provided in Table V.F–2. For instance, visibility is expected to improve in all areas of the country, with the largest improvements occurring in heavily populated residential areas (*e.g.*, half of the urban areas show an

improvement of 0.5 deciviews or more). However, due to limitations on sources to value these effects, we include a “B” in the primary estimate table for this category. Likewise, the HD Engine/Diesel Fuel rule will also provide progress for some estuaries to meet their goals for reducing nitrogen deposition (*e.g.*, nitrogen loadings for the Albemarle/Pamlico Sound are reduced by 24 percent of their reductions goal), however, this endpoint is also displayed with a “B” in the table. A full

appreciation of the overall economic consequences of the HD Engine/Diesel Fuel standards requires consideration of all benefits and costs expected to result from the new standards, not just those benefits and costs which could be expressed here in dollar terms.

In summary, EPA’s primary estimate of the benefits of the HD Engine/Diesel Fuel rule is \$70.4 billion in 2030. This estimate accounts for growth in real gross domestic product (GDP) per capita between 1990 and 2030.

TABLE V.F-2.—ADDITIONAL, NON-MONETIZED BENEFITS OF THE HD ENGINE/DIESEL FUEL STANDARDS

Pollutant	Unquantified effects
Ozone Health	Premature mortality; ^A Increased airway responsiveness to stimuli; Inflammation in the lung; Chronic respiratory damage; Premature aging of the lungs; Acute inflammation and respiratory cell damage; Increased susceptibility to respiratory infection; and Non-asthma respiratory emergency room visits.
Ozone Welfare	Decreased yields for commercial forests; Decreased yields for fruits and vegetables; Decreased yields for non-commercial crops; Damage to urban ornamental plants; Impacts on recreational demand from damaged forest aesthetics; and Damage to ecosystem functions.
PM Health	Infant mortality; Low birth weight; Changes in pulmonary function; Chronic respiratory diseases other than chronic bronchitis; and Morphological changes.
PM Welfare	Visibility in non-class I areas; Soiling and materials damage; and Damage to ecosystem functions.
Nitrogen and Sulfate Deposition Welfare.	Impacts of acidic sulfate and nitrate deposition on commercial forests; Impacts of acidic deposition to commercial freshwater fishing; Impacts of acidic deposition to recreation in terrestrial ecosystems; Reduced existence values for currently healthy ecosystems; Impacts of nitrogen deposition on commercial fishing, agriculture, and forests; Impacts of nitrogen deposition on recreation in estuarine ecosystems; and Damage to ecosystem functions.

TABLE V.F-2.—ADDITIONAL, NON-MONETIZED BENEFITS OF THE HD ENGINE/DIESEL FUEL STANDARDS—Continued

Pollutant	Unquantified effects
CO Health	Premature mortality; ^A Behavioral effects; Hospital admissions—respiratory, cardiovascular, and other; Other cardiovascular effects; Developmental effects; Decreased time to onset of angina; and Non-asthma respiratory ER visits.
NMHC Health	Cancer (benzene, 1,3-butadiene, formaldehyde, acetaldehyde); ^B Anemia (benzene); Disruption of production of blood components (benzene); Reduction in the number of blood platelets (benzene); Excessive bone marrow formation (benzene); Depression of lymphocyte counts (benzene); Reproductive and developmental effects (1,3-butadiene); Irritation of eyes and mucus membranes (formaldehyde); Respiratory irritation (formaldehyde); Asthma attacks in asthmatics (formaldehyde); Asthma-like symptoms in non-asthmatics (formaldehyde); Irritation of the eyes, skin, and respiratory tract (acetaldehyde); and Upper respiratory tract irritation and congestion (acrolein).
NMHC Welfare	Direct toxic effects to animals; Bioaccumulation in the food chain; and Damage to ecosystem function.

^A Premature mortality associated with ozone and carbon monoxide is not separately included in this analysis. In this analysis, we assume that the ACS/Krewski, *et al.* C-R function for premature mortality captures both PM mortality benefits and any mortality benefits associated with other air pollutants.

^B Non-methane hydrocarbons related to this rule are also hazardous air pollutants listed in the Clean Air Act.

In addition, in analyzing the present rule, we recognized that the benefits estimates were subject to a number of uncertainties with other parameters. In Table V.F-3 we present key alternatives to assumptions regarding individual elements of the benefits analysis and their effect on the primary estimate of

benefits. This table also displays some assumptions that can be made to value some of the categories that are indicated with a “B” in the primary estimate. For example, this table can be used to answer questions like, “What would total benefits be if we were to use the ACS/Krewski, *et al.* regionally adjusted

PM_{2.5} C-R function to estimate avoided premature mortality?” This table is not meant to be comprehensive but to identify the impact of key issues identified by EPA or in public comment as affecting the total benefits estimation.

TABLE V.F-3. KEY ALTERNATIVE BENEFITS CALCULATIONS FOR THE HD ENGINE/DIESEL FUEL RULE IN 2030^A

Description of alternative	Avoided incidences	Impact on primary benefits estimate adjusted for growth in real income (million 1999\$)	
Alternative Concentration-Response Functions for PM-related Premature Mortality			
1. Krewski/ACS Study Regional Adjustment Model ^B	9,400	+\$7,370 (+10.5%)	
2. Pope/ACS Study ^C	9,900	+12,780 (+18.2%)	
3. Krewski/Harvard Six-city Study ^D	24,200	+\$118,500 (+168.4%)	
Alternative Methods for Valuing Reductions in Incidences of PM-related Premature Mortality			
Value of avoided premature mortality incidences based on age-specific VSL	Jones-Lee (1989) ^E	8,300	− \$28,510 (− 40.5%)
	Jones-Lee (1993) ^F	8,300	− \$6,820 (− 10.0%)

^A Section VII-F of the RIA provides complete information about the estimates in this table.

^B This C-R function is included as a reasonable specification to explore the impact of adjustments for broad regional correlations, which have been identified as important factors in correctly specifying the PM mortality C-R function.

^C The Pope *et al.* C-R function was used to estimate reductions in premature mortality for the Tier 2/Gasoline Sulfur benefits analysis. It is included here to provide a comparable estimate for the HD Engine/Diesel Fuel rule.

^D The Krewski *et al.* “Harvard Six-cities Study” estimate is included because the Harvard Six-cities Study featured improved exposure estimates, a slightly broader study population (adults aged 25 and older), and a follow-up period nearly twice as long as that of Pope, *et al.* and as such provides a reasonable alternative to the primary estimate.

^E Jones-Lee (1989) provides an estimate of age-adjusted VSL based on a finding that older people place a much lower value on mortality risk reductions than middle-age or younger people.

^F Jones-Lee (1993) provides an estimate of age-adjusted VSL based on a finding that older people value mortality risk reductions only somewhat less than middle-aged or younger people.

The estimated annualized 2030 cost for businesses to implement the final HD Engine/Diesel Fuel program from Table V.D-1 of the RIA is \$4.3 billion (1999\$). When considered in a broader social cost context of the cost to society of the resources used, which is the right

metric for cost-benefit analysis, the annualized cost is \$4.2 billion. The monetized benefits are approximately \$70.4 billion and EPA believes there is considerable value to the public of the benefits it could not monetize. The net benefit that can be monetized is \$66.2

billion. Therefore, implementation of the HD Engine/Diesel Fuel program is expected to provide society with a net gain in social welfare based on economic efficiency criteria. Tables V.F-4 summarizes the costs, benefits, and net benefits.

TABLE V.F-4.—2030 ANNUAL MONETIZED COSTS, BENEFITS, AND NET BENEFITS FOR THE FINAL HD ENGINE/DIESEL FUEL RULE ^a

	Billions of 1999\$
Annual compliance costs	\$4.2
Monetized PM-related benefits ^b	\$69.0 + B _{PM}
Monetized Ozone-related benefits ^{b, c}	\$1.4 + B _{Ozone}
NMHC-related benefits	not monetized
CO-related benefits	(B _{NMHC}) not monetized
Total annual benefits	(B _{CO}) \$70.4 + B _{PM} + B _{Ozone} + B _{NMHC} + B _{CO}
Monetized net benefits ^d	\$66.2 + B

^a For this section, all costs and benefits are rounded to the nearest 100 million. Thus, figures presented in this chapter may not exactly equal benefit and cost numbers presented in earlier sections of the chapter.

^b Not all possible benefits or disbenefits are quantified and monetized in this analysis. Potential benefit categories that have not been quantified and monetized are listed in Table VII-1. Unmonetized PM- and ozone-related benefits are indicated by B_{PM} and B_{Ozone}, respectively.

^c Ozone-related benefits are only calculated for the Eastern U.S. due to unavailability of reliable modeled ozone concentrations in the Western U.S. This results in an underestimate of national ozone-related benefits. See US EPA (2000a) for a detailed discussion of the UAM-V ozone model and model performance issues.

^d B is equal to the sum of all unmonetized benefits, including those associated with PM, ozone, CO, and NMHC.

VI. Requirements for Engine and Vehicle Manufacturers

A. Compliance with Standards and Enforcement

We are making some changes to the compliance-related requirements that will apply to vehicles and engines certified to the new standards. These changes are described below. Changes related to the supplemental emission requirements are discussed in Section III.C, along with the discussion of revised standards for those requirements. In general, however, existing compliance provisions will continue to apply to the vehicles and engines subject to today's standards.

1. Allowable Maintenance

Our existing regulations contain provisions (40 CFR § 86.004-25) that would affect scheduled maintenance of NO_x adsorbers, PM traps, and other devices that may be used to comply with the new standards. These provisions limit the amount of maintenance to emission-related components that the manufacturer is allowed to conduct during durability testing (or specify in the maintenance instructions that it gives to operators). We believe that the continuation of these requirements is appropriate because we expect that, with very low fuel sulfur levels, these technologies will be very durable in use and will last the full useful life with little or no scheduled maintenance other than cleaning. However, we are modifying these provisions slightly. The existing regulations would have allowed a manufacturer to specify something as drastic as replacement of the adsorber catalyst bed or the trap filter after as

little as 100,000–150,000 miles if there was a “reasonable likelihood” that the maintenance would get done. To ensure that no manufacturer underdesigns their adsorbers or traps (compared to the level of durability that is achievable), we are requiring that these technologies be designed to last for the full useful life of the engine. More specifically, the final regulations state that scheduled replacement of the PM filter element, NO_x adsorber, or other catalyst module bed is not allowed during the useful life, unless the manufacturer can show that the replacement will in fact occur and pays for the replacement. Otherwise, only cleaning and adjustment will be allowed as scheduled maintenance. It is important to note that this restriction only applies to the manufacturer's specified maintenance. Owners and operators are, of course, allowed to perform additional maintenance.

2. Emission Data Waivers

Today's action includes PM standards for all heavy-duty engines. However, because gasoline engines have inherently low PM emissions, it will be appropriate in some cases to waive the requirement to measure PM emissions for certification. Therefore, the final regulations give us the flexibility to allow manufacturers to certify gasoline engines and vehicles without measuring PM emissions, provided they can demonstrate compliance in some other way such as with previous data, analyses, or other information. The flexibility is the same as that allowed for PM emissions from light-duty gasoline vehicles and for CO emissions from heavy-duty diesel engines. We are also allowing the same type of analysis to be used with respect to formaldehyde

emissions from all petroleum-fueled heavy-duty vehicles.

3. Crankcase Emissions

Section III describes a new requirement for manufacturers to control crankcase emissions from turbocharged diesel engines. Historically, control of crankcase emissions has meant sealing the crankcase and routing the crankcase gases into the air intake system so they can be combusted. However, some manufacturers have expressed a reasonable concern that this would be unnecessarily restrictive, and suggested that we should allow for alternative controls. Therefore, we are making some revisions from the proposed regulations. First, we are clarifying that this closed crankcase provision does not require that crankcase gases be routed into the engine intake. We will also allow manufacturers to route crankcase gases into the exhaust system, including upstream of the exhaust emission controls. Furthermore, we are also changing the regulations to allow manufacturers to instead measure crankcase emissions and add them to the measured exhaust emissions (or to measure them together). Manufacturers choosing to use this allowance rather than to seal the crankcase will need to modify their exhaust deterioration factors or to develop separate deterioration factors to account for increases in crankcase emissions as the engine ages. Manufacturers would also be responsible for ensuring that crankcase emissions would be readily measurable in use.

4. Non-Conformance Penalties

We are not establishing non-conformance penalties (NCPs) for the new standards at this time. NCPs are monetary penalties that manufacturers can pay instead of complying with an emission standard. In order for us to establish NCPs for a specific standard, we would have to find that: (1) Substantial work will be required to meet the standard for which the NCP is offered; and (2) there is likely to be a "technological laggard" (*i.e.*, a manufacturer that cannot meet the standard because of technological (not economic) difficulties and, without NCPs, might be forced from the marketplace). According to the CAA (Section 206(g)), such NCPs "shall remove any competitive disadvantage to manufacturers whose engines or vehicles achieve the required degree of emission reduction." We also must determine compliance costs so that appropriate penalties can be established. While we have established NCPs in past rulemakings, their use has been rare since the implementation of our averaging, banking and trading program.

We requested comment on the need for NCPs in this rulemaking. However, after reviewing the comments, we cannot conclude that NCPs will be needed. While we believe that substantial work will be required to meet the 2007 standards, we currently have no information indicating that a technological laggard is likely to exist. Recognizing that it may have been difficult for manufacturers to comment on these criteria at this early stage of development, when implementation of these standards is still more than six years away, it may be appropriate to reconsider NCPs in a future action.

5. Idle CO Standards

We are also eliminating the idle CO emission standards for heavy-duty vehicles and engines below 14,000 pounds beginning in the 2004 model year, provided they are certified to the OBD requirements of our Phase 1 rule. (See 65 FR 59896, October 6, 2000.) The certified OBD systems on those vehicles will likely serve as the basis for future inspection and maintenance tests in areas testing vehicles in that weight class. Certification data show that heavy-duty engines and vehicles are certifying with idle CO levels well below the standard. We believe that the existing standard is not the forcing function for these low idle CO levels, but instead it is the electronic computer-controlled engines of today. In effect, we believe that the idle CO standard places

an unnecessary testing burden on manufacturers whose vehicles are certified to the OBD requirements. We also eliminated the idle CO standard for light-duty trucks in our Tier 2 rule. (See 65 FR 6698, February 10, 2000.) Note that we are considering a future rule that would implement OBD on engines over 14,000 pounds. We would consider eliminating the idle CO requirement for those engines in the event that OBD requirements are put into place.

B. Compliance With Phase-in Schedules

In Section III we described the phase-in options for diesel engine manufacturers. These options are based on percentages of a manufacturer's production. We recognize, however, that manufacturers need to plan for compliance well in advance of the start of production, and that actual production volumes for any one model year may differ from their projections. This is a bigger concern for the diesel engines than for gasoline engines because of the three-year phase-in of the new diesel NO_x standards. On the other hand, we believe that it would be inappropriate to base compliance solely on a manufacturer's projections. That could encourage manufacturers to overestimate their production of the low-emission engines, and could result in significantly lower emission benefits during the phase-in. Given these conflicting factors, we are finalizing a compromise approach. We will initially only require diesel manufacturers to project compliance with the phase-in based on their projected production volumes, provided that they made up any deficits (in terms of percent of production) the following year. Thus, a manufacturer that projected 50 percent of its production in 2007 would be low-NO_x (*i.e.*, meet the 0.20 g/bhp-hr NO_x standard), but that was only able to actually produce 45 percent of its production as low-NO_x, could achieve compliance by producing at least 55 percent of its production as low-NO_x in 2008. However, since production volumes differ from year to year, deficits would be calculated and made up based on numbers of engines or vehicles, rather than percent of production. This is similar to the approach that we used in phasing-in the Tier 2 emission standards.

Since we expect that a manufacturer making a good-faith projection of sales would not be very far off of the actual production volumes, we are limiting the size of the deficit that could be excused. In all cases, the manufacturer will be required to produce at least 25 percent of its production as low-NO_x engines in model years 2007, 2008, and 2009.

Another important restriction is that manufacturers will not be allowed to have a deficit in the third year of the phase-in (2009). This restriction is being finalized to ensure that manufacturers are able to make up the deficit. Since they could not produce more than 100 percent low-NO_x engines in 2010, it would not be possible to make up a deficit from 2009.

C. Averaging, Banking, and Trading

We are continuing the basic structure of the existing ABT program for heavy-duty engines. This program allows manufacturers to certify their engine families at various specified emissions levels above or below the standard, as long as they comply with the applicable standards when averaged across their various engine families. More specifically, manufacturers are allowed to certify their engine families with various family emission limits (FELs), provided that in each model year the average of the FELs does not exceed the standard when weighted by the numbers of engines produced in each family for that model year. To do this, they generate certification emission credits by producing engine families that are certified below the applicable standard. These credits can then be used to offset the production of engine families that are certified to have emissions in excess of the applicable standards. Manufacturers are also allowed to bank these credits for later use or trade them to other manufacturers. We are adopting some restrictions to ensure that the environmental benefits of the program are not jeopardized as described in the Response to Comments document. These restrictions are described below along with other changes made in response to comments. We are continuing this ABT program because we believe that it will provide the manufacturers significant compliance flexibility. This compliance flexibility could be a significant factor in the manufacturers' ability to comply with the standards in 2007 and will help to allow implementation of the new, more stringent standards as soon as permissible under the CAA.

We proposed two separate averaging sets during the diesel phase-in period. In one set, engines would be certified to the 2.4 g/bhp-hr NO_x+NMHC standard (which applies for model years 2004–2006), and would be subject to the restrictions and allowances established for those model years. In the other set, engines would be certified to the 0.20 g/bhp-hr NO_x standard, and would be subject to the restrictions and allowances in the proposed program.

While we proposed to not allow averaging between these two sets, based on the comments we received, the final regulations allow manufacturers to transfer credits across these averaging sets, with some restrictions. Manufacturers could use credits generated during the phase-out of engines subject to the 2.4 g/bhp-hr NO_x+NMHC standard to comply with the 0.20 g/bhp-hr NO_x standard, but these credits will be subject to a 20 percent discount. (Each gram of NO_x+NMHC credits from the phase-out engines would be worth 0.8 grams of NO_x credits in the new ABT program.) This discount reflects the fact that the change from our proposed ABT program provides manufacturers with substantial flexibility in meeting the final standards and also accounts for the NMHC component of the credit. In the first year of the phase-in, this flexibility will allow manufacturers to reduce fleetwide emissions more than would have been possible with the proposed program. Manufacturers will be able to reduce emissions for a substantial percentage of their production, reflecting the use of low-NO_x technologies, without being required to produce a full 50 percent of their production with NO_x emissions near or below 0.20 g/bhp-hr in the initial year of the phase-in. This generation and use of credits will give manufacturers a greater opportunity to gain experience with the low-NO_x technologies before they are required to meet the final standards across their full production. As part of the averaging program during the phase-in period (model years 2007–2009), we will allow diesel engine credits to be averaged across service class using a modified form of the ABT program. These credit exchanges would occur in the same manner as other credit exchanges, except that the credits generated from one service class would need to be calculated using the useful life and horsepower values of the engine family using credits. This would make the credit exchanges equivalent to the vehicle count phase-in provisions. This allowance is restricted to averaging. Banked or traded credits cannot be used across service class.

We are also adopting a restriction on the use of banked NO_x+NMHC credits generated from diesel engines certified to the 2.4 g/bhp-hr NO_x+NMHC standard. While we proposed to prohibit any such use, the final regulations will allow manufacturers to use banked credits to show compliance with the 0.20 g/bhp-hr standard, but the credits will be discounted by 20 percent when

they are used for this purpose.²⁰⁰ This is consistent with the cross-averaging set discount described above. In addition, we are setting an upper bound on the number of engines for which a manufacturer could use such banked credits during any one model year. The upper limit is ten percent of the manufacturer's annual U.S.-directed production of heavy-duty highway diesel engines, and would apply only for engines certified to FELs higher than 0.50 g/bhp-hr. We believe that this limit is necessary to prevent manufacturers from delaying the introduction of the low-NO_x technologies by using a large number of banked credits. This kind of delay would be contrary to the goals of the phase-in, which in large part is intended for manufacturers to gain some initial experience with the low-NO_x technologies for a limited portion of their production. Although it does not appear likely (based on manufacturer expectations) that such credits will exist in large numbers, this limit appears prudent to ensure that such a problem does not occur.

We are making similar changes to the ABT programs for heavy-duty gasoline engines and vehicles. We will allow exchange of credits from the chassis-certified vehicles to engines (and vice versa) on a credit for credit face-value basis, subject to a 20 percent discount.²⁰¹ The discount is necessary to account for the uncertainty in converting between g/mi standards and g/bhp-hr standards. We will also allow NO_x+NMHC credits from gasoline engines certified to the combined standards (including banked credits) to be used in the new NO_x-only ABT program, also subject to the 20 percent discount, for reasons discussed above and in the Response to Comments document. This discount would not apply for banked or averaged gasoline vehicle credits used within the vehicle ABT program, since the existing program is already a NO_x-only program. In connection to this option, we believe that it would be appropriate to allow gasoline engine manufacturers to voluntarily participate in an NMHC ABT program, instead of forcing them to convert their NO_x+NMHC credits into

NO_x credits when the new standards take effect. While we believe that manufacturers will generally prefer to use these credits as NO_x credits, NMHC credits may be of some value to manufacturers since gasoline engine emission controls often have a NO_x-NMHC emission tradeoff much like the NO_x-PM tradeoff for diesel engines. Therefore, we are extending the ABT programs for gasoline engines and vehicles to include NMHC, beginning with the 2007 model year. These NO_x and NMHC ABT programs parallel the NO_x and PM ABT programs for diesels. In the NMHC ABT programs, the NMHC credits would be subject to the same allowances, restrictions, and discounts as the NO_x credits. In addition, we are adopting a provision to allow vehicle manufacturers to bank NMHC credits before 2008 for complete vehicles that are certified to the 2008 standards early. (Engine manufacturers are already allowed to bank NO_x+NMHC credits for model year 2004 and later engines.)

It is worth noting three other aspects of this new banking program. First we recognize that NO_x+NMHC credits are not the same as NO_x-only credits. However, both NMHC reductions and NO_x reductions have environmental value, although they are not necessarily equivalent. Thus, given the 20 percent discount that would be applied to the NO_x+NMHC credits if they are transferred into the new NO_x ABT program, we believe that it is appropriate to allow those credits to be used in the new NO_x program. This is especially true for diesels, which are expected to have low NMHC levels for model years 2004–2006 (probably about one-tenth of the expected NO_x levels). Second, the final program does not include the proposed provisions for banking undiscounted credits by meeting all of the new diesel standards early, because we believe that the early compliance option described in Section III would accomplish essentially the same flexibility. Finally, we are not finalizing any new discounts or restrictions for banked PM credits. Considering the simple 100 percent phase-in of the PM standards in 2007, we believe that such restrictions are not necessary to achieve the goals of this program for PM, especially given the 0.02 g/bhp-hr PM FEL cap, which is described below.

The existing ABT program includes limits on how high the emissions from credit-using engines can be. These limits are referred to as FEL caps. No engine family may be certified above these caps using credits. These limits provide the manufacturers compliance flexibility while protecting against the

²⁰⁰ It should be noted that the existing regulations already contain provisions that would discount diesel NO_x+NMHC credits in some cases when they are banked or traded. The reason for this discount is an interest in encouraging engine designs that are significantly cleaner than the 2.4 g/bhp-hr standard while that standard is in effect. There are also similar provisions for gasoline engines and vehicles. While the new regulations do not change these existing provisions, they do account for the previous discount by capping the total discount at 20 percent.

²⁰¹ See preceding footnote.

introduction of unnecessarily high-emitting engines. In the past, we have generally set the FEL caps at the emission levels allowed by the previous standard, unless there was some specific reason to do otherwise. However, we proposed much lower FEL caps, because the proposed standard levels were so much lower than the previous levels and because we wanted to ensure that manufacturers did not continue to produce old-technology high-emitting engines under the new program. In today's FRM, for model year 2007 and later diesel engines, we are adopting a more flexible cap for NO_x emissions during the first three years of the program than was proposed, but are adopting the proposed FEL cap for PM emissions. We believe that this approach for NO_x is more consistent with the rest of the ABT program (as is described above) than applying the proposed FEL cap during this interim period. Specifically, model year 2007 through 2009 diesel engines subject to the 0.20 g/bhp-hr standard will not be

allowed to have NO_x emissions higher than 2.0 g/bhp-hr, or PM emissions higher than 0.02 g/bhp-hr. The NO_x level represents a conservative estimate of the emission level that is expected under the combined NO_x+NMHC standards that will apply beginning in model year 2004. The proposed NO_x FEL cap of 0.50 g/bhp-hr would not apply until model year 2010. We believe that the higher FEL cap is appropriate during the transition to the much lower standards, to allow some meaningful use of averaging. However, since the 2.0 g/bhp-hr cap is ten times the level of the new standard, it would not be appropriate as a long-term cap.

The PM cap is also lower than the previous standard of 0.10 g/bhp-hr. As noted above, this is being done in connection with the absence of the kind of restrictions on the use of PM credits that are being set for NO_x credits. The NO_x credits restrictions are designed to better coordinate the NO_x ABT program with the NO_x standard phase-in; and the PM standard is not phased-in.

Without those types of restrictions, we believe that it is appropriate to adopt the proposed lower FEL cap to prevent the possibility of PM credits being used to delay the implementation of the program and its benefits.

The FEL caps for gasoline vehicles and engines are being set at the previous standards, and the approximate NO_x and NMHC levels inherent in the NO_x+NMHC standards that will apply for model year 2004–2007 engines. Since engine manufacturers will have the option of certifying their engines to a 1.5 g/bhp-hr NO_x+NMHC standard for model years 2004–2007 (instead of the 2005 standard of 1.0 g/bhp-hr), those manufacturers choosing that option, will also be allowed higher FEL caps for model years 2008–2010. All of these FEL caps are shown in Table VI.D–1 and are discussed in more detail in the Response to Comments document. These new FEL caps do not apply for the phase-out engines and vehicles.

TABLE VI.D–1.—NEW FEL CAPS FOR AVERAGING BANKING AND TRADING

	NO _x FEL cap	PM/NMHC FEL cap
HDDE	0.50 g/bhp-hr ^a ..	0.02 g/bhp-hr PM.
HDGE	0.50 g/bhp-hr ^b ..	0.30 g/bhp-hr ^b NMHC.
Complete HDGV less than or equal to 10,000 pounds GVWR	0.9 gpm	0.28 gpm NMHC.
Complete HDGV over 10,000 pounds GVWR	1.0 gpm	0.33 gpm NMHC.

^a The NO_x FEL cap is 2.0 for model years 2007–2009 diesel engines.

^b The NO_x and NMHC FEL caps are 0.80 and 0.40 g/bhp-hr, respectively, for model years 2008–2010 gasoline engines for manufacturers choosing to certify to the 1.5 g/bhp-hr NO_x+NMHC level in 2004.

D. FTP Changes to Accommodate Regeneration of Exhaust Emission Controls

It is expected that some of the exhaust emission control devices used to meet today's standards will have discrete regeneration events that could affect emission characteristics. For example, NO_x adsorbers incorporate discrete regenerations. The NO_x adsorber stores NO_x under normal conditions until the NO_x storage capacity is nearly full, at which point the regeneration event is triggered to purge the stored NO_x and reduce it across a catalyst. We expect that these regeneration events would be controlled by the engine computer, and would thus be generally predictable. Even passively regenerating catalytic PM trap designs can have discrete regeneration events that can be predictable.

Discrete regeneration events can be important because it is possible for

exhaust emissions to increase during the regeneration process. The regeneration of a NO_x adsorber for instance, could result in increased particulates, NMHC and NO_x due to the rich exhaust gas required to purge and reduce the NO_x. We expect that in most cases, the regeneration events will be sufficiently frequent to be included in the measured emissions. Our feasibility analysis projects very frequent regeneration of the NO_x adsorbers, and continuously regenerating PM traps. Nevertheless, this issue becomes a regulatory concern because it is also conceivable that these emission storage devices could be designed in such a way that a regeneration event would not necessarily occur over the course of a single heavy-duty FTP cycle, and thus be unmeasured by the current test procedure. In addition, desulfation of NO_x adsorbers is clearly not likely to occur frequently enough to reliably be

caught in the FTP. Since these regeneration events could produce increased emissions during the regeneration process, it will be important to make sure that regeneration is captured or accounted for as part of the certification testing.

In order to ensure control of emissions during regeneration (including desulfation), we will require manufacturers to determine and use a mathematical adjustment of measured emissions to account for increased emissions during infrequent regeneration events that do not occur during the testing. Conversely, we will also require manufacturers to provide us with a consistent reverse adjustment factor for tests in which the regeneration does occur. For example, if a system requires a desulfation after every 20 FTP transient cycles, and PM emissions increase by 0.01 g/bhp-hr during an FTP transient cycle with a desulfation, we

will require measured emissions to be adjusted upward by 0.0005 g/bhp-hr (0.01 g/bhp-hr divided by 20 cycles) for all tests in which that regeneration does not occur. The equivalent reverse adjustment (downward) for tests in which the regeneration does occur would be 0.0095 g/bhp-hr (0.01 g/bhp-hr multiplied by 19/20). The reason that the adjustment downward would be so much larger than the adjustment upward is that it is correcting for a significant emission increase over a single emission test, while the adjustment downward would be correcting for that same emission increase over the other 19 tests. No adjustment will be made for events that are so frequent that they always occur during FTP testing. In designs for which these activities are not commanded at regular intervals, such as those based on changes in backpressure or NO_x levels, the manufacturer would be required to determine an average frequency of the regeneration (during repeat FTP transient tests). In all cases, manufacturers would need to provide information to allow testers to know when an infrequent regeneration has occurred during the test, such as by identifying the controller command signal for this event. If this information is not available, manufacturers would be required to meet the standards during all tests, without regard to whether a regeneration occurs.

E. Improvements to the Test Procedures

In response to manufacturer comments, we are finalizing changes to the test procedures to improve the precision of emission measurements. The changes fully address the manufacturers concerns about the potential effect of measurement precision on the feasibility of the standards. It is important to note that these changes are not intended to make measurements higher or lower, but only to improve the repeatability of the measurements. Based on our experience with these modified test procedures, and our discussions with manufacturers about their experiences, we are confident that these changes will not affect the stringency of the standards. These changes are summarized briefly here. A more complete description can be found in a memorandum to the docket.²⁰²

Most of the changes being finalized are in three general areas. Many of the changes are to the PM sampling procedure. These include changes to the type of PM filters that are used, and

improvements in how PM filters are weighed before and after emission measurements, including requirements for more precise microbalances. Another area includes changes to the dilution air specifications to allow for lower dilution ratios. The final area of change is the NO_x calibration procedure. The new calibration procedures will result in more precise continuous measurement of very low concentrations of NO_x.

Other changes are being made to the regulations to allow for other measurement options. In some cases, manufacturers will be allowed to use their current procedures, even though EPA will adopt the changes for our own testing. The reason for this is that some of these changes may not be convenient or cost-effective in the short term, and manufacturers may be willing to live with some slightly higher measurement variability in order to lower testing costs. We believe that manufacturers should be able to individually optimize their test facilities in this manner. However, it is important for manufacturers to understand that we will conduct our confirmatory testing in the accurate and precise manner specified in these regulations.

We are including a new regulatory provision that specifies the steps that someone needs to go through to demonstrate that their own alternate measurement procedure is as good as or better than the procedure specified by our regulations. This provision is found in 40 CFR § 86.1306–07. It is also worth noting that, although we requested comment on changes to the NO_x humidity correction factors used for FTP testing, we did not receive any such comments. Thus we will continue to use the existing NO_x humidity correction factors for FTP testing.

F. Certification Fuel

It is well established that measured emissions are affected by the properties of the fuel used during the test. For this reason, we have historically specified allowable ranges for test fuel properties such as cetane and sulfur content. These specifications are intended to represent most typical fuels that are commercially available in use. Because today's action is lowering the upper limit for sulfur content in the field, we are also establishing a new range of allowable sulfur content for testing that is 7 to 15 ppm (by weight). We believe that this range best represents the fuel that diesel vehicles will potentially see in use. Beginning in the 2007 model year, these specifications will apply to emission testing conducted for Certification and Selective Enforcement Audits, as well as

any other laboratory engine testing for compliance purposes. Because the same in-use fuel is used for light- and heavy-duty highway diesel vehicles, we are also changing the specifications for light-duty diesel vehicle testing.

It is important to note that while these specifications include the maximum sulfur level allowed for in-use fuel, we believe that it is generally appropriate to test using the most typical fuels. We expect that refineries will typically produce diesel fuel with about 7 ppm sulfur, and that the fuel could have slightly higher sulfur levels after distribution. Thus, we expect that we would use fuel having a sulfur content between 7 and 10 ppm sulfur for our emission testing. Should we determine that the typical in-use fuel has significantly more sulfur than this, we would adjust this target upward.

We are including a regulatory change to the heavy-duty gasoline test fuel specifications to make them the same as the recently established Tier 2 fuel specifications for light-duty vehicles. We are also extending to heavy-duty engines and vehicles the Tier 2 allowance for manufacturers to use California test gasoline for certification. As is the case with Tier 2, this allowance does not affect our authority to conduct our own testing using federal fuel. Also consistent with our approach under Tier 2, we will consider requests, prior to manufacturer or EPA in-use testing, to permit preconditioning procedures designed solely to remove the effects of high sulfur gasoline on vehicles produced through the 2007 model year.

We are also allowing as an option the use of the new diesel test fuel beginning in the 2004 model year for vehicles employing sulfur-sensitive technology that are certifying to the Tier 2 standards. This allowance to use the new fuel in model years 2004–2006 will only be available for vehicles for which the manufacturer recommends to the owner that the vehicle be operated on fuel with 15 ppm sulfur or less, where available. Any testing that we perform on these vehicles would also use fuel meeting this lower sulfur specification. This optional certification fuel provision is targeted at encouraging the introduction of low-emission light-duty diesel technologies under the new Tier 2 standards that will be taking effect at that time. The provision accounts for the fact that these vehicles will use the lower sulfur fuel during most, perhaps all, of their operating life, given the clear manufacturer recommendation for use of low-sulfur fuel in these vehicles, combined with prospects for early availability of this fuel under the

²⁰² Memorandum from Matthew Spears to Docket A–99–06, dated December 6, 2000.

incentive provisions discussed in Section IV, and the assured availability of this fuel by mid-2006. Furthermore, we will allow manufacturers choosing to exercise this option in certifying vehicles for sale in both California and the other 49 states to use a fuel that, on a specification by specification basis, meets the requirements of either the federal or the California fuel specifications. This option is appropriate for light-duty vehicles and trucks since they would otherwise face a very complicated transition period, in which they would need to retest and potentially recalibrate vehicles for as many as four different test fuels during a three-year period.

G. Misfueling Concerns for Light- and Heavy-Duty Diesel Vehicles

As explained in Section III, the emissions standards contained in these regulations will make it necessary for manufacturers to employ exhaust emission control devices that require low-sulfur fuel to ensure proper operation. This action therefore restricts the sulfur content of highway diesel fuel sold in the U.S. There are, however, some situations in which vehicles requiring low-sulfur fuel may be accidentally or purposely misfueled with higher-sulfur fuel. Vehicles operated within the continental U.S. may cross into Canada and Mexico, countries that may not adopt the same low sulfur requirements on the same schedule. High-sulfur nonroad fuel may illegally be used by some operators to fuel highway vehicles. Any of these misfueling events could seriously degrade the emission performance of sulfur-sensitive exhaust emission control devices, or perhaps destroy their functionality altogether.

There are, however, some factors that help to mitigate concerns about misfueling. Most operators are very conscious of the need to ensure proper fueling and maintenance of their vehicles. The fear of large repair and downtime costs may often outweigh the temptation to save money through misfueling. The likelihood of misfueling in Canada and Mexico is lessened by current cross-border shipment practices and prospects for eventual harmonization of standards. Canada has recently expressed its intent to harmonize its fuel regulations with U.S. fuels standards.²⁰³ This would offer vehicle owners the option of refueling with low-sulfur fuel there. Even if

Canada were to lag behind the U.S. in mandating low-sulfur fuels, these fuels would likely become available along major through routes to serve the needs of U.S. commercial traffic that have the need to purchase it. In addition, there is less potential for U.S. commercial vehicles needing low-sulfur fuel to refuel in Canada because Canadian fuel is currently more costly than U.S. fuel. As a result, most vehicle owners will prefer to purchase fuel in the U.S., prior to entering Canada, whenever possible. This is facilitated by large tractor-trailer trucks that can have long driving ranges—up to 2,000 miles per tankful or so—and the fact that most of the Canadian population lives within 100 miles of the United States/Canada border.

In Mexico, the entrance of trucks beyond the border commercial zone has been prohibited since before the conclusion of the North American Free Trade Agreement in 1994. This prohibition applies in the U.S. as well, as entrance of trucks into the U.S. beyond the border commerce zone is also not allowed. Since these prohibitions are contrary to the intent of the Free Trade Agreement, a timetable was established to eliminate them.²⁰⁴ However, these prohibitions remain in force at this time.

The NAFTA negotiations included creation of a “corridor” where commercial truck travel occurs, and where Mexico is obligated to provide “low-sulfur” fuel. At the time of the NAFTA negotiations, “low-sulfur” fuel was considered 500 ppm, which was the level needed to address the needs of engines meeting the 1994 emission standards. The travel prohibition currently in place may be lifted at some point. At that time, the issue of assuring, for U.S. vehicles, the availability of fuel with a sulfur level needed by the new technology may need to be addressed.

Even considering these mitigating factors, we believe it is reasonable to adopt additional measures with very minor costs to manufacturers, fuel distributors, and consumers. First, we are requiring that highway diesel fuel pumps and co-located nonroad diesel fuel pumps be prominently labeled, as described in Section VII.

We are also adopting a requirement that heavy-duty vehicle manufacturers notify each purchaser of a model year 2007 or later diesel-fueled vehicle that the vehicle must be fueled only with the low-sulfur diesel fuel meeting the

regulations being adopted in this FRM. We believe this requirement is necessary to alert vehicle owners to avoid higher sulfur fuel in the U.S. and to seek out low-sulfur fuel when operating in areas such as Canada and Mexico where it may not be widely available. We are also requiring that model year 2007 and later heavy-duty diesel vehicles must be equipped by the manufacturer with labels on the dashboard and near the refueling inlet that say: “Use Low Sulfur Diesel Fuel Only” or “Low Sulfur Diesel Fuel Only”. For non-integrated manufacturers, the engine manufacturer will be required to provide such a label to the vehicle manufacturer, which the vehicle manufacturer will be required to install. Optionally, if a vehicle manufacturer chooses to install its own label, the engine manufacturer will not be required to provide the label.

We believe that these measures will help vehicle owners find and use the correct fuel and will be sufficient to address misfueling concerns. Thus, more costly provisions, such as vehicles fuel inlet restrictors, will not be necessary.

We are also requiring that the labeling and purchaser notification requirements described above for heavy-duty vehicles also be applied to the light-duty diesel vehicles certified to the final Tier 2 standards using certification test fuel with 15 ppm or less sulfur. These vehicles are expected to also need the low-sulfur fuel and be equally susceptible to misfueling damage.

H. In-Use Compliance Levels During the Transition Years to New Technologies

The Phase 2 standards will be challenging for diesel and gasoline engine manufacturers to achieve, and will require manufacturers to develop new technologies for their engines. Not only will manufacturers be responsible for ensuring that these technologies will allow engines to meet the standards at the time of certification, they will also have to ensure that these technologies continue to be highly effective in a wide range of in-use environments so that their engines would comply in-use when tested by EPA. However, in the early years of a program that introduces new technology, there are risks of in-use compliance problems that may not appear in the certification process or during developmental testing. Thus, we believe that it is appropriate to adjust the compliance levels for assessing in-use compliance for low emission engines (i.e., diesel engines equipped with the new exhaust emission control devices expected for Phase 2 diesel engines, and gasoline engines

²⁰³ “Process Begins to Develop Long Term Agenda to Reduce Air Pollution from Vehicles and Fuels”, Environment Canada press release, May 26, 2000.

²⁰⁴ See NAFTA, Volume II, Annex I, Reservations for Existing Measures and Liberalization Commitments, Pages I-M-69 and 70, and Pages I-U-19 and 20.

employing Tier 2/Phase 2 level technology). This will provide assurance to the manufacturers that they will not face recall if they exceed standards by a small amount during this transition to clean technologies. This approach is very similar to that taken in the Tier 2 final rule, which involves a similar introduction of new technologies (65 FR 6796, February 10, 2000).

Table VI.H-1 shows the in-use adjustments that we will apply to diesel and gasoline engines. These adjustments will be added to the appropriate FELs (or for engines certified to the standards

without the use of credits, to the standards themselves) in determining the in-use compliance level for a given in-use mileage. For example, a light HD diesel engine with a useful life of 110,000 miles and a NO_x FEL of 0.20 g/bhp-hr would have an in-use compliance level of 0.30 g/bhp-hr (0.20 + 0.10) throughout its useful life. A heavy HD diesel engine, having a useful life of 435,000 miles and a NO_x FEL of 0.20 g/bhp would have an in-use compliance level of 0.30 g/bhp-hr through 110,000 miles, 0.35 g/bhp-hr from there through 185,000 miles, and 0.40 g/bhp-hr through the remainder of

its useful life. The adjustment levels were chosen to be roughly equivalent to the temporary in-use standard adjustments adopted for low-emitting vehicles in the Tier 2 program, accounting for the higher mileage requirements reflected in the useful lives of the larger heavy-duty engines. Note too in the table footnotes the limiting of these adjustments to engine certified to levels below certain threshold levels. This is similar to the approach taken in the Tier 2 rule which applied the in-use standards only to vehicles in certain low-emitting bins.

TABLE VI.H-1.—ADD-ON LEVELS USED IN DETERMINING IN-USE STANDARDS FOR DIESEL & GASOLINE ENGINES

Engine mileage (miles)	Diesel ^a and gasoline ^b NO _x Add-on level to FEL (g/bhp-hr)	Diesel PM Add-on level to FEL (g/bhp-hr)	Gasoline ^c NMHC Add-on level to FEL (g/bhp-hr)
<110,000	0.10	0.01	0.10
110,000 to 185,000	0.15	0.01	^d N/A
185,000 to 435,000	0.20	0.01	^d N/A

^a Applicable to those diesel engines with FELs at or below 1.3 g/bhp-hr NO_x through 2011.

^b Applicable to those gasoline engines with NO_x FELs at or below 0.5 g/bhp-hr through 2011.

^c Applicable to those gasoline engines with NMHC FELs at or below 0.3 g/bhp-hr through 2011.

^d Note that the useful life for gasoline engines is 110,000 miles, so these add-on levels have significance only to that mileage for gasoline engines.

Similar examples apply for diesel engine PM, with the exception that the PM in-use add-on level is a constant 0.01 regardless of mileage. Likewise for gasoline NMHC where the add-on level is a constant 0.10 g/bhp-hr through the 110,000 mile useful life.

These same in-use add-on levels will be applied to the certification SET and NTE levels after applying the SET and NTE multipliers for the purpose of determining the corresponding in-use standards. In other words, for heavy HD diesel engine with a NO_x FEL of 0.20 g/bhp-hr, the in-use SET standard would be 0.30, 0.35, and 0.40 g/bhp-hr in each respective mileage range (remember that the SET multiplier is 1.0 × the FTP standard or FEL). The in-use NTE standard, with a multiplier of 1.5 × the FTP standard or FEL, would be 0.40, 0.45, and 0.50 g/bhp-hr in each of the respective mileage ranges (0.20 × 1.5 =

0.30; + 0.1 = 0.40; + 0.15 = 0.45; + 0.20 = 0.50).

Note that these in-use add-on levels apply only to engines certified through the 2011 model year and having FELs below the specified levels. These levels are very low and represent levels we believe will require significant effort by manufacturers to reach. The in-use add-ons are available through 2011 because some diesel engine models may not incorporate the emission control technology until 2010 as a result of the final phase-in schedule. Engine models incorporating these technologies for the first time in 2010 may account for as many as 50 percent of all diesel engines sold in that year. We believe these engine models should be provided the in-use adjustment for at least the first two years of their market introduction. In the case of gasoline engines, the phase-in ends in the 2009 model year.

However, we have decided to allow the in-use adjustments through model year 2011, consistent with the diesel provision.

For HD complete gasoline vehicles, and any complete diesel vehicles choosing the chassis certification option, we will have a flat in-use adjustment of 0.1 g/mile NO_x, 0.100 g/mile NMHC (gasoline vehicles only), and 0.01 PM for all weight classes. These in-use adjustments will apply only to those vehicles certified with FELs at or below the applicable Phase 2 standards. Further, they will apply for vehicles certified through 2010 so that those vehicle models newly certified to the Phase 2 standards in 2009 are given two years of certification experience prior to elimination of the in-use adjustments. Table VI.H-2 shows the adjustments that will apply to HD chassis certified vehicles.

TABLE VI.H-2.—IN-USE ADJUSTMENTS FOR CHASSIS CERTIFIED VEHICLES

Weight range (GVWR)	Durability period (miles)	NO _x ^a (g/mi)	NMHC ^a (g/mi)	PM (g/mi)
8,500 to 10,000 lbs.	120,000	0.1	0.100	0.01
10,000 to 14,000 lbs.	120,000	0.1	0.100	0.01

^a Applicable to those vehicles with NO_x and/or NMHC FELs at or below the appropriate Phase 2 standards through 2010.

During the certification demonstration, manufacturers will still

be required to demonstrate compliance with the unadjusted Phase 2

certification standards using deteriorated emission rates. Therefore,

the manufacturer will not be able to use these in-use standards as the design targets for the engine or vehicle. They will need to project that most engines would meet the standards in-use without adjustment. The in-use adjustments will merely provide some assurance that they would not be forced to recall engines or vehicles because of some small miscalculation of the expected deterioration rates. Furthermore, given that a new diesel fuel will be in place and it will be sold alongside higher sulfur diesel fuel being marketed to the existing fleet, there is a small likelihood of accidental misfueling during the phase-in years as users become familiar with the importance of using the lower sulfur fuel. As discussed in detail in sections III.E and III.F, sulfur has adverse impacts on exhaust emission control devices.

VII. Highway Diesel Fuel Program: Compliance, Enforcement and Downstream Provisions

For the highway diesel fuel sulfur program that we are adopting today to be successful in achieving its large emission reduction goals, it is vital for all parties that are affected by the program to thoroughly understand what is expected of them to comply, what compliance options may apply to them, and how their compliance will be assessed and enforced. If you believe that you are or may be subject to the program, the most important information is found in the regulatory language following this preamble. There, readers will find the detailed legal requirements of the program for each party and how we will assess and enforce compliance with the program requirements.

A key purpose of this preamble is to supplement the regulatory language by providing a context for and an explanation of the requirements of the program. Section IV above discusses in some detail most of the requirements under the highway diesel fuel sulfur program adopted today. In addition, this section (Section VII) builds on the Section IV discussions by addressing specific compliance and enforcement provisions we have adopted in today's rule to ensure that highway diesel fuel standards are met at all points in the distribution system—from the refiner or importer that introduces the fuel into the distribution system, through all the parties that may distribute the fuel, to the retailers and other parties that provide the fuel to its ultimate user. This section also explains certain requirements of the program in more detail.

After touching on a few general aspects of the highway diesel fuel program, this section discusses the compliance and enforcement provisions that apply to refiners and importers and those that apply to the downstream parties that handle diesel fuel. This section also discusses diesel fuel sampling and testing for sulfur, reporting and recordkeeping requirements, limited exemptions from the program, and how liability for any noncompliance would be handled.

A. General Provisions

1. Definition of Diesel Fuel Covered by This Program

In this preamble, we refer to the fuel covered by the program adopted today as “highway diesel fuel.” For technical and legal consistency with the Clean Air Act and existing fuels regulations, the regulatory language associated with today's rule uses the term “motor vehicle diesel fuel” in order to assure consistency with the language in existing laws and regulations. “Nonroad diesel fuel” refers to diesel fuel intended for use in nonroad vehicles or equipment, and is not covered by the highway diesel fuel sulfur requirements of the program. However, any fuel that is available for highway vehicles and engines, whether or not it is also available for nonroad vehicles and engines or for other purposes, is treated as highway diesel fuel under today's program.

2. Relationship to Highway Diesel Standards

As discussed in Section IV above, today's final rule reduces the sulfur cap standard for highway diesel fuel from 500 ppm to 15 ppm nationally²⁰⁵ effective in 2006. (Implementation dates are discussed further in Section VII.C.2. below.) The existing standards for cetane and aromatics will remain in effect and are not being changed by today's action (40 CFR § 80.29(a)). The highway diesel fuel sulfur, cetane, and aromatics standards will be enforced through sampling and testing at all points in the distribution system, combined with inspection of fuel delivery records and other commercial documents. The general compliance requirements of this rule are very similar to those in the current diesel fuel rule, except that the sulfur standard is substantially more stringent (see 40

CFR 80.29 and 80.30). Prior to the implementation dates for today's rule, all the requirements and prohibitions of the current diesel fuel rule will remain in effect, with limited modifications concerning sulfur sampling methods.

B. What Are the Requirements for Refiners and Importers?

1. General Requirements

As discussed earlier in this preamble, the sulfur sensitivity of emission controls that will be used on model year 2007 and later motor vehicles requires that the sulfur content of highway diesel fuel dispensed into 2007 and later heavy-duty vehicles not exceed 15 ppm. To ensure that highway diesel fuel meets this standard as it leaves the refinery or import facility, today's final rule adopts the proposed approach that if the sulfur content of highway diesel fuel at a refinery or import facility exceeds 15 ppm by any amount, the fuel is in violation of the sulfur standard. The determination of compliance with the sulfur standard for highway diesel fuel at the refinery level is not subject to a test tolerance.²⁰⁶

Consistent with the proposal, today's final rule does not require that refiners or importers engage in mandatory sampling and testing of every batch of highway diesel fuel they produce or import.²⁰⁷ This is because the highway diesel fuel sulfur standard is a national cap standard and compliance can be monitored at any point in the distribution system by taking samples of fuel for testing. However, under the presumptive liability scheme, any refiner producing noncomplying product would face liability for fuel in violation of the standard, regardless where the violation is discovered. (See Sections VII.G. and VII.H. for a discussion of liability and penalties.) Consequently, we expect that refiners and importers will voluntarily test every batch of highway diesel fuel produced or imported for their own purposes, including the need to demonstrate compliance with pipeline specifications.

Today's program requires all refiners that on January 1, 2000 produced—or by June 1, 2006 expect to produce—highway diesel fuel for U.S. sale to

²⁰⁶ However, test variability is taken into account in determination of compliance for diesel fuel at locations downstream of the refinery or import facility. See Section VII.C.1.

²⁰⁷ However, any refiner producing highway diesel fuel complying with the 500 ppm standard for use in pre-model year 2007 motor vehicles, under any of the several refiner flexibility options, would have to maintain records designating each batch as complying with the 15 ppm standard or the 500 ppm standard.

²⁰⁵ Except as noted elsewhere in the preamble and final rule, today's rule applies to all states, including the State of California. See Section IV.F for unique implementation provisions for Alaska and exemptions for diesel fuel in certain U.S. territories.

register with EPA. Similarly, all importers that on January 1, 2000 imported—or by June 1, 2006 expect to import—highway diesel fuel into the U.S. also need to register with EPA. This registration process will provide an essentially complete and up-to-date picture of the universe of highway diesel suppliers that exist at the beginning of this program. Refiners and importer must register by December 31, 2001. See Section VII.E. below for more details about registration requirements.

2. Refiner and Importer Temporary Compliance Option Provisions and the Credit Trading Program

As described in Section IV.A.2 above, today's final rule adopts a program that allows refiners and importers to transition in the production and importation of 15 ppm sulfur content diesel fuel. The temporary compliance option is available to all refiners and importers and includes a credit averaging, banking, and trading program. This temporary compliance option allows a refiner or importer to designate and sell a certain percentage of its highway diesel fuel as fuel subject to a 500 ppm sulfur standard, for use in pre-2007 model year heavy-duty vehicles.

Section IV.A.2 above describes most of the compliance requirements associated with the temporary compliance option. The paragraphs below supplement the earlier information.

a. Early Credits Program

As discussed in Section IV.A.2.a, today's regulation allows refiners and importers to generate early credits (prior to June 1, 2006) under limited circumstances. Most of the compliance requirements associated with the early credits program are described in that section. The following paragraphs add certain supplemental information.

The early credits program has two sets of provisions: (1) credits generated after May 31, 2005 but before June 1, 2006, and (2) credits generated after June 1, 2001 but before May 31, 2005. For a refiner or importer to generate early credits after May 31, 2005, it must demonstrate that the 15 ppm fuel produced early was segregated in the distribution system and not commingled with current 500 ppm sulfur fuel. Only that volume the refiner could verify was actually sold as 15 ppm fuel at retail or to centrally-fueled fleets would be eligible for early credits. Prior to generating credits, the refiner or importer must submit a notification to EPA and demonstrate how it will ensure segregation of the fuel from other

highway diesel fuel and that the fuel will be sold as 15 ppm fuel (e.g., through voluntary pump labeling and/or through information provided in PTDs).

The program also specifies that early credits can be generated prior to June 1, 2005. In this case, however, the refiner or importer must demonstrate that the 15 ppm fuel will be used in vehicles certified to meet the 2007 particulate matter standard being adopted today for heavy-duty engines (0.01 g/bhp-hr) or in vehicles with retrofit technologies that achieve emission levels equivalent to the 2007 NO_x or PM standard verified as part of a retrofit program administered by EPA or a state. (See Section VIII for further discussion of the credit program for heavy-duty engines.) To meet this condition, the refiner or importer must notify EPA, and in its notification it must demonstrate that any early credits that it claims are only for the volume of 15 ppm fuel that is dispensed into vehicles meeting the emission standards as described above (e.g., into designated fleet vehicles).

All early credits generated, banked, transferred, obtained or used must be identified as early credits in records and in reports. The refiner's annual pre-compliance reports must provide the volume of early credit fuel produced, credits generated, credits transferred, and continued demonstration that the early credit fuel is sold appropriately (i.e., as 15 ppm fuel after May 31, 2005, or into vehicles meeting the 2007 standards up to May 31, 2005).

b. Credit Use in a Credit Deficit Situation

Today's rule allows a refinery or importer to have a credit deficit in any given year (as long as the deficit does not exceed five percent of its annual highway diesel fuel production) so long as the refinery or importer makes up for that credit deficit the next year. In other words, the year following the deficit the refiner or importer must have enough credits (or actual production volume of 15 ppm fuel) to cover the previous year's deficit and to cover the current year's compliance. A refinery or importer (by PADD) must use credits to cover its own compliance before it can transfer credits to another refinery or importer, and although a refinery is allowed to be in deficit for a given year, it cannot lawfully transfer credits in the deficit year.

c. Resolving Issues of Invalid Credits

We recognize that there is potential for credits to be generated by one party and subsequently purchased and used in good faith by another party, yet the credits are later found to have been

calculated or created improperly, or otherwise found to be invalid. As with the RFG rule and the Tier 2/Gasoline Sulfur rule, invalid credits purchased in good faith cannot be legally used. To allow such use would not be consistent with the environmental goals of the regulation. Further, both the seller and purchaser of invalid credits would have to adjust their credit calculations to reflect the proper credits and either party (or both) could be deemed in violation if the adjusted calculations demonstrated noncompliance.

Nevertheless, our strong preference is to hold the credit seller liable for the violation, rather than the credit purchaser. As a general matter we would expect to enforce a shortfall in credit compliance calculations against the credit seller, and we would expect to enforce a compliance shortfall (caused by the good faith purchase of invalid credits) against a good faith purchaser only in cases where we are unable to recover sufficient valid credits from the seller to cover the shortfall. Moreover, in settlement of such cases we would strongly encourage the seller to purchase credits to cover the good faith purchaser's credit shortfall. EPA will consider the covering of a credit deficit through the purchase of valid credits a very important factor in mitigation of any case against a good faith purchaser, whether the purchase of valid credits is made by the seller or by the purchaser.

d. Compliance Provisions

Today's rule includes compliance provisions under the temporary compliance option to allow the determination of the volumes of each of the two grades of highway diesel fuel produced or imported by each participating refinery or importer. For parties participating in the credit program, the rule includes provisions to ensure compliance with the credit generation, banking and trading provisions. The requirements include the designation of each batch of highway diesel fuel as meeting either the 500 ppm sulfur standard or the 15 ppm highway diesel sulfur standard; maintenance of records concerning the volumes of each grade of highway diesel fuel produced (and for foreign refiners and importers, volumes by PADD of import); and maintenance of records concerning the generation, use, transfer and purchase of credits, if applicable (by PADD in the case of foreign refiners and importers). Beginning in 2007, annual compliance reports demonstrating compliance with the applicable provisions are required. These recordkeeping and reporting

requirements are discussed more fully in Section VII.E below.

The rule also includes enforcement and compliance provisions to assure that highway diesel fuel subject to the 15 ppm sulfur standard is not caused to exceed the standard by being contaminated with highway diesel fuel subject to the 500 ppm sulfur standard (or other high sulfur products such as nonroad diesel fuel), and to assure that 500 ppm diesel fuel is not introduced into model year 2007 and later motor vehicles. Participating refiners and importers are required to provide identifying information on product transfer documents for highway diesel fuel subject to the 500 ppm standard to help prevent contamination of 15 ppm product. (As discussed more fully below, transfers of 15 ppm highway diesel fuel must also be accompanied by product transfer documents identifying such fuel.)

e. Additional Provisions for Importers of Diesel Fuel and for Foreign Refiners Subject to the Temporary Compliance Option and Hardship Provisions

Since today's final rule includes several compliance options that can be used by diesel fuel importers and foreign refiners, we are also including specific compliance and enforcement provisions to ensure compliance for imported highway diesel fuel. These special foreign refiner provisions are similar to those under the conventional gasoline regulations and the gasoline sulfur regulations (see 40 CFR 80.94 and 80.410).

Under today's rule, standards for highway diesel fuel produced by foreign refineries must be met by the importer, unless the foreign refiner has been approved to produce highway diesel fuel under the temporary compliance option or hardship provisions of today's rule. If the foreign refiner is so approved, the volume requirements are to be met by the foreign refinery and the foreign refinery would be the entity generating, using, banking or trading credits for the highway diesel fuel produced and imported into the U.S.

Any foreign refiner that applies for and obtains approval to produce highway diesel fuel subject to the temporary compliance option or hardship provisions will be subject to the same requirements as domestic refiners operating under the same provisions. Additionally, foreign refiners are subject to provisions similar to the provisions at 40 CFR 80.94 and 80.410, which include:

- Segregating highway diesel fuel produced at the foreign refinery until it reaches the U.S. and separately

- tracking volumes imported into each PADD;

- Controls on product designation;
- Load port and port of entry testing;
- Attest requirements; and
- Requirements regarding bonds and sovereign immunity.

These provisions aid the Agency in tracking highway diesel fuel from the foreign refinery to its point of import into this country. We believe these provisions are necessary and sufficient to ensure that foreign refiners' compliance can be monitored and that the requirements of today's rule can be enforced against foreign refiners. (For more discussion of the rationale for these enforcement provisions, see preamble to the final RFG/CG foreign refineries rule (see 62 FR 45533 (August 28, 1997) and the gasoline sulfur rule, 40 CFR 80.410).)

3. Refiner Hardship Provisions

a. General Refiner Hardship Provisions

Section IV.C. above describes two types of hardship provisions for which any refiner may petition. We will consider such petitions in cases of extreme unforeseen circumstances and of extreme hardship circumstances. Petitions for extreme unforeseen circumstances may be submitted at any time; petitions for extreme hardship circumstances must be submitted to EPA by June 1, 2002. If any relief granted includes allowing the refiner to produce 500 ppm highway diesel fuel (or additional 500 ppm highway diesel fuel beyond that allowed under the temporary compliance option) for use in pre-2007 heavy-duty vehicles and engines, we would apply enforcement provisions at least as stringent as those that apply for the temporary compliance option.

Any application for hardship relief later found to be based on false or inaccurate information will be void ab initio.

b. Small Refiner Hardship Provisions

Section IV.C.1 above describes three small refiner relief provisions. Section IV.C.1.b defines "small refiner," Section IV.C.1.c describes the special provisions that approved small refiners are eligible for, and Section IV.C.1.d describes how a refiner applies for status as a small refiner. Section VII.E below describes the additional information that small refiners need to include in their application for small refiner status, in their pre-compliance reports, and in their annual compliance reports (these requirements vary depending on which small refiner provision they choose). Any application for small refiner status

will be void ab initio if approval is based on false or inaccurate information.

For an approved small refiner to use the Diesel/Gasoline Compliance Date Option (described in Section IV.C. above) at one or more refineries, it must fulfill two main conditions: (1) 100 percent of the highway diesel volume it produces during each annual compliance period starting June 1, 2006 must meet the 15 ppm standard, and (2) the actual volume of highway diesel fuel it produces during each annual compliance period through 2010 must be at least 85 percent of its 1998–1999 baseline highway diesel fuel volume (i.e., through the end date of the extended small refiner interim gasoline program). If a refiner at some point did not fulfill one or both of these conditions, it would forfeit the entire three year extension (or any remaining portion of the extension) of its Tier 2/ Gasoline Sulfur small refiner standards and would thus need to comply with the 30/80 ppm sulfur standards by January 1, 2008. During the period when the national gasoline sulfur standard would otherwise be in effect for a small refiner (2008–2010), if the refiner fails to meet the two conditions above, it would be subject to the 30/80 gasoline sulfur standard for that year and future years.

However, a small refiner may elect to petition EPA to permanently opt out of this Diesel/Gasoline Compliance Date Option and opt into another small refiner option or into the temporary compliance option, so long as it does so for the full year that the change in program options takes place. Once it makes that election, it must thereafter meet the 30/80 gasoline sulfur standard.

c. Relief for Refiners Supplying Gasoline to the Tier 2 Geographic Phase-In Area (GPA)

As discussed in Section IV.B, refiners or importers supplying gasoline to the Geographic Phase-In Area (GPA) established in the Tier 2/Gasoline Sulfur program may apply for an additional two years to meet interim Tier 2 GPA gasoline sulfur standards (through December 31, 2008). Similar to the criteria for small refiners under the Diesel/Gasoline Compliance Date Option above, a refiner wishing to receive this extension of the Tier 2 GPA standards must meet two main conditions: (1) 100 percent of the highway diesel volume it produces during each annual compliance period starting June 1, 2006 must meet the 15 ppm standard, and (2) the actual volume of highway diesel fuel it produces during each annual compliance period through 2008 must be at least 85 percent

of its 1998–1999 baseline highway diesel fuel volume (i.e., through the end date of the extended GPA gasoline program). Refiners may not participate both in this option and the temporary compliance option.

To be eligible for this option, a refiner must apply to EPA in writing by December 31, 2001, at the same time that it registers as a highway diesel fuel producer with EPA. As with applications by refiners for “small refiner” status, a refiner’s application must submit its average annual highway diesel volume baseline for 1998 and 1999 for each of its refineries it expects to be covered by the GPA provisions under today’s program.

If a refiner did not fulfill one or both of the conditions above, it would forfeit the entire two-year extension of the GPA standards, or any remaining extension, and would thus need to comply with the 30/80 ppm sulfur standards by January 1 of the following year.

However, a refiner may elect to petition EPA to permanently opt out of this GPA program and opt into the temporary compliance option, so long as it does so for the full year that the change in program options takes place. Once it makes that election, it must thereafter meet the 30/80 gasoline sulfur standard.

C. What Requirements Apply Downstream of the Refinery or Import Facility?

1. Downstream Enforcement of the Standards

In the NPRM, we proposed an industry-wide 15 ppm cap on sulfur content for highway diesel fuel. In the proposal we stated our belief that refiners would likely have to produce diesel fuel meeting a 7–8 ppm average sulfur content in order to ensure compliance downstream. We received comments to the NPRM indicating that enforcing the 15 ppm sulfur cap at all levels of the distribution system downstream of the refinery or import facility would effectively require refiners to produce diesel fuel having a maximum sulfur content of 7 ppm due to variability in sulfur content test results that may occur between laboratories when testing the same sample of diesel fuel for sulfur content. Commenters stated that at test reproducibility level of ± 4 ppm,²⁰⁸ refiners would have no assurance of downstream compliance with the 15 ppm cap if they produced any fuel with a sulfur content greater than 7 ppm. Consequently, commenters suggested

²⁰⁸ The NPRM preamble suggested a possible reproducibility level of 4 ppm.

either that we adopt a less stringent downstream sulfur standard, based on test variability, as was done in the Tier 2/Gasoline Sulfur rule (40 CFR 80.210), or that we state a downstream test tolerance, based on test variability.

After considering the comments, we agree that it is appropriate to recognize test variability in determination of compliance with the sulfur standard downstream of the refinery or import facility. However, we anticipate that the reproducibility of sulfur test methods is likely to improve to two ppm or even less by the time the rule goes into effect. Thus, today’s rule provides that for all 15 ppm sulfur highway diesel fuel at locations downstream of the refinery or import facility, sulfur test results can be adjusted by subtracting 2 ppm to account for the expected reproducibility of sulfur test methods. The sole purpose of this downstream compliance provision is to address test variability concerns. With this change, we anticipate that refiners will be able to produce diesel fuel at an average level of approximately 7–8 ppm, as was intended by the proposal, without fear of causing a downstream violation due solely to test variability. As test methods improve in the future, we may reevaluate whether two ppm is the appropriate allowance for purposes of this compliance provision.

This change is not expected to undermine the environmental goals of the regulation since it should not result in diesel fuel exceeding the 15 ppm sulfur standard at any point in the distribution system. All highway diesel fuel subject to the 15 ppm standard is still required to meet the 15 ppm standard at the refinery gate, without allowance for test variability.²⁰⁹ The purpose of taking testing variability into account in compliance determinations for fuel sampled downstream of the refinery or import facility is merely to ensure that fuel actually meeting the 15 ppm cap is not rejected by pipelines or otherwise treated as noncompliant due to concerns about testing variability. It is not expected to result in any increase in the actual sulfur content of highway diesel fuel above 15 ppm at any point in the distribution system.

2. Other Provisions

a. Implementation Dates

As discussed in Section IV.A, today’s rule staggers the implementation dates for highway diesel fuel for use in 2007

²⁰⁹ Once motor vehicle diesel fuel is moved from the tank in which it was blended at the refinery (and which the refiner’s designation of the fuel as meeting the 15 ppm standard was based), the two ppm adjustment applies.

and later vehicles to comply with the 15 ppm sulfur standard, based on a facility’s position in the distribution system. Refiners and importers must meet the 15 ppm sulfur standard by June 1, 2006. Fuel in the distribution system downstream of the refinery or import facility, including fuel at truck loading terminals, but not including fuel at retail outlets or wholesale purchaser-consumers, must be in compliance by July 15, 2006. Highway diesel fuel at retailers’ and wholesale purchaser-consumers’ storage tanks must be in compliance by September 1, 2006, and pump labeling requirements (see Section VII.C.2.c below) also must be in place by that date. We believe the dates finalized in today’s rule will allow sufficient time for downstream parties to transition tanks from 500 ppm sulfur levels to 15 ppm sulfur levels.

The date by which all highway diesel fuel produced by refiners must meet the 15 ppm sulfur standard is June 1, 2010.²¹⁰ The final compliance date for all highway diesel fuel in the distribution system to meet the 15 ppm standard, other than at retail outlets and wholesale purchaser-consumer facilities, is October 1, 2010. The final compliance date for all highway diesel fuel at retail and wholesale purchaser-consumer facilities to meet the 15 ppm sulfur standard is December 1, 2010.

b. Product Segregation and Contamination

Under today’s diesel sulfur program, it is imperative that distribution systems segregate highway diesel fuel from high sulfur distillate products such as home heating oil and nonroad diesel fuel. The sulfur content of those products is frequently as high as 3,000 ppm. We are also concerned about potential misfueling at retail outlets and wholesale purchaser-consumer facilities, even if segregation of the different grades of diesel fuel has been maintained in the distribution system. Thus, certain downstream compliance and enforcement provisions of the rule are aimed at both preventing contamination of highway diesel fuels with fuels containing higher levels of sulfur, and preventing misfueling of motor vehicles with high sulfur fuels.

Similarly, it is imperative that all parties in the distribution system avoid contamination of 15 ppm highway diesel fuel with 500 ppm highway diesel fuel. Thus, the final rule has adopted a requirement for product

²¹⁰ Under the temporary compliance option, for the period from January 1, 2010 through May 31, 2010, refiners can produce 500 ppm fuel only through the use of credits.

transfer documents accompanying deliveries of motor vehicle diesel fuel diesel fuel to identify the sulfur standard it meets and its allowed use. All parties in the distribution system face liability if highway diesel fuel is contaminated such that it fails to meet the applicable standard.

We are also adopting provisions designed to discourage the downgrading of 15 ppm diesel to 500 ppm diesel in the distribution system during the initial years of the program when the optional compliance provision is in effect. Our concern is that if 15 ppm diesel is routinely downgraded and sold as 500 ppm fuel, this practice could lead to availability problems (*i.e.*, risk of 15 ppm not being widely available across the country). We fully recognize that some amount of 15 ppm downgrading will be necessary where the 15 ppm fuel becomes contaminated in the distribution system (*e.g.*, pipeline interfaces). In fact, one advantage of the temporary compliance option is that if 15 ppm fuel becomes contaminated, it can still be sold as highway fuel (downgraded to 500 ppm fuel), rather than downgrading it to off-highway fuel. However, we also recognize that there is the potential for parties in the distribution system to intentionally mix 15 ppm product with 500 ppm fuel, and still sell the product as 500 ppm fuel. While we don't expect this practice to be widespread, it could occur, especially where there is only a small price differential between the two fuels.

Therefore, we are restricting the volume of 15 ppm fuel that can be downgraded to 500 ppm highway diesel fuel at each point in the distribution system (downstream of the refinery gate) to not more than 20 percent on an annual basis. Each party in the distribution system subject to this provision will be required to meet this requirement separately, based on the amount of 15 ppm fuel it receives and transfers/sells to the next party (or end user, in the case of retailers and wholesale purchaser-consumers) on an annual basis. We believe that this limit will be more than sufficient to allow for some downgrading for any contamination that may occur, while still being restrictive enough to discourage downgrading and commingling of 15 ppm fuel with 500 ppm fuel. These provisions will be in effect through May 31, 2010.

We recognize that, in some parts of the country, highway-grade diesel fuel is commonly sold into off-highway markets, due to limitations in the distribution system for carrying one grade of diesel. We do not want to preclude this practice in the future;

thus, we are not preventing 15 ppm diesel from being downgraded to off-highway fuel. The downgrading restriction applies only to 15 ppm downgraded to 500 ppm highway diesel fuel. We do not anticipate increased instances of downgrading to off-highway diesel fuel relative to today, given the increase in the price differential between highway diesel and off-highway diesel fuel that will likely result from this program. Therefore, we do not believe it is necessary to impose a regulatory restriction on downgrading of 15 ppm highway diesel to off-highway diesel.

All parties in the distribution system downstream of the refinery gate are subject to this provision, except for those retailers that offer for sale and wholesale purchaser-consumers that use 15 ppm fuel (either as the only grade of diesel or in addition to 500 ppm diesel). In other words, the only retailers and wholesale purchaser-consumers that are subject to this requirement are those that offer for sale or use only 500 ppm diesel (but not 15 ppm diesel).

Since all parties in the distribution system are required by other provisions in this final rule to maintain product transfer documents, which will indicate whether the diesel fuel meets the 15 ppm or 500 ppm standard as well as the volume of such fuel, we are not requiring new recordkeeping requirements beyond these to demonstrate compliance with these provisions. The parties will merely have to ensure that at the end of each year during the period the temporary compliance option is in effect that they comply with the 20 percent requirement based on the incoming and outgoing PTD records described in Section VII.E.5 below.

c. Diesel Fuel Pump Labeling

As discussed in Section IV.A.2 above and in the Chapter IV of the RIA, we believe that clear information about the proper fuel to use and the consequences of misfueling will minimize the potential for misfueling of new-technology vehicles. Under our final fuel program approximately 75% of the fuel in each PADD will meet the 15 ppm standard during the first few years. We believe that this will ensure that the fuel will be widely available in every part of the United States. Moreover, within four years all highway diesel fuel will meet this standard. Under these circumstances we believe the potential for misfueling will be limited. Nevertheless, we did receive considerable comment expressing concerns over the potential for misfueling.

In addition to the required labels on diesel fuel pumps described below, we believe that the use of unique nozzles, color-coded scuffguards, or dyes to distinguish the grades of diesel fuel may be useful in preventing accidental misfueling. While we are not finalizing any requirements today, we will plan to work with the vehicle manufacturers and representatives of the fuel industry and other interested stakeholders over the next several years to develop workable solutions that are consistent with current industry practices and other regulatory requirements.

For any multiple-fuel program like the temporary compliance option adopted today, clearly labeling diesel fuel pumps is vital for end users to distinguish between the two grades of fuel. We received comments on the NPRM that concurred with our assessment in the proposal that pump labels, in conjunction with vehicle labels, would also have the effect of helping to help prevent misfueling of motor vehicles with high sulfur diesel fuel. Section VI.G. above describes the labels that manufactures will place on vehicle and information that will be provided to vehicle owners. Today's rule also adopts pump labeling requirements for retailers and wholesale purchaser-consumers similar to those we proposed, but with modifications to account for the availability of diesel fuel subject to the 500 ppm sulfur standard for use in pre-2007 motor vehicles. The text of the labels appears below; the specific requirements for label size and appearance are found in the regulatory language for this rule.

For pumps dispensing 15 ppm diesel fuel, the label will read as follows:

LOW-SULFUR DIESEL FUEL

Recommended for use in all diesel highway vehicles.

Required for model year 2007 and later highway vehicles.

For pumps dispensing 500 ppm diesel fuel the label will read as follows:

HIGH-SULFUR DIESEL FUEL—WARNING

May damage model year 2007 and later highway vehicles.

Federal Law *prohibits* use in these vehicles.

Finally, for pumps dispensing nonroad diesel fuel that are located at the same retail outlet as highway diesel fuel pumps, the label will read as follows:

NONROAD DIESEL FUEL—WARNING

May damage highway vehicles.

Federal Law *prohibits* use in any highway vehicle.

3. Use of Used Motor Oil in New Diesel Vehicles

We understand that used motor oil is sometimes disposed of by blending it with diesel fuel for use as fuel in diesel vehicles. Such practices range from blending used motor oil directly into the vehicle fuel tank, to blending it into the fuel storage tanks, to blending small amounts of motor oil from the vehicle crank case into the fuel system as the vehicle is being operated. To the extent such practices could cause vehicles to exceed their emissions standards, the person blending the oil, or causing or permitting such blending, could be considered to be rendering emission controls inoperative in violation of Section 203 of the CAA and potentially liable for a civil penalty (Section 203(a)(3) of the Act, 42 U.S.C. 7522(a)(3)).

Since current formulations of motor oil contain very high levels of sulfur, the addition of used oil to highway diesel fuel could substantially impair the sulfur-sensitive emissions control equipment expected to be used by engine manufacturers to meet the emissions standards in today's rule. Depending on how the oil is blended, it could increase the sulfur content of the fuel burned in the vehicle by as much as 200 ppm. As a result, we believe blending used oil into highway diesel fuel could render inoperative the emission control technology on the vehicle and potentially cause driveability problems.

Therefore, today's rule prohibits any person from introducing or causing or allowing the introduction of used motor oil, or diesel fuel containing used motor oil, into the fuel delivery systems of vehicles manufactured in model year 2007 and later. The only exception to this is where the engine is explicitly certified to the emission standard with oil added and the oil is added in a manner consistent with the certification. Please refer to the Response to Comments document for a discussion of concerns raised by commenters on this issue.

4. Use of Kerosene in Diesel Fuel

As we discussed in the NPRM, kerosene is commonly added to highway diesel fuel to reduce fuel viscosity in cold weather. Today's rule will not limit this practice. Consistent with the proposal, under today's rule, kerosene that is used, intended for use, or made available for use as or for blending with 15 ppm sulfur highway diesel fuel is itself required to be classified as "motor vehicle diesel fuel" and meet the 15 ppm standard, as well

as the standards for aromatics and cetane (see Section 80.2(y) of the regulatory language following this preamble). This classification for highway fuel use may be made by the fuel's refiner or may be made by a downstream party at the point when that party chooses to use the kerosene in its possession for highway fuel use.

To help ensure that only distillates that comply with the 15 ppm highway diesel fuel standard are blended into 15 ppm highway diesel fuel, today's rule has adopted the proposed requirement that kerosene meeting the 15 ppm standard and distributed by the transferring party for use in motor vehicles, must be accompanied by PTDs accurately stating that the product meets the 15 ppm sulfur standard (See Section VII.E.5. below).

As a general matter, any party who blends kerosene, or any blendstock, into motor vehicle diesel fuel, or who produces motor vehicle diesel fuel by mixing blendstocks, is a refiner and would be subject the requirements and prohibitions applicable to refiners under the rule. However, under today's rule, in deference to the longstanding and widespread practice of blending kerosene into diesel fuel at downstream locations, downstream parties who only blend kerosene into motor vehicle diesel fuel will not be subject to the requirements applicable to refiners, provided that they do not alter the fuel in any other way. Further, downstream parties choosing to blend kerosene into 15 ppm highway diesel fuel will be entitled to the 2 ppm adjustment factor for both the kerosene and the diesel fuel into which it is blended at downstream locations, provided that the kerosene had been transferred to the party with a PTD indicating compliance with that standard. Sulfur test results from downstream locations of parties who do not have such a PTD for their kerosene will not be subject to this adjustment factor, either for the kerosene itself, or for the highway diesel fuel into which it is blended.

In order to ensure the continued compliance of 15 ppm fuel with the 15 ppm standard, downstream parties choosing to blend kerosene into 15 ppm highway diesel fuel are required by the final rule to either have a PTD for that kerosene indicating compliance with the 15 ppm standard, or to have test results for the kerosene establishing such compliance.

Any party who causes the sulfur level of 15 ppm highway diesel fuel to exceed 15 ppm by blending kerosene into highway diesel fuel, or by using high sulfur kerosene as highway diesel fuel, would be subject to liability for

violating the sulfur standard. Similarly, parties who cause the sulfur level of 500 ppm highway diesel fuel to exceed that standard by blending kerosene into the fuel, would also be subject to liability.

The rule does not require refiners or importers of kerosene to produce or import kerosene meeting the 15 ppm sulfur standard. However, we believe that refiners will produce low sulfur kerosene in the same refinery processes that they use to produce low sulfur highway diesel fuel, and that the market will drive supply of low sulfur kerosene for those areas where, and during those seasons when, the product is needed for blending with highway diesel fuel. Comments to the NPRM regarding this provision generally supported this approach.

5. Use of Diesel Fuel Additives

Diesel fuel additives include corrosion inhibitors, cold-operability improvers, and static dissipaters. Use of such additives is distinguished from the use of kerosene by the low concentrations at which they are used and their relatively more complex chemistry.²¹¹ We proposed that diesel fuel additives used in highway diesel fuel meet the same cap on sulfur content required for the fuel itself. Additive manufacturers commented²¹² that there was no need to impose a 15 ppm sulfur cap on such additives in order to effectively limit the sulfur content of finished diesel fuel. They asserted that imposing such a cap would result in unjustified costs and disruptions to the producers and users of diesel additives. Additive manufacturers also stated that for certain additives, such as static dissipaters needed to prevent explosion hazards at terminal facilities, there are currently no effective alternatives that comply with a 15 ppm cap on sulfur content.

Additive manufacturers suggested an approach whereby shipments of additives that have a sulfur content above 15 ppm would be accompanied by a product transfer document (PTD) that includes information on additive sulfur content, maximum recommended treatment rate, and the potential impact

²¹¹ Diesel fuel additives are used at concentrations commonly expressed in parts per million. Diesel fuel additives can include specially-formulated polymers and other complex chemical components. Kerosene is used at much higher concentrations, expressed in volume percent. Unlike diesel fuel additives, kerosene is a narrow distillation fraction of the range of hydrocarbons normally contained in diesel fuel. See Section VII.C.4 above regarding the requirements associated with the addition of kerosene to diesel fuel.

²¹² See comments of the American Chemistry Council, Docket Item IV-D-183 in Docket A-99-06 associated with this rule.

on the sulfur content of the fuel when the additive is used at the maximum recommended treatment rate. Under such an approach, they suggested that the use of diesel additives should be permitted to result in an increase in the sulfur content of the finished fuel of less than 0.5 ppm, such that fuel would effectively be required to meet a sulfur cap of 15.5 ppm.

In response to these comments, we are allowing the use of diesel fuel additives with a sulfur content greater than 15 ppm. However, we believe that this can be accomplished without allowing the 15 ppm cap on fuel sulfur content to be exceeded. The 15 ppm cap is based on our understanding of the level that is necessary to ensure the durability and proper operation of the emissions control hardware that will be used to comply with the emissions standards in today's rule. We believe that it is most appropriate for the market to determine how best to accommodate increases in the fuel sulfur content from the refinery gate to the end user, while maintaining the 15 ppm cap, and whether such increases result from contamination in the distribution system or diesel additive use. By providing this flexibility, we anticipate that market forces will encourage an optimal balance between the competing demands of manufacturing fuel lower than the 15 ppm sulfur cap, limiting contamination in the distribution system, and limiting the additive contribution to fuel sulfur content.

Our review of data submitted by additive and fuel manufacturers to comply with EPA's Fuel and Fuel Additive Registration requirements (40 CFR Part 79) indicates that additives to meet every purpose (including static dissipation) are currently in common use which meet a 15 ppm cap on sulfur content (see Chapter IV.D. of the RIA for more information on additives). Since such low-sulfur additives are currently in use side-by-side with high-sulfur additives, it is reasonable to conclude that there is not a significant difference in their cost. Even if not yet available for certain purposes, we believe that it is reasonable to assume that low-sulfur additives will become available before this rule is implemented in 2006. The ability of industry to provide low-sulfur additives is supported by the fact that diesel fuel meeting a 10 ppm cap on sulfur content has been marketed in Sweden for some time, and ARCO Petroleum recently began marketing fuel meeting a 15 ppm sulfur cap in California.

The unusually high sulfur content of a few additives may discourage their use in diesel fuel that meets a 15 ppm sulfur

cap. However, it will generally continue to be possible for additive manufacturers to market additives that contain greater than 15 ppm sulfur for use in highway diesel fuel. Such additives can also continue to be used in nonroad diesel fuel. Additive manufacturers that market such additives and blenders that use them in highway diesel fuel will have additional requirements to ensure that the 15 ppm sulfur cap on highway diesel fuel is not exceeded. Although today's rule may encourage the gradual retirement of additives that do not meet a 15 ppm sulfur cap for use in highway diesel fuel, we do not anticipate that this will result in disruption to additive users and producers or a significant increase in cost. Additive manufacturers commonly reformulate their additives on a periodic basis as a result of competitive pressures. We anticipate that any reformulation that might need to occur to meet a 15 ppm sulfur cap will be substantially accommodated within this normal cycle.

Today's rule limits the continued use in highway diesel fuel of diesel fuel additives that exceed 15 ppm sulfur to additives that are used at concentrations of less than one volume percent. We believe that this limitation is appropriate and will not cause any undue burden because the diesel fuel additives for which this flexibility was included are always used today at concentrations well below one volume percent. Further, one volume percent is the threshold above which the blender of an additive becomes subject to all the requirements applicable to a refiner (40 CFR 79.2(d)(1)).

The specific requirements in today's rule regarding the use of diesel fuel additives are as follows:

- Additives that have a sulfur content at or below 15 ppm must be accompanied by a PTD that states: "The sulfur content of this additive does not exceed 15 ppm."
- Additives that exceed 15 ppm sulfur may continue to be used in highway diesel fuel provided that they are used at a concentration of less than one volume percent and their transfer is accompanied by a PTD that lists the following:

- (1) The additive's maximum sulfur concentration
- (2) The maximum recommended concentration for use of the additive in diesel fuel, and
- (3) The contribution to the sulfur level of the fuel that would result if the additive is used at the maximum recommended concentration.

Blenders of additives that exceed 15 ppm in sulfur content will be held liable

if their actions cause the sulfur content of the finished fuel to exceed 15 ppm. In some cases, blenders may not find it feasible to conduct testing, or otherwise obtain information on the sulfur content of the fuel either before or after additive blending, without incurring substantial cost. We anticipate that blenders will manage the risk associated with the use of additives above 15 ppm in sulfur content under such circumstances with actions such as the following:

- Selecting an additive with minimal sulfur content above 15 ppm that is used at a low concentration, and
- Working with their upstream suppliers to provide fuel of sufficiently low sulfur content to accommodate the small increase in sulfur content which results from the use of the additive.

This is similar to the way distributors will manage contamination from their distribution hardware (tank trucks, etc.). Distributors will not necessarily test for fuel sulfur content after each opportunity for contamination, but rather will rely on mechanisms set up to minimize the contamination, and to obtain fuel sufficiently below the standard to accommodate the increase in sulfur content from the contamination.

The recordkeeping, reporting, and PTD provisions associated with these requirements are discussed in Section VII.E below. The liability provisions are discussed in Section VII.G below.

D. What Are the Testing and Sampling Methods and Requirements?

1. Diesel Fuel Testing Requirements and Test Methods

As part of the diesel fuel sulfur program adopted today, EPA is designating the test method that we will use in determining compliance for samples collected at all points in the distribution system. This designated method is called "Test Method for Total Sulfur in Liquid Aromatic Hydrocarbons and Their Derivatives by Oxidative Combustion and Electrochemical Detection," or ASTM D 6428-99.

In the notice of proposed rulemaking, we proposed to designate ASTM D 2622-98 with minor modifications as the designated test method for quantifying the sulfur content of diesel fuel. This designated test method would be the one that EPA would utilize in its own laboratory in order to determine whether a given sample taken at any point in the distribution system is in compliance with the appropriate diesel sulfur standard or not. We proposed to apply this designated test method not

just to this final rule, which will be effective in 2006, but also to the existing diesel sulfur requirements, which are currently in effect. The modifications were designed to ensure appropriate precision at low sulfur levels below 15 ppm. Specifically, the modifications consisted of substitution of a measurement blank that more closely resembles the boiling point range and density of diesel fuel and a change to the calibration line to ensure that it goes through zero.²¹³

We received several comments related to the proposed test method. Some parties suggested further modifications to ASTM D 2622–98 and others recommended that we select ASTM D 5453–00 entitled, “Standard Test Method for Determination of Total Sulfur in Light Hydrocarbons, Motor Fuels and Oils by Ultraviolet Fluorescence” as the designated test method in the regulation. We have considered the comments carefully and agree that it is desirable to choose an accepted ASTM method as our designated test method. However, we do not believe that ASTM D 5453 is capable of measuring all sulfur containing compounds. Specifically, we do not believe that it will measure sulfonates, which are found in certain diesel additives typically added at terminals. Because of the stringent 15 ppm sulfur standard adopted today, the sulfonate compounds in these additives may become significant contributors to the overall sulfur level of the fuel.

Under this final rule, there is no requirement for every-batch testing for refiners or importers. However, because the diesel sulfur standard will be enforced at all points in the fuel distribution system, we believe that refiners and importers will engage in such testing, because satisfactory test results may be used to form the basis for an affirmative defense in the event of a violation. Downstream fuel suppliers such as truck loading terminals that blend additives to highway diesel fuel may not find it practical to engage in testing every time they blend additives into diesel fuel. As described in the previous section, manufacturers of fuel additives will be required to provide appropriate information about how to blend the additive properly (the treatment rate) and will be required to retain samples of additive batches for the prescribed time period in order to demonstrate compliance with this regulation, as discussed in the previous section.

²¹³ For a detailed description of the proposed modifications to ASTM D 2622–98, see 65 FR 35530–35531 (June 2, 2000).

We believe that there is more than one test method that may be used to determine the sulfur content of diesel fuel at low levels and believe that it is appropriate to allow alternative analytical test methods as long as they are correlated to the designated test method to be used by EPA. The ASTM methods that are allowed as alternative test methods under this rule are ASTM D 3120–96, “Standard Test Method for Trace Quantities of Sulfur in Light Liquid Petroleum Hydrocarbons by Oxidative Microcoulometry.” and ASTM D 4045–99, “Standard Test Method for Sulfur in Petroleum Products by Hydrogenolysis and Rateometric Colorimetry.” Furthermore, we will allow the use of the modified form of ASTM D 2622, which was proposed to be the designated test method, as an alternative test method. As stated above, results from the use of all alternative analytical test methods must be correlated to the designated test method.

We believe that choosing an appropriate ASTM method as our designated test method for enforcement testing purposes and allowing the use of these alternative test methods furthers the purposes of the “National Technology Transfer and Advancement Act of 1995” (NTTAA), section 12(d) of Public Law 104–113, and Office of Management and Budget (OMB) Circular A–119. Both of these documents are designed to encourage the adoption of standards developed by “voluntary consensus bodies” and to reduce reliance on government-unique standards where such consensus standards would suffice. In the future, we plan to adopt a performance based test method approach that would address the use of these alternative methods, including “in-house” test methods developed by individual refiners and importers. We also intend to continue working with the industry and ASTM in the future to develop and improve sulfur test methods, and will consider modifications to today’s rule as developments warrant.

We also received comments indicating that there would not be any field test equipment for 15 ppm diesel fuel available by 2006. With regard to field testing, we believe that the technology that will enable the development of appropriate equipment or modifications to existing equipment exists or will be developed in response to the requirements of this rule.

In the NPRM, we discussed a comment received in response to the ANPRM that ASTM D 2622–98 may not be suitable for determining the sulfur content of biodiesel fuel, or mixtures of

biodiesel and conventional diesel fuel. In response to the NPRM, we received comment indicating that significant modifications would be required to ASTM D 2622–98 in order to adapt it for use with biodiesel and biodiesel blends. We believe the selected method, ASTM D 6428–99, is appropriate for use with biodiesel and biodiesel blends. However, depending on the product, any of the test methods allowed by this rule may require some adaptation by the operator.

The test method for determination of sulfur in motor oil is ASTM D 4297–96, entitled, “Standard Test Methods for Elemental Analysis of Lubricant and Additive Components—Barium, Calcium, Phosphorus, Sulfur, and Zinc by Wavelength-Dispersive Fluorescence Spectroscopy.” This method uses the same apparatus as ASTM D 2622–98, but includes specific methodology to compensate for interferences caused by additives present in motor oil. Consistent with the goals of the NTTAA and OMB Circular A–119, and in order to provide greater flexibility for regulated parties, we recognize that ASTM D 5453–00 may be selected by regulated parties as an appropriate alternative analytical test method for the purpose of measuring sulfur in motor oil.

2. Diesel Fuel Sampling Methods

The final rule adopts the proposed sampling methods. There were no negative comments regarding these technical changes. The requirement to use these methods is effective June 1, 2001. These same methods were adopted for use in the Tier 2/Gasoline Sulfur rule.²¹⁴ These sampling methods are ASTM D 4057–95 (manual sampling) and D 4177–95 (automatic sampling from pipelines/in-line blending). We are requiring the use of these ASTM methods instead of the methods currently provided in 40 CFR part 80, Appendix G, for determining compliance under both the new 15 ppm sulfur standard, and the 500 ppm standard currently in place. That is because these methods have been updated by ASTM, and the updates have provided clarification and have eliminated certain requirements that are not necessary for sampling petroleum products such as diesel fuel.

²¹⁴ 65 FR 6833–34 (Feb. 10, 2000). These methods are also proposed for use under the RFG and CG rules. See 62 FR 37337 *et seq.* (July 11, 1997).

E. What Are the Recordkeeping, Reporting and Product Transfer Document Requirements?

1. Registration of Refiners and Importers

a. All Refiners and Importers

By December 31, 2001, refiners and importers that may produce or supply highway diesel fuel by 2006 must register with EPA. Specifically, refiners and importers that are either currently producing or supplying highway diesel fuel, or that expect to do so by June 1, 2006, must register. The registration must include the following information:

- Corporate name and address of the refiner or importer and any parent companies and a contact person
- Name and address of all refineries or import facilities (including, for importers, the port of entry and PADD)
- A contact person.
- Location of records
- Business activity (refiner or importer)
- Capacity of each refinery in barrels of crude oil per calendar day

b. Prospective Small Refiners

In addition to the basic registration requirements above, a refiner seeking status as a small refiner needs to apply for this status as a part of their registration and provide the average number of employees for all pay periods from January 1, 1999 to January 1, 2000, for the company, all parent companies, and all subsidiaries or joint ventures. The application also must include which small refiner option the refiner expects to use at each of its refineries.

c. Refiners Seeking an Extension of the GPA Gasoline Sulfur Standards

In addition to the basic registration requirements above, a refiner or importer seeking an extension of the special GPA gasoline sulfur standards (see Section IV.B above) must apply for such an extension in their registration.

2. Pre-Compliance Reports

a. All Refiners

As discussed in Section IV above, by June 1, 2003, all refiners and importers must report to EPA on their progress toward compliance with the highway diesel fuel sulfur standards adopted today. Subsequently, these pre-compliance reports are also due on June 1 of 2004 and 2005. EPA will maintain the confidentiality of information submitted in pre-compliance reports. We will present generalized data from the reports on a PADD basis in annual reports following the receipt of each year's pre-compliance reports. These reports are for information purposes

only and, while refiners must truthfully report on their projected plans in order for this provision to have any value, we will not hold refiners liable if their actual actions deviate from these reports. We fully expect that refiners' plans may change, which is why we are requiring these reports to be updated annually through 2005.

In their pre-compliance reports, refiners and importers need to include the following information:

- Any changes in their basic corporate or facility information since registration.
- Estimates of the volumes (in gallons) of 15 ppm fuel and, if applicable, 500 ppm fuel to be produced from crude oil in each refinery, as well as the volumes of each grade of highway diesel fuel produced from other sources.
- For entities expecting to participate in the credit program, estimates of numbers of credits to be earned and/or used.
- Information regarding engineering plans (e.g., design and construction), the status of obtaining any necessary permits, and capital commitments for making the necessary modifications to produce low sulfur highway diesel fuel, and actual construction progress. The pre-compliance reports due in 2004 and 2005 must provide an update of the progress in each of these areas.

b. Small Refiners

In addition to the information required for all refiners above, small refiners must provide additional information in their pre-compliance reports. The information required varies according to which small refiner option the refiner plans to use, as discussed in Section IV.C above. The following paragraphs summarize the supplementary information required for each small refiner option.

500 ppm Option

The pre-compliance report for a refiner planning use the 500 ppm Option must make a showing that sufficient sources of 15 ppm fuel will likely exist in the area. If after 2003 the sources of 15 ppm fuel decrease, the pre-compliance reports for 2004 and/or 2005 must identify this change and must include a supplementary showing that the sources of 15 ppm fuel are still sufficient.

Small Refiner Credit Option

Pre-compliance reporting for small refiners choosing this Small Refiner Credit option is identical to that for the 500 ppm option (that is, if the small refiner is also producing 500 ppm

highway diesel fuel), with the additional requirement that the refiner also report on any credits it expects to generate and sell.

Diesel/Gasoline Compliance Date Option

Pre-compliance reports from any small refiners expecting to use the Diesel/Gasoline Compliance Date Option must provide information showing that diesel desulfurization plans are on track. In addition to the information about the expansion of desulfurization capacity required above for all refiners, the pre-compliance reports for small refiners expecting to use this option need to reasonably show that the refiner will be in a position by June 1, 2006 to produce of 100 percent of the refiners highway diesel fuel at 15 ppm sulfur at a volume at least 85 percent of its baseline highway diesel volume.

c. GPA Refiners

As with small refiners expecting to use the Diesel/Gasoline Compliance Option above, pre-compliance report from any refiners or importers expecting to use the extension of the GPA gasoline sulfur standards must provide information showing that diesel desulfurization plans are on track. In addition to the information about the expansion of desulfurization capacity required above for all refiners, the pre-compliance reports for prospective GPA refiners need to reasonably show that the refiner will be in a position by June 1, 2006 to produce of 100 percent of the refiners highway diesel fuel at 15 ppm sulfur at a volume at least 85 percent of its baseline highway diesel volume.

3. Annual Compliance Reports

a. All Refiners

After the highway diesel sulfur requirements begin June 1, 2006, refiners and importers will be required to submit annual compliance reports that demonstrate compliance with the requirements of this final rule. The first annual compliance report will be due by the end of February 2007 (for the period of June 1, 2006 through December 31, 2006) and would be required annually through February 2011. A refiner's annual compliance reports must include the following information, for each refinery:

- The volumes of 15 ppm and 500 ppm sulfur highway diesel fuel produced from crude oil during the compliance period, as well as the volumes of each grade of highway diesel fuel produced from other sources.

- The number of credits, if any, used to demonstrate compliance with the 80 percent requirement for 15 ppm sulfur fuel, and their source(s).
- The number of credits, if any generated.

b. Small Refiners

As with pre-compliance reports, small refiners must supply additional information related to the small refiner option they are using in their annual compliance reports.

500 ppm Option and Small Refiner Credit Option

In their annual compliance reports, small refiners choosing the 500 ppm Option or the Small Refiner Credit Option need to show that the volume they produce of highway diesel fuel meeting the 500 ppm sulfur standard meets the lesser of the following values: (1) 105 percent of the average highway diesel volume it produced in calendar years 1998 and 1999 or (2) the average highway diesel volume it produced from crude oil in calendar years 2004 and 2005.

Diesel/Gasoline Compliance Date Option

A small refiner using this option needs to confirm in each annual compliance report that it continues to produce 100 percent of its highway diesel fuel at 15 ppm sulfur and that its highway diesel volume continues to be at least 85 percent of its baseline volume.

4. Initial Confirmation of 15 ppm Fuel Production

Small refiners using the Diesel/Gasoline Compliance Date Option and refiners using the extension of the GPA gasoline sulfur standard must confirm to EPA by July 1, 2006 that they began on June 1, 2006 producing 100 percent of their highway diesel fuel at 15 ppm sulfur.

5. Product Transfer Documents (PTDs)

a. Diesel Fuel

We are adopting the proposed requirements that refiners and importers provide information on commercial PTDs that identifies diesel fuel distributed for use in motor vehicles and that states the fuel complies with the 15 ppm sulfur standard. Since today's rule adopts provisions for production and sale of diesel fuel having a sulfur content of 500 ppm for use in pre-2007 model year vehicles, the rule also adopts provisions requiring PTDs to identify such fuel and state that its use in motor vehicles is limited to

pre-2007 motor vehicles.²¹⁵ We believe this additional information on commercial PTDs is necessary because of the importance of preventing commingling of highway diesel fuel with high sulfur distillate products, avoiding contamination of 15 ppm highway diesel fuel with 500 ppm highway diesel fuel, and preventing misfueling of model year 2007 and later vehicles with any fuel having a sulfur content greater than 15 ppm. In addition, we are requiring that each PTD include the volume of fuel delivered (for each grade, 15 ppm and 500 ppm), that is necessary to demonstrate compliance with the fuel downgrading restrictions discussed in Section VII.C.2.b above.

Except for transfers to truck carriers, retailers and wholesale purchaser-consumers, product codes may be used to convey the information. More explicit language on PTDs to these parties is necessary since employees of such parties are less likely to be aware of the meaning of product codes. PTDs are not required for transfers of product into motor vehicles at retail outlets or wholesale purchaser-consumer facilities.

To assure that downstream parties can determine whether kerosene, or other distillates, distributed for use for blending into highway diesel fuel to reduce viscosity in cold weather meets the 15 ppm sulfur standard, today's rule adopts the proposed requirement for PTD identification of distillates distributed for such use as meeting the 15 ppm standard.

Today's rule adopts the proposal to retain the current diesel rule's PTD requirement regarding the identification of dyed, tax-exempt highway diesel fuel. This provision is useful for wholesale purchaser-consumers that need to know that the diesel fuel they purchase is appropriate for tax exempt motor vehicle use despite the presence of red dye.²¹⁶

b. Additives

The NPRM proposed that PTDs for additives for use in highway diesel fuel would be required to state that the additive complies with the 15 ppm sulfur standard. Today's rule has been modified to allow the sale of additives, for use by fuel terminals or other parties in the diesel fuel distribution system, that have a sulfur content greater than 15 ppm under specified conditions. As a result, under today's rule the PTD

provisions for such additives are modified as follows:

For additives that have a sulfur content not exceeding 15 ppm, the PTD must state: "The sulfur content of this additive does not exceed 15 ppm."

For additives that may have a sulfur content exceeding 15 ppm, the additive manufacturer's PTD, and PTDs accompanying all subsequent transfers, must provide: a warning that the additive's sulfur content exceeds 15 ppm; the maximum sulfur content of the additive; the appropriate amount of additive to blend to highway diesel fuel, stated as gallon of additive per gallon of diesel fuel; and the increase in sulfur concentration of the fuel the additive will cause when used at the specified concentration.

The proposed provisions for consumer additives for use in diesel motor vehicles are slightly modified in the final rule due to concerns that additives designed for nonroad engines could accidentally be introduced into motor vehicle engines if they have no label stating appropriate use. Under today's rule consumer additives for use in any diesel engines must be accompanied by information that states that the additive either: complies with the sulfur content requirements for diesel motor vehicles; or that it has a sulfur content exceeding 15 ppm and is not for use in model year 2007 or later motor vehicles. This information is necessary for consumers to determine if an additive is appropriate for diesel motor vehicle use.

6. Recordkeeping Requirements

Refiners that produce (or importers that import) both 500 ppm highway diesel fuel and 15 ppm highway diesel fuel under the temporary compliance option or any hardship program, or that produce only 15 ppm sulfur content diesel fuel and that wish to generate credits (including early credits), must maintain records for each batch of highway diesel fuel produced, of the batch designations and the batch volumes. The refiner must maintain records regarding credit generation, use, transfer, purchase, or termination.

In general, refiners and importers participating in the temporary compliance option or any hardship program must keep records of the following information, as applicable for each refinery (and in the case of foreign refiners, separately by refinery and by PADD of import), or for importers, for each PADD:

- The total volume of highway diesel fuel produced or imported;

²¹⁵ Such fuel can also be used in nonroad vehicles, whose fuel is currently unregulated.

²¹⁶ The federal tax code requires the use of red dye in both off-highway distillate fuels and in highway diesel fuel sold for tax exempt use.

- The total volume of highway diesel fuel produced or imported meeting the 500 ppm; sulfur standard;
- The total volume of highway diesel fuel produced or imported meeting the 15 ppm sulfur standard;
- For small refiners or GPA refiners using the gasoline sulfur program extensions, a statement of the baseline volume and whether the volume of 15 ppm produced or imported fuel is at least equal to 85 percent of the baseline volume;
- The percentage of highway diesel fuel produced or imported meeting the 15 ppm sulfur standard before inclusion of credits;
- The volume of 15 ppm highway diesel fuel represented by credits;
- The percentage of 15 ppm highway diesel fuel produced or imported that is represented by credits;
- The number of credits in the refinery's or importer's possession at the beginning of the compliance period, separately by early credits and all other credits;
- The number of credits generated during the compliance period;
- The number of credits used, separately by early credits and all other credits;
- If any credits were obtained from or transferred to other parties, for each other party, its name, its EPA refiner or importer registration number, and the number of credits obtained from or transferred to the other party, provided separately for early credits and all other credits;
- The percentage of compliance with the 15 ppm motor vehicle diesel 80 percent volume requirement by use of credits (provided separately for early credits and all other credits);
- The number of credits that will carry over to the next averaging period, provided separately for early credits and all other credits;
- Records regarding test results, including mandatory quality assurance tests; and
- Contracts or other commercial documents that establish each transfer of credits.

Refiners approved for temporary hardship relief due to extreme unforeseen circumstances or extreme financial hardship must include certain information in their application for relief. The required information, and the factors we will consider in determining what relief, if any, is appropriate, are discussed in Section IV.B.3. Such refiners will also have reasonable recordkeeping and reporting requirements, which will be fashioned on a case-by-case basis depending on

the nature of any temporary waiver approved.

7. Record Retention

Today's rule adopts the NPRM proposal that the retention period for all records required to be kept by the rule is 5 years. This is the same period of time required in other fuels rules, and it coincides with the applicable statute of limitations. We believe that for other reasons, most parties in the distribution system would maintain some or all of these records for this length of time even without the requirement.

This retention period applies to PTDs, records of any test results performed by any regulated party for quality assurance purposes or otherwise, along with supporting documentation such as date of sampling and testing, batch number, tank number, and volume of product. Business records regarding actions taken in response to any violations discovered are also required to be maintained for 5 years.

All records required to be maintained by refiners participating in the temporary compliance option or hardship options (or by importers of diesel fuel produced by a foreign refiner approved for the temporary compliance option or a hardship option), including small refiner and farmer cooperative and GPA options, are also covered by the retention requirement.

F. Are There Any Exemptions From the Highway Diesel Fuel Requirements?

1. Research and Development

Today's rule exempts from the sulfur standards diesel fuel used for research, development and testing purposes (R & D), as was proposed in the NPRM. We recognize that there may be legitimate research programs that require the use of highway diesel fuel with higher sulfur levels than allowed under today's proposed rule. As a result, today's rule contains provisions for obtaining an exemption from the prohibitions for persons distributing, transporting, storing, selling, or dispensing highway diesel fuel that exceeds the standards, where such diesel fuel is necessary to conduct a research, development, or testing program.

Under the rule, parties seeking an R&D exemption are required to submit to EPA an application for exemption that describes the purpose and scope of the program and the reasons that the use of the higher-sulfur diesel fuel is necessary. Upon presentation of the required information, an exemption may be granted at the discretion of the Administrator, with the condition that EPA may withdraw the exemption *ab*

initio in the event the Agency determines the exemption is not justified. Fuel subject to this exemption is exempt from the other provisions of today's rule, provided certain requirements are met. These requirements include the segregation of the exempt fuel from non-exempt highway diesel fuel, identification of the exempt fuel on product transfer documents, pump labeling, and where appropriate, the replacement, repair, or removal from service of emission systems damaged by the use of the high sulfur fuel.

2. Racing Vehicles

Today's rule adopts the NPRM proposal to provide no exemption from the sulfur content standard and other requirements of today's rule for diesel fuel used in racing vehicles. In the NPRM, we requested comment on whether such an exemption is needed and we received no comments supporting the need for such exemption. As we stated in the NPRM, we see no advantage for racing vehicles to use fuel having higher sulfur levels (or lower cetane or higher aromatic levels) than are required by today's rule, and we are concerned about the potential for misfueling of motor vehicles that could result from having a high sulfur (*e.g.*, 3,000 ppm) automotive fuel available in the marketplace. Consequently, the rule does not provide an exemption from the highway diesel fuel requirements for vehicles used in racing.

3. Military Fuel

Based on EPA's existing definition of diesel fuel, we previously concluded that JP-8 military fuel is not subject to EPA's existing requirements for diesel fuel. Today's rule revises the definition of diesel fuel so that JP-5 and JP-8 military fuel that is used or intended for use in highway diesel motor vehicles will be subject to all of the requirements applicable to diesel fuel under today's rule.²¹⁷ However, today's rule also exempts JP-5 and JP-8 fuels from EPA's diesel fuel requirements if it is used in tactical military vehicles that have a national security exemption or if it is used in tactical military vehicles that are not covered by a national security exemption but for national security reasons, such as the need to be ready for immediate deployment overseas, need to be fueled on the same fuel as motor

²¹⁷ Any JP-5, JP-8, or other distillate product that is not designated by the refiner or importer as motor vehicle diesel fuel, and that does not otherwise meet the definition of motor vehicle diesel fuel, would not be included by the refiner or importer in any computation of motor vehicle diesel fuel volume for baseline or other purposes.

vehicles with a national security exemption. Use of JP-5 and JP-8 fuel not meeting the highway diesel fuel standards in a motor vehicle other than the tactical military vehicles described above is prohibited under today's rule.

Due to national security considerations, EPA's existing regulations allow the military to request and receive national security exemptions (NSE) for their motor vehicles from emissions regulations if the operational requirements for such vehicles warrant such an exemption. These provisions have worked successfully in the past to enable us to meet both our national air quality and security goals simultaneously. Today's rule does not change these provisions.

In discussions with the Department of Defense (DOD), DOD stated that certain tactical military vehicles must be ready to be shipped overseas quickly in response to an emergency and must be ready to be fueled on whatever fuel is available under tactical conditions (typically JP-8). To avoid problems experienced in the past when switching between fuel types in tactical vehicles, JP-8 has been selected as the common tactical fuel for use by the military in the U.S. and overseas. Thus, the use of the high sulfur fuel, which is normally supplied overseas under tactical situations, is expected to continue after the implementation of this rule. However, use of the high sulfur fuel in these engines equipped with the aftertreatment technology, necessary to meet the emissions requirements of today's rule could result in engine failure, driveability problems, and permanently destroy the emission control system.

Therefore, it appears that requiring tactical military vehicles that may be used outside of the U.S. to comply with the emissions requirements in today's rule is not compatible with the operational requirements for such vehicles. In their comments on the proposed rule, DOD stated that it would be appropriate for EPA to cover the tactical military vehicles that would otherwise be subject to the emissions regulations in today's rule under a national security exemption. We recognize the national security concerns raised by DOD, and will address this issue using the Agency procedures established for this purpose.²¹⁸ These guidelines are contained in EPA's "Guidelines for National Security Exemptions of Motor Vehicles and

Motor Vehicle Engines—Guidelines for Tactical Vehicles/Engines."

We also recognize that there are tactical military vehicles manufactured before the requirements of today's rule become effective that for national security purposes need to continue to be operated on JP-5 or JP-8 fuel while in the U.S. to facilitate their readiness to be fueled on whatever fuel is available overseas. Consistent with an exemption for certain military vehicles, EPA is also exempting diesel fuel from the sulfur standard in this rule, where the fuel is used in vehicles exempted from the emissions standards in this rule (pursuant to 40 CFR 85.1708) or in tactical motor vehicles that are not covered by a national security exemption but for national security reasons need to be fueled on the same fuel as motor vehicles with a national security exemption. To more clearly identify the tactical motor vehicles to be covered by the diesel fuel exemption the Department of Defense will submit a notification to EPA describing the rationale and supporting data for the request and a description of the covered tactical motor vehicles. The one-time notification should be sent to EPA by December 15, 2003 in order to provide sufficient time for EPA to review the information as well as lead time to the Department of Defense for logistics planning purposes. EPA will then respond to DOD identifying all vehicles that are covered by the fuel exemption. Based on data provided by the Department of Defense to date, EPA believes that providing an exemption for JP-5 and JP-8 fuel used in tactical motor vehicles does not have any significant environmental impact.

G. Liability and Penalty Provisions for Noncompliance

1. General

The liability and penalty provisions of the diesel sulfur rule are similar to the liability and penalty provisions found in the gasoline sulfur rule, RFG rule and other EPA fuels regulations.²¹⁹ Regulated parties are subject to prohibitions which are typical in EPA fuels regulations, such as selling or distributing fuel that does not comply with the standard, and causing others to commit prohibited acts. Liability also arises under the diesel rule for

prohibited acts specific to the diesel sulfur control program, such as introducing diesel fuel not meeting the 15 ppm sulfur standard into diesel motor vehicles of model year 2007 and later. In addition, parties will be liable for a failure to meet certain requirements, such as the recordkeeping, reporting, or PTD requirements, or causing others to fail to meet such requirements.

Under today's rule, the party in the diesel fuel's distribution system that controls the facility where the violation occurred, and other parties in that fuel's distribution system (such as the refiner, reseller, and distributor), are presumed to be liable for the violation.²²⁰ As in the Tier 2 gasoline sulfur rule ("Tier 2 sulfur rule"), today's diesel sulfur rule explicitly prohibits causing another person to commit a prohibited act or causing non-conforming diesel fuel to be in the distribution system. Non-conforming means: (1) Diesel fuel with sulfur content above 15 ppm incorrectly designated as appropriate for model year 2007 and above motor vehicles or (2) diesel fuel with sulfur content above 500 ppm incorrectly designated as appropriate for any model year motor vehicle. Parties outside the diesel fuel distribution system, such as diesel additive manufacturers and distributors, would also be subject to liability for those diesel rule violations which could have been caused by their conduct.

Affirmative defenses are provided for each party deemed presumptively liable for a violation, and all presumptions of liability are rebuttable. In general, in order to rebut the presumption of liability, parties are required to establish that: (1) The party did not cause the violation; (2) PTD(s) exist which establish that the fuel or diesel additive was in compliance while under the party's control; and (3) the party conducted a quality assurance sampling and testing program. Diesel fuel refiners, diesel fuel additive manufacturers, and blenders of high sulfur additives into diesel fuel, would also be required to provide test results establishing the conformity of the product prior to leaving that party's control.²²¹ Branded

²²⁰ An additional type of liability, vicarious liability, is also imposed on branded refiners under these fuels programs.

²²¹ The requirement of conforming test results was not included in the NPRM as an affirmative defense element for the fuel refiner. However, under both the NPRM and today's final rule, refiners need to establish that they didn't cause the violation. As a practical matter, refiners generally establish their lack of causation using such test results. The Agency believes that it is nonetheless important to require these test results as an affirmative defense element for refiners because under today's final rule, refiners are given the

²¹⁸ These guidelines are contained in EPA's "Guidelines for National Security Exemptions of Motor Vehicles and Motor Vehicle Engines—Guidelines for Tactical Vehicles/Engines"

²¹⁹ See section 80.5 (penalties for fuels violations); section 80.23 (liability for lead violations); section 80.28 (liability for volatility violations); section 80.30 (liability for diesel violations); section 80.79 (liability for violation of RFG prohibited acts); section 80.80 (penalties for RFG/CG violations); section 80.395 (liability for gasoline sulfur violations); section 80.405 (penalties for gasoline sulfur regulations).

refiners have additional affirmative defense elements to establish. The defenses under the diesel sulfur rule are similar to those available to parties for violations of the RFG, volatility, and the Tier 2 sulfur regulations. Today's final rule also clarifies that parent corporations are liable for violations of subsidiaries, in a manner consistent with the Tier 2 sulfur rule. Finally, the final diesel sulfur rule mirrors the Tier 2 sulfur rule by clarifying that each partner to a joint venture will be jointly and severally liable for the violations at the joint venture facility or by the joint venture operation.

As is the case with the other EPA fuels regulations, today's final diesel sulfur rule applies the provisions of section 211(d)(1) of the Clean Air Act (Act) for the collection of penalties. These penalty provisions subject any person that violates any requirement or prohibition of the diesel sulfur rule to a civil penalty of up to \$27,500 for every day of each such violation and the amount of economic benefit or savings resulting from the violation. A violation of a diesel sulfur cap standard constitutes a separate day of violation for each day the diesel fuel giving rise to the violation remains in the fuel's distribution system. Under the regulation, the length of time the diesel fuel in question remains in the distribution system is deemed to be twenty-five days unless there is evidence that the fuel remained in its distribution system a lesser or greater amount of time—the same time presumption that is incorporated in the RFG and Tier 2 sulfur rules. The penalty provisions are similar to the penalty provisions for violations of the RFG and the Tier 2 sulfur regulations.

EPA has included in today's rule two prohibitions for "causing" violations: (1) Causing another to commit a violation; and (2) causing non-complying diesel fuel to be in the distribution system. These causation prohibitions are like similar prohibitions included in the Tier 2

ability to produce high sulfur highway diesel fuel as well as low sulfur product. This makes the possibility of refiner causation of violations much more likely, and the production of conforming test results—the one most convincing piece of evidence which would establish the refiner's lack of causation—much more essential. Further, conducting such testing should not be a significant burden for refiners to comply with. Refiners typically already test their batches to assure component quality for commercial reasons, and refiners are usually the party in the distribution system with the most resources—both financial and analytical—to conduct quality testing. In any case, refiners may choose not to conduct this testing, since it is merely an affirmative defense element, and the tests would only become relevant once a violation is discovered.

gasoline sulfur regulations, and, as discussed in the preamble to that rule, EPA believes they are consistent with EPA's implementation of prior motor vehicle fuel regulations. See the liability discussion in the preamble to the Tier 2 final rule, at 65 FR 6812 et seq.

The prohibition against causing another to commit a violation would apply where one party's violation is caused by the actions of another party. For example, EPA may conduct an inspection of a terminal and discover that the terminal is offering for sale highway diesel fuel designated as complying with the 15 ppm sulfur standard, while it, in fact, had an actual sulfur content greater than the standard.²²² In this scenario, parties in the fuel's distribution system, as well as parties in the distribution system of any diesel additive that had been blended into the fuel, would be presumed liable for causing the terminal to be in violation. Each party, of course, would have the right to present an affirmative defense to rebut this presumption.

The prohibition against causing non-complying diesel fuel to be in the distribution system would apply, for example, if a refiner transfers non-complying diesel fuel to a pipeline. This prohibition could encompass situations where evidence shows high sulfur diesel fuel was transferred from an upstream party in the distribution system, but EPA may not have test results to establish that parties downstream also committed violations with this fuel.

The Agency intends to enforce the liability scheme of the diesel sulfur rule in the same manner that we have enforced the similar liability schemes in our prior fuels regulations. As in other fuels programs, we will attempt to identify the party most responsible for causing the violation in determining that party that should primarily be liable for penalties for the violation.

2. What Is the Liability That Additive Manufacturers and Distributors, and Parties That Blend Additives Into Diesel Fuel, Are Subject To?

a. General

In the NPRM, the Agency did not propose that additive manufacturers or distributors would be presumed liable for any violations of the diesel regulation. Only parties that were in the diesel fuel distribution system were to be presumed liable for diesel fuel

violations. Parties in the additive distribution system would only be subject to liability for fuels violations where the Agency established that they caused others (such as fuel distributors or retailers) to be in violation. This approach was followed because the NPRM prohibited the downstream blending into highway diesel fuel of any additive whose sulfur content exceeded the 15 ppm standard. This limitation reduced the potential that the additive could be the cause of sulfur non-compliance in fuel within the diesel distribution system.

Various additive manufacturers provided comments regarding the need for certain diesel fuel additives that may exceed the 15 ppm sulfur standard. Today's final rule, therefore, permits the blending of diesel additives with sulfur content in excess of 15 ppm into 15 ppm highway diesel fuel under limited circumstances, in response to those comments. As more fully discussed in section VII(C)(5) of this preamble, today's rule permits downstream parties to blend into 15 ppm highway diesel fuel additives having a sulfur content exceeding 15 ppm, provided that: (1) The blending of the additive does not cause the diesel fuel's sulfur content to exceed the 15 ppm sulfur standard; (2) the additive is added in an amount no greater than one volume percent of the blended product; and (3) the downstream party obtained from its additive supplier a product transfer document ("PTD") with the additive's sulfur content and the recommended treatment rate, and that it complied with such treatment rate, as appropriate.

Since the final rule permits the limited use in highway diesel fuel of additives with high sulfur content, the Agency believes it is now more likely that a diesel fuel sulfur violation could be caused by the use of high sulfur additives. This could result from the additive manufacturer's misrepresentation or inaccurate statement of the additive's sulfur content or recommended treat rate on the additive's PTD, or an additive distributor's contamination of low sulfur additives with high sulfur additives during transportation. The increased probability that parties in the additive distribution system could cause a violation of the sulfur standard warrants the imposition by the Agency of increased liability for such parties under the final rule. As one example of this, the final rule explicitly makes parties in the additive distribution system liable for the sale of nonconforming diesel fuel additives, even if such additives have not yet been blended into diesel fuel. In addition, the

²²² The violation would occur if EPA's test result showed a sulfur content of greater than 17 ppm, which takes into account the two ppm adjustment factor for testing reproducibility for downstream parties.

final rule imposes presumptive liability on parties in the additive distribution system if diesel fuel into which the additive has been blended is determined to have a sulfur level in excess of its permitted concentration. This presumptive liability differs depending on whether the blended additive was designated as meeting the 15 ppm sulfur standard (a "15 ppm additive") or designated as a greater than 15 ppm sulfur additive (a "high sulfur additive"), as discussed below.

b. Liability When the Additive Is Designated as Complying With the 15 ppm Sulfur Standard

With the sole exception of diesel additives blended into highway diesel fuel at a concentration no greater than one percent by volume of the blended fuel, any additive blended into diesel fuel downstream of the refinery must have a sulfur content no greater than 15 ppm, and must be accompanied by PTD(s) accurately identifying them as complying with the 15 ppm sulfur standard.

All parties in the fuel and additive distribution systems are subject to presumptive liability if the blended fuel exceeds the sulfur standard (with the two ppm downstream adjustment applied when EPA tests the fuel subject to the 15 ppm sulfur standard). Low sulfur additives present a less significant threat to diesel fuel sulfur compliance than would occur with the use of additives designated as possibly exceeding 15 ppm sulfur. Thus, parties in the additive distribution system of the low sulfur additive will be permitted to rebut the presumption of liability by showing the following: (1) Additive distributors will only be required to produce PTDs asserting that the additive complies with the 15 ppm sulfur standard (2) additive manufacturers will also be required to produce PTDs complying in an accurate manner with the regulatory requirements, as well as producing test results (or retained samples on which tests could be run) establishing the additive's compliance with the 15 ppm sulfur standard prior to leaving the manufacturer's control. Once their presumptive liability would be refuted by producing such documentation in a convincing manner, these additive system parties would only be held responsible for the diesel fuel non-conformity in situations in which EPA can establish that the party actually caused the violation.

Under today's final rule, parties in the diesel fuel distribution system will have the typical presumptive liability defenses as proposed. For parties

blending an additive into their diesel fuel, the requirement of producing PTDs showing that the product complied with the regulatory standards will necessarily include PTDs for the additive that was used, affirming the additive's compliance as well as the fuel's.

c. Liability When the Additive Is Designated as Having a Possible Sulfur Content Greater Than 15 ppm

Under today's rule, if an additive manufacturer produces an additive for use in 15 ppm highway diesel fuel at a concentration no greater than one volume percent of the blended fuel, then the additive is permitted to have a maximum sulfur content above 15 ppm. However, if highway diesel fuel containing that additive is found by EPA to have high sulfur content, then all the parties in both the additive's and the fuel's distribution chain will be presumed liable for causing the diesel fuel violation. Since this type of high sulfur additive presents a much greater probability of causing diesel fuel non-compliance, parties in the additive's distribution system will have to satisfy an additional element to establish an affirmative defense. In addition to the elements of an affirmative defense described above, parties in the distribution system for such a high sulfur additive must also establish that they did not cause the violation, an element of an affirmative defense that is typically required in EPA fuel programs to rebut presumptive liability.

Parties in the diesel fuel's distribution system will essentially have to establish the same affirmative elements as proposed, with one addition. Blenders of high sulfur additives into 15 ppm sulfur diesel fuel, by the act of blending such an additive into that fuel, subject themselves to the need for establishing a more rigorous quality control program than would exist without the addition of such a high sulfur addition. The Agency believes that parties blending high sulfur additives into their 15 ppm sulfur diesel fuel should be required to produce test results establishing that the blended fuel was in compliance with the 15 ppm sulfur standards after being blended with the high sulfur additive. This additional defense element is required as an added safeguard to ensure diesel fuel compliance, since the blender has voluntarily chosen to use an additive which increases the risk of diesel fuel non-compliance.

H. How Will Compliance With the Sulfur Standards Be Determined?

In the NPRM, EPA proposed that compliance with the diesel sulfur standards would be determined based

on the sulfur level of the diesel fuel, as measured using the regulatory testing methodology. We further proposed that any evidence from any source or location could be used to establish the diesel fuel sulfur level, provided that such evidence is relevant to whether the level would have been in compliance if the regulatory sampling and testing methodology had been correctly performed. In today's action, consistent with the approach taken under the Tier 2 sulfur rule, EPA is adopting the proposed regulatory provisions.

The final regulations provide that the primary determinant of compliance with the standards will be the specified regulatory test method.²²³ Additionally, other information may be used under the rule, including test results using non-designated test methods, if the evidence is relevant to determining whether the sulfur level would meet applicable standards had compliance been determined using the specified test methodology. Moreover, since evidence other than regulatory test results must be relevant to compliance using the regulation test method, EPA believes that the rule enables parties to rely with confidence on the proper use of the regulatory method.

For example, the Agency might not have sulfur results derived from the regulatory test method for diesel fuel sold by a terminal, yet the terminal's own test results, based on testing using methods other than those specified and approved in the regulations, could reliably show an exceedance of the sulfur standard. Under today's rule, evidence from the non-regulatory test method could be used to establish the diesel fuel's sulfur level that would have resulted if the regulatory test method had been conducted. This type of evidence is available for use by either the EPA or the regulated party, and could be used to show either compliance or noncompliance. Similarly, absent the existence of sulfur test results using the regulation method, commercial documents asserting the sulfur level of diesel fuel or additive could be used as some evidence of that sulfur level if the product would have been tested using the regulatory method.²²⁴

²²³ Under today's final rule, several specified alternative test methods are also permitted, provided they have been properly correlated with the regulatory method.

²²⁴ The ability to use such evidence is in addition to the presumption established under the final rule, that when a mandated product transfer document asserts that diesel fuel complies with the 500 ppm sulfur standard, the fuel accompanied by that transfer document will be presumed to comply with the 500 standard and not to comply with the 15

The Agency believes that the same statutory authority for EPA to adopt the Tier 2 sulfur rule's evidentiary provisions (Clean Air Act section 211(c)), provides appropriate authority for our adoption of the evidentiary provisions of today's diesel rule. For a fuller explanation of this statutory authority, see Section VI(I) of the Tier 2 final rule preamble, 65 FR 6815, February 10, 2000.

VIII. Standards and Fuel For Nonroad Diesel Engines

Although this program covers only highway diesel engines and highway diesel fuel, our potential plans for nonroad diesel engines, and especially the sulfur content of nonroad diesel, fuel are clearly related. For example, depending on whether and how nonroad diesel fuel is regulated, factors including the costs, leadtime, environmental impacts, and impacts on competitive relationships in the marketplace associated with this program could be affected. We would need to address these factors in any future regulatory action on nonroad diesel fuel.

Because of these factors, various stakeholders inquired during the public comment period about the potential requirements that could apply to nonroad diesel fuel. Several states, environmental organizations, and other commenters urged us to take action on nonroad because of the nonroad contribution to air quality problems. The remainder of this section summarizes the background behind this issue and our current thinking about the future regulation of nonroad diesel engines and fuel.

After establishing an initial set of emission standards for nonroad diesel engines in 1994, we proposed in 1997, and finalized in 1998, a comprehensive program of emission standards for most diesel engines designed for nonroad use.²²⁵ This program established NMHC + NO_x and PM standards that are phasing in over the 1999–2006 time frame, with engines of different horsepower ranges coming into the program in different years. At the same time, we set long-term (“Tier 3”) NMHC + NO_x standards, but not PM standards, for medium and high horsepower engines, to begin in 2006. This rule also included a plan to reassess the Tier 3 NMHC + NO_x standards and to establish a PM test cycle and associated standards in the 2001 time frame. In addition, the

1998 rule anticipated an EPA reassessment of the NMHC + NO_x standards for the smaller engines (less than 50 horsepower), which are to be phased in beginning in 2004 (referred to as nonroad “Tier 2” standards).

We did not include regulations on nonroad diesel fuel in the first diesel fuel sulfur control program which was established in 1993 for highway diesel fuel. We estimate that the average sulfur content for nonroad diesel fuel is currently around 3000 ppm,²²⁶ as compared to the cap for highway diesel fuel of 500 ppm.²²⁷

We believe that any specific new requirements for nonroad diesel fuel would need to be carefully considered in the context of a proposal for further nonroad diesel engine emission standards. For the nonroad program, we expect to use the same systems-based approach as we used for the Tier 2/ Gasoline Sulfur program and today's highway diesel fuel and heavy-duty engine standards program. This is because of the close interrelationship between fuels and engines—the best emission control solutions may not come through either fuel changes or engine improvements alone, but perhaps through an appropriate balance between the two. This is especially significant given that engine manufacturers and diesel fuel refiners would need to address potential challenges such as capital cost, leadtime, and engineering and construction resources, of simultaneously meeting the highway standards under this program with the nonroad standards that may be implemented. Thus we need to address issues in both the fuel and engine arenas together.

The many issues connected with any rulemaking for nonroad engines and fuel warrant serious attention, and we believe it would be premature today for us to attempt to raise potential resolutions to them. We plan to initiate action in the future to formulate thoughtful proposals covering both nonroad diesel fuel and engines.

IX. Public Participation

A wide variety of interested parties participated in the rulemaking process that culminates with this final rule. The formal comment period and five public hearings associated with the NPRM provided additional opportunities for public input. EPA also met with a variety of stakeholders, including

environmental and public health organizations, oil company representatives, auto company representatives, emission control equipment manufacturers, and states at various points in the process.

We prepared a detailed Response to Comments document that describes the comments received on the NPRM and presents our response to each of these comments. The Response to Comments document is available in the docket for this rule and on the Office of Transportation and Air Quality internet home page. Comments and our responses are also included throughout this preamble for several key issues.

X. Administrative Requirements

A. Administrative Designation and Regulatory Analysis

Under Executive Order 12866 (58 FR 51735, October 4, 1993), the Agency is required to determine whether this regulatory action will be “significant” and therefore subject to review by the Office of Management and Budget (OMB) and the requirements of the Executive Order. The order defines a “significant regulatory action” as any regulatory action that is likely to result in a rule that may:

- Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;
- Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or,
- Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Pursuant to the terms of Executive Order 12866, EPA has determined that this rule is a “significant regulatory action” because the engine standards, diesel fuel sulfur standards, and other regulatory provisions will have an annual effect on the economy in excess of \$100 million. Accordingly, we have prepared a Final Regulatory Impact Analysis (RIA) which is available in the docket for this rulemaking and at the internet address listed under ADDRESSES above. This action was submitted to the Office of Management and Budget (OMB) for review as required by Executive Order 12866. Written comments from OMB on today's action

ppm standard, unless the party can establish otherwise.

²²⁵ See the final rule, 63 FR 56968, October 23, 1998 for more about the history of these regulations.

²²⁶ National Institute for Petroleum and Energy Research (NIPER) report, Diesel Fuel Oils, 1996.

²²⁷ Information from recent national fuel surveys by NIPER and the Alliance of Automobile Manufacturers.

and responses from EPA to OMB comments are in the public docket for this rulemaking.

B. Regulatory Flexibility Analysis

EPA has decided to prepare a Final Regulatory Flexibility Analysis in connection with this final rule. For purposes of assessing the impact of today's rule on small entities, small entities are defined as described under section X.B.3 below.

In accordance with section 603 of the RFA, EPA prepared an initial regulatory flexibility analysis (IRFA) for the proposed rule and convened a Small Business Advocacy Review Panel to obtain advice and recommendations of representatives of the regulated small entities in accordance with section 609(b) of the RFA (see 65 FR 35541, June 2, 2000). A detailed discussion of the Panel's advice and recommendations is found in the Panel Report contained in the docket for this rulemaking. A summary of the Panel's recommendations is presented at 65 FR 35541.

We have also prepared a final regulatory flexibility analysis (FRFA) for today's final rule. The FRFA addresses the issues raised by public comments on the IRFA, which was part of the proposal of this rule. The FRFA is available for review in the docket and is summarized below.²²⁸ The key elements of the FRFA include:

- The need for, and objectives of, the rule;
- The significant issues raised by public comments on the Initial RFA, a summary of the Agency's assessment of those issues, and a statement of any changes made to the proposed rule as a result of those comments;
- The types and number of small entities to which the rule will apply;
- The reporting, recordkeeping, and other compliance requirements of the rule, including the classes of small entities that will be affected and the type of professional skills necessary to prepare the report or record;
- The steps taken to minimize the significant impact on small entities consistent with the stated objectives of the applicable statute, including a statement of the factual, policy and legal reasons why the Agency selected the alternatives we did, and why other significant alternatives to the rule which affect the impact on small entities were rejected.

We summarize the key elements of the FRFA below. A fuller discussion of

each of these elements can be found in the FRFA (Chapter VIII of the RIA).

1. Need for and Objectives of the Rule

Section I of this preamble provides a summary of the need for and objectives of this rule. As discussed in detail in Section II of this preamble, emissions from heavy-duty vehicles contribute greatly to a number of serious air pollution problems, and would have continued to do so into the future absent further controls to reduce these emissions. Although the air quality problems caused by diesel heavy-duty vehicles are challenging, we believe they can be resolved through the application of high-efficiency emissions control technologies. Based on the Clean Air Act requirements discussed in Section I.B.3, we are setting stringent new emission standards that will result in the use of these diesel exhaust emission control devices (see Section III). We are also finalizing changes to diesel fuel sulfur standards in order to enable these high-efficiency technologies (Section IV). In consideration of the impacts that sulfur has on the efficiency, reliability, and fuel economy impact of diesel engine exhaust emission control devices, we believe that controlling the sulfur content of highway diesel fuel to the 15 ppm level is necessary, feasible and cost effective. The standards will result in substantial benefits to public health and welfare and the environment through significant reductions in emissions of nitrogen oxides, particulate matter, nonmethane hydrocarbons, carbon monoxide, sulfur oxides, and air toxics.

2. Summary of Significant Public Comments on the IRFA

EPA received many comments from small refiners and others pertaining to the options for hardship relief described in the NPRM. In general, many small refiners commented on the financial difficulty their refinery would face in complying with the proposed diesel sulfur program, and encouraged EPA to provide hardship relief. Many small refiners acknowledged that there was not one single hardship relief option to best suit the needs of all small refiners, and thus supported a menu of options. Section IV.C of the preamble discusses the three hardship relief options available to small refiners under today's program. These three options are based on concepts which were considered by the SBAR Panel and on which we requested and received comment in the proposal. A summary of the comments pertaining to regulatory alternatives for small refiners, and our response to them, is contained in the Response to

Comments document contained in the docket.

3. Types and Number of Small Entities

Today's program, which establishes new emission standards for heavy-duty engines and new standards for the sulfur content of highway diesel fuel, will directly affect manufacturers of heavy-duty engines and petroleum refiners that produce highway diesel fuel, respectively. In addition, but to a lesser extent, the program will directly affect diesel distributors and marketers.

We have not identified any manufacturers of heavy-duty engines that meet SBA's definition of a small business. However, we have identified several petroleum refiners that produce highway diesel fuel and meet the SBA's definitions for a small business for the industry category. According to the SBA's definition of a small business for a petroleum refining company (Standard Industrial Classification (SIC) 2911), which we have used for purposes of assessing the impact of today's rule on small entities, a company must have 1500 or fewer employees to qualify as an SBA small business. Of the approximately 158 refineries in the U.S. today, we estimate that approximately 24 refiners (owning 27 refineries) would meet the SBA definition and produce highway diesel fuel. We estimate that these 24 refiners produce approximately five percent of highway diesel fuel nationwide.

EPA also has identified several thousand businesses in the diesel distribution and marketing industry that meet SBA's definitions of small business. More information about these industries is contained in the Final RFA. The low sulfur diesel fuel rule contains certain downstream compliance and enforcement provisions, for all parties in the diesel fuel distribution system downstream of the refinery gate, to prevent (1) contamination of highway diesel fuels with fuels containing higher levels of sulfur and (2) misfueling of motor vehicles with high sulfur fuels.

Under this rule, distributors and retailers may choose to handle 500 ppm diesel fuel, 15 ppm diesel fuel, or both (as permitted under the temporary compliance option and small refiner hardship provisions described in the preamble). However, distributors and marketers will have to segregate low sulfur diesel fuel from other distillates just as they do today with 500 ppm diesel fuel. Retailers and wholesale purchaser-consumers will be responsible for ensuring that only low sulfur diesel fuel is sold for use in model year 2007 and later heavy-duty

²²⁸ The Final RFA is contained in Chapter VIII of the RIA.

vehicles. Under the temporary compliance option for refiners and small refiner hardship provisions (described in Section IV), where two grades of highway diesel fuel are allowed for the initial years of the program, some distributors and marketers may voluntarily decide (presumably based on economics) to add tankage or make additional modifications to accommodate two grades of highway diesel fuel. We have taken such costs into account in our diesel fuel cost analysis (described in more detail in Chapter V of the RIA).

The low sulfur diesel fuel rule also includes a product downgrading restriction that is designed to discourage the intentional downgrading of 15 ppm diesel fuel to 500 ppm diesel fuel in the distribution system during the initial years of the program when the optional compliance provision is in effect. This provision and its impacts on affected entities is discussed more in Section VII of this preamble and in the FRFA. This provision does not require any new recordkeeping or reporting requirements beyond those required of the rest of the program.

4. Reporting, Recordkeeping and Other Compliance Requirements

As with all refiners complying with the highway diesel fuel program, small refiners will be subject to registration, pre-compliance reporting, annual compliance reporting, and product transfer document requirements. In addition, the low sulfur diesel fuel program contains several hardship options to assist small refiners in producing low sulfur diesel fuel. Under these options, small refiners may be subject to additional reporting and recordkeeping requirements to help ensure compliance with the options and the integrity of the low sulfur diesel fuel as it moves from the refinery gate to the retail outlet. For example, all refiners producing diesel fuel are required to provide us with basic data on their progress toward compliance in 2003–2005 under the pre-compliance reporting requirements described in Section IV.A. As a part of their pre-compliance reports, small refiners must provide a limited amount of additional information specific to the option they choose. However, we believe the benefits of these hardship options will far outweigh any burdens imposed by their associated recordkeeping and reporting requirements.

The low sulfur diesel fuel program does not impose any new reporting requirements for small diesel marketers or distributors. However, this program does impose new record keeping

requirements for such parties, specifically product transfer documents that track transfers of diesel fuel. Such transfer records are currently maintained by most parties for business and/or tax reasons. In addition, the record keeping requirements for downstream parties are fairly consistent with those in place today under other EPA fuel programs, including the current highway diesel fuel program. Therefore, we expect that the new record keeping requirements for downstream parties will not impose a significant burden.

These recordkeeping, reporting and compliance requirements are discussed in more detail in Sections IV and VII of this preamble and in the FRFA.

5. Regulatory Alternatives To Minimize Impact on Small Entities

The Small Business Advocacy Review Panel was convened by EPA on November 12, 1999. The Panel consisted of representatives of the Small Business Administration (SBA), the Office of Management and Budget (OMB) and EPA. During the development of the proposal to this rule, EPA and the Panel were in contact with representatives from the small businesses that will be subject to the provisions in today's rule. In addition to verbal comments from industry noted by the Panel at meetings and teleconferences, written comments were received from each of the affected industry segments or their representatives. The Panel report contains a summary of these comments and the Panel's recommendations on options that could mitigate the adverse impacts on small businesses.

The Panel considered a range of options and regulatory alternatives for providing small businesses with flexibility in complying with new sulfur standards for highway diesel fuel. As part of the process, the Panel requested and received comment on several ideas for flexibility that were suggested by small entity representatives (SERs) and Panel members. The Panel's recommendations are discussed in detail in the Panel Report, contained in the docket. In the NPRM, EPA sought public comment on several ideas that stemmed from the Panel's recommendations, as well as on the Panel's recommendations. Taking into consideration the comments received on these ideas, as well as additional business and technical information gathered about potentially affected small entities, we are finalizing certain of those options today, as discussed in detail in Section IV above.

In addition to our participation in the SBREFA process, we conducted our

own outreach, fact-finding, and analysis of the potential impacts of our regulations on small businesses. Some of the small refiners with whom we and the Panel met indicated their belief that their businesses may close due to the substantial costs, capital and other impacts of meeting the 15 ppm diesel fuel standard without either additional time or flexibility with respect to gasoline sulfur compliance. Based on these discussions and analyses, the Panel and we agree that small refiners would likely experience a significant and disproportionate financial hardship in reaching the objectives of our diesel fuel sulfur program. However, the Panel also noted that the burden imposed upon the small refiners by our sulfur requirements varied from refiner to refiner and could not be alleviated with a single provision. We agree with the Panel and are offering qualifying small refiners three options to choose from in moving toward compliance with the low sulfur diesel fuel requirements.

For today's action, we have structured a selection of temporary flexibilities for qualifying small refiners, both domestic and foreign, based on the factors described below. Generally, we structured these provisions to address small refiner hardship while expeditiously achieving air quality benefits and ensuring that the low sulfur diesel fuel coincides with the introduction of 2007 model year diesel vehicles. First, the compliance deadlines in the program, combined with flexibility for small refiners, will quickly achieve the air quality benefits of the program, while helping to ensure that small refiners will have adequate time to raise capital for new or revamped equipment. Second, we believe that allowing time for refinery sulfur-reduction technologies to be proven out by larger refiners before small refiners have to put them in place will likely allow for lower costs of these improvements in desulfurization technology (e.g., better catalyst technology or lower-pressure hydrotreater technology). Third, providing small refiners more time to comply will increase the availability of engineering and construction resources. Since most large and small refiners must install additional processing equipment to meet the sulfur requirements, there will be a tremendous amount of competition for technology services, engineering manpower, and construction management and labor. Finally, because the gasoline and diesel sulfur requirements will occur in approximately the same time frame, small refiners that produce both fuels

will have a greater difficulty than most other refiners in securing the necessary financing. Hence, any effort that increases small refiners' ability to stagger investments for low sulfur gasoline and diesel will facilitate compliance with the two programs. These factors are discussed further in Section IV.C.

Providing these options to assist small refiners experiencing hardship circumstances enables us to go forward with the 15 ppm sulfur standard beginning in 2006. Without this flexibility, the benefits of the 15 ppm standard would possibly not be achieved as quickly. By providing temporary relief to those refiners that need additional time, we are able to adopt a program that expeditiously reduces diesel sulfur levels in feasible manner for the industry as a whole. In addition, we believe the volume of diesel that will be affected by this hardship provision is marginal. We estimate that small refiners contribute approximately five percent of all domestic highway diesel fuel production.

The Final RFA evaluates the financial impacts of today's program on small entities. EPA believes that the regulatory alternatives finalized in this rule will provide substantial relief to qualifying small businesses from the potential adverse economic impacts of complying with today's rule. The three hardship options available to small refiners under today's rule are summarized below, and are discussed in more detail in Section IV.C and the FRFA.

500 ppm Option. A small refiner may continue to produce and sell diesel fuel meeting the current 500 ppm sulfur standard for four additional years, until May 31, 2010, provided that it reasonably ensures the existence of sufficient volumes of 15 ppm fuel in the marketing area(s) that it serves.

Small Refiner Credit Option. A small refiner that chooses to produce 15 ppm fuel prior to June 1, 2010 may generate and sell credits under the broader temporary compliance option. Since a small refiner has no requirement to produce 15 ppm fuel under this option, any fuel it produces at or below 15 ppm sulfur will qualify for generating credits.

Diesel/Gasoline Compliance Date Option. For small refiners that are also subject to the Tier 2/Gasoline sulfur program (40 CFR Part 80), the refiner may choose to extend by three years the duration of its applicable interim gasoline standards, provided that it also produces all its highway

diesel fuel at 15 ppm sulfur beginning June 1, 2006.

One alternative for which we sought public comment, but are not finalizing today, is an option of allowing small refiners to produce highway diesel fuel meeting a less stringent sulfur standard (e.g., 50 ppm). Some small refiners, and other refiners, commented that the costs of meeting a 50 ppm sulfur cap would be significantly less than those to meet a 15 ppm cap. However, we are not adopting less stringent sulfur standards for small refiners today, because the new diesel exhaust emissions control devices require diesel fuel with a sulfur content capped at 15 ppm in order to be viable and capable to meeting the 2007 emission standards. The need for 15 ppm sulfur diesel fuel is discussed in detail in Section III. Additional discussion of this issue can be found in the Response to Comments document. Additional information on the factual, policy, and legal reasons for the selection of alternatives considered for small refiners, and on any rejected alternatives, can be found in the FRFA, as well as in appropriate sections of the Preamble, RIA, and RTC.

As required by Section 212 of SBREFA, EPA also is preparing a small entity compliance guide to help small entities comply with this rule. Once available, small businesses will be able to obtain a copy through our web site at <http://www.epa.gov/otaq>.

C. Paperwork Reduction Act

This action establishes a standard for low sulfur diesel fuel that will become effective in 2006 and that involves the collection of information under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.* An Agency may not conduct or sponsor, and a person is not required to respond to a collection of information, unless it displays a currently valid OMB control number. The OMB control numbers for our regulations are listed in 40 CFR Part 9 and 48 CFR Chapter 15.

For 500 ppm diesel fuel standards currently in effect, the existing ICR is "Regulations of Fuel and Fuel Additives; Fuel Quality Regulations for Highway Diesel Sold in 1993 and Later Calendar Years; Recordkeeping Requirements," OMB Control Number 2060-0308, EPA ICR Number 1718.12 (expires July 31, 2001). Copies of this ICR may be obtained from Delores Evans, Office of Policy, Regulatory Information Division, U.S. Environmental Protection Agency (Mail Code 2137), 1200 Pennsylvania Avenue, NW., Washington, DC 20460. Please mark requests, "Attention: Desk Officer

for EPA" and include the ICR in any correspondence.

The Paperwork Reduction Act stipulates that ICR documents estimate the burden of activities that will be required of regulated parties within a three year time period. Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

The information collection requirements (ICR) for this rule as it relates to low sulfur (15 ppm) diesel fuel will undergo any required public notice and comment and be submitted for approval to OMB under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.* prior to any required information collection.

D. Intergovernmental Relations

1. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104-4, establishes requirements for federal agencies to assess the effects of their regulatory actions on state, local, and tribal governments, and the private sector. Under Section 202 of the UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with "federal mandates" that may result in expenditures to state, local, and tribal governments, in the aggregate, or to the private sector, of \$100 million or more for any single year. Before promulgating a rule, for which a written statement is needed, Section 205 of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost effective, or least burdensome alternative that achieves the objectives of the rule. The provisions of Section 205 do not apply when they are inconsistent with applicable law. Moreover, Section 205 allows EPA to adopt an alternative that is not the least costly, most cost effective, or least burdensome

alternative if EPA provides an explanation in the final rule of why such an alternative was adopted.

Before we establish any regulatory requirement that may significantly or uniquely affect small governments, including tribal governments, we must develop a small government plan pursuant to Section 203 of the UMRA. Such a plan must provide for notifying potentially affected small governments, and enabling officials of affected small governments to have meaningful and timely input in the development of our regulations with significant federal intergovernmental mandates. The plan must also provide for informing, educating, and advising small governments on compliance with the regulatory requirements.

This rule contains no federal mandates for state, local, or tribal governments as defined by the provisions of Title II of the UMRA. The rule imposes no enforceable duties on any of these governmental entities. Nothing in this rule will significantly or uniquely affect small governments.

EPA has determined that this rule contains federal mandates that may result in expenditures of more than \$100 million to the private sector in any single year. EPA considered and evaluated a wide range of regulatory alternatives before arriving at the program finalized today. EPA believes that today's final rule represents the least costly, most cost effective approach to achieve the air quality goals of the rule. The cost-benefit analysis required by the UMRA is discussed in Section V above and in the RIA. See the "Administrative Designation and Regulatory Analysis" Section (XI.A.) in today's preamble for further information regarding these analyses.

2. Executive Order 13084: Consultation and Coordination With Indian Tribal Governments

Under Executive Order 13084, EPA may not issue a regulation that is not required by statute, that significantly or uniquely affects the communities of Indian Tribal governments, and that imposes substantial direct compliance costs on those communities, unless the federal government provides the funds necessary to pay the direct compliance costs incurred by the tribal governments, or EPA consults with those governments. If EPA complies by consulting, Executive Order 13084 requires EPA to provide to the OMB, in a separately identified section of the preamble to the rule, a description of the extent of EPA's prior consultation with representatives of affected tribal governments, a summary of the nature

of their concerns, and a statement supporting the need to issue the regulation. In addition, Executive Order 13084 requires EPA to develop an effective process permitting elected officials and other representatives of Indian tribal governments "to provide meaningful and timely input in the development of regulatory policies on matters that significantly or uniquely affect their communities."

Today's rule does not significantly or uniquely affect the communities of Indian Tribal governments. The engine emissions, diesel fuel, and other related requirements for private businesses in today's rule will have national applicability, and thus will not uniquely affect the communities of Indian Tribal Governments. Further, no circumstances specific to such communities exist that will cause an impact on these communities beyond those discussed in the other sections of this rule. Thus, EPA's conclusions regarding the impacts from the implementation of today's rule discussed in the other sections of this preamble are equally applicable to the communities of Indian Tribal governments. Accordingly, the requirements of Section 3(b) of Executive Order 13084 do not apply to this rule.

E. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (NTTAA), Section 12(d) of Public Law 104-113, directs EPA to use voluntary consensus standards in its regulatory activities unless it would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) developed or adopted by voluntary consensus standards bodies. The NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards.

This rule references technical standards adopted by the Agency through previous rulemakings. No new technical standards are established in today's rule. The standards referenced in today's rule involve the measurement of diesel fuel parameters and engine emissions. The measurement standards for diesel fuel parameters referenced in today's rule are all voluntary consensus standards. The engine emissions measurement standards referenced in today's rule are government-unique standards that were developed by the Agency through previous rulemakings.

These standards have served the Agency's emissions control goals well since their implementation and have been well accepted by industry. EPA is not aware of any voluntary consensus standards for the measurement of engine emissions. Therefore, the Agency is using the existing EPA-developed standards found in 40 CFR Part 86 for the measurement of engine emissions.

F. Executive Order 13045: Children's Health Protection

Executive Order 13045, "Protection of Children from Environmental Health Risks and Safety Risks" (62 FR 19885, April 23, 1997) applies to any rule that (1) is determined to be "economically significant" as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, Section 5-501 of the Order directs the Agency to evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

This rule is subject to the Executive Order because it is an economically significant regulatory action as defined by Executive Order 12866 and it concerns in part an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children.

This rulemaking will achieve significant reductions of various emissions from heavy-duty engines, including NO_x, PM, VOCs and air toxics. These pollutants raise concerns regarding environmental health or safety risks that EPA has reason to believe may have a disproportionate effect on children, such as impacts from ozone, PM and certain toxic air pollutants. See Section II and the RIA for a further discussion of these issues.

The effects of ozone and PM on children's health were addressed in detail in EPA's rulemaking to establish the NAAQS for these pollutants, and EPA is not revisiting those issues here. The emission reductions from the strategies in this rulemaking will further reduce air toxics and the related adverse impacts on children's health. In a separate rulemaking under Section 202(l) of the Act, EPA addresses the emissions of hazardous air pollutants from motor vehicles and fuels, and the appropriate level of control of HAPs from these sources. It is important to note that the air toxics reductions that the Agency expects to achieve based on

today's action are an integral part of the Agency's comprehensive strategy to address air toxics from motor vehicles under section 202(l).

In this rule, EPA has evaluated several regulatory strategies for reductions in emissions from heavy-duty engines. (See Section III of this rule as well as the RIA.) For the reasons described there, EPA believes that the strategies are preferable under the CAA to other potentially effective and reasonably feasible alternatives considered by the Agency, for purposes of reducing emissions from these sources as a way of helping areas achieve and maintain the NAAQS for ozone and PM. Moreover, EPA believes that it has selected for this rule the most stringent and effective control reasonably feasible at this time, in light of the technology and cost requirements of the Act.

G. Executive Order 13132: Federalism

Executive Order 13132, entitled "Federalism" (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure "meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications." "Policies that have federalism implications" is defined in the Executive Order to include regulations that have "substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government."

Under Section 6 of Executive Order 13132, EPA may not issue a regulation that has federalism implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by State and local governments, or EPA consults with State and local officials early in the process of developing the regulation. EPA also may not issue a regulation that has federalism implications and that preempts State law, unless the Agency consults with State and local officials early in the process of developing the regulation.

Section 4 of the Executive Order contains additional requirements for rules that preempt State or local law, even if those rules do not have federalism implications (i.e., the rules will not have substantial direct effects on the States, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government). Those requirements include providing all

affected State and local officials notice and an opportunity for appropriate participation in the development of the regulation. If the preemption is not based on express or implied statutory authority, EPA also must consult, to the extent practicable, with appropriate State and local officials regarding the conflict between State law and Federally protected interests within the agency's area of regulatory responsibility.

This rule does not have federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. Section 211(d)(4)(A) of the CAA prohibits states from prescribing or attempting to enforce controls or prohibitions respecting any fuel characteristic or component if EPA has prescribed a control or prohibition applicable to such fuel characteristic or component under Section 211(c)(1) of the Act. This rule merely modifies existing EPA diesel fuel and heavy-duty vehicle standards and therefore will merely continue an existing preemption of State and local law as discussed in Section VI. Thus, Executive Order 13132 does not apply to this rule.

Although Section 6 of Executive Order 13132 does not apply to this rule, EPA did consult with representatives of various State and local governments in developing this rule. In particular EPA consulted with the State of Alaska in the design of the program as it applies to them, as discussed in Section IV. EPA also talked to representatives from the State of California as well as representatives from STAPPA/ALAPCO, which represents state and local air pollution officials.

H. Congressional Review Act

The Congressional Review Act, 5 U.S.C. 801 *et seq.*, as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the **Federal Register**. This rule is a "major rule" as defined by 5 U.S.C. 804(2).

XI. Statutory Provisions and Legal Authority

Statutory authority for the engine controls finalized in this document can be found in Sections 202, 203, 206, 207, 208, and 301 of the CAA, as amended, 42 U.S.C. 7521, 7522, 7525, 7541, 7542, and 7601.

Statutory authority for the fuel controls finalized in this notice comes from Section 211(c) and 211(i) of the CAA, which allows EPA to regulate fuels that either contribute to air pollution which endangers public health or welfare or which impair emission control equipment which is in general use or has been in general use. Additional support for the procedural and enforcement-related aspects of the fuel's controls in today's rule, including the record keeping requirements, comes from Sections 114(a) and 301(a) of the CAA.

List of Subjects

40 CFR Part 69

Environmental protection, Air pollution control.

40 CFR Part 80

Environmental protection, Fuel additives, Gasoline, Imports, Incorporation by reference, Labeling, Motor vehicle pollution, Penalties, Reporting and recordkeeping requirements.

40 CFR Part 86

Environmental protection, Administrative practice and procedure, Confidential business information, Incorporation by reference, Labeling, Motor vehicle pollution, Reporting and recordkeeping requirements.

Dated: December 21, 2000.

Carol M. Browner,
Administrator.

For the reasons set forth in the preamble, we amend parts 69, 80 and 86 of title 40 of the Code of Federal Regulations to read as follows:

PART 69—SPECIAL EXEMPTIONS FROM THE REQUIREMENTS OF THE CLEAN AIR ACT

1. The authority citation for part 69 is revised to read as follows:

Authority: 42 U.S.C. 7545(c), (g) and (i), and 7625–1.

Subpart E—Alaska

2. Section 69.51 of subpart E is revised to read as follows:

§ 69.51 Motor vehicle diesel fuel.

(a) Diesel fuel that is designated for use only in Alaska and is used only in

Alaska, is exempt from the sulfur standard of 40 CFR 80.29(a)(1) and the dye provisions of 40 CFR 80.29(a)(3) and 40 CFR 80.29(b) until the implementation dates of 40 CFR 80.500, provided that:

(1) The fuel is segregated from non-exempt diesel fuel from the point of such designation; and

(2) On each occasion that any person transfers custody or title to the fuel, except when it is dispensed at a retail outlet or wholesale purchaser-consumer facility, the transferor must provide to the transferee a product transfer document stating:

This diesel fuel is for use only in Alaska. It is exempt from the federal low sulfur standards applicable to highway diesel fuel and red dye requirements applicable to non-highway diesel fuel only if it is used in Alaska.

(b) Beginning on the implementation dates in 40 CFR 80.500, diesel fuel that is designated for use in Alaska or is used in Alaska, is subject to the applicable provisions of 40 CFR Part 80, Subpart I, except as provided under paragraph (c) of this section. The Governor of Alaska may submit for EPA approval, by April 1, 2002, a plan for implementing the sulfur standard in Alaska as an alternative to the temporary compliance option provided under §§ 80.530–80.532. If EPA approves an alternative plan, the provisions as approved by EPA under that plan shall apply to the diesel fuel subject to this paragraph (b).

(c) If such diesel fuel is designated as fuel that does not comply with the standards and requirements for motor vehicle diesel fuel under 40 CFR Part 80, Subpart I, it is exempt from the dye presumption of 40 CFR 80.520(b)(2) provided that:

(1) The fuel is segregated from all motor vehicle diesel fuel.

(2) On each occasion that any person transfers custody or title to the fuel, except when it is dispensed at a retail outlet or wholesale purchaser-consumer facility, the transferor must provide to the transferee a product transfer document complying with the requirements of 40 CFR 80.590(a) through (d) and (g), and stating:

This diesel fuel is for use only in Alaska and is not for use in highway vehicles. It is exempt from the red dye requirement applicable to non-highway diesel fuel only if it is used in Alaska.

(3) Any pump dispensing the fuel must comply with the labeling requirements in 40 CFR 80.570(c).

PART 80—REGULATION OF FUELS AND FUEL ADDITIVES

3. The authority citation for part 80 is revised to read as follows:

Authority: 42 U.S.C. 7414, 7545, and 7601(a).

4. Section 80.2 is amended by revising paragraphs (x) and (y) and adding paragraphs (bb), (nn), and (xx) to read as follows:

§ 80.2 Definitions.

* * * * *

(x) *Diesel fuel* means any fuel sold in any state or Territory of the United States and suitable for use in diesel motor vehicles, diesel motor vehicle engines or diesel nonroad engines, and which is commonly or commercially known or sold as diesel fuel.

(y) *Motor vehicle diesel fuel* means any diesel fuel, or any distillate product, that is used, intended for use, or made available for use, as a fuel in diesel motor vehicles or diesel motor vehicle engines.

* * * * *

(bb) *Sulfur percentage* is the percentage of sulfur in diesel fuel by weight, as determined using the applicable sampling and testing methodologies set forth in § 80.580.

* * * * *

(nn) *Batch of motor vehicle diesel fuel* means a quantity of diesel fuel which is homogeneous with regard to those properties that are specified for motor vehicle diesel fuel under subpart I of this part.

* * * * *

(xx) *Motor vehicle diesel fuel additive* means any substance not composed solely of carbon and/or hydrogen, or of diesel blendstocks, that is added, intended for adding, used, or offered for use in motor vehicle diesel fuel subsequent to the production of diesel fuel by processing crude oil from refinery processing units, or in diesel motor vehicle fuel systems.

* * * * *

5. Section 80.29 is amended by revising paragraphs (a) and (b), to read as follows:

§ 80.29 Controls and prohibitions on diesel fuel quality.

(a) *Prohibited activities.* Beginning October 1, 1993 and continuing until the implementation dates for subpart I of part 80 as specified in § 80.500, except as provided in 40 CFR 69.51, no person, including but not limited to, refiners, importers, distributors, resellers, carriers, retailers or wholesale purchaser-consumers, shall manufacture, introduce into commerce,

sell, offer for sale, supply, store, dispense, offer for supply or transport any diesel fuel for use in motor vehicles, unless the diesel fuel:

(1) Has a sulfur percentage, by weight, no greater than 0.05 percent;

(2)(i) Has a cetane index of at least 40; or

(ii) Has a maximum aromatic content of 35 volume percent; and

(3) Is free of visible evidence of the dye solvent red 164; unless it is used in a manner that is tax-exempt as defined under section 4082 of the Internal Revenue Code (26 U.S.C. 4082).

(b) *Determination of compliance.* (1) Any diesel fuel which does not show visible evidence of being dyed with dye solvent red 164 (which has a characteristic red color in diesel fuel) shall be considered to be available for use in diesel motor vehicles and motor vehicle engines, and shall be subject to the prohibitions of paragraph (a) of this section.

(2) Compliance with the sulfur, cetane, and aromatics standards in paragraph (a) of this section shall be determined based on the level of the applicable component or parameter, using the sampling methodologies specified in § 80.330(b), as applicable, and the appropriate testing methodologies specified in § 80.580(a) for sulfur, § 80.2(w) for cetane index, and § 80.2(z) for aromatic content. Any evidence or information, including the exclusive use of such evidence or information, may be used to establish the level of the applicable component or parameter in the diesel fuel, if the evidence or information is relevant to whether that level would have been in compliance with the standard if the appropriate sampling and testing methodology had been correctly performed. Such evidence may be obtained from any source or location and may include, but is not limited to, test results using methods other than the compliance methods in this paragraph (b), business records, and commercial documents.

(3) Determination of compliance with the requirements of this section other than the standards described in paragraph (a) of this section, and determination of liability for any violation of this section, may be based on information obtained from any source or location. Such information may include, but is not limited to, business records and commercial documents.

* * * * *

6. Section 80.30 is amended by revising paragraphs (g)(2)(ii) and (g)(4)(i), and adding paragraph (h), to read as follows:

§ 80.30 Liability for violations of diesel fuel controls and prohibitions.

* * * * *

(g) Defenses. * * *

* * * * *

(2) * * *

(ii) Test results, performed in accordance with the applicable sampling and testing methodologies set forth in §§ 80.2(w), 80.2(z), 80.2(bb), and 80.580, which evidence that the diesel fuel determined to be in violation was in compliance with the diesel fuel standards of § 80.29(a) when it was delivered to the next party in the distribution system;

* * * * *

(4) * * *

(i) Test results, performed in accordance with the applicable sampling and testing methodologies set forth in §§ 80.2(w), 80.2(z), 80.2(bb), and 80.580, which evidence that the diesel fuel determined to be in violation was in compliance with the diesel fuel standards of § 80.29(a) when it was delivered to the next party in the distribution system;

* * * * *

(h) *Detection of violations.* In paragraphs (a) through (f) of this section, the term "is detected at" means that the violation existed at the facility in question, and the existence of the violation at that facility may be established through evidence obtained or created at that facility, at any other location, and by any party.

7. Section 80.215 is amended by revising paragraph (b) to read as follows:

§ 80.215 What is the scope of the geographic phase-in program?

* * * * *

(b) *Duration of the program.* (1) The geographic phase-in program applies to the 2004, 2005, and 2006 annual averaging periods, except as provided in paragraph (b)(2) of this section.

(2) Subject to the provisions of § 80.540, the geographic phase-in program shall also apply to the 2007 and 2008 annual averaging period for refiners approved for GPA standards in 2007 and 2008 under § 80.540.

* * * * *

8. Section 80.220 is amended by adding paragraph (c) to read as follows:

§ 80.220 What are the downstream standards for GPA gasoline?

* * * * *

(c) Notwithstanding paragraph (a) of this section, the sulfur content standard of 326 ppm at any downstream location may be extended as provided under § 80.540(m).

9. Section 80.240 is amended by adding paragraph (e), to read as follows:

§ 80.240 What are the small refiner gasoline sulfur standards?

* * * * *

(e) Notwithstanding paragraph (a) of this section, the temporary sulfur standards for small refiners may be extended as provided under § 80.553.

10. Subpart I is added to part 80 to read as follows:

Subpart I—Motor Vehicle Diesel Fuel**General Information**

Sec.

80.500 What are the implementation dates for the diesel fuel sulfur control program?

80.501 What diesel fuel is subject to the provisions of this subpart?

80.502–80.519 [Reserved]

Motor Vehicle Diesel Fuel Standards and Requirements

80.520 What are the standards and dye requirements for motor vehicle diesel fuel?

80.521 What are the standards and identification requirements for motor vehicle diesel fuel additives?

80.522 May used motor oil be dispensed into diesel motor vehicles?

80.523 What diesel fuel designation requirements apply to refiners and importers?

80.524 What sulfur content standard applies to motor vehicle diesel fuel downstream of the refinery or importer?

80.525 What requirements apply to kerosene blenders?

80.526 [Reserved]

80.527 Under what conditions may motor vehicle diesel fuel subject to the 15 ppm sulfur standard be downgraded as motor vehicle diesel fuel subject to the 500 ppm sulfur standard?

80.528–80.529 [Reserved]

Temporary Compliance Option

80.530 Under what conditions can 500 ppm motor vehicle diesel fuel be produced or imported?

80.531 How are motor vehicle diesel fuel credits generated?

80.532 How are credits used and transferred?

80.533–80.539 [Reserved]

Geographic Phase-In Provisions

80.540 How may a refiner be approved to produce gasoline under the GPA gasoline sulfur standards in 2007 and 2008?

80.541–80.549 [Reserved]

Small Refiner Hardship Provisions

80.550 What is the definition of a small refiner under this subpart?

80.551 How does a refiner obtain approval as a small refiner under this subpart?

80.552 What compliance options are available to small refiners?

80.553 Under what conditions may the small refiner gasoline sulfur standards be

extended for a small refiner of motor vehicle diesel fuel?

80.554–80.559 [Reserved]

Other Hardship Provisions

80.560 How can a refiner seek temporary relief from the requirements of this subpart in case of extreme hardship circumstances?

80.561 How can a refiner or importer seek temporary relief from the requirements of this subpart in case of extreme unforeseen circumstances?

80.562–80.569 [Reserved]

Labeling Requirements

80.570 What labeling requirements apply to retailers and wholesale purchaser-consumers of motor vehicle diesel fuel?

80.571–80.579 [Reserved]

Sampling and Testing

80.580 What are the sampling and testing methods for sulfur?

80.581–80.589 [Reserved]

Recordkeeping and Reporting Requirements

80.590 What are the product transfer document requirements for motor vehicle diesel fuel?

80.591 What are the product transfer document requirements for additives to be used in motor vehicle diesel fuel?

80.592 What records must be kept?

80.593 What are the reporting and registration requirements for refiners and importers of motor vehicle diesel fuel subject to temporary refiner relief standards?

80.594 What are the pre-compliance reporting requirements?

80.595 How does a refiner apply for a motor vehicle diesel fuel volume baseline?

80.596 How is a refinery motor vehicle diesel fuel volume baseline calculated?

80.597 What are the registration requirements?

80.598–80.599 [Reserved]

Exemptions

80.600 What are the requirements for obtaining an exemption for motor vehicle diesel fuel used for research, development or testing purposes?

80.601 What requirements apply to motor vehicle diesel fuel for use in the Territories?

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80.603–80.609 [Reserved]

Violation Provisions

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80.615–80.619 [Reserved]**Provisions for Foreign Refiners and Importers for Motor Vehicle Diesel Fuel Subject to a Temporary Compliance Option or Hardship Provision****80.620 What are the additional requirements for motor vehicle diesel fuel produced by foreign refineries subject to a temporary refiner compliance option or hardship provisions?****Subpart I—Motor Vehicle Diesel Fuel****General Information****§ 80.500 What are the implementation dates for the diesel fuel sulfur control program?**

The implementation dates for standards for motor vehicle diesel fuel and diesel fuel additives, and for other provisions of this subpart, are as follows:

(a) *Implementation date for standards applicable to production or importation of motor vehicle diesel fuel, and to motor vehicle diesel fuel additives.*

Except as provided in paragraph (d) of this section, beginning June 1, 2006:

(1) The standards and requirements under § 80.520(a) and (b) shall apply to any motor vehicle diesel fuel produced or imported by any refiner or importer; and

(2) The standards and requirements under § 80.521 shall apply to any motor vehicle diesel fuel additive.

(b) *Implementation date for standards applicable to motor vehicle diesel fuel downstream of the refinery or importer.*

Except as provided in paragraphs (c) and (d) of this section, beginning July 15, 2006, the standards and requirements under § 80.520(a) and (b) shall apply to any motor vehicle diesel fuel at any downstream location.

(c) *Implementation date for standards applicable to motor vehicle diesel fuel at retail outlets and wholesale purchaser-consumer facilities.* Except as provided in paragraph (d) of this section, beginning September 1, 2006, the standards and requirements under § 80.520(a) and (b) shall apply to any motor vehicle diesel fuel at any retail outlet or wholesale purchaser-consumer facility.

(d) *Implementation date for motor vehicle diesel fuel subject to the 500 ppm sulfur content standard in § 80.520(c).* (1) Beginning June 1, 2006, the sulfur content standard of § 80.520(c) shall apply to motor vehicle diesel fuel, but only where authorized under, and subject to, an applicable provision of this Subpart.

(2) Beginning June 1, 2010, the sulfur content standard of § 80.520(c) shall no longer apply to any motor vehicle diesel

fuel produced or imported by any refiner or importer.

(3) Beginning October 1, 2010, the sulfur content standard of § 80.520(c) shall no longer apply to any motor vehicle diesel fuel at any downstream location other than a retail or wholesale purchaser-consumer facility.

(4) Beginning December 1, 2010, the sulfur content standard of § 80.520(c) shall no longer apply to any motor vehicle diesel fuel.

(e) *Other provisions.* All other provisions of this subpart apply beginning June 1, 2006, unless another date is specified.

(f) For purposes of this subpart, the term “downstream location” shall mean any point in the diesel fuel distribution system downstream from refineries and import facilities, including diesel fuel at facilities of distributors, carriers, retailers, kerosene blenders, and wholesale purchaser-consumers.

§ 80.501 What diesel fuel is subject to the provisions of this subpart?

(a) *Included fuel and additives.* The provisions of this subpart apply to motor vehicle diesel fuel as defined in § 80.2(y), motor vehicle diesel fuel additives as defined in § 80.2(xx), and motor oil that is used as or intended for use as fuel in diesel motor vehicles or is blended with diesel fuel for use in diesel motor vehicles at any downstream location, as provided in § 80.500(f).

(b) *Excluded fuel.* The provisions of this subpart do not apply to motor vehicle diesel fuel that is designated for export outside the United States, and identified for export by a transfer document as required under § 80.590.

§§ 80.502–80.519 [Reserved]**Motor Vehicle Diesel Fuel Standards and Requirements****§ 80.520 What are the standards and dye requirements for motor vehicle diesel fuel?**

(a) *Standards.* All motor vehicle diesel fuel is subject to the following per-gallon standards:

(1) *Sulfur content.* 15 parts per million (ppm) maximum, except as provided in paragraph (c) of this section;

(2) *Cetane index and aromatic content.* (i) A minimum cetane index of 40; or
(ii) A maximum aromatic content of 35 volume percent.

(b) *Dye requirements.* (1) All motor vehicle diesel fuel shall be free of visible evidence of dye solvent red 164 (which has a characteristic red color in diesel fuel), except for motor vehicle diesel fuel that is used in a manner that

is tax exempt under section 4082 of the Internal Revenue Code.

(2) Any diesel fuel that does not show visible evidence of dye solvent red 164 shall be considered to be motor vehicle diesel fuel and subject to all the requirements of this subpart for motor vehicle diesel fuel, except for diesel fuel designated or classified for use only in:

(i) The State of Alaska as provided under 40 CFR 69.51; or

(ii) Jet aircraft, a research and development testing program exempted under 80.600, or motor vehicles covered by an exemption under § 80.602.

(c) Pursuant and subject to the provisions of §§ 80.530–80.532, 80.552(a), 80.560–80.561, and 80.620, only motor vehicle diesel fuel produced or imported in full compliance with the requirements of those provisions is subject to the following per-gallon standard for sulfur content: 500 ppm maximum.

(d) Kerosene and any other distillate product, that meets the definition of motor vehicle diesel fuel, is subject to the standards and requirements under this section.

§ 80.521 What are the standards and identification requirements for motor vehicle diesel fuel additives?

(a) Except as provided in paragraph (b) of this section, any motor vehicle diesel fuel additive that is added, intended for adding, used, or offered for use in motor vehicle diesel fuel subject to the 15 ppm sulfur content standard, at any downstream location must:

(1) Have a sulfur content not exceeding 15 ppm; and

(2) Be accompanied a product transfer document pursuant to § 80.591 indicating that the additive complies with the 15 ppm standard for motor vehicle diesel fuel, except for those diesel fuel additives which are only sold in containers for use by the ultimate consumer of motor vehicle diesel fuel and which are subject to the requirements of § 80.591(d).

(b) Any motor vehicle diesel fuel additive that is added, intended for adding, used, or offered for use in motor vehicle diesel fuel subject to the 15 ppm sulfur content standard may have a sulfur content exceeding 15 ppm provided that:

(1) The additive is added or used in the motor vehicle diesel fuel in a quantity less than 1% by volume of the resultant additive/diesel fuel mixture;

(2) The product transfer document pursuant to § 80.591 indicates that the additive may exceed the 15 ppm sulfur standard, that improper use of the additive may result in non-complying fuel, and that the additive complies

with the sulfur information requirements of § 80.591(b)(3); and

(3) The additive is not used or intended for use by an ultimate consumer in diesel motor vehicles.

§ 80.522 May used motor oil be dispensed into diesel motor vehicles?

No person may introduce used motor oil, or used motor oil blended with diesel fuel, into the fuel system of model year 2007 or later diesel motor vehicles, unless both of the following requirements have been met:

(a) The vehicle or engine manufacturer has received a Certificate of Conformity under 40 CFR Part 86 and the certification of the vehicle or engine configuration is explicitly based on emissions data with the addition of motor oil; and

(b) The oil is added in a manner and rate consistent with the conditions of the Certificate of Conformity.

§ 80.523 What diesel fuel designation requirements apply to refiners and importers?

Any refiner or importer shall accurately and clearly designate all fuel it produces or imports for use in diesel motor vehicles as either motor vehicle diesel fuel meeting the 15 ppm sulfur standard under § 80.520(a)(1) or as motor vehicle diesel fuel meeting the 500 ppm sulfur standard under § 80.520(c).

§ 80.524 What sulfur content standard applies to motor vehicle diesel fuel downstream of the refinery or importer?

(a) Except as provided in paragraph (b) of this section or otherwise in the provisions of this Subpart I, the 15 ppm sulfur content standard of § 80.520(a) shall apply to all motor vehicle diesel fuel at any downstream location.

(b) Prior to the October 1, 2010 and December 1, 2010 dates specified in § 80.500(d)(3) and (4), the 500 ppm sulfur content standard of § 80.520(c) shall apply to motor vehicle diesel fuel at any downstream location, provided the following conditions are met:

(1) The product transfer documents comply with the requirements of § 80.590, including indicating that the fuel complies with the 500 ppm sulfur standard for motor vehicle diesel fuel and is for use only in model year 2006 and older diesel motor vehicles, or the fuel is downgraded pursuant to the provision of § 80.527 to motor vehicle diesel fuel subject to the 500 ppm sulfur standard;

(2) The motor vehicle diesel fuel is not represented or intended for sale or use as subject to the 15 ppm sulfur content standard, and is not dispensed, or intended to be dispensed, into model

year 2007 and later motor vehicles by a retailer or wholesale purchaser-consumer; and

(3) For retailers or wholesale purchaser-consumers, the pump labeling requirements of § 80.570(a) are satisfied.

§ 80.525 What requirements apply to kerosene blenders?

(a) For purposes of this subpart, a kerosene blender means any refiner who produces motor vehicle diesel fuel by adding kerosene to motor vehicle diesel fuel downstream of the refinery that produced the motor vehicle diesel fuel or of the import facility where the motor vehicle diesel fuel was imported, without altering the quality or quantity of the motor vehicle diesel fuel in any other manner.

(b) Kerosene blenders are not subject to the requirements of this subpart applicable to refiners of motor vehicle diesel fuel, but are subject to the requirements and prohibitions applicable to downstream parties.

(c) For purposes of compliance with § 80.524(b)(1), the product transfer documents must indicate that the fuel to which kerosene is added complies with the 500 ppm sulfur standard for motor vehicle diesel fuel and is for use only in model year 2006 and older diesel motor vehicles, or the fuel is properly downgraded pursuant to the provisions of § 80.527 to motor vehicle diesel fuel subject to the 500 ppm sulfur standard.

(d) Kerosene that a kerosene blender adds or intends to add to motor vehicle diesel fuel subject to the 15 ppm sulfur content standard must meet the 15 ppm sulfur content standard, and the following requirements:

(1) The product transfer document received by the kerosene blender indicates that the kerosene is motor vehicle diesel fuel that complies with the 15 ppm sulfur content standard; or

(2) The kerosene blender has test results indicating the kerosene complies with the 15 ppm sulfur standard.

§ 80.526 [Reserved]

§ 80.527 Under what conditions may motor vehicle diesel fuel subject to the 15 ppm sulfur standard be downgraded as motor vehicle diesel fuel subject to the 500 ppm sulfur standard?

(a) *Definition.* As used in this section, *downgrade* means changing the classification of motor vehicle diesel fuel subject to the 15 ppm sulfur standard under § 80.520(a)(1) to motor vehicle diesel fuel subject to the 500 ppm sulfur standard under § 80.520(c). A *downgrade* occurs when the change in classification takes place. Changing the classification of motor vehicle diesel

fuel subject to the 15 ppm sulfur standard under § 80.520(a)(1) to any fuel that is not motor vehicle diesel fuel is not a *downgrade* for purposes of this section and is not limited by the provisions of this section.

(b) *Who may downgrade.* Any person in the motor vehicle diesel fuel distribution system who has custody or title to motor vehicle diesel fuel may downgrade it.

(c) *Downgrading limitation.* (1) Except as provided in paragraphs (d) and (e) of this section, a person described in paragraph (c)(4) of this section may not downgrade a total of more than 20% of the motor vehicle diesel fuel (by volume) that is subject to the 15 ppm sulfur standard of § 80.520(a)(1) while such person has title to or custody of such fuel. In addition, a refiner or importer may only downgrade (subject to the 20% limit) motor vehicle diesel fuel designated under § 80.523 as subject to 15 ppm sulfur standard under § 80.520(a)(1) after it has been so designated and after it has been moved from the refinery's, or import facility's, storage tank or other vessel where the diesel fuel batch was designated as subject to the sulfur standard of § 80.520(a) under § 80.523.

(2) The limitation of paragraph (c)(1) of this section applies separately to each person who has custody or title of the fuel when it is downgraded.

(3) Compliance with the limitation of paragraph (c)(1) of this section shall be on an annual, calendar year basis (except in 2006 compliance shall be for the period June 1, 2006 through December 31, 2006, and in 2010 compliance shall be for the period January 1 through May 31).

(4) The limitation of this section applies to persons who sell, offer for sale, dispense, supply, store or transport diesel fuel. The limitation does not apply to persons who are transferred custody or title to motor vehicle diesel fuel when it is dispensed into motor vehicles at retail outlets.

(d) *Diesel fuel in violation of the 15 ppm standard.* Where motor vehicle diesel fuel subject to the sulfur standard of § 80.520(a)(1) is found to be in violation of any standard under § 80.520(a) and is consequently downgraded, the person, or persons, having custody and title to the fuel at the time it is found to be in violation must include the volume of such fuel toward its 20% volume limitation under paragraph (c)(1) of this section, unless the person, or persons, demonstrates that it did not cause the violation.

(e) *Special provisions for retail outlets and wholesale purchaser-consumer facilities.* Notwithstanding the

provisions of paragraph (c)(1) of this section, retailers and wholesale purchaser-consumers shall comply with the downgrading limitation as follows:

(1) Retailers and wholesale purchaser-consumers who sell, offer for sale, or dispense motor vehicle diesel fuel that is subject to the 15 ppm sulfur standard under § 80.520(a)(1) are exempt from the volume limitations of paragraph (c)(1) of this section.

(2) A retailer or wholesale purchaser-consumer who does not sell, offer for sale, or dispense motor vehicle diesel fuel subject to the 15 ppm sulfur standard under § 80.520(a)(1) may not downgrade a volume of motor vehicle diesel fuel classified as subject to the 15 ppm sulfur standard greater than 20% of the total volume of motor vehicle diesel fuel that it sells, offers for sale, or dispenses annually.

(f) *Product transfer documents.* If the custody or title to any motor vehicle diesel fuel that is downgraded under this section is transferred, the product transfer documents under § 80.590 for such fuel must reflect the change in classification to motor vehicle diesel fuel subject to the 500 ppm sulfur standard.

(g) *Recordkeeping requirement.* Any person subject to the provisions of this section, as described in paragraph (c)(4) of this section, who downgrades any motor vehicle diesel fuel previously classified as subject to the 15 ppm sulfur standard under § 80.520(a)(1) during any calendar year, must make and maintain records sufficient to show compliance with the requirements and limitations of this section.

(h) *Termination of downgrading limitations.* The provisions of this section shall not apply after May 31, 2010.

§§ 80.528–80.529 [Reserved.]

Temporary Compliance Option

§ 80.530 Under what conditions can 500 ppm motor vehicle diesel fuel be produced or imported?

(a) Beginning June 1, 2006, a refiner or importer may produce or import motor vehicle diesel fuel subject to the 500 ppm sulfur content standard of § 80.520(c) if all of the following requirements are met:

(1) Each batch of motor vehicle diesel fuel subject to the 500 ppm sulfur content standard must be designated by the refiner or importer as subject to such standard, pursuant to § 80.523.

(2) The refiner or importer must meet the requirements for product transfer documents in § 80.590 for each batch subject to the 500 ppm sulfur content standard.

(3)(i) The volume V_{500} of diesel fuel that is produced or imported during a compliance period, as provided in paragraph (a)(5) of this section, may not exceed the following volume limit:

(A) For compliance periods prior to 2010, 20% of the volume V_t of diesel fuel that is produced or imported during a compliance period plus an additional volume of motor vehicle diesel fuel represented by credits properly generated and used pursuant to the requirements of §§ 80.531 and 80.532.

(B) For the compliance period of January 1, 2010 through May 31, 2010, the volume of motor vehicle diesel fuel represented by credits properly generated and used pursuant to the requirements of §§ 80.531 and 80.532.

(ii) The terms V_{500} and V_t have the meaning specified in § 80.531(a)(2).

(4) Compliance with the volume limit in paragraph (a)(3) of this section must be determined separately for each refinery. For an importer, such compliance must be determined separately for each Credit Trading Area (as defined in § 80.531) into which motor vehicle diesel fuel is imported. If a party is both a refiner and an importer, such compliance shall be determined separately for the refining and importation activities.

(5) Compliance with the volume limit in paragraph (a)(3) of this section shall be determined on a calendar year basis, where the calendar year period is from January 1st through December 31st. For the year 2006, compliance shall be determined for the period June 1, 2006 through December 31, 2006. For the year 2010, compliance shall be determined for the period of January 1, 2010 through May 31, 2010.

(6) Any motor vehicle diesel fuel produced or imported above the volume limit in paragraph (a)(3) of this section shall be subject to the 15 ppm sulfur content standard. However, for any compliance period prior to and including 2009, a refiner or importer may exceed the volume limit in paragraph (a)(3) of this section by no more than 5 percent of the volume V_t of diesel fuel produced or imported during the compliance period, provided that for the immediately following calendar year:

(i) The refiner or importer complies with the volume limit in paragraph (a)(3) of this section; and

(ii) The refiner or importer produces or imports a volume of motor vehicle diesel fuel subject to the 15 ppm sulfur standard, or obtains credits properly generated and used pursuant to the requirements of §§ 80.531 and 80.532 that represent a volume of motor vehicle diesel fuel, equal to the volume of the

exceedence for the prior compliance period.

(b) After May 31, 2010, no refiner or importer may produce or import motor vehicle diesel fuel subject to the 500 ppm sulfur content standard pursuant to this section.

§ 80.531 How are motor vehicle diesel fuel credits generated?

(a) *Generation of credits from June 1, 2006 through December 31, 2009.* (1) A refiner or importer may generate credits during the period June 1, 2006 through December 31, 2009, for motor vehicle diesel fuel produced or imported that is designated as subject to the 15 ppm sulfur content standard under § 80.520(a)(1). Credits may be generated only if the volume of motor vehicle diesel fuel designated under § 80.523 as subject to the 15 ppm sulfur standard of § 80.520(a) exceeds 80% of the total volume of diesel fuel produced or imported as described in paragraph (a)(2) of this section.

(2) The number of credits generated shall be calculated for each compliance period (as specified in § 80.530(a)(5)) as follows:

$$C = V_{15} - (0.80 \times V_t)$$

Where:

C = the positive number of credits generated, in gallons.

V_{15} = the total volume in gallons of motor vehicle diesel fuel produced or imported that is designated under § 80.523 as subject to the standards of § 80.520(a) during the compliance period.

V_{500} = the total volume in gallons of motor vehicle diesel fuel produced or imported that is designated under § 80.523 as subject to the 500 ppm sulfur standard under § 80.520(c) plus the total volume of any other diesel fuel (not including V_{15} , or diesel fuel that is dyed in accordance with § 80.520(b) at the refinery or import facility where the diesel fuel is produced or imported) represented as having a sulfur content not exceeding 500 ppm.

$$V_t = V_{15} + V_{500}.$$

(3) Credits shall be generated and designated as follows:

(i) Credits shall be generated separately for each refinery of a refiner.

(ii) Credits shall be generated separately for each credit trading area (CTA), as defined in paragraph (a)(5) of this section, into which motor vehicle diesel fuel is imported by an importer.

(iii) Credits shall be designated separately by year of generation and by CTA of generation. In the case of a refiner, credits shall also be designated by refinery, and in the case of an importer, credits shall also be designated by port of import.

(iv) Credits may not be generated by both a foreign refiner and by an importer for the same motor vehicle diesel fuel.

(4) Credits shall be generated by a foreign refiner as provided in § 80.620(c) and this section.

(5) For purposes of this subpart, the CTAs are:

(i) PADDs 1, 2, 3 and 4, as described in § 80.41(r), except as provided in paragraph (a)(5)(iv) of this section. The CTAs shall be designated as CTA 1, 2, 3, and 4, respectively, and correspond to PADD 1, 2, 3, and 4, respectively;

(ii) CTA 5 shall correspond to PADD 5, as described in § 80.41(r), except as provided in paragraphs (a)(5)(iii) and (iv) of this section;

(iii) The states of Hawaii and Alaska shall each be treated as a separate CTA and not a part of CTA 5. Alaska shall be CTA 6. Hawaii shall be CTA 7;

(iv) If any state (through a waiver of federal preemption under Section 211(c)(4) of the Clean Air Act, 42 U.S.C. 7545(c)(4)) implements a law or regulation that requires a greater volume of motor vehicle diesel fuel to meet a sulfur standard of less than or equal to 15 ppm than the volume that is required under this subpart, no motor vehicle diesel fuel produced in that state or imported directly into that state may generate credits under this subpart, effective on the implementation date of the sulfur program under the state statute or regulation that implements the more stringent state requirements.

(6) No credits may be generated under this paragraph (a) after December 31, 2009.

(7) No refinery may generate credits under both this paragraph (a) and under paragraph (e) of this section.

(b) *Generation of early credits from June 1, 2001 through May 31, 2005.* (1) Beginning June 1, 2001, a refiner or importer may generate one credit for each gallon of motor vehicle diesel fuel meeting the sulfur content standard in § 80.520(a)(1) that is used in vehicles with engines that are certified to meet the model year 2007 heavy duty engine PM standard under 40 CFR 86.007–11, or vehicles with retrofit technologies that achieve emission levels equivalent to the 2007 NO_x or PM emission standard verified as part of a retrofit program administered by EPA or a state. Such refiners and importers must comply with the requirements of paragraphs (b) and (d) of this section.

(2)(i) Any refiner or importer planning to generate credits under this paragraph must provide notice of intent to generate early credits at least 120 calendar days prior to the date it begins generating credits under this paragraph by submitting such notice to Attn: Early Diesel Credits Notice, at the address in § 80.595.

(ii) The notice shall include a detailed plan that demonstrates that the motor vehicle diesel fuel meeting the 15 ppm sulfur standard of § 80.520(a)(1) for which credits are generated under this paragraph will be used in vehicles with engines that are certified to meet the model year 2007 heavy duty engine PM standard under 40 CFR 86.007–11 or in vehicles with retrofit technologies that achieve emission levels equivalent to the 2007 NO_x or PM emission standard verified as part of a retrofit program administered by EPA or a state. The notice must include the refiner's or importer's detailed plan for ensuring that all motor vehicle diesel fuel that generates early credits under this paragraph will be segregated from all other motor vehicle diesel fuel not meeting the sulfur standard under § 80.520(a)(1), from the refinery or import facility to its ultimate use in motor vehicles.

(3) No credits may be generated under this paragraph (b) after May 31, 2005.

(4) A refiner or importer may generate credits under this paragraph and also generate credits under paragraph (a) of this section, and a small refiner, as defined under § 80.550, may generate credits under this paragraph (b) and paragraph (e) of this section.

(c) *Generation of early credits from June 1, 2005 through May 31, 2006.* (1) Beginning June 1, 2005, a refiner or importer may generate one credit for each gallon of motor vehicle diesel fuel that is dispensed at retail outlets or at wholesale-purchaser consumer facilities exclusively as motor vehicle diesel fuel meeting the 15 ppm sulfur standard in § 80.520(a)(1). Such refiners and importers must comply with the requirements of this paragraph (c) and paragraph (d) of this section.

(2)(i) Any refiner or importer planning to generate credits under this paragraph must provide notice of intent to generate early credits at least 120 calendar days prior to the date it begins generating credits under this paragraph (c).

(ii) The notice shall include a detailed plan that demonstrates that the motor vehicle diesel fuel meeting the sulfur standard under § 80.520(a)(1) will be dispensed exclusively at retail outlets or at wholesale-purchaser consumer facilities as 15 ppm sulfur content motor vehicle diesel fuel. The plan must demonstrate that the refiner or importer will assure that all motor vehicle diesel fuel that generates early credits under this paragraph (c) will be segregated from all other motor vehicle diesel fuel from the refinery or import facility to its ultimate use in motor vehicles.

(3) No credits may be generated under this paragraph after May 31, 2006.

(4) A refiner or importer may generate credits under this paragraph (c) and also generate credits under paragraph (a) of this section, and a small refiner, as defined under § 80.550, may generate credits under this paragraph (c) and paragraph (e) of this section.

(d) *Additional requirements for early credits.* Early credits generated under paragraphs (b) and (c) of this section are subject to the following additional requirements:

(1) The designation requirements of § 80.523, and all recordkeeping and annual reporting requirements of §§ 80.592, 80.593 and 80.594.

(2) Credits generated under paragraphs (b) and (c) of this section shall be generated separately by CTA as defined in paragraph (a)(5) of this section and must be designated by CTA of generation, and by the refiner and refinery, or by importer and port of import, as applicable.

(3) Credits may not be generated for the same fuel by both a foreign refiner and an importer.

(4) The plan under paragraph (b)(2)(ii) or (c)(2)(ii) of this section must include provisions to include information on product transfer documents and on pump stands dispensing the fuel identifying the fuel as 15 ppm sulfur content motor vehicle diesel fuel. The plan must also identify the specific retail outlets or wholesale purchaser-consumer facilities that the fuel will be provided to. The Administrator may require a refiner or importer to submit additional information, as needed.

(5) In addition to the reporting requirements under paragraph (d)(1) of this section, the refiner or importer must submit a report to the Administrator no later than the last day of February for the prior calendar year period (or for the period June 1, 2001 through December 31, 2001, the period June 1, 2005 through December 31, 2005, or the period January 1, 2006 through May 31, 2006, as applicable) demonstrating that all the motor vehicle diesel fuel produced or imported for which credits were generated met the applicable requirements of paragraph (b), (c), or (d)(4) of this section. If the Administrator finds that such credits did not in fact meet the requirements of paragraphs (b)(1) and (c)(1) of this section, as applicable, or if the Administrator determines that there is insufficient information to determine the validity of such credits, the Administrator may deny the credits submitted in whole or in part.

(e) *Credits generated by small refiners.* (1) Notwithstanding the provisions of paragraph (a) of this section, a small refiner that is approved by the EPA as

a small refiner under § 80.551(g) may generate credits under § 80.552(b). Such a small refiner may generate one credit for each gallon of motor vehicle diesel fuel produced that is designated under § 80.523 as subject to the 15 ppm sulfur standard under § 80.520(a)(1).

(2)(i) Credits may be generated under this paragraph (e) and § 80.552(b) only during the compliance periods beginning June 1, 2006 and ending on May 31, 2010. Credits shall be designated separately by refinery, separately by CTA of generation, and separately by annual compliance period. The annual compliance period for 2006 shall be June 1, 2006 through December 31, 2006. The annual compliance period for 2010 shall be January 1, 2010 through May 31, 2010.

(ii) The small refiner must meet the requirements of paragraphs (d)(1), (d)(2) and (d)(3) of this section, and the recordkeeping and reporting requirements of §§ 80.592, 80.593 and 80.594.

(iii) In addition, a foreign refiner that is approved by the Administrator to generate credits under § 80.552(b) shall comply with the requirements of § 80.620.

§ 80.532 How are credits used and transferred?

(a) *Credit use.* Credits generated under § 80.531 may be used to meet the volume limit of § 80.530(a)(3) provided that:

(1) The credits were generated and reported according to the requirements of this subpart; and

(2) The requirements of paragraphs (b), (c), (d), and (e) of this section are met.

(b) Credits generated under § 80.531 may be used by a refinery or by an importer to comply with section 80.530 by applying one credit for every gallon of motor vehicle diesel fuel needed to meet compliance with the volume limit of § 80.530(a)(3).

(c) Credits generated may be banked for use or transfer in a later compliance period or may be transferred to another refinery or importer for use as provided in paragraph (d) of this section.

(d) *Credit transfers.* (1) Credits obtained from another refinery or from another importer, including early credits and small refiner credits as described in § 80.531 (b), (c) (d), and (e), may be used to satisfy the volume limit of § 80.530(a)(3) if all the following conditions are met:

(i) The credits were generated in the same CTA as the CTA in which credits are used to achieve compliance;

(ii) The credits are used in compliance with the time period limitations for credit use in this subpart;

(iii) Any credit transfer takes place no later than the last day of February following the compliance period when the credits are used;

(iv) No credit may be transferred more than twice, as follows: The first transfer by the refiner or importer who generated the credit may only be made to a refiner or importer who intends to use the credit; if the transferee cannot use the credit, it may make a second and final transfer only to a refiner or importer who intends to use the credit. In no case may a credit be transferred more than twice before being used or terminated;

(v) The credit transferor must apply any credits necessary to meet the transferor's annual compliance requirements before transferring credits to any other refinery or importer;

(vi) No credits may be transferred that would result in the transferor having a negative credit balance; and

(vii) Each transferor must supply to the transferee records indicating the year the credits were generated, the identity of the refiner (and refinery) or importer who generated the credits, the CTA of credit generation, and the identity of the transferring party, if it is not the same party who generated the credits.

(2) In the case of credits that have been calculated or created improperly, or are otherwise determined to be invalid, the following provisions apply:

(i) Invalid credits cannot be used to achieve compliance with the transferee's volume requirements regardless of the transferee's good faith belief that the credits were valid.

(ii) The refiner or importer who used the credits, and any transferor of the credits, must adjust their credit records, reports and compliance calculations as necessary to reflect the proper credits.

(iii) Any properly created credits existing in the transferor's credit balance after correcting the credit balance, and after the transferor applies credits as needed to meet the compliance requirements at the end of the compliance period, must first be applied to correct the invalid transfers before the transferor trades or banks the credits.

(e) *Limitations on credit use.* (1) Credits may not be used to achieve compliance with any requirements of this subpart other than the volume limit of § 80.530(a)(3), unless specifically approved by the Administrator pursuant to a hardship relief petition under § 80.560 or § 80.561.

(2) A refiner or importer possessing credits must use all credits in its

possession prior to applying the credit deficit provisions of § 80.530(a)(6).

(3) No credits may be used to meet compliance with this subpart subsequent to the compliance period ending May 31, 2010.

§§ 80.533–80.539 [Reserved]

Geographic Phase-In Provisions

§ 80.540 How may a refiner be approved to produce gasoline under the GPA gasoline sulfur standards in 2007 and 2008?

(a) A refiner that has been approved by EPA under § 80.217 for the geographic phase-in area (GPA) gasoline sulfur content standards under § 80.216 may apply to EPA for approval to produce gasoline subject to the GPA standards in 2007 and 2008. Such application shall be submitted to EPA, at the address provided in § 80.595(b), by December 31, 2001. A foreign refiner must apply under the provisions of paragraph (n) of this section.

(b) The refiner must submit an application in accordance with the provisions of §§ 80.595 and 80.596. The application must also include information, as provided in § 80.594(c), demonstrating that starting no later than June 1, 2006, all motor vehicle diesel fuel produced by the refinery for United States use will comply with the 15 ppm sulfur content standard under § 80.520(a)(1), and that the volume of motor vehicle diesel fuel produced will comply with the volume requirements of paragraph (e) of this section.

(c) The Administrator may approve a refiner's application to produce gasoline subject to the GPA gasoline sulfur content standards in 2007 and 2008 if the provisions of paragraph (b) of this section are satisfied. In approving an application, the Administrator shall establish a motor vehicle diesel fuel volume baseline under §§ 80.595 and 80.596.

(d) Starting June 1, 2006, and continuing through December 31, 2008, all motor vehicle diesel fuel produced by a refiner that has been approved under paragraph (c) of this section to produce gasoline subject to the GPA gasoline sulfur content standards in 2007 and 2008, must be accurately designated under § 80.523 as meeting the 15 ppm sulfur content standard of § 80.520(a)(1).

(e) The total volume of motor vehicle diesel fuel produced for use in the United States and designated as meeting the 15 ppm sulfur content standard under paragraph (d) of this section must meet or exceed 85% of the baseline volume established under paragraph (c) of this section, except that for the year

2006, the total volume must meet or exceed 50% of the baseline volume.

(f) Compliance with the volume requirements in paragraph (e) of this section shall be determined on a calendar year basis, except that for the year 2006 compliance shall be determined for the period June 1, 2006 through December 31, 2006.

(g) If a refiner fails to comply with the requirements of paragraph (d) of this section, or if the approval of the application, including the baseline, was based on false or inaccurate information, the approval to produce gasoline subject to the GPA gasoline sulfur content standards under this section during the years 2007 and 2008 shall be void ab initio, and gasoline produced for use in the GPA must meet the gasoline sulfur content standards of subpart H of this Part as if there had been no approval to produce gasoline subject to the GPA gasoline sulfur content standards in 2007 and 2008.

(h) If for any compliance period a refiner fails to meet the volume requirements in paragraph (e) of this section, the approval to produce gasoline subject to the GPA gasoline sulfur content standards shall be void for that compliance period and for all succeeding compliance periods, and gasoline produced for use in the GPA must meet the gasoline sulfur standards under subpart H of this subpart as if there had been no approval to produce gasoline subject to the GPA gasoline sulfur content standards under this section in 2007 and 2008.

(i) A refiner that is approved for production of gasoline subject to the GPA gasoline sulfur standards under this section in 2007 and 2008 must meet all applicable recordkeeping and reporting requirements of §§ 80.592, 80.593, and 80.594, and shall meet all the recordkeeping and reporting requirements under §§ 80.219, 80.365 and 80.370.

(j) A refiner approved to produce gasoline subject to the GPA gasoline sulfur standards under this section in 2007 and 2008 may not generate or use credits under § 80.531(a) or (e), or § 80.532 unless the approval is vacated as provided in paragraph (k) of this section.

(k) A refiner may petition the Administrator to vacate approval to produce gasoline subject to the GPA gasoline sulfur content standards in 2007 and 2008. EPA may grant such a petition, effective January 1 of the compliance period following EPA's receipt of such petition (or effective June 1, in 2006, if applicable). Upon such effective date and thereafter, gasoline produced for use in the GPA

must meet the gasoline sulfur content standards under subpart H of this Part as if there had been no approval to produce gasoline subject to the GPA gasoline sulfur content standards under this section in 2007 and 2008. Upon such effective date, the refiner shall not be subject to the requirements of this section.

(l) The provisions of this section shall apply separately for each refinery of a refiner.

(m) If any refinery is approved for production of gasoline subject to GPA gasoline sulfur content standards under this section in 2007 and 2008, the GPA downstream gasoline sulfur standard under § 80.220(a)(2) shall apply as follows:

(1) During the period of February 1, 2005 through January 31, 2009, the sulfur content of GPA gasoline at any downstream location other than at a retail outlet or wholesale purchaser-consumer facility shall not exceed 326 ppm.

(2) During the period of March 1, 2005 through February 28, 2009, the sulfur content of GPA gasoline at any downstream location shall not exceed 326 ppm.

(n) A foreign refiner may apply to the Administrator to produce gasoline that is subject to the gasoline sulfur standards for GPA gasoline under § 80.216 for the compliance years 2007 and 2008. Such application must be submitted to the EPA, at the address in § 80.595(b), by December 31, 2001.

(1) The Administrator may approve such interim GPA gasoline sulfur standards for the foreign refiner provided that the foreign refiner applies for a gasoline sulfur baseline under paragraph (n)(2) of this section and complies with:

(i) The requirements of paragraphs (b) through (l) of this section;

(ii) The requirements for the import of motor vehicle diesel fuel under § 80.620; and

(iii) All applicable gasoline requirements for refiners under subpart H of this Part, including the foreign refiner requirements under § 80.410, the attest requirements of § 80.415, the recordkeeping and reporting requirements of §§ 80.365 and 80.370, the designation and product transfer document requirements of § 80.219, the sampling and testing requirements of § 80.330, and the sample retention requirements of § 80.335.

(2) The refiner must submit an application for a gasoline sulfur baseline under the provisions of §§ 80.216(a), 80.295, and 80.410(b).

(3) After review of the foreign refiner's individual refinery gasoline sulfur

baseline, its individual refinery motor vehicle diesel fuel baseline, and other information submitted with the application, the Administrator may approve such baselines and the application for GPA gasoline sulfur standards for 2007 and 2008.

(o) An importer is not eligible for approval to import gasoline subject to the GPA standards in 2007 or 2008 under this section.

§§ 80.541—80.549 [Reserved]

Small Refiner Hardship Provisions

§ 80.550 What is the definition of a small refiner under this subpart?

(a) A small refiner is defined as any person, as defined by 42 U.S.C. 7602(e), who:

(1) Produces diesel fuel at a refinery by processing crude oil through refinery processing units;

(2) Employed an average of no more than 1,500 people, based on the average number of employees for all pay periods from January 1, 1999, to January 1, 2000; and

(3) Had an average crude capacity less than or equal to 155,000 barrels per calendar day (bpcd) for 1999.

(b) For the purpose of determining the number of employees and crude capacity under paragraph (a) of this section, the refiner shall include the employees and crude capacity of any subsidiary companies, any parent company and subsidiaries of the parent company in which the parent has 50% or greater ownership, and any joint venture partners.

(c) The definition under paragraph (a) of this section applies to domestic and foreign refiners. For any refiner owned by a governmental entity, the number of employees as specified in paragraph (a) of this section shall include all employees and total crude capacity of the government of which the governmental entity is a part.

(d) Notwithstanding the provisions of paragraph (a) of this section, a refiner that acquires a refinery after January 1, 2000, or reactivates a refinery that was shutdown or was non-operational between January 1, 1999, and January 1, 2000, may apply for small refiner status in accordance with the provisions of § 80.551(c)(1)(ii).

(e) *Ineligible parties.* The following are ineligible for the small refiner provisions:

(1) Refiners or refineries built or started up after January 1, 2000;

(2) Persons who exceed the employee or crude oil capacity criteria under this section on January 1, 2000, but who meet these criteria after that date, regardless of whether the reduction in

employees or crude oil capacity is due to operational changes at the refinery or a company sale or reorganization;

(3) Importers; and

(4) Refiners who produce motor vehicle diesel fuel other than by processing crude oil through refinery processing units.

(f)(1) Refiners who qualify as small refiners under this section and who subsequently employ more than 1500 people as a result of merger with or acquisition of another entity, are disqualified as small refiners. If this occurs, the refiner shall notify EPA in writing no later than 20 days following this disqualifying event.

(2) Any refiner whose status changes under this paragraph shall comply with the sulfur standard of § 80.520(a)(1) beginning January 1 of the calendar year following the disqualifying event in paragraph (f)(1) of this section.

(g) Notwithstanding the criteria in paragraph (a) of this section, any small refiner that has been approved by EPA as a small refiner under § 80.235 and meets the criteria of paragraph (a)(1) of this section, will be considered a small refiner under this section as well, for as long as they are a small refiner under § 80.225. The provisions of paragraph (f) of this section apply to any such refiner.

§ 80.551 How does a refiner obtain approval as a small refiner under this subpart?

(a)(1) Applications for small refiner status must be submitted to EPA by December 31, 2001 as part of the refiner's registration under § 80.597.

(2) In the case of a refiner who acquires a refinery after January 1, 2000, or reactivates a refinery that was shutdown between January 1, 1999, and January 1, 2000, the application for small refiner status must be submitted to EPA by June 1, 2003.

(b) Applications for small refiner status must be sent via certified mail with return receipt or express mail with return receipt to: U.S. EPA—Attn: Diesel Small Refiner Status (6406J), 1200 Pennsylvania Avenue, NW (6406J), Washington, DC 20460 (certified mail/return receipt) or Attn: Diesel Small Refiner Status, Transportation and Regional Programs Division, 501 3rd Street, NW (6406J), Washington, DC 20001 (express mail/return receipt).

(c) The small refiner status application must contain the following information for the company seeking small refiner status, plus any subsidiary companies, any parent company and subsidiaries of the parent company in which the parent has 50% or greater ownership, and any joint venture partners:

(1)(i) A listing of the name and address of each location where any employee worked during the 12 months preceding January 1, 2000; the average number of employees at each location based upon the number of employees for each pay period for the 12 months preceding January 1, 2000; and the type of business activities carried out at each location; or

(ii) In the case of a refiner who acquires a refinery after January 1, 2000, or reactivates a refinery that was shutdown between January 1, 1999, and January 1, 2000, a listing of the name and address of each location where any employee of the refiner worked since the refiner acquired or reactivated the refinery; the average number of employees at any such acquired or reactivated refinery during each calendar year since the refiner acquired or reactivated the refinery; and the type of business activities carried out at each location.

(2) The total corporate crude capacity of each refinery as reported to the Energy Information Administration (EIA) of the U.S. Department of Energy (DOE) for the most recent 12 months of operation. The information submitted to EIA is presumed to be correct. In cases where a company disagrees with this information, the company may petition EPA with appropriate data to correct the record when the company submits its application for small refiner status. EPA may accept such alternate data at its discretion.

(3) An indication of whether the refiner, for each refinery, is applying for:

(i) The ability to produce motor vehicle diesel fuel subject to the 500 ppm sulfur content standard under § 80.520(c) or generate credits under § 80.531, pursuant to the provisions of § 80.552(a) or (b); or

(ii) An extension of the duration of its small refiner gasoline sulfur standard under § 80.553, pursuant to the provisions of § 80.552(c).

(4) A letter signed by the president, chief operating or chief executive officer of the company, or his/her designee, stating that the information contained in the application is true to the best of his/her knowledge.

(5) Name, address, phone number, facsimile number and e-mail address (if available) of a corporate contact person.

(d) For joint ventures, the total number of employees includes the combined employee count of all corporate entities in the venture.

(e) For government-owned refiners, the total employee count includes all government employees.

(f) Approval of small refiner status for refiners who apply under § 80.550(d)

will be based on all information submitted under paragraph (c) of this section, except as provided in § 80.550(d).

(g) EPA will notify a refiner of approval or disapproval of small refiner status by letter. If disapproved, the refiner must comply with the sulfur standard in § 80.520, except as otherwise provided in this subpart.

(h) If EPA finds that a refiner provided false or inaccurate information on its application for small refiner status, upon notice from EPA the refiner's small refiner status will be void ab initio.

(i) Upon notification to EPA, an approved small refiner may withdraw its status as a small refiner. Effective on January 1 of the year following such notification, the small refiner will become subject to the sulfur standard of § 80.520 unless one of the hardship provisions of this subpart apply.

§ 80.552 What compliance options are available to small refiners?

(a) A refiner that has been approved by EPA as a small refiner under § 80.551(g) may produce motor vehicle diesel fuel subject to the 500 ppm sulfur content standard pursuant to the provisions of § 80.530, except that the volume limits of § 80.530(a)(3) shall only apply to that volume V^{500} of diesel fuel that is produced or imported during a calendar year that exceeds 105% of the baseline volume established under § 80.595. The calendar year period shall be from January 1st through December 31st. For the period June 1, 2006 through December 31, 2006, the volume limits shall only apply to that volume VV^{500} that exceeds 60% of the baseline volume.

(b) A refiner that has been approved by EPA as a small refiner under § 80.551(g) may generate motor vehicle diesel fuel credits pursuant to the provisions of § 80.531, except that for purposes of § 80.531(a) the term Credit shall equal VV^{15} , without further adjustment.

(c) A refiner that has been approved by EPA as a small refiner under § 80.551(g) may apply for an extension of the duration of its small refiner gasoline sulfur standards pursuant to § 80.553.

(d) A refiner that produces motor vehicle diesel fuel under the provisions of paragraph (a) of this section or generates credits under the provisions of paragraph (b) of this section may not receive an extension of its small refiner gasoline sulfur standard under the provisions of paragraph (c) of this section. A refiner that receives an extension of its small refiner gasoline

sulfur standard under the provisions of paragraph (c) of this section may not produce motor vehicle diesel fuel under the provisions of paragraph (a) of this section and may not generate credits under the provisions of paragraph (b) of this section.

(e) The provisions of this section shall apply separately for each refinery owned or operated by a small refiner.

§ 80.553 Under what conditions may the small refiner gasoline sulfur standards be extended for a small refiner of motor vehicle diesel fuel?

(a) A refiner that has been approved by EPA for small refiner gasoline sulfur standards under § 80.240 may apply, under § 80.551, for an extension of the duration of its small refiner gasoline sulfur standards through the calendar year 2010 annual averaging period.

(b) As part of its application, the refiner must submit an application for a motor vehicle diesel fuel baseline in accordance with the provisions of §§ 80.595 and 80.596. The application must also include information, as provided in § 80.594, demonstrating that starting no later than June 1, 2006, all motor vehicle diesel fuel produced by the refiner will comply with the 15 ppm sulfur content standard under § 80.520(a)(1), and that the volume of motor vehicle diesel fuel produced will comply with the volume requirements of paragraph (e) of this section.

(c) The Administrator may approve an application for extension of the small refiner gasoline sulfur standards if the provisions of paragraph (b) of this section and §§ 80.595 and 80.596 are satisfied. In approving an application for extension, the Administrator shall establish a motor vehicle diesel fuel volume baseline under §§ 80.595 and 80.596.

(d) Beginning June 1, 2006, and continuing through December 31, 2010, all motor vehicle diesel fuel produced by a refiner that has received an extension of its small refiner gasoline sulfur standards under this section must be accurately designated under § 80.523 as meeting the 15 ppm sulfur content standard under § 80.520(a)(1).

(e) The total volume of motor vehicle diesel fuel produced for use in the United States and designated as meeting the 15 ppm sulfur content standard under paragraph (d) of this section must meet or exceed 85% of the baseline volume established under paragraph (c) of this section, except that for the year 2006, the total volume must meet or exceed 50% of the baseline volume.

(f) Compliance with the volume requirements in paragraph (e) of this section shall be determined on a

calendar year basis, except that for the year 2006 compliance shall be determined for the period June 1, 2006 through December 31, 2006.

(g) If a refiner fails to comply with the requirements of paragraph (d) of this section, or if approval of the application, including the baseline, was based on false or inaccurate information, the extension of the applicable small refiner gasoline sulfur standards under this section shall be void ab initio, and all gasoline produced by the refinery must meet the gasoline sulfur standards under subpart H of this Part as if there had been no extension of the small refiner gasoline sulfur standards.

(h) If for any compliance period a refiner fails to meet the volume requirements in paragraph (e) of this section, the extension of the small refiner gasoline sulfur standards shall be void for that compliance period and for all succeeding compliance periods and all gasoline produced by the refinery must meet the gasoline sulfur standards under subpart H of this part as if there had been no extension of the small refiner gasoline sulfur standards under this section for such compliance periods.

(i) A refiner that is approved for an extension of the interim small refiner gasoline sulfur standards under this section must meet all applicable recordkeeping and reporting requirements of §§ 80.592, 80.593, and 80.594, and shall meet all the recordkeeping and reporting requirements under §§ 80.210, 80.365 and 80.370. Any foreign refiner shall meet all additional requirements under §§ 80.620 and 80.410.

(j) A refiner approved for the small refiner gasoline sulfur standards extension under this section may not generate or use credits under § 80.531(a) or (e), or § 80.532.

(k) A refiner may petition the Administrator to vacate an extension of the small refiner gasoline sulfur content standards. EPA may grant such a petition, effective January 1 of the compliance period following receipt of such petition (or effective June 1, 2006, if applicable). Upon such effective date, all gasoline produced by the refiner must meet the gasoline sulfur content standards under subpart H of this Part as if there had been no extension of the small refiner gasoline sulfur content standards under this section. Upon such effective date, the refiner shall not be subject to the requirements of this section.

(l) The provisions of this section shall apply separately for each refinery of a refiner.

§§ 80.554–80.559 [Reserved]

Other Hardship Provisions

§ 80.560 How can a refiner seek temporary relief from the requirements of this subpart in case of extreme hardship circumstances?

(a) EPA may, at its discretion, grant a refiner, for one or more of its refineries, temporary relief from some or all of the provisions of this subpart. Such relief shall be no less stringent than the small refiner compliance options specified in § 80.552. EPA may grant such relief provided that the refiner demonstrates that:

(1) Unusual circumstances exist that impose extreme hardship and significantly affect the refiner's ability to comply by the applicable date; and

(2) It has made best efforts to comply with the requirements of this subpart.

(b) Applications must be submitted to EPA by June 1 2002 to the following address: Applications for small refiner status must be sent via certified mail with return receipt or express mail with return receipt to: U.S. EPA-Attn: Diesel Hardship (6406J), 1200 Pennsylvania Avenue, NW (6406J), Washington, DC 20460 (certified mail/return receipt) or Attn: Diesel Hardship, Transportation and Regional Programs Division, 501 3rd Street, NW (6406J), Washington, DC 20001 (express mail/return receipt). EPA reserves the right to deny applications for appropriate reasons, including unacceptable environmental impact. Approval to distribute motor vehicle diesel fuel not subject to the 15 ppm sulfur standard may be granted for such time period as EPA determines is appropriate, but shall not extend beyond May 31, 2010.

(c) Applications must include a plan demonstrating how the refiner will comply with the requirements of this subpart as expeditiously as possible. The plan shall include a showing that contracts are or will be in place for engineering and construction of desulfurization equipment a plan for applying for and obtaining any permits necessary for construction or operation, projected timeline for beginning and completing construction, and for beginning actual operation of such equipment, and a description of plans to obtain necessary capital, and a detailed estimate of when the requirements of this subpart will be met.

(d) Applicants must provide, at a minimum, the following information:

(1) Detailed description of efforts to obtain capital for refinery investments and efforts made to obtain credits for compliance under § 80.531;

(2) Bond rating of entity that owns the refinery (in the case of joint ventures,

include the bond rating of the joint venture entity and the bond ratings of all partners; in the case of corporations, include the bond ratings of any parent or subsidiary corporations); and

(3) Estimated capital investment needed to comply with the requirements of this subpart by the applicable date.

(e) In addition to the application requirements of paragraph (b) of this section, a refiner's application for temporary relief under this paragraph must also include a compliance plan. Such compliance plan shall demonstrate how the refiner will engage in a quality assurance testing program to ensure that its motor vehicle diesel fuel subject solely to the sulfur standards under § 80.520(c) has not caused motor vehicle diesel fuel subject to the 15 ppm standard § 80.520(a)(1) to fail to comply with that standard. The quality assurance program must at least include periodic sampling and testing at the party's own facilities and at downstream facilities in the refiner's or importer's diesel fuel distribution system, to determine compliance with the applicable sulfur standards for both categories of motor vehicle diesel fuel; examination at the party's own facilities and at applicable downstream facilities, of product transfer documents to confirm appropriate transfers and deliveries of both products; and inspection of retailer and wholesale purchaser-consumer pump stands for the presence of the labels and warning signs required under this section. Any violations that are discovered shall be reported to EPA within 48 hours of discovery.

(f) Applications under this section must be accompanied by:

(1) A letter signed by the president, chief operating or chief executive officer of the company, or his/her designee, stating that the information contained in the application is true to the best of his/her knowledge.

(2) The name, address, phone number, facsimile number and e-mail address of a corporate contact person.

(g) Applicants must also provide any other relevant information requested by EPA.

(h) Refiners who are granted a hardship relief standard for any refinery, and importers of fuel subject to temporary refiner relief standards, may not distribute the diesel fuel subject to the sulfur standard under § 80.520(c) for use in model year 2007 and later vehicles and must comply with all applicable provisions of this subpart, including the provisions of this subpart.

(i) EPA may impose any reasonable conditions on waivers under this section, including limitations on the

refinery's volume of motor vehicle diesel fuel subject to a temporary refiner relief standards.

(j) The provisions of this section are available only to refineries that produce diesel fuel from crude.

(k) The individual refinery sulfur standard and the compliance plan will be approved or disapproved by the Administrator, and approval will be effective when the refiner (or importer, as applicable, in the case of compliance plans) receives an approval letter from EPA. If disapproved, the refiner or importer must comply with the motor vehicle diesel fuel standard under § 80.520(a)(1) by the appropriate compliance date specified in § 80.500.

(l) If EPA finds that a refiner provided false or inaccurate information on its application for small refiner status, upon notice from EPA the refiner's small refiner status will be void ab initio.

§ 80.561 How can a refiner or importer seek temporary relief from the requirements of this subpart in case of extreme unforeseen circumstances?

In appropriate extreme, unusual, and unforeseen circumstances (e.g., natural disaster or refinery fire) which are clearly outside the control of the refiner or importer and which could not have been avoided by the exercise of prudence, diligence and due care, EPA may permit a refiner or importer, for a brief period, to distribute motor vehicle diesel fuel which does not meet the requirements of this subpart if:

(a) It is in the public interest to do so (e.g., distribution of the nonconforming diesel fuel is necessary to meet projected shortfalls which cannot otherwise be compensated for);

(b) The refiner or importer exercised prudent planning and was not able to avoid the violation and has taken all reasonable steps to minimize the extent of the nonconformity;

(c) The refiner or importer can show how the requirements for motor vehicle diesel fuel will be expeditiously achieved;

(d) The refiner or importer agrees to make up any air quality detriment associated with the nonconforming motor vehicle diesel fuel, where practicable;

(e) The refiner or importer pays to the U.S. Treasury an amount equal to the economic benefit of the nonconformity minus the amount expended pursuant to paragraph (d) of this section, in making up the air quality detriment; and

(f) In the case of motor vehicle diesel fuel distributed under this section that does not meet the 15 ppm sulfur standard under § 80.520(a)(1), such

diesel fuel shall not be distributed for use in model year 2007 or later motor vehicles, and must meet all the requirements and prohibitions of this subpart applicable to diesel fuel meeting the sulfur standard under § 80.520(c), or to diesel fuel that is not motor vehicle diesel fuel, as applicable.

§§ 80.562–80.569 [Reserved]

Labeling Requirements

§ 80.570 What labeling requirements apply to retailers and wholesale purchaser-consumers of motor vehicle diesel fuel?

(a) Any retailer or wholesale purchaser-consumer who sells, dispenses, or offers for sale or dispensing, motor vehicle diesel fuel subject to the 500 ppm sulfur standard of § 80.520(c), must prominently and conspicuously display in the immediate area of each pump stand from which motor vehicle fuel subject to the 500 ppm standard is offered for sale or dispensing, the following legible label, in block letters of no less than 36-point bold type, printed in a color contrasting with the background:

HIGH-SULFUR DIESEL FUEL—
WARNING

May damage model year 2007 and later highway vehicles.
Federal Law *prohibits* use in these vehicles.

(b) Any retailer or wholesale purchaser-consumer who sells, dispenses, or offers for sale or dispensing, motor vehicle diesel fuel subject to the 15 ppm sulfur standard of § 80.520(a)(1), must affix the following conspicuous and legible label, in block letters of no less than 36-point bold type, and printed in a color contrasting with the background, to each pump stand:

LOW-SULFUR DIESEL FUEL

Recommended for use in all diesel vehicles.

Required for model year 2007 and later vehicles.

(c) Any retailer or wholesale purchaser-consumer who sells, dispenses, or offers for sale or dispensing, diesel fuel for nonroad equipment that does not meet the standards for motor vehicle diesel fuel, must affix the following conspicuous and legible label, in block letters of no less than 36-point bold type, and printed in a color contrasting with the background, to each pump stand:

NONROAD DIESEL FUEL—WARNING

May damage or destroy highway engines and their emission controls.
Federal Law *prohibits* use in any highway vehicle.

(d) The labels required by paragraphs (a) through (c) of this section must be placed on the vertical surface of each pump housing and on each side with gallonage and price meters. The labels shall be on the upper two-thirds of the pump, in a location where they are clearly readable by the public.

§§ 80.571–80.579 [Reserved]

Sampling and Testing

§ 80.580 What are the sampling and testing methods for sulfur?

(a) *Diesel fuel and diesel fuel additives.* For purposes of §§ 80.520 and 80.521, the sulfur content of diesel and diesel fuel additives is to be determined in accordance with this section.

(1) *Sampling method.* The applicable sampling methodology provided in § 80.330(b).

(2) *Test method for sulfur.* (i) For diesel fuel and diesel fuel additives subject to the 15 ppm sulfur standard of § 80.520(a)(1), the American Society for Testing and Materials (ASTM) standard method D 6428–99, entitled “Test Method for Total Sulfur in Liquid Aromatic Hydrocarbons and Their Derivatives by Oxidative Combustion and Electrochemical Detection.”

(ii) For diesel fuel and diesel fuel additives subject to the 500 ppm sulfur standard of 80.520(c), ASTM standard method D 2622–98, “Standard Test Method for Sulfur in Petroleum Products by X-Ray Spectrometry.”

(3) *Alternative test methods for sulfur.* (i) For diesel fuel and diesel fuel additives subject to the 15 ppm standard of § 80.520(a)(1), sulfur content may be determined using ASTM D 5453–99, entitled “Standard Test Method for Determination of Total Sulfur in Light Hydrocarbons, Motor Fuels and Oils by Ultraviolet Fluorescence,” or ASTM D 3120–96, entitled “Standard Test Method for Trace Quantities of Sulfur in Light Liquid Petroleum Hydrocarbons by Oxidative Microcoulometry,” provided that the refiner or importer test result is correlated with the appropriate method specified in paragraph (a)(2) of this section.

(ii) For diesel fuel and diesel fuel additives subject to the 500 ppm standard of § 80.520(c), sulfur content may be determined using ASTM D 5453–99, “Standard Test Method for Determination of Total Sulfur in Light Hydrocarbons, Motor Fuels and Oils by Ultraviolet Fluorescence,” or ASTM D 6428–00, entitled “Test Method for Total Sulfur in Liquid Aromatic Hydrocarbons and Their Derivatives by Oxidative Combustion and Electrochemical Detection,” provided that the refiner or importer test result is

correlated with the appropriate method specified in paragraph (a)(2) of this section.

(4) *Adjustment Factor for downstream test results.* An adjustment factor of negative 2 ppm shall be applied to the test results, to account for test variability, but only for testing of motor vehicle diesel fuel identified as subject to the 15 ppm sulfur standard of § 80.520(a)(1), at a downstream location as defined in § 80.500(f).

(b) *Incorporation by reference.* ASTM Standard Methods D 2622–98, “Standard Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-ray Fluorescence Spectrometry,” D 3120–96, “Standard Test Method for Trace Quantities of Sulfur in Light Liquid Petroleum Hydrocarbons by Oxidative Microcoulometry,” D 6428–99, “Test Method for Total Sulfur in Liquid Aromatic Hydrocarbons and Their Derivatives by Oxidative Combustion and Electrochemical Detection,” and D 5453–00, “Standard Test Method for Determination of Total Sulfur in Light Hydrocarbons, Motor Fuels and Oils by Ultraviolet Fluorescence,” are incorporated by reference. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Dr., West Conshohocken, PA 19428–2959. Copies may be inspected at the Air Docket Section (LE–131), Room M–1500, U.S. Environmental Protection Agency, Docket No. A–99–06, 401 M Street, SW, Washington, DC 20460, or at the Office of the Federal Register, 800 North Capitol Street, NW, Suite 700, Washington, DC.

§§ 80.581–80.589 [Reserved]

Recordkeeping and Reporting Requirements

§ 80.590 What are the product transfer document requirements for motor vehicle diesel fuel?

On each occasion that any person transfers custody or title to motor vehicle diesel fuel, including distillates used or intended to be used as motor vehicle diesel fuel, except when such fuel is dispensed into motor vehicles at a retail outlet or wholesale purchaser-facility, the transferor must provide to the transferee documents identifying the fuel as motor vehicle diesel fuel, and which include the following information:

(a) The name and address of the transferor and transferee.

(b) The volume of motor vehicle diesel fuel which is being transferred.

(c) The location of the motor vehicle diesel fuel at the time of the transfer.

(d) The date of the transfer.

(e) Except as provided in 40 CFR 69.51, an accurate statement, as applicable, that:

(1) “This fuel complies with the 15 ppm low sulfur standard for motor vehicle diesel fuel.”;

(2) “This fuel complies with the 500 ppm high sulfur standard for motor vehicle diesel fuel and is for use only in MY 2006 and older diesel motor vehicles.”;

(3) “This is high sulfur motor vehicle diesel fuel for use only in Guam, American Samoa, or the Northern Mariana Islands.”;

(4) “This diesel fuel is for export use only.”;

(5) “This diesel fuel is for research, development, or testing purposes only.”;

(6) “This diesel fuel is for use in diesel vehicles having an EPA-approved national security exemption only.”.

(f) For motor vehicle diesel fuel that contains visible evidence of the dye solvent red 164, and is intended to be used in a manner that is tax-exempt as defined under section 4082 of the Internal Revenue Code, the following statement:

This fuel is motor vehicle diesel fuel for tax-exempt use only, in accordance with Section 4082 of the Internal Revenue Code.

(g) Except for transfers to truck carriers, retailers or wholesale purchaser-consumers, product codes may be used to convey the information required under this section if such codes are clearly understood by each transferee. Codes used to convey the statement in paragraph (e)(1) of this section must contain the number “15”, and codes used to convey the statement in paragraph (e)(2) of this section must contain the number “500”.

(h) Beginning June 1, 2001 and ending May 31, 2005, any transfer subject to this section, which is also subject to the early credit provisions of § 80.531(b), must comply with all applicable requirements of this section except those in paragraph (e) of this section.

(i) Beginning June 1, 2005 and ending May 31, 2006, any transfer subject to this section, which is also subject to the early credit requirements of § 80.531(c), must comply with all applicable requirements of this section.

§ 80.591 What are the product transfer document requirements for additives to be used in diesel fuel?

(a) Except as provided in paragraphs (b) and (d) of this section, on each

occasion that any person transfers custody or title to a motor vehicle diesel fuel additive to a party in the additive distribution system or in the motor vehicle diesel fuel distribution system for use downstream of the diesel fuel refiner, the transferor must provide to the transferee documents which identify the additive, and:

(1) Identify the name and address of the transferor and transferee; the date of transfer; the location at which the transfer took place; the volume of additive transferred; and

(2) Indicates compliance with the 15 ppm sulfur standard by inclusion of the following statement:

The sulfur content of this diesel fuel additive does not exceed 15 ppm.

(b) On each occasion that any person transfers custody or title to a motor vehicle diesel fuel additive subject to the requirements of § 80.521(b), to a party in the additive distribution system or in the motor vehicle diesel fuel distribution system for use in diesel fuel downstream of the diesel fuel refiner, the transferor must provide to the transferee documents which identify the additive, and:

(1) Identify the name and address of the transferor and transferee; the date of transfer; the location at which the transfer took place; the volume of additive transferred.

(2) Indicate the high sulfur potential of the additive by inclusion of the following statement:

This motor vehicle diesel fuel additive may exceed the federal 15 ppm sulfur standard. Improper use of this additive may result in non-complying diesel fuel.

(3) Includes the following information:

(i) The additive's maximum sulfur concentration;

(ii) The maximum recommended concentration in volume percent for use of the additive in diesel fuel; and

(iii) The contribution to the sulfur level of the fuel, in ppm, that would result if the additive is used at the maximum recommended concentration.

(c) Except for transfers of motor vehicle diesel fuel additives to truck carriers, retailers or wholesale purchaser-consumers, product codes may be used to convey the information required under paragraphs (a) and (b) of this section, if such codes are clearly understood by each transferee. Codes used to convey the statement in paragraph (a)(2) of this section must contain the number "15" and codes used to convey the statement in paragraph (b)(2) of this section may not contain such number.

(d) For those motor vehicle diesel fuel additives which are sold in containers for use by the ultimate consumer of diesel fuel, each transferor must have displayed on the additive container, in a legible and conspicuous manner, either of the following statements, as applicable:

(1) "This diesel fuel additive complies with the federal low sulfur content requirements for use in diesel motor vehicles."; or

(2) For those additives sold in containers for use by the ultimate consumer, with a sulfur content in excess of 15 ppm: "This diesel fuel additive does not comply with federal low sulfur content requirements for use in model year 2007 and newer diesel motor vehicles.".

§ 80.592 What records must be kept?

(a) *Records that must be kept by parties in the motor vehicle diesel fuel and motor vehicle diesel fuel additive distribution systems.* Beginning June 1, 2006, or for a refiner the first compliance period in which the refiner is generating early credits under § 80.531(b) or (c), whichever is earlier, any person who produces, imports, sells, offers for sale, dispenses, distributes, supplies, offers for supply, stores, or transports motor vehicle diesel fuel subject to the provisions of this subpart, must keep the following records:

(1) The applicable product transfer documents required under §§ 80.590 and 80.591;

(2) For any sampling and testing for sulfur content, cetane index or aromatics content of motor vehicle diesel fuel or motor vehicle diesel fuel additives, conducted as part of a quality assurance program or otherwise:

(i) The location, date, time and storage tank or truck identification for each sample collected;

(ii) The name and title of the person who collected the sample and the person who performed the testing; and

(iii) The results of the tests for sulfur content (including where applicable the test results with and without application of the adjustment factor under § 80.580(a)(4)) or other standard content, and the volume of product in the storage tank or container from which the sample was taken;

(3) The actions the party has taken, if any, to stop the sale or distribution of any motor vehicle diesel fuel found not to be in compliance with the sulfur standards specified in this subpart, and the actions the party has taken, if any, to identify the cause of any noncompliance and prevent future instances of noncompliance.

(b) *Additional records to be kept by refiners and importers of motor vehicle diesel fuel subject to temporary refiner relief standards, small refiner standards, and early credit provisions.* Beginning June 1, 2006, or for a refiner the first compliance period in which the refiner is generating early credits under § 80.531(b) or (c), whichever is earlier, any refiner producing motor vehicle diesel fuel subject to the sulfur standard under § 80.520(a)(1), for each of its refineries, and any importer importing such motor vehicle diesel fuel, shall keep records that include the following information for each batch of motor vehicle diesel fuel produced or imported:

(1) The batch volume.

(2) The batch number, assigned under the batch numbering procedures under § 80.65(d)(3).

(3) The date of production or import.

(4) A record designating the batch as meeting the 500 ppm sulfur standard or the 15 ppm sulfur standard.

(5) For foreign refiners, the designations and other records required to be kept under § 80.620.

(6) In the case of importers, the designations and other records required under § 80.620(o).

(7) Information regarding credits, kept separately for each calendar year compliance period, kept separately for each refinery and in the case of importers, kept separately for imports into each CTA, as follows:

(i) The number of credits in the refiner's or importer's possession at the beginning of the calendar year;

(ii) The number of credits generated;

(iii) The number of credits used;

(iv) If any were obtained from or transferred to other parties, for each such other party, its name, its EPA refiner or importer registration number consistent with § 80.593(d), in the case of credits generated by an importer the port and CTA of import of the diesel fuel that generated the credits, and the number obtained from, or transferred to, the other party;

(v) The number in the refiner's or importer's possession that will carry over into the subsequent calendar year compliance period; and

(vi) Commercial documents that establish each transfer of credits from the transferor to the transferee.

(8) The calculations used to determine compliance with the volume requirements of this subpart.

(9) The calculations used to determine the number of credits generated.

(10) A copy of reports submitted to EPA under § 80.593.

(c) *Additional records importers must keep.* Any importer shall keep records

that identify and verify the source of each batch of certified diesel fuel program foreign refiner (DFR)-Diesel and non-certified DFR-Diesel imported and demonstrate compliance with the requirements under § 80.620.

(d) *Length of time records must be kept.* The records required in this section shall be kept for five years from the date they were created, except that records relating to credit transfers shall be kept by the transferor for 5 years from the date the credits were transferred, and shall be kept by the transferee for 5 years from the date the credits were transferred, used or terminated, whichever is later.

(e) *Make records available to EPA.* On request by EPA the records required in paragraphs (a), (b) and (c) of this section must be made available to the Administrator or the Administrator's authorized representative. For records that are electronically generated or maintained the equipment and software necessary to read the records shall be made available, or if requested by EPA, electronic records shall be converted to paper documents which shall be provided to the Administrator's authorized representative.

§ 80.593 What are the reporting and registration requirements for refiners and importers of motor vehicle diesel fuel subject to temporary refiner relief standards?

Beginning with 2006, or the first compliance period during which credits are generated under § 80.531(b) or (c), whichever is earlier, any refiner or importer who produces or imports motor vehicle diesel fuel subject to the 500 ppm sulfur standard under § 80.520(c), or any refiner or importer who generates, uses, obtains or transfers credits under §§ 80.530 through 80.532, and continuing for each year thereafter, must submit to EPA annual reports that contain the information required in this section, and such other information as EPA may require:

(a) *Refiners and importers.* Refiners and importers must report the following information separately for each refinery or CTA, in the case of importers, subject to a phase-in sulfur standard, small refiner standard or temporary refiner relief sulfur standard, or who generates, uses or transfers credits under §§ 80.530 through 80.532:

(1) The refiner's name and the EPA refinery registration number.

(2) For all motor vehicle diesel fuel produced for use in the United States during the compliance period:

(i) The total volume of motor vehicle diesel fuel produced;

(ii) The volume, in gallons, that complied with a sulfur content standard of 500 ppm; and

(iii) The volume, in gallons, that complied with the 15 ppm sulfur content standard.

(3) The percentage of the volume motor vehicle diesel fuel produced during the calendar year that met the 15 ppm sulfur standard and the percentage that met the 500 ppm sulfur standard prior to the application of any volume credits.

(4) The percentage of volume of motor vehicle diesel fuel produced meeting the 15 ppm sulfur standard after the inclusion of any credits.

(5) Information regarding credits, separately for each refinery and for credits or debits related to imported motor diesel fuel, separately by importer and separately by CTA of import as follows:

(i) The CTA of the refiner's refinery or the importer's or the foreign refiner's CTA and port of importation;

(ii) The number of credits at the beginning of the compliance period;

(iii) The number of credits generated;

(iv) The number of credits used;

(v) If any credits were obtained from or transferred to other refineries or import ports, for each other refinery or importer, its name, address (or Port) and CTA, EPA refinery or importer registration number, and the number of credits obtained from or transferred to the other refinery or importer (by import CTA);

(vi) The number of credits, if any, that will carry over to the subsequent compliance period; and

(vii) The number of credits in deficit that must be made up for the following year;

(6) The reporting requirements under § 80.620, if applicable.

(7) For each batch of motor vehicle diesel fuel produced or imported during the compliance period:

(i) The batch number assigned using the batch numbering conventions under § 80.65(d)(3) and the appropriate designation under § 80.523;

(ii) The date the batch was produced; and

(iii) The volume of the batch, in gallons.

(8) When submitting reports under this paragraph (a), any importer shall exclude certified DFR-Diesel.

(b) *Additional reporting requirements for importers.* Importers of motor vehicle diesel fuel subject to the 500 ppm sulfur standard must report the following information:

(1) The importer's name and EPA registration number.

(2) For each foreign refinery from which motor vehicle diesel fuel is

imported that is subject to a sulfur standard under § 80.520(c), the importer must report, for each batch of diesel fuel imported, the information required to be reported under § 80.620(o).

(c) *Report submission.* Any annual report required by this section shall be:

(1) Signed and certified as meeting all the applicable requirements of this subpart by the owner or a responsible corporate officer of the refiner or importer; and

(2) Submitted to EPA no later than the last day of February for the prior calendar year period.

§ 80.594 What are the pre-compliance reporting requirements?

(a) Beginning on June 1, 2003, and on June 1, 2004 and June 1, 2005, all refiners and importers planning to produce or import motor vehicle diesel fuel subject to the provisions of this subpart, shall submit the following information to EPA:

(1) Any changes to the information submitted for the company registration;

(2) Any changes to the information submitted for any refinery or import facility registration;

(3) An estimate of the annual production or importation, in gallons, after June 1, 2006, for each refinery and import facility, of 15 ppm motor vehicle diesel fuel produced from crude oil and, if applicable, 500 ppm motor vehicle diesel fuel produced from crude oil, and the volumes of each grade of motor vehicle diesel fuel produced from other sources;

(4) If expecting to participate in the temporary compliance options provisions and the credit trading program, estimates of the number of credits to be generated and/or used each year the program is applicable;

(5) Information regarding engineering plans (e.g., design and construction), the status of obtaining any necessary permits, and capital commitments for making the necessary modifications to produce low sulfur motor vehicle fuel, and actual construction progress. The pre-compliance reports due 2004 and 2005 must provide an update of the progress in each of these areas.

(b) Beginning on June 1, 2003, all approved small refiners shall submit the following additional information to EPA, as applicable:

(1) In the case of a refinery with an approved application under § 80.552(a):

(i) A showing that sufficient sources of 15 ppm motor vehicle diesel fuel will likely be available in its marketing area after June 1, 2006 and through 2010;

(ii) If after 2003 the sources of 15 ppm motor vehicle diesel fuel decrease, the pre-compliance reports for 2004 and/or

2005 must identify this change and must include a supplementary showing that the sources of 15 ppm motor vehicle diesel fuel are still sufficient.

(2) In case of a refinery with an approved application under § 80.552(c), a demonstration that by June 1, 2006 its motor vehicle diesel fuel will be at 15 ppm sulfur at a volume at least 85% of its baseline motor vehicle diesel fuel volume.

(c) For each refiner and importer approved under § 80.540, a demonstration that by June 1, 2006 all of its motor vehicle diesel fuel will be at 15 ppm sulfur at a volume of at least 85% of its baseline motor vehicle diesel fuel volume.

(d) By July 1, 2006, each refiner and importer of motor vehicle diesel fuel shall submit a report to EPA stating that the production or importation of 15 ppm sulfur motor vehicle diesel fuel commenced by June 1, 2006.

§ 80.595 How does a refiner apply for a motor vehicle diesel fuel volume baseline?

(a) Any small refiner applying for extension of the duration of its small refiner gasoline sulfur standards of § 80.240, under §§ 80.552(c) and 80.553, or any refiner applying for an extension of the duration of the GPA standards under § 80.540 must apply for a motor vehicle diesel fuel volume baseline by December 31, 2001. A separate volume baseline must be sought for each refinery for which application of the provisions of § 80.553 or § 80.540 is sought.

(b) The volume baseline must be sent via certified mail with return receipt or express mail with return receipt to: U.S. EPA-Attn: Diesel Baseline (6406J), 1200 Pennsylvania Avenue, NW (6406J), Washington, DC 20460 (certified mail/return receipt) or Attn: Diesel Baseline, Transportation and Regional Programs Division, 501 3rd Street, NW (6406J), Washington, DC 20001 (express mail/return receipt).

(c) The motor vehicle diesel fuel volume baseline application must include the following information:

(1) A listing of the names and addresses of all refineries owned by the refiner for which the refiner is applying for a motor vehicle diesel fuel volume baseline.

(2) The average annual volume (in gallons) of motor vehicle diesel fuel produced for U.S. use in 1998 and 1999, for each refinery for which the refiner is applying for such baseline, calculated in accordance with § 80.596. The refiner shall follow the procedures, applicable to volume baselines and using motor vehicle diesel fuel instead of gasoline, specified in §§ 80.91 through 80.93 to

establish the volume of motor vehicle diesel fuel that was produced for U.S. use in 1998 and 1999 for purposes of establishing a volume baseline under this section.

(3) A letter signed by the president, chief operating, or chief executive officer of the company, or his/her delegate, stating that the information contained in the volume baseline determination is true to the best of his/her knowledge.

(4) Name, address, phone number, facsimile number, and e-mail address (if available) of a corporate contact person.

(5) The following information for each batch of motor vehicle diesel fuel produced for U.S. use in 1998 and 1999:

(i) Batch number assigned to the batch under procedures such as those in § 80.65(d) or § 80.101(i), or, if unavailable, such other identifying information as is available; and

(ii) Volume of the batch, in gallons.

(6) For a refinery that was not in operation during part or all of the period 1998 and 1999, the information required under this paragraph (c) for the motor vehicle diesel fuel produced for U.S. use during the most recent calendar year that the refinery was in operation after the refinery was reactivated.

(d) Within 120 days of receipt of an application under this section, EPA will notify the refiner of an approval of the refinery's baseline, or of any deficiencies in the application.

(e) If at any time the baseline submitted in accordance with the requirements of this section is determined to be incorrect, EPA will notify the refiner of the corrected baseline. The corrected baseline shall apply to all applicable compliance calculations under this subpart.

(f)(1) If insufficient information is available for the Administrator to establish a baseline under the provisions of paragraph (c) of this section and § 80.596(a), the refiner shall submit additional information sufficient for the Administrator to establish a baseline.

(2) To satisfy the requirements of paragraph (f)(1) of this section, the Administrator may require, and consider, any information pertinent to establish a baseline, including:

(i) Motor vehicle diesel fuel production volumes for other years;

(ii) Crude capacity of the refinery;

(iii) The ratio, or the typical ratio, for other similarly sized or configured refineries, between motor vehicle diesel fuel production and gasoline production.

§ 80.596 How is a refinery motor vehicle diesel fuel volume baseline calculated?

(a) For purposes of this subpart, a refinery's motor vehicle diesel fuel volume baseline is calculated using the following equation:

$$V_{\text{Base}} = \frac{\sum_{i=1}^n (V_i)}{m/12}$$

Where:

V_{Base} = Volume baseline value.

V_i = Volume of motor vehicle diesel fuel batch i .

n = Total number of batches of motor vehicle diesel fuel produced for U.S. use during January 1, 1998 through December 31, 1999 (or the total number of batches of motor vehicle diesel fuel produced during the most recent calendar year the refinery was in operation after being reactivated pursuant to § 80.595(c)(6)); or, for a foreign refinery, the total number of batches of motor vehicle diesel fuel produced and imported into the U.S. during January 1, 1998 through December 31, 1999 (or the total number of batches of motor vehicle diesel fuel produced and imported into the U.S. during the most recent calendar year the refinery was in operation after being reactivated pursuant to § 80.595(c)(6)).

i = Individual batch of motor vehicle diesel fuel produced during January 1, 1998 through December 31, 1999 (or individual batch of motor vehicle diesel fuel produced during the most recent calendar year the refinery was in operation after being reactivated pursuant to § 80.595(c)(6)); or, for a foreign refinery, individual batch of motor vehicle diesel fuel produced and imported into the U.S. during January 1, 1998 through December 31, 1999 (or individual batch of motor vehicle diesel fuel produced and imported into the U.S. during the most recent calendar year the refinery was in operation after being reactivated pursuant to § 80.595(c)(6)).

m = Number of months in the baseline period (24 except in the case of a startup or reactivation).

(b) If insufficient information is available for the Administrator to establish a baseline under paragraph (a) of this section, the baseline may be determined under the provisions of § 80.595(f).

§ 80.597 What are the registration requirements?

Refiners having any refinery that is subject to a sulfur standard under § 80.520(c), and importers importing such diesel fuel, must provide EPA the information under § 80.76 no later than December 31, 2001, if such information has not been provided under the provisions of this part. In addition, for each import facility, the same identifying information as required for each refinery under § 80.76(c) must be provided.

§§ 80.598–80.599 [Reserved]**Exemptions****§ 80.600 What are the requirements for obtaining an exemption for motor vehicle diesel fuel used for research, development or testing purposes?***(a) Written request for R&D*

exemption. Any person may receive an exemption from the provisions of this subpart for motor vehicle diesel fuel used for research, development, or testing ("R&D") purposes by submitting the information listed in paragraph (c) of this section to:

(1) Director (6406J), Transportation and Regional Programs Division, U.S. Environmental Protection Agency, Ariel Rios Building, 1200 Pennsylvania Avenue, NW., Washington, DC 20460 (postal mail); or

(2) Director (6406J), Transportation and Regional Programs Division, U.S. Environmental Protection Agency, 501 3rd Street, NW., Washington, DC 20001 (express mail/courier); and

(3) Director (2242A), Air Enforcement Division, U.S. Environmental Protection Agency, Ariel Rios Building, 1200 Pennsylvania Avenue, NW., Washington, DC 20460.

(b) Criteria for an R&D exemption. For an R&D exemption to be granted, the person requesting an exemption must:

(1) Demonstrate a purpose that constitutes an appropriate basis for exemption;

(2) Demonstrate that an exemption is necessary;

(3) Design an R&D program to be reasonable in scope; and

(4) Exercise a degree of control consistent with the purpose of the program and EPA's monitoring requirements.

(c) Information required to be submitted. To demonstrate each of the elements in paragraphs (b)(1) through (4) of this section, the person requesting an exemption must include the following information in the written request required under paragraph (a) of this section:

(1) A concise statement of the purpose of the program demonstrating that the program has an appropriate R&D purpose.

(2) An explanation of why the stated purpose of the program cannot be achieved in a practicable manner without performing one or more of the prohibited acts under this subpart.

(3) To demonstrate the reasonableness of the scope of the program:

(i) An estimate of the program's duration in time and, if appropriate, mileage;

(ii) An estimate of the maximum number of vehicles or engines involved in the program;

(iii) The manner in which the information on vehicles and engines used in the program will be recorded and made available to the Administrator upon request; and

(iv) The quantity of diesel fuel which does not comply with the requirements of §§ 80.520 through 80.525.

(4) With regard to control, a demonstration that the program affords EPA a monitoring capability, including:

(i) The site(s) of the program (including facility name, street address, city, county, state, and zip code);

(ii) The manner in which information on vehicles and engines used in the program will be recorded and made available to the Administrator upon request;

(iii) The manner in which information on the diesel fuel used in the program (including quantity, fuel properties, name, address, telephone number and contact person of the supplier, and the date received from the supplier), will be recorded and made available to the Administrator upon request;

(iv) The manner in which the party will ensure that the R&D fuel will be segregated from motor vehicle diesel fuel and fuel pumps will be labeled to ensure proper use of the R&D diesel fuel;

(v) The name, address, telephone number and title of the person(s) in the organization requesting an exemption from whom further information on the application may be obtained; and

(vi) The name, address, telephone number and title of the person(s) in the organization requesting an exemption who is responsible for recording and making available the information specified in this paragraph (c), and the location where such information will be maintained.

(d) Additional requirements. (1) The product transfer documents associated with R&D motor vehicle diesel fuel must comply with requirements of § 80.590(b)(5).

(2) The R&D diesel fuel must be designated by the refiner or supplier, as applicable, as R&D diesel fuel.

(3) The R&D diesel fuel must be kept segregated from non-exempt motor vehicle diesel fuel at all points in the distribution system.

(4) The R&D diesel fuel must not be sold, distributed, offered for sale or distribution, dispensed, supplied, offered for supply, transported to or from, or stored by a diesel fuel retail outlet, or by a wholesale purchaser-consumer facility, unless the wholesale purchaser-consumer facility is associated with the R&D program that uses the diesel fuel.

(5) At the completion of the program, any emission control systems or elements of design which are damaged or rendered inoperative shall be replaced on vehicles remaining in service, or the responsible person will be liable for a violation of the Clean Air Act Section 203(a)(3) unless sufficient evidence is supplied that the emission controls or elements of design were not damaged.

(e) Mechanism for granting of an exemption. A request for an R&D exemption will be deemed approved by the earlier of sixty (60) days from the date on which EPA receives the request for exemption, (provided that EPA has not notified the applicant of potential disapproval by that time), or the date on which the applicant receives a written approval letter from EPA.

(1) The volume of diesel fuel subject to the approval shall not exceed the estimated amount in paragraph (c)(3)(iv) of this section, unless EPA grants a greater amount in writing.

(2) Any exemption granted under this section will expire at the completion of the test program or three years from the date of approval, whichever occurs first, and may only be extended upon re-application consistent with all requirements of this section.

(3) The passage of sixty (60) days will not signify the acceptance by EPA of the validity of the information in the request for an exemption. EPA may elect at any time to review the information contained in the request, and where appropriate may notify the responsible person of disapproval of the exemption.

(4) In granting an exemption the Administrator may include terms and conditions, including replacement of emission control devices or elements of design, that the Administrator determines are necessary for monitoring the exemption and for assuring that the purposes of this subpart are met.

(5) Any violation of a term or condition of the exemption, or of any requirement of this section, will cause the exemption to be void ab initio.

(6) If any information required under paragraph (c) of this section should change after approval of the exemption, the responsible person must notify EPA in writing immediately. Failure to do so may result in disapproval of the exemption or may make it void ab initio, and may make the party liable for a violation of this subpart.

(f) Effects of exemption. Motor vehicle diesel fuel that is subject to an R&D exemption under this section is exempt from other provisions of this subpart provided that the fuel is used in a manner that complies with the purpose of the program under paragraph (c) of

this section and the requirements of this section.

(g) *Notification of Completion.* The party shall notify EPA in writing within thirty (30) days of completion of the R&D program.

§ 80.601 What requirements apply to motor vehicle diesel fuel for use in the Territories?

The sulfur standards of § 80.520(a)(1) and (c) do not apply to diesel fuel that is produced, imported, sold, offered for sale, supplied, offered for supply, stored, dispensed, or transported for use in the Territories of Guam, American Samoa or the Commonwealth of the Northern Mariana Islands provided that such diesel fuel is:

(a) Designated by the refiner or importer as high sulfur diesel fuel only for use in Guam, American Samoa, or the Commonwealth of the Northern Mariana Islands;

(b) Used only in Guam, American Samoa, or the Commonwealth of the Northern Mariana Islands;

(c) Accompanied by documentation that complies with the product transfer document requirements of § 80.590(e)(3); and

(d) Segregated from non-exempt motor vehicle diesel fuel at all points in the distribution system from the point the diesel fuel is designated as exempt fuel only for use in Guam, American Samoa, or the Commonwealth of the Northern Mariana Islands, while the exempt fuel is in the United States but outside these Territories.

§ 80.602 What exemption applies to diesel fuel used in vehicles having a national security exemption from motor vehicle emissions standards?

The motor vehicle diesel fuel standards of § 80.520(a)(1), (a)(2), and (c) do not apply to diesel fuel that is produced, imported, sold, offered for sale, supplied, offered for supply, stored, dispensed, or transported for use in:

(a) Vehicles for which EPA has granted a national security exemption under 40 CFR 85.1708 from motor vehicle emissions standards under 40 CFR Part 86; or

(b) Tactical military motor vehicles that are not subject to a national security exemption from motor vehicle emissions standards but for national security purposes (for purposes of readiness for deployment overseas) need to be fueled on the same fuel as motor vehicles for which EPA has granted a national security exemption, provided that such fuel is:

(1) Used only in vehicles identified in paragraph (a) of this section or this paragraph (b);

(2) Accompanied by product transfer documents as required under § 80.590;

(3) Segregated from non-exempt motor vehicle diesel fuel at all points in the distribution system; and

(4) Dispensed from a fuel pump stand, fueling truck or tank that is labeled under the provisions of § 80.570(c). Any such fuel pump stand, fueling truck or tank may also be labeled with the appropriate designation of the fuel, such as "JP-8".

§ 80.603–80.609 [Reserved]

Violation Provisions

§ 80.610 What acts are prohibited under the diesel fuel sulfur program?

No person shall:

(a) *Standard or dye violation.* Produce, import, sell, offer for sale, dispense, supply, offer for supply, store or transport motor vehicle diesel fuel that does not comply with the applicable standards and dye requirements under § 80.520.

(b) *Additive violation.* (1) Produce, import, sell, offer for sale, dispense, supply, offer for supply, store or transport any motor vehicle diesel fuel additive for use at a downstream location that does not comply with the requirements under § 80.521(a) or (b), as applicable.

(2) Blend or permit the blending into motor vehicle diesel fuel at a downstream location, or use, or permit the use, as motor vehicle diesel fuel, of any additive which does not comply with the requirements of § 80.521(a) or (b), as applicable.

(c) *Used motor oil violation.* Introduce into the fuel system of model year 2007 or later diesel motor vehicles, or permit the introduction into the fuel system of such vehicles of used motor oil, or used motor oil blended with diesel fuel, which does not comply with the requirements of § 80.522.

(d) *Improper fuel usage violation.* (1) Introduce, or permit the introduction of, diesel fuel into model year 2007 or later diesel motor vehicles, and beginning December 1, 2010 into any diesel motor vehicle, which does not comply with the standards and dye requirements of § 80.520(a) and (b).

(2) Produce, import, sell, offer for sale, dispense, offer for supply, store, or transport for use in model year 2007 or later diesel motor vehicles, or introduce or permit the introduction into such motor vehicles, motor vehicle diesel fuel that is identified as other than diesel fuel complying with the 15 ppm sulfur standard; and beginning December 1, 2010, diesel fuel for use in or introduced into any diesel motor vehicle.

(e) *Cause another party to violate.*

Cause another person to commit an act in violation of paragraphs (a) through (d) of this section.

(f) *Cause violating fuel or additive to be in the distribution system.* Cause motor vehicle diesel fuel to be in the motor vehicle diesel fuel distribution system which does not comply with the applicable standard and dye requirements of § 80.520(a) and (b), or cause any motor vehicle diesel fuel additive to be in the motor vehicle diesel fuel additive distribution system which does not comply with the applicable sulfur, cetane, and/or aromatics standards of § 80.521.

§ 80.611 What evidence may be used to determine compliance with the prohibitions and requirements of this subpart and liability for violations of this subpart?

(a) *Compliance with sulfur, cetane, and aromatics standards.* Compliance with the standards in §§ 80.520, 80.521, and 80.522 shall be determined based on the level of the applicable component or parameter, using the sampling methodologies specified in § 80.330(b), as applicable, and the appropriate testing methodologies specified in § 80.580(a)(2) for sulfur, or one of the alternative methodologies for sulfur as approved under § 80.580(a)(3); § 80.2(w) for cetane index; and § 80.2(z) for aromatic content. Any evidence or information, including the exclusive use of such evidence or information, may be used to establish the level of the applicable component or parameter in the diesel fuel or additive, or motor oil to be used in diesel fuel, if the evidence or information is relevant to whether that level would have been in compliance with the standard if the regulatory sampling and testing methodology had been correctly performed. Such evidence may be obtained from any source or location and may include, but is not limited to, test results using methods other than the compliance methods in this paragraph (a), business records, and commercial documents.

(b) *Compliance with other requirements.* Determination of compliance with the requirements of this subpart other than the standards described in paragraph (a) of this section and in §§ 80.520, 80.521, and 80.522, and determination of liability for any violation of this subpart, may be based on information obtained from any source or location. Such information may include, but is not limited to, business records and commercial documents.

§ 80.612 Who is liable for violations of this subpart?

(a) *Persons liable for violations of prohibited acts.*—(1) *Standard, dye, additives, motor oil, and introduction violations.* (i) Any refiner, importer, distributor, reseller, carrier, retailer, or wholesale purchaser-consumer who owned, leased, operated, controlled or supervised a facility where a violation of § 80.610(a) through (d) occurred, or any other person who violates § 80.610(a) through (d), is deemed liable for the applicable violation.

(ii) Any person who causes another person to violate § 80.610(a) through (d) is liable for a violation of § 80.610(e).

(iii) Any refiner, importer, distributor, reseller, carrier, retailer, or wholesale purchaser-consumer who produced, imported, sold, offered for sale, dispensed, supplied, offered to supply, stored, transported, or caused the transportation or storage of, motor vehicle diesel fuel that violates § 80.610(a), is deemed in violation of § 80.610(e).

(iv) Any person who produced, imported, sold, offered for sale, dispensed, supplied, offered to supply, stored, transported, or caused the transportation or storage of a motor vehicle diesel fuel additive which is used in motor vehicle diesel fuel that is found to violate § 80.610(a), is deemed in violation of § 80.610(e).

(2) *Cause violating motor vehicle diesel fuel or additive to be in the distribution system.* Any refiner, importer, distributor, reseller, carrier, retailer, or wholesale purchaser-consumer or any other person who owned, leased, operated, controlled or supervised a facility from which motor vehicle diesel fuel or additive was released into the motor vehicle diesel fuel or additive distribution system which does not comply with the applicable standards or dye requirements of § 80.520 or § 80.521, is deemed in violation of § 80.610(f).

(3) *Branded refiner/importer liability.* Any refiner or importer whose corporate, trade, or brand name, or whose marketing subsidiary's corporate, trade, or brand name appeared at a facility where a violation of § 80.610(a) occurred, is deemed in violation of § 80.610(a).

(4) *Carrier causation.* In order for a motor vehicle diesel fuel or motor vehicle diesel fuel additive carrier to be liable under paragraph (a)(1)(ii), (iii) or (iv) of this section, as applicable, EPA must demonstrate, by reasonably specific showing by direct or circumstantial evidence, that the carrier caused the violation.

(5) *Parent corporation.* Any parent corporation is liable for any violations of this subpart that are committed by any subsidiary.

(6) *Joint venture.* Each partner to a joint venture is jointly and severally liable for any violation of this subpart that occurs at the joint venture facility or is committed by the joint venture operation.

(b) *Persons liable for failure to comply with other provisions of this subpart.* Any person who:

(1) Fails to comply with the requirements of a provision of this subpart not addressed in paragraph (a) of this section is liable for a violation of that provision; or

(2) Causes another person to fail to comply with the requirements of a provision of this subpart not addressed in paragraph (a) of this section, is liable for causing a violation of that provision.

§ 80.613 What defenses apply to persons deemed liable for a violation of a prohibited act?

(a) *Presumptive liability defenses.* (1) Any person deemed liable for a violation of a prohibition under § 80.612(a)(1)(i) or (iii), (a)(2), or (a)(3), will not be deemed in violation if the person demonstrates:

(i) The violation was not caused by the person or the person's employee or agent;

(ii) Product transfer documents account for fuel or additive found to be in violation and indicate that the violating product was in compliance with the applicable requirements when it was under the party's control;

(iii) The person conducted a quality assurance sampling and testing program, as described in paragraph (d) of this section, except for those parties subject to the provisions of paragraph (a)(1)(iv) or (v) of this section. A carrier may rely on the quality assurance program carried out by another party, including the party who owns the diesel fuel in question, provided that the quality assurance program is carried out properly. Retailers, wholesale purchaser-consumers, and ultimate consumers of diesel fuel are not required to conduct quality assurance programs;

(iv) For refiners and importers of motor vehicle diesel fuel subject to the 15 ppm standard under § 80.520(a)(1), test results which:

(A) Were conducted according to the test methodology required under § 80.580 (a)(2) or an approved alternative test method under § 80.580(a)(3); and

(B) Establish that, when it left the party's control, the sulfur content of

motor vehicle diesel fuel subject to the 15 ppm standard did not exceed 15 ppm; and

(v) For any person who, at a downstream location, blends a diesel fuel additive subject to the requirements of § 80.521(b) into motor vehicle diesel fuel subject to the sulfur standard under § 80.520(a)(1), except a blender who blends additives into fuel trucks at a truck loading rack subject to the provisions of (d)(1) of this section, test results which are conducted subsequent to the blending of the additive into the fuel, and which comply with the requirements of paragraphs (a)(4)(iv)(A) and (B) of this section.

(2) Any party deemed liable for a violation under § 80.612(a)(1)(iv), in regard to a diesel fuel additive subject to the requirements of § 80.521(a), will not be deemed in violation if the person demonstrates that:

(i) Product transfer document(s) account for the additive in the fuel found to be in violation, which comply with the requirements under § 80.591(a), and indicate that the additive was in compliance with the applicable requirements while it was under the party's control; and

(ii) For the additive's manufacturer or importer, test results which accurately establish that, when it left the party's control, the additive in the diesel fuel determined to be in violation did not have a sulfur content in excess of 15 ppm.

(A) Analysis of the additive sulfur content pursuant to this paragraph (a)(2) may be conducted at the time the batch was manufactured or imported, or on a sample of that batch which the manufacturer or importer retains for such purpose for a minimum of two years from the date the batch was manufactured or imported.

(B) After two years from the date the additive batch was manufactured or imported, the additive manufacturer or importer is no longer required to retain samples for the purpose of complying with the testing requirements of this paragraph (a)(2) of this section.

(C) The analysis of the sulfur content of the additive must be conducted pursuant to the requirements of § 80.580(a).

(3) Any person who is deemed liable for a violation under § 80.612 (a)(1)(iv) with regard to a diesel fuel additive subject to the requirements of § 80.521(b), will not be deemed in violation if the person demonstrates that:

(i) The violation was not caused by the party or the party's employee or agent;

(ii) Product transfer document(s) which comply with the additive information requirements under § 80.591 (b), account for the additive in the fuel found to be in violation, and indicate that the additive was in compliance with the applicable requirements while it was under the party's control; and

(iii) For the additive's manufacturer or importer, test results which accurately establish that, when it left the party's control, the additive in the diesel fuel determined to be in violation was in conformity with the information on the additive product transfer document pursuant to the requirements of § 80.591(b). The testing procedures applicable under paragraph (a)(2) of this section, also apply under this paragraph (a)(3).

(b) *Branded refiner defenses.* In the case of a violation found at a facility operating under the corporate, trade or brand name of a refiner or importer, or a refiner's or importer's marketing subsidiary, the refiner or importer must show, in addition to the defense elements required under paragraph (a)(1) of this section, that the violation was caused by:

(1) An act in violation of law (other than the Clean Air Act or this Part 80), or an act of sabotage or vandalism;

(2) The action of any refiner, importer, retailer, distributor, reseller, oxygenate blender, carrier, retailer or wholesale purchaser-consumer in violation of a contractual agreement between the branded refiner or importer and the person designed to prevent such action, and despite periodic sampling and testing by the branded refiner or importer to ensure compliance with such contractual obligation; or

(3) The action of any carrier or other distributor not subject to a contract with the refiner or importer, but engaged for transportation of diesel fuel, despite specifications or inspections of procedures and equipment which are reasonably calculated to prevent such action.

(c) *Causation demonstration.* Under paragraph (a)(1) of this section for any person to show that a violation was not caused by that person, or under paragraph (b) of this section to show that a violation was caused by any of the specified actions, the person must demonstrate by reasonably specific showing, by direct or circumstantial evidence, that the violation was caused or must have been caused by another person and that the person asserting the defense did not contribute to that other person's causation.

(d) *Quality assurance and testing program.* To demonstrate an acceptable

quality assurance program under paragraph (a)(1)(iii) of this section, a person must present evidence of the following:

(1) A periodic sampling and testing program to ensure the motor vehicle diesel fuel or additive the person sold, dispensed, supplied, stored, or transported, meets the applicable standards.

(2) For those parties who, at a downstream location, blend diesel fuel additives subject to the requirements of § 80.521(b) into fuel trucks at a truck loading rack, the periodic sampling and testing program required under this paragraph (d) must ensure, by taking into account the greater risk of noncompliance created through use of a high sulfur additive, that the diesel fuel into which the additive was blended meets the applicable standards subsequent to the blending.

(3) On each occasion when motor vehicle diesel fuel or additive is found not in compliance with the applicable standard:

(i) The person immediately ceases selling, offering for sale, dispensing, supplying, offering for supply, storing or transporting the non-complying product; and

(ii) The person promptly remedies the violation and the factors that caused the violation (for example, by removing the non-complying product from the distribution system until the applicable standard is achieved and taking steps to prevent future violations of a similar nature from occurring).

(4) For any carrier who transports motor vehicle diesel fuel or additive in a tank truck, the quality assurance program required under this paragraph (d) need not include its own periodic sampling and testing of the motor vehicle diesel fuel or additive in the tank truck, but in lieu of such tank truck sampling and testing, the carrier shall demonstrate evidence of an oversight program for monitoring compliance with the requirements of this subpart relating to the transport or storage of such product by tank truck, such as appropriate guidance to drivers regarding compliance with the applicable sulfur standard and product transfer document requirements, and the periodic review of records received in the ordinary course of business concerning motor vehicle diesel fuel or additive quality and delivery.

§ 80.614 What penalties apply under this subpart?

(a) Any person liable for a violation under § 80.612 is subject to civil penalties as specified in section 205 of the Clean Air Act for every day of each

such violation and the amount of economic benefit or savings resulting from each violation.

(b)(1) Any person liable under § 80.612(a)(1) for a violation of an applicable standard or requirement under § 80.520, or of causing another party to violate such standard or requirement, is subject to a separate day of violation for each and every day the non-complying motor vehicle diesel fuel remains any place in the distribution system.

(2) Any person liable under § 80.612(a)(2) for causing motor vehicle diesel fuel to be in the distribution system which does not comply with an applicable standard or requirement of § 80.520, is subject to a separate day of violation for each and every day that the non-complying motor vehicle diesel fuel remains any place in the motor vehicle diesel fuel distribution system.

(3) Any person liable under § 80.612(a)(1) for blending into motor vehicle diesel fuel an additive violating the applicable sulfur standard pursuant to the requirements of § 80.521(a) or (b), as appropriate, or of causing another party to so blend or add such an additive, is subject to a separate day of violation for each and every day the motor vehicle diesel fuel into which the noncomplying additive was blended, remains any place in the fuel distribution system.

(4) For purposes of this paragraph (b), the length of time the motor vehicle diesel fuel in question remained in the motor vehicle diesel fuel distribution system is deemed to be twenty-five days, unless a person subject to liability or EPA demonstrates by reasonably specific showings, by direct or circumstantial evidence, that the non-complying motor vehicle diesel fuel remained in the distribution system for fewer than or more than twenty-five days.

(c) Any person liable under § 80.612(b) for failure to meet, or causing a failure to meet, a provision of this subpart is liable for a separate day of violation for each and every day such provision remains unfulfilled.

§§ 80.615–80.619 [Reserved]

Provisions for Foreign Refiners and Importers for Motor Vehicle Diesel Fuel Subject to a Temporary Compliance Option or Hardship Provision

§ 80.620 What are the additional requirements for motor vehicle diesel fuel produced by foreign refineries subject to a temporary refiner compliance option or hardship provisions?

(a) *Definitions.* (1) A foreign refinery is a refinery that is located outside the

United States, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands (collectively referred to in this section as "the United States").

(2) A foreign refiner is a person who meets the definition of refiner under § 80.2(i) for a foreign refinery.

(3) A diesel fuel program foreign refiner ("DFR") is a foreign refiner that has been approved by EPA for participation in any motor vehicle diesel fuel credits program, motor vehicle diesel fuel temporary compliance option, hardship or GPA provisions of §§ 80.530 through 80.532, § 80.540, § 80.552, § 80.553, § 80.560 or § 80.561 (collectively referred to as "diesel foreign refiner program").

(4) "DFR-Diesel" means motor vehicle diesel fuel produced at a DFR refinery that is imported into the United States.

(5) "Non-DFR-Diesel" means motor vehicle diesel fuel that is produced at a foreign refinery that has not been approved as a DFR foreign refiner, motor vehicle diesel fuel produced at a DFR foreign refinery that is not imported into the United States, and motor vehicle diesel fuel produced at a DFR foreign refinery during a period when the foreign refiner has opted to not participate in the DFR-Diesel diesel foreign refiner program under paragraph (c)(3) of this section.

(6) "Certified DFR-Diesel" means DFR-Diesel the foreign refiner intends to include in the foreign refinery's compliance calculations under §§ 80.530 through 80.532, § 80.540, § 80.552, § 80.553, § 80.560 or § 80.561 and does include in these compliance calculations when reported to EPA.

(7) "Non-Certified DFR-Diesel" means DFR-Diesel fuel that a DFR foreign refiner imports to the United States that is not Certified DFR-Diesel.

(b) *Baseline.* For any foreign refiner to obtain approval under the diesel foreign refiner program of this subpart for any refinery, it must apply for approval under the applicable provisions of this subpart. To obtain approval the refiner is required, as applicable, to demonstrate a volume baseline for calendar years 1998 and 1999 for motor vehicle diesel fuel produced for use in the United States under §§ 80.595 and 80.596.

(1) The refiner shall follow the procedures, applicable to volume baselines and using motor vehicle diesel fuel instead of gasoline, in §§ 80.91 through 80.93 to establish the volume of motor vehicle diesel fuel that was produced at the refinery and imported into the United States during 1998 and

1999 for purposes of establishing a baseline under §§ 80.595 and 80.596.

(2) In making determinations for foreign refinery baselines EPA will consider all information supplied by a foreign refiner, and in addition may rely on any and all appropriate assumptions necessary to make such determinations.

(3) Where a foreign refiner submits a petition that is incomplete or inadequate to establish an accurate baseline, and the refiner fails to correct this deficiency after a request for more information, EPA will not assign an individual refinery motor vehicle diesel fuel volume baseline.

(c) *General requirements for DFR foreign refiners.* A foreign refiner of a refinery that is approved under the diesel foreign refiner program of this subpart must designate each batch of motor vehicle diesel fuel produced at the foreign refinery that is exported to the United States as either Certified DFR-Diesel or as Non-Certified DFR-Diesel, except as provided in paragraph (c)(3) of this section. It must further designate all Certified DFR-Diesel as complying with either the 15 ppm sulfur standard under § 80.520(a)(1) or the 500 ppm sulfur standard under § 80.520(c).

(1) In the case of Certified DFR-Diesel, the foreign refiner must meet all requirements that apply to refiners under this subpart, except that:

(i) For purposes of complying with the compliance option requirements of § 80.530, motor vehicle diesel fuel produced by a foreign refinery must comply separately for each Credit Trading Area of import, as defined in § 80.531(a)(5).

(ii) For purposes of complying with the compliance option requirements of § 80.530, credits obtained from any other refinery or from any importer must have been generated in the same Credit Trading Area as the Credit Trading Area of import of the fuel for which credits are needed to achieve compliance.

(iii) For purposes of generating credits under this subpart, credits shall be generated separately by Credit Trading Area of import and shall be designated by Credit Trading Area of importation and by port of importation.

(2) In the case of Non-Certified DFR-Diesel, the foreign refiner shall meet all the following requirements:

(i) The designation requirements in this section.

(ii) The reporting requirements in this section and § 80.593.

(iii) The product transfer document requirements in this section.

(iv) The prohibitions in this section and § 80.610.

(3)(i) Any foreign refiner that has been approved to produce motor vehicle diesel fuel subject to the diesel foreign refiner program for a foreign refinery under this subpart may elect to classify no diesel fuel imported into the United States as DFR-Diesel provided the foreign refiner notifies EPA of the election no later than November 1 of the prior calendar year.

(ii) An election under paragraph (c)(3)(i) of this section shall be for an entire calendar year and apply to all motor vehicle diesel fuel that is produced by the foreign refinery that is imported into the United States, and shall remain in effect for each succeeding year unless and until the foreign refiner notifies EPA of the termination of the election. The change in election shall take effect at the beginning of the next calendar year.

(d) *Designation, product transfer documents, and foreign refiner certification.* (1) Any foreign refiner of a foreign refinery that has been approved by EPA to produce motor vehicle diesel fuel subject to the diesel foreign refiner program must designate each batch of DFR-Diesel as such at the time the diesel fuel is produced, unless the refiner has elected to classify no diesel fuel exported to the United States as DFR-Diesel under paragraph (c)(3) of this section.

(2) On each occasion when any person transfers custody or title to any DFR-Diesel prior to its being imported into the United States, it must include the following information as part of the product transfer document information in this section:

(i) Identification of the diesel fuel as Certified DFR-Diesel or as Non-Certified DFR-Diesel, and if it is Certified DFR-Diesel, further designation as meeting the 500 ppm sulfur standard under § 80.520(c) or the 15 ppm sulfur standard under § 80.520(a)(1) pursuant to § 80.523; and

(ii) The name and EPA refinery registration number (under § 80.593) of the refinery where the DFR-Diesel was produced.

(3) On each occasion when DFR-Diesel is loaded onto a vessel or other transportation mode for transport to the United States, the foreign refiner shall prepare a certification for each batch of the DFR-Diesel that meets the following requirements.

(i) The certification shall include the report of the independent third party under paragraph (f) of this section, and the following additional information:

(A) The name and EPA registration number of the refinery that produced the DFR-Diesel;

(B) The identification of the diesel fuel as Certified DFR-Diesel or Non-Certified DFR-Diesel;

(C) The volume of DFR-Diesel being transported, in gallons;

(D) In the case of Certified DFR-Diesel:

(1) The sulfur content as determined under paragraph (f) of this section, and the designation of the fuel as complying with the 15 ppm sulfur content standard for motor vehicle diesel fuel under § 80.520(a)(1) or the 500 ppm sulfur content standard for motor vehicle diesel fuel under § 80.520(c); and

(2) A declaration that the DFR-Diesel is being included in the applicable compliance calculations required by the EPA under this subpart.

(ii) The certification shall be made part of the product transfer documents for the DFR-Diesel.

(e) *Transfers of DFR-Diesel to non-United States markets.* The foreign refiner is responsible to ensure that all diesel fuel classified as DFR-Diesel is imported into the United States. A foreign refiner may remove the DFR-Diesel classification, and the diesel fuel need not be imported into the United States, but only if:

(1)(i) The foreign refiner excludes:

(A) The volume of diesel from the refinery's compliance report under § 80.593; and

(B) In the case of Certified DFR-Diesel, the volume of the diesel fuel from the compliance report under § 80.593.

(ii) The exclusions under paragraph (e)(1)(i) of this section shall be on the basis of the designations under § 80.523 and volumes determined under paragraph (f) of this section.

(2) The foreign refiner obtains sufficient evidence in the form of documentation that the diesel fuel was not imported into the United States.

(f) *Load port independent sampling, testing and refinery identification.* (1) On each occasion that DFR-Diesel is loaded onto a vessel for transport to the United States a foreign refiner shall have an independent third party:

(i) Inspect the vessel prior to loading and determine the volume of any tank bottoms;

(ii) Determine the volume of DFR-Diesel loaded onto the vessel (exclusive of any tank bottoms before loading);

(iii) Obtain the EPA-assigned registration number of the foreign refinery;

(iv) Determine the name and country of registration of the vessel used to transport the DFR-Diesel to the United States; and

(v) Determine the date and time the vessel departs the port serving the foreign refinery.

(2) On each occasion that Certified DFR-Diesel is loaded onto a vessel for transport to the United States a foreign refiner shall have an independent third party:

(i) Collect a representative sample of the Certified DFR-Diesel from each vessel compartment subsequent to loading on the vessel and prior to departure of the vessel from the port serving the foreign refinery;

(ii) Determine the sulfur content value for each compartment using the methodology specified in § 80.580 by:

(A) The third party analyzing each sample; or

(B) The third party observing the foreign refiner analyze the sample;

(iii) Review original documents that reflect movement and storage of the certified DFR-Diesel from the refinery to the load port, and from this review determine:

(A) The refinery at which the DFR-Diesel was produced; and

(B) That the DFR-Diesel remained segregated from:

(1) Non-DFR-Diesel and Non-Certified DFR-Diesel; and

(2) Other Certified DFR-Diesel produced at a different refinery.

(3) The independent third party shall submit a report:

(i) To the foreign refiner containing the information required under paragraphs (f)(1) and (f)(2) of this section, to accompany the product transfer documents for the vessel; and

(ii) To the Administrator containing the information required under paragraphs (f)(1) and (f)(2) of this section, within thirty days following the date of the independent third party's inspection. This report shall include a description of the method used to determine the identity of the refinery at which the diesel fuel was produced, assurance that the diesel fuel remained segregated as specified in paragraph (n)(1) of this section, and a description of the diesel fuel's movement and storage between production at the source refinery and vessel loading.

(4) The independent third party must:

(i) Be approved in advance by EPA, based on a demonstration of ability to perform the procedures required in this paragraph (f);

(ii) Be independent under the criteria specified in § 80.65(e)(2)(iii); and

(iii) Sign a commitment that contains the provisions specified in paragraph (i) of this section with regard to activities, facilities and documents relevant to compliance with the requirements of this paragraph (f).

(g) *Comparison of load port and port of entry testing.* (1) Load port and port of entry testing requirements, as follows:

(i) Any foreign refiner and any United States importer of Certified DFR-Diesel shall compare the results from the load port testing under paragraph (f) of this section, with the port of entry testing as reported under paragraph (o) of this section, for the volume of diesel and the sulfur value; except that

(ii) Where a vessel transporting Certified DFR-Diesel off loads this diesel fuel at more than one United States port of entry, and the conditions of paragraph (g)(2)(i) of this section are met at the first United States port of entry, the requirements of paragraph (g)(2) of this section do not apply at subsequent ports of entry if the United States importer obtains a certification from the vessel owner that meets the requirements of paragraph(s) of this section, that the vessel has not loaded any diesel fuel or blendstock between the first United States port of entry and the subsequent port of entry.

(2)(i) The requirements of this paragraph (g)(2) apply if:

(A) The temperature-corrected volumes determined at the port of entry and at the load port differ by more than one percent; or

(B) The sulfur value determined at the port of entry is higher than the sulfur value determined at the load port, and the amount of this difference is greater than the reproducibility amount specified for the port of entry test result by the American Society of Testing and Materials (ASTM).

(ii) The United States importer and the foreign refiner shall treat the diesel fuel as Non-Certified DFR-Diesel, and the foreign refiner shall exclude the diesel fuel volume from its motor vehicle diesel fuel volumes calculations and sulfur standard designations under § 80.523.

(h) *Attest requirements.* Refiners, for each calendar year, must arrange to have an attest engagement performed of the underlying documentation that forms the basis of any report required under this subpart. The attest engagement must comply with the procedures and requirements that apply to refiners under §§ 80.125 through 80.130 and must be submitted to the Administrator of EPA by May 30 of each year for the prior calendar year. The following additional procedures shall be carried out for any foreign refiner of DFR-Diesel:

(1) The inventory reconciliation analysis under § 80.128(b) and the tender analysis under § 80.128(c) shall include Non-DFR-Diesel.

(2) Obtain separate listings of all tenders of Certified DFR-Diesel and of Non-Certified DFR-Diesel, and obtain separate listings of Certified DFR-Diesel

based on whether it is 15 ppm sulfur content motor vehicle diesel fuel or 500 ppm sulfur content motor vehicle diesel fuel. Agree the total volume of tenders from the listings to the diesel fuel inventory reconciliation analysis in § 80.128(b), and to the volumes determined by the third party under paragraph (f)(1) of this section.

(3) For each tender under paragraph (h)(2) of this section, where the diesel fuel is loaded onto a marine vessel, report as a finding the name and country of registration of each vessel, and the volumes of DFR-Diesel loaded onto each vessel.

(4) Select a sample from the list of vessels identified in paragraph (h)(3) of this section used to transport Certified DFR-Diesel, in accordance with the guidelines in § 80.127, and for each vessel selected perform the following:

(i) Obtain the report of the independent third party, under paragraph (f) of this section, and of the United States importer under paragraph (o) of this section.

(A) Agree the information in these reports with regard to vessel identification, diesel fuel volumes and sulfur content test results.

(B) Identify, and report as a finding, each occasion the load port and port of entry sulfur content and volume results differ by more than the amounts allowed in paragraph (g) of this section, and determine whether the foreign refiner adjusted its refinery calculations as required in paragraph (g) of this section.

(ii) Obtain the documents used by the independent third party to determine transportation and storage of the Certified DFR-Diesel from the refinery to the load port, under paragraph (f) of this section. Obtain tank activity records for any storage tank where the Certified DFR-Diesel is stored, and pipeline activity records for any pipeline used to transport the Certified DFR-Diesel, prior to being loaded onto the vessel. Use these records to determine whether the Certified DFR-Diesel was produced at the refinery that is the subject of the attest engagement, and whether the Certified DFR-Diesel was mixed with any Non-Certified DFR-Diesel, Non-DFR-Diesel, or any Certified DFR-Diesel produced at a different refinery.

(5) Select a sample from the list of vessels identified in paragraph (h)(3) of this section used to transport certified and Non-Certified DFR-Diesel, in accordance with the guidelines in § 80.127, and for each vessel selected perform the following:

(i) Obtain a commercial document of general circulation that lists vessel arrivals and departures, and that

includes the port and date of departure of the vessel, and the port of entry and date of arrival of the vessel.

(ii) Agree the vessel's departure and arrival locations and dates from the independent third party and United States importer reports to the information contained in the commercial document.

(6) Obtain separate listings of all tenders of Non-DFR-Diesel, and perform the following:

(i) Agree the total volume and sulfur content of tenders from the listings to the diesel fuel inventory reconciliation analysis in § 80.128(b).

(ii) Obtain a separate listing of the tenders under this paragraph (h)(6) where the diesel fuel is loaded onto a marine vessel. Select a sample from this listing in accordance with the guidelines in § 80.127, and obtain a commercial document of general circulation that lists vessel arrivals and departures, and that includes the port and date of departure and the ports and dates where the diesel fuel was off loaded for the selected vessels. Determine and report as a finding the country where the diesel fuel was off loaded for each vessel selected.

(7) In order to complete the requirements of this paragraph (h) an auditor shall:

(i) Be independent of the foreign refiner;

(ii) Be licensed as a Certified Public Accountant in the United States and a citizen of the United States, or be approved in advance by EPA based on a demonstration of ability to perform the procedures required in §§ 80.125 through 80.130 and this paragraph (h); and

(iii) Sign a commitment that contains the provisions specified in paragraph (i) of this section with regard to activities and documents relevant to compliance with the requirements of §§ 80.125 through 80.130 and this paragraph (h).

(i) *Foreign refiner commitments.* Any foreign refiner shall commit to and comply with the provisions contained in this paragraph (i) as a condition to being approved for a temporary refiner diesel fuel program option.

(1) Any United States Environmental Protection Agency inspector or auditor must be given full, complete and immediate access to conduct inspections and audits of the foreign refinery.

(i) Inspections and audits may be either announced in advance by EPA, or unannounced.

(ii) Access will be provided to any location where:

(A) Diesel fuel is produced;

(B) Documents related to refinery operations are kept;

(C) Diesel fuel or blendstock samples are tested or stored; and

(D) DFR-Diesel is stored or transported between the foreign refinery and the United States, including storage tanks, vessels and pipelines.

(iii) Inspections and audits may be by EPA employees or contractors to EPA.

(iv) Any documents requested that are related to matters covered by inspections and audits must be provided to an EPA inspector or auditor on request.

(v) Inspections and audits by EPA may include review and copying of any documents related to:

(A) Refinery baseline establishment, if applicable, including the volume and sulfur content; transfers of title or custody of any diesel fuel or blendstocks whether DFR-Diesel or Non-DFR-Diesel, produced at the foreign refinery during the period January 1, 1998 through the date of the refinery baseline petition or through the date of the inspection or audit if a baseline petition has not been approved, and any work papers related to refinery baseline establishment;

(B) The volume and sulfur content of DFR-Diesel;

(C) The proper classification of diesel fuel as being DFR-Diesel or as not being DFR-Diesel, or as Certified DFR-Diesel or as Non-Certified DFR-Diesel, or as meeting the 15 ppm sulfur standard under § 80.520(a)(1) or the 500 ppm sulfur standard under § 80.520(c);

(D) Transfers of title or custody to DFR-Diesel;

(E) Sampling and testing of DFR-Diesel;

(F) Work performed and reports prepared by independent third parties and by independent auditors under the requirements of this section, including work papers; and

(G) Reports prepared for submission to EPA, and any work papers related to such reports.

(vi) Inspections and audits by EPA may include taking samples of diesel fuel, diesel fuel additives or blendstock, and interviewing employees.

(vii) Any employee of the foreign refiner must be made available for interview by the EPA inspector or auditor, on request, within a reasonable time period.

(viii) English language translations of any documents must be provided to an EPA inspector or auditor, on request, within 10 working days.

(ix) English language interpreters must be provided to accompany EPA inspectors and auditors, on request.

(2) An agent for service of process located in the District of Columbia shall

be named, and service on this agent constitutes service on the foreign refiner or any employee of the foreign refiner for any action by EPA or otherwise by the United States related to the requirements of this subpart.

(3) The forum for any civil or criminal enforcement action related to the provisions of this section for violations of the Clean Air Act or regulations promulgated thereunder shall be governed by the Clean Air Act, including the EPA administrative forum where allowed under the Clean Air Act.

(4) United States substantive and procedural laws shall apply to any civil or criminal enforcement action against the foreign refiner or any employee of the foreign refiner related to the provisions of this section.

(5) Submitting a petition for participation in the diesel foreign refiner program or producing and exporting diesel fuel under any such program, and all other actions to comply with the requirements of this subpart relating to participation in any diesel foreign refiner program, or to establish an individual refinery motor vehicle diesel fuel volume baseline (if applicable) constitute actions or activities that satisfy the provisions of 28 U.S.C. section 1605(a)(2), but solely with respect to actions instituted against the foreign refiner, its agents and employees in any court or other tribunal in the United States for conduct that violates the requirements applicable to the foreign refiner under this subpart, including conduct that violates Title 18 U.S.C. section 1001 and Clean Air Act section 113(c)(2).

(6) The foreign refiner, or its agents or employees, will not seek to detain or to impose civil or criminal remedies against EPA inspectors or auditors, whether EPA employees or EPA contractors, for actions performed within the scope of EPA employment related to the provisions of this section.

(7) The commitment required by this paragraph (i) shall be signed by the owner or president of the foreign refiner business.

(8) In any case where DFR-Diesel produced at a foreign refinery is stored or transported by another company between the refinery and the vessel that transports the DFR-Diesel to the United States, the foreign refiner shall obtain from each such other company a commitment that meets the requirements specified in paragraphs (i)(1) through (7) of this section, and these commitments shall be included in the foreign refiner's petition to participate in any diesel foreign refiner program.

(j) *Sovereign immunity.* By submitting a petition for participation in any diesel foreign refiner program under this subpart (and baseline, if applicable) under this section, or by producing and exporting diesel fuel to the United States under any such program, the foreign refiner, and its agents and employees, without exception, become subject to the full operation of the administrative and judicial enforcement powers and provisions of the United States without limitation based on sovereign immunity, with respect to actions instituted against the foreign refiner, its agents and employees in any court or other tribunal in the United States for conduct that violates the requirements applicable to the foreign refiner under this subpart including conduct that violates Title 18 U.S.C. section 1001 and Clean Air Act section 113(c)(2).

(k) *Bond posting.* Any foreign refiner shall meet the requirements of this paragraph (k) as a condition to approval for any diesel foreign refiner program under this subpart.

(1) The foreign refiner shall post a bond of the amount calculated using the following equation: $\text{Bond} = G \times \$0.01$

Where:

Bond = amount of the bond in U.S. dollars.
G = the volume baseline for motor vehicle diesel fuel produced at the foreign refinery and exported to the United States, in gallons.

(2) Bonds shall be posted by:

(i) Paying the amount of the bond to the Treasurer of the United States;

(ii) Obtaining a bond in the proper amount from a third party surety agent that is payable to satisfy United States administrative or judicial judgments against the foreign refiner, provided EPA agrees in advance as to the third party and the nature of the surety agreement; or

(iii) An alternative commitment that results in assets of an appropriate liquidity and value being readily available to the United States, provided EPA agrees in advance as to the alternative commitment.

(3) Bonds posted under this paragraph (k) shall:

(i) Be used to satisfy any judicial judgment that results from an administrative or judicial enforcement action for conduct in violation of this subpart, including where such conduct violates Title 18 U.S.C. 1001 and Clean Air Act section 113(c)(2);

(ii) Be provided by a corporate surety that is listed in the United States Department of Treasury Circular 570 "Companies Holding Certificates of Authority as Acceptable Sureties on

Federal Bonds" (available from the Department of Treasury website at <http://www.fms.treas.gov> or from the Government Printing Office, phone (202) 512-1800); and

(iii) Include a commitment that the bond will remain in effect for at least five (5) years following the end of latest annual reporting period that the foreign refiner produces motor vehicle diesel fuel pursuant to the requirements of this subpart.

(4) On any occasion a foreign refiner bond is used to satisfy any judgment, the foreign refiner shall increase the bond to cover the amount used within 90 days of the date the bond is used.

(5) If the bond amount for a foreign refiner increases, the foreign refiner shall increase the bond to cover the shortfall within 90 days of the date the bond amount changes. If the bond amount decreases, the foreign refiner may reduce the amount of the bond beginning 90 days after the date the bond amount changes.

(l) [Reserved]

(m) *English language reports.* Any report or other document submitted to EPA by a foreign refiner shall be in English language, or shall include an English language translation.

(n) *Prohibitions.* (1) No person may combine Certified DFR-Diesel with any Non-Certified DFR-Diesel or Non-DFR-Diesel, and no person may combine Certified DFR-Diesel with any Certified DFR-Diesel produced at a different refinery, until the importer has met all the requirements of paragraph (o) of this section, except as provided in paragraph (e) of this section.

(2) No foreign refiner or other person may cause another person to commit an action prohibited in paragraph (n)(1) of this section, or that otherwise violates the requirements of this section.

(o) *United States importer requirements.* Any United States importer shall meet the following requirements:

(1) Each batch of imported motor vehicle diesel fuel shall be classified by the importer as being DFR-Diesel or as Non-DFR-Diesel, and each batch classified as DFR-Diesel shall be further classified as Certified DFR-Diesel or as Non-certified DFR-Diesel, and each batch of Certified DFR-Diesel shall be further classified as complying with the 500 ppm motor vehicle diesel fuel sulfur standard under § 80.520(c) or the 15 ppm motor vehicle diesel fuel sulfur standard under § 80.520(a)(1).

(2) Motor vehicle diesel fuel shall be classified as Certified DFR-Diesel or as Non-Certified DFR-Diesel according to the designation by the foreign refiner if this designation is supported by product

transfer documents prepared by the foreign refiner as required in paragraph (d) of this section, unless the diesel fuel is classified as Non-Certified DFR-Diesel under paragraph (g) of this section. Additionally, the importer shall comply with all requirements of this subpart applicable to domestic refiners subject to any diesel foreign refiner program under this subpart.

(3) For each diesel fuel batch classified as DFR-Diesel, any United States importer shall perform the following procedures:

(i) In the case of both Certified and Non-Certified DFR-Diesel, have an independent third party:

(A) Determine the volume of diesel fuel in the vessel;

(B) Use the foreign refiner's DFR-Diesel certification to determine the name and EPA-assigned registration number of the foreign refinery that produced the DFR-Diesel;

(C) Determine the name and country of registration of the vessel used to transport the DFR-Diesel to the United States; and

(D) Determine the date and time the vessel arrives at the United States port of entry.

(ii) In the case of Certified DFR-Diesel, have an independent third party:

(A) Collect a representative sample from each vessel compartment subsequent to the vessel's arrival at the United States port of entry and prior to off loading any diesel fuel from the vessel;

(B) Obtain the compartment samples; and

(C) Determine the sulfur value of each compartment sample using the methodologies specified in § 80.580, by:

(1) The third party analyzing the sample; or

(2) The third party observing the importer analyze the sample.

(4) Any importer shall submit reports within thirty days following the date any vessel transporting DFR-Diesel arrives at the United States port of entry:

(i) To the Administrator containing the information determined under paragraph (o)(3) of this section; and

(ii) To the foreign refiner containing the information determined under paragraph (o)(3)(ii) of this section, and including identification of the port and Credit Trading Area at which the product was offloaded.

(5) Any United States importer shall meet the requirements specified in § 80.520, for any imported motor vehicle diesel fuel that is not classified as Certified DFR-Diesel under paragraph (o)(2) of this section.

(p) *Truck Imports of Certified DFR-Diesel produced at a Foreign Refinery.*

(1) Any refiner whose Certified DFR-Diesel is transported into the United States by truck may petition EPA to use alternative procedures to meet the following requirements:

(i) Certification under paragraph (d)(5) of this section;

(ii) Load port and port of entry sampling and testing under paragraphs (f) and (g) of this section;

(iii) Attest under paragraph (h) of this section; and

(iv) Importer testing under paragraph (o)(3) of this section.

(2) These alternative procedures must ensure Certified DFR-Diesel remains segregated from Non-Certified DFR-Diesel and from Non-DFR-Diesel until it is imported into the United States. The petition will be evaluated based on whether it adequately addresses the following:

(i) Provisions for monitoring pipeline shipments, if applicable, from the refinery, that ensure segregation of Certified DFR-Diesel from that refinery from all other diesel fuel;

(ii) Contracts with any terminals and/or pipelines that receive and/or transport Certified DFR-Diesel, that prohibit the commingling of Certified DFR-Diesel with any of the following:

(A) Other Certified DFR-Diesel from other refineries.

(B) All Non-Certified DFR-Diesel.

(C) All Non-DFR-Diesel;

(iii) Procedures for obtaining and reviewing truck loading records and United States import documents for Certified DFR-Diesel to ensure that such diesel fuel is only loaded into trucks making deliveries to the United States;

(iv) Attest procedures to be conducted annually by an independent third party that review loading records and import documents based on volume reconciliation, or other criteria, to confirm that all Certified DFR-Diesel remains segregated throughout the distribution system and is only loaded into trucks for import into the United States.

(3) The petition required by this section must be submitted to EPA along with the application for temporary refiner relief individual refinery highway diesel sulfur standard under this subpart I and this section.

(q) *Withdrawal or suspension of a foreign refinery's temporary refinery flexibility program approval.* EPA may withdraw or suspend a diesel refiner temporary compliance option diesel fuel sulfur program approval for a foreign refinery where:

(1) A foreign refiner fails to meet any requirement of this section;

(2) A foreign government fails to allow EPA inspections as provided in paragraph (i)(1) of this section;

(3) A foreign refiner asserts a claim of, or a right to claim, sovereign immunity in an action to enforce the requirements in this subpart; or

(4) A foreign refiner fails to pay a civil or criminal penalty that is not satisfied using the foreign refiner bond specified in paragraph (k) of this section.

(r) *Early use of a foreign refiner baseline.* (1) A foreign refiner may begin using an individual refinery baseline before EPA has approved the baseline, provided that:

(i) A baseline petition has been submitted as required in paragraph (b) of this section;

(ii) EPA has made a provisional finding that the baseline petition is complete;

(iii) The foreign refiner has made the commitments required in paragraph (i) of this section;

(iv) The persons who will meet the independent third party and independent attest requirements for the foreign refinery have made the commitments required in paragraphs (f)(3)(iii) and (h)(7)(iii) of this section; and

(v) The foreign refiner has met the bond requirements of paragraph (k) of this section.

(2) In any case where a foreign refiner uses an individual refinery baseline before final approval under paragraph (r)(1) of this section, and the foreign refinery baseline values that ultimately are approved by EPA are more stringent than the early baseline values used by the foreign refiner, the foreign refiner shall recalculate its compliance, ab initio, using the baseline values approved by the EPA, and the foreign refiner shall be liable for any resulting violation of the motor vehicle highway diesel fuel requirements.

(s) *Additional requirements for petitions, reports and certificates.* Any petition for approval to produce motor vehicle diesel fuel subject to the diesel foreign refiner program, any alternative procedures under paragraph (p) of this section, any report or other submission required by paragraph (c), (f)(2), or (i) of this section, and any certification under paragraph (d)(3) of this section shall be:

(1) Submitted in accordance with procedures specified by the Administrator, including use of any forms that may be specified by the Administrator.

(2) Be signed by the president or owner of the foreign refiner company, or by that person's immediate designee, and shall contain the following declaration:

I hereby certify: (1) that I have actual authority to sign on behalf of and to bind

[insert name of foreign refiner] with regard to all statements contained herein; (2) that I am aware that the information contained herein is being certified, or submitted to the United States Environmental Protection Agency, under the requirements of 40 CFR Part 80, subpart I, and that the information is material for determining compliance under these regulations; and (3) that I have read and understand the information being certified or submitted, and this information is true, complete and correct to the best of my knowledge and belief after I have taken reasonable and appropriate steps to verify the accuracy thereof.

I affirm that I have read and understand the provisions of 40 CFR Part 80, subpart I, including 40 CFR 80.620 apply to [insert name of foreign refiner]. Pursuant to Clean

Air Act section 113(c) and Title 18, United States Code, section 1001, the penalty for furnishing false, incomplete or misleading information in this certification or submission is a fine of up to \$10,000 U.S., and/or imprisonment for up to five years.

PART 86—CONTROL OF EMISSIONS FROM NEW AND IN-USE HIGHWAY VEHICLES AND ENGINES

11. The authority citation for part 86 continues to read as follows:

Authority: 42 U.S.C. 7401–7671q.

12. Section 86.1 is amended by revising paragraph (b)(1) to read as follows:

§ 86.1 Reference materials.

* * * * *

(b) * * *

(1) *ASTM material.* The following table sets forth material from the American Society for Testing and Materials that has been incorporated by reference. The first column lists the number and name of the material. The second column lists the section(s) of this part, other than this section, in which the matter is referenced. Copies of these materials may be obtained from American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428–2959.

Document number and name	40 CFR part 86 reference
ASTM E29–67 (Reapproved 1980), Standard Recommended Practice for Indicating Which Places of Figures Are To Be Considered Significant in Specified Limiting Values.	86.1105–87.
ASTM E29–90, Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications.	86.609–84; 86.609–96; 86.609–97; 86.609–98; 86.1009–84; 86.1009–96; 86.1442; 86.1708–99; 86.1709–99; 86.1710–99; 86.1728–99.
ASTM D5186–91, Standard Test Method for Determination of Aromatic Content of Diesel Fuels by Supercritical Fluid Chromatography.	86.113–07; 86.1313–91; 86.1313–94; 86.1313–98; 1313–2007.
ASTM D2163–91, Standard Test Method for Analysis of Liquefied Petroleum (LP) Gases and Propane Concentrates by Gas Chromatography.	86.113–94; 86.1213–94; 86.1313–94.
ASTM D1945–91, Standard Test Method for Analysis of Natural Gas By Gas Chromatography	86.113–94; 86.513–94; 86.1213–94; 86.1313–94.
ASTM E29–93a, Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications.	86.098–15; 86.004–15; 86.007–11; 86.007–15; 86.1803–01; 86.1823–01; 86.1824–01; 86.1825–01; 86.1837–01.
ASTM D2986–95a, (Reapproved 1999) Standard Practice for Evaluation of Air Assay Media by the Monodisperse DOP (Dioctyl Phthalate) Smoke Test.	86.1310–2007.
ASTM F1471–93, Standard Test Method for Air Cleaning Performance of a High-Efficiency Particulate Air-Filter System.	86.1310–2007.

* * * * *

13. Section 86.004–2 is amended by adding in alphabetical order a definition of “U.S.-directed production” to read as follows:

§ 86.004–2 Definitions.

* * * * *

U.S.-directed production means the engines and/or vehicles (as applicable) produced by a manufacturer for which the manufacturer has reasonable assurance that sale was or will be made to ultimate purchasers in the United States, excluding engines and/or vehicles that are certified to state emission standards different than the emission standards in this part.

* * * * *

14. Section 86.004–28 is amended by adding paragraph (i) to read as follows:

§ 86.004–28 Compliance with emission standards.

* * * * *

(i) Emission results from heavy-duty engines equipped with exhaust aftertreatment may need to be adjusted to account for regeneration events. This provision only applies for engines

equipped with emission controls that are regenerated on an infrequent basis. For the purpose of this paragraph (i), the term “regeneration” means an event during which emissions levels change while the aftertreatment performance is being restored by design. Examples of regenerations are increasing exhaust gas temperature to remove sulfur from an adsorber or increasing exhaust gas temperature to oxidize PM in a trap. For the purpose of this paragraph (i), the term “infrequent” means having an expected frequency of less than once per transient test cycle. Calculation and use of adjustment factors are described in paragraphs (i)(1) through (i)(5) of this section.

(1) *Development of adjustment factors.* Manufacturers must develop separate pairs of adjustment factors (an upward adjustment factor and a downward adjustment factor) for each pollutant based on measured emission data and observed regeneration frequency. Adjustment factors may be carried-over to subsequent model years or carried-across to other engine families only where the Administrator determines that such carry-over or

carry-across is consistent with good engineering judgment. Adjustment factors should generally apply to an entire engine family, but manufacturers may develop separate adjustment factors for different engine configurations within an engine family. All adjustment factors for regeneration are additive.

(2) *Calculation of adjustment factors.* The adjustment factors are calculated from the following parameters: the measured emissions from a test in which the regeneration occurs (EF_H), the measured emissions from a test in which the regeneration does not occur (EF_L), and the frequency of the regeneration event in terms of fraction of tests during which the regeneration occurs (F). The average emission rate (EF_A) is calculated as:

$$EF_A = (F)(EF_H) + (1 - F)(EF_L)$$

(i) The upward adjustment factor (UAF) is calculated as: $UAF = EF_A - EF_L$.

(ii) The downward adjustment factor (DAF) is calculated as: $DAF = EF_A - EF_H$.

(3) *Use of adjustment factors.* Upward adjustment factors are added to

measured emission rates for all tests in which the regeneration does not occur. Downward adjustment factors are added to measured emission rates for all tests in which the regeneration occurs. The occurrence of the regeneration must be identified in a manner that is readily apparent during all testing. Where no regeneration is identified, the upward adjustment factor shall be applied.

(4) *Sample calculation.* If EF_L is 0.10 g/bhp-hr, EF_H is 0.50 g/bhp-hr, and F is 0.1 (*i.e.*, the regeneration occurs once for each ten tests), then:

$$EF_A = (0.1)(0.5 \text{ g/bhp-hr}) + (1.0 - 0.1)(0.1 \text{ g/bhp-hr}) = 0.14 \text{ g/bhp-hr}$$

$$UAF = 0.14 \text{ g/bhp-hr} - 0.10 \text{ g/bhp-hr} = 0.04 \text{ g/bhp-hr}$$

$$DAF = 0.14 \text{ g/bhp-hr} - 0.50 \text{ g/bhp-hr} = -0.36 \text{ g/bhp-hr}$$

(5) *Options.* (i) A manufacturer may elect to omit adjustment factors for one or more of its engine families (or configurations) because the effect of the regeneration is small, or because it is not practical to identify when regenerations occur. In these cases, no upward or downward adjustment factor shall be added, and the manufacturer is liable for compliance with the emission standards for all tests, without regard to whether a regeneration occurs.

(ii) Upon request by the manufacturer, the Administrator may account for regeneration events differently than is provided in this paragraph (i). However, this option only applies for events that occur extremely infrequently, and which cannot be practically addressed using the adjustment factors described in this paragraph (i).

15. Section 86.004–40 is amended by revising the introductory text to read as follows:

§ 86.004–40 Heavy-duty engine rebuilding practices.

The provisions of this section are applicable to heavy-duty engines subject to model year 2004 or later standards and are applicable to the process of engine rebuilding (or rebuilding a portion of an engine or engine system). The process of engine rebuilding generally includes disassembly, replacement of multiple parts due to wear, and reassembly, and also may include the removal of the engine from the vehicle and other acts associated with rebuilding an engine. Any deviation from the provisions contained in this section is a prohibited act under section 203(a)(3) of the Clean Air Act (42 U.S.C. 7522(a)(3)).

* * * * *

16. Section 86.005–10 is amended by revising paragraph (a)(1)(ii)(C) to read as follows:

§ 86.005–10 Emission standards for 2005 and later model year Otto-cycle heavy-duty engines and vehicles.

* * * * *

(a) * * *

(1) * * *

(ii) * * *

(C) *Idle carbon monoxide.* For all Otto-cycle HDEs utilizing aftertreatment technology, and not certified to the onboard diagnostics requirements of § 86.005–17: 0.50 percent of exhaust gas flow at curb idle.

* * * * *

17. Section 86.005–17 is amended by revising paragraphs (b) introductory text, (b)(1), (b)(2), (b)(3), (b)(4), (b)(5), and (k) to read as follows:

§ 86.005–17 On-board diagnostics.

* * * * *

(b) *Malfunction descriptions.* The OBD system must detect and identify malfunctions in all monitored emission-related engine systems or components according to the following malfunction definitions as measured and calculated in accordance with test procedures set forth in subpart N of this part (engine-based test procedures) excluding the test procedure referred to as the “Supplemental emission test; test cycle and procedures” contained in § 86.1360, and excluding the test procedure referred to as the “Not-To-Exceed Test Procedure” contained in § 86.1370, and excluding the test procedure referred to as the “Load Response Test” contained in § 86.1380.

(1) *Catalysts and particulate traps.* (i) *Otto-cycle.* Catalyst deterioration or malfunction before it results in an increase in NMHC (or NO_x +NMHC, as applicable) emissions 1.5 times the NMHC (or NO_x +NMHC, as applicable) standard or FEL, as compared to the NMHC (or NO_x +NMHC, as applicable) emission level measured using a representative 4000 mile catalyst system.

(ii) *Diesel.* (A) If equipped, catalyst deterioration or malfunction before it results in exhaust emissions exceeding 1.5 times the applicable standard or FEL for NO_x (or NO_x +NMHC, as applicable) or PM. This requirement applies only to reduction catalysts; monitoring of oxidation catalysts is not required. This monitoring need not be done if the manufacturer can demonstrate that deterioration or malfunction of the system will not result in exceedance of the threshold.

(B) If equipped with a particulate trap, catastrophic failure of the device must be detected. Any particulate trap whose complete failure results in exhaust emissions exceeding 1.5 times the applicable standard or FEL for NMHC

(or NO_x +NMHC, as applicable) or PM must be monitored for such catastrophic failure. This monitoring need not be done if the manufacturer can demonstrate that a catastrophic failure of the system will not result in exceedance of the threshold.

(2) *Engine Misfire.* (i) *Otto-cycle.* Engine misfire resulting in exhaust emissions exceeding 1.5 times the applicable standard or FEL for NMHC, NO_x (or NO_x +NMHC, as applicable) or CO; and any misfire capable of damaging the catalytic converter.

(ii) *Diesel.* Lack of cylinder combustion must be detected.

(3) Oxygen sensors. If equipped, oxygen sensor deterioration or malfunction resulting in exhaust emissions exceeding 1.5 times the applicable standard or FEL for NMHC, NO_x (or NO_x +NMHC, as applicable) or CO.

(4) *Evaporative leaks.* If equipped, any vapor leak in the evaporative and/or refueling system (excluding the tubing and connections between the purge valve and the intake manifold) greater than or equal in magnitude to a leak caused by a 0.040 inch diameter orifice; an absence of evaporative purge air flow from the complete evaporative emission control system. Where fuel tank capacity is greater than 25 gallons, the Administrator may, following a request from the manufacturer, revise the size of the orifice to the smallest orifice feasible, based on test data, if the most reliable monitoring method available cannot reliably detect a system leak equal to a 0.040 inch diameter orifice.

(5) *Other emission control systems.* Any deterioration or malfunction occurring in an engine system or component directly intended to control emissions, including but not necessarily limited to, the exhaust gas recirculation (EGR) system, if equipped, the secondary air system, if equipped, and the fuel control system, singularly resulting in exhaust emissions exceeding 1.5 times the applicable emission standard or FEL for NMHC, NO_x (or NO_x +NMHC, as applicable), CO or diesel PM. For engines equipped with a secondary air system, a functional check, as described in paragraph (b)(6) of this section, may satisfy the requirements of this paragraph (b)(5) provided the manufacturer can demonstrate that deterioration of the flow distribution system is unlikely. This demonstration is subject to Administrator approval and, if the demonstration and associated functional check are approved, the diagnostic system must indicate a malfunction when some degree of secondary airflow is not detectable in

the exhaust system during the check. For engines equipped with positive crankcase ventilation (PCV), monitoring of the PCV system is not necessary provided the manufacturer can demonstrate to the Administrator's satisfaction that the PCV system is unlikely to fail.

* * * * *

(k) *Phase-in for heavy-duty engines.* Manufacturers of heavy-duty engines must comply with the OBD requirements in this section according to the following phase-in schedule, based on the percentage of projected engine sales within each category. The

2004 model year requirements in the following phase-in schedule are applicable only to heavy-duty Otto-cycle engines where the manufacturer has selected Otto-cycle Option 1 or Option 2 for alternative 2004 compliance according to § 86.005–01(c)(1) or (2). The 2005 through 2007 requirements in the following phase-in schedule apply to all heavy-duty engines intended for use in a heavy-duty vehicle weighing 14,000 pounds GVWR or less. Manufacturers may exempt 2005 model year diesel heavy-duty engines from the requirements of this section if the 2005 model year

commences before July 31, 2004 from the requirements of this section. Manufacturers may exempt 2005 model year Otto-cycle heavy-duty engines and vehicles from the requirements of this section if the manufacturer has selected Otto-cycle Option 3 and if the 2005 model year commences before July 31, 2004. For the purposes of calculating compliance with the phase-in provisions of this paragraph (k), heavy-duty engines may be combined with heavy-duty vehicles subject to the phase-in requirements of paragraph § 86.1806–05(l). The OBD Compliance phase-in table follows:

OBD COMPLIANCE PHASE-IN FOR HEAVY-DUTY ENGINES INTENDED FOR USE IN A HEAVY-DUTY VEHICLE WEIGHING 14,000 POUNDS GVWR OR LESS

Model year	Otto-cycle phase-in based on projected sales	Diesel Phase-in based on projected sales
2004 MY	Applicable only to Otto-cycle engines complying with Options 1 or 2; 40% compliance; alternative fuel waivers available.	
2005 MY	60% compliance; alternative fuel waivers available	50% compliance; alternative fuel waivers available.
2006 MY	80% compliance; alternative fuel waivers available	50% compliance; alternative fuel waivers available.
2007 MY	80% compliance; alternative fuel waivers available	100% compliance.
2008+ MY	100% compliance	100% compliance.

18. Section 86.007–11 is amended by revising the introductory text, paragraphs (a) through (a)(2), (a)(3), (a)(4)(i), (b)(3) through (d), and adding paragraphs (a)(4)(iv)(C), (a)(4)(v), (e), (f), (g) and (h) to read as follows:

§ 86.007–11 Emission standards and supplemental requirements for 2007 and later model year diesel heavy-duty engines and vehicles.

This section applies to new 2007 and later model year diesel HDEs. Section 86.007–11 includes text that specifies requirements that differ from § 86.004–11. Where a paragraph in § 86.004–11 is identical and applicable to § 86.007–11, this may be indicated by specifying the corresponding paragraph and the statement “[Reserved]. For guidance see § 86.004–11.”.

(a)(1) Exhaust emissions from new 2007 and later model year diesel HDEs shall not exceed the following:

(i) *Oxides of Nitrogen (NO_x)*. (A) 0.20 grams per brake horsepower-hour (0.075 grams per megajoule).

(B) A manufacturer may elect to include any or all of its diesel HDE families in any or all of the NO_x and NO_x plus NMHC emissions ABT programs for HDEs, within the restrictions described in § 86.007–15 or § 86.004–15. If the manufacturer elects to include engine families in any of these programs, the NO_x FELs may not exceed the following FEL caps: 2.00 grams per brake horsepower-hour (0.75 grams per megajoule) for model years

before 2010; 0.50 grams per brake horsepower-hour (0.19 grams per megajoule) for model years 2010 and later. This ceiling value applies whether credits for the family are derived from averaging, banking, or trading programs.

(ii)(A) *Non-Methane Hydrocarbons (NMHC) for engines fueled with either diesel fuel, natural gas, or liquefied petroleum gas.* 0.14 grams per brake horsepower-hour (0.052 grams per megajoule).

(B) *Non-Methane Hydrocarbon Equivalent (NMHCE) for engines fueled with methanol.* 0.14 grams per brake horsepower-hour (0.052 grams per megajoule).

(iii) *Carbon monoxide.* (A) 15.5 grams per brake horsepower-hour (5.77 grams per megajoule).

(B) 0.50 percent of exhaust gas flow at curb idle (methanol-, natural gas-, and liquefied petroleum gas-fueled diesel HDEs only). This does not apply for vehicles certified to the requirements of § 86.005–17

(iv) *Particulate.* (A) 0.01 grams per brake horsepower-hour (0.0037 grams per megajoule).

(B) A manufacturer may elect to include any or all of its diesel HDE families in any or all of the particulate ABT programs for HDEs, within the restrictions described in § 86.007–15 or other applicable sections. If the manufacturer elects to include engine families in any of these programs, the particulate FEL may not exceed 0.02

grams per brake horsepower-hour (0.0075 grams per megajoule).

(2) The standards set forth in paragraph (a)(1) of this section refer to the exhaust emitted over the operating schedule set forth in paragraph (f)(2) of appendix I to this part, and measured and calculated in accordance with the procedures set forth in subpart N or P of this part, except as noted in § 86.007–23(c)(2).

(3) *SET* (i) The weighted average exhaust emissions, as determined under § 86.1360–2007(e)(5) pertaining to the supplemental emission test cycle, for each regulated pollutant shall not exceed 1.0 times the applicable emission standards or FELs specified in paragraph (a)(1) of this section.

(ii) For engines not having a NO_x FEL less than 1.5 g/bhp-hr, gaseous exhaust emissions shall not exceed the steady-state interpolated values determined by the Maximum Allowable Emission Limits (for the corresponding speed and load), as determined under § 86.1360–2007(f), when the engine is operated in the steady-state control area defined under § 86.1360–2007(d).

(4) *NTE* (i)(A) The brake-specific exhaust NMHC or NO_x emissions in g/bhp-hr, as determined under § 86.1370–2007 pertaining to the not-to-exceed test procedures, shall not exceed 1.5 times the applicable NMHC or NO_x emission standards or FELs specified in paragraph (a)(1) of this section, during engine and vehicle operation specified

in paragraph (a)(4)(ii) of this section except as noted in paragraph (a)(4)(iii) of this section.

(B) For engines not having a NO_x FEL less than 1.50 g/bhp-hr, the brake-specific NO_x and NMHC exhaust emissions in g/bhp-hr, as determined under § 86.1370–2007 pertaining to the not-to-exceed test procedures, shall not exceed 1.25 times the applicable emission standards or FELs specified in paragraph (a)(1) of this section (or of § 86.004–11, as allowed by paragraph (g) of this section), during engine and vehicle operation specified in paragraph (a)(4)(ii) of this section except as noted in paragraph (a)(4)(iii) of this section.

(C) The brake-specific exhaust PM emissions in g/bhp-hr, as determined under § 86.1370–2007 pertaining to the not-to-exceed test procedures, shall not exceed 1.5 times the applicable PM emission standards or FEL (for FELs above the standard only) specified in paragraph (a)(1) of this section, during engine and vehicle operation specified in paragraph (a)(4)(ii) of this section except as noted in paragraph (a)(4)(iii) of this section.

(D) The brake-specific exhaust CO emissions in g/bhp-hr, as determined under § 86.1370–2007 pertaining to the not-to-exceed test procedures, shall not exceed 1.25 times the applicable CO emission standards or FEL specified in paragraph (a)(1) of this section, during engine and vehicle operation specified in paragraph (a)(4)(ii) of this section except as noted in paragraph (a)(4)(iii) of this section.

* * * * *

(iv) * * *

(C) For model years 2010 through 2013, the Administrator may allow up to three deficiencies per engine family. The provisions of paragraphs (a)(4)(iv)(A) and (B) of this section apply for deficiencies allowed by this paragraph (a)(4)(iv)(C). In determining whether to allow the additional deficiencies, the Administrator may consider any relevant factors, including the factors identified in paragraph (a)(4)(iv)(A) of this section. If additional deficiencies are approved, the Administrator may set any additional conditions that he/she determines to be appropriate.

(v) The emission limits specified in paragraphs (a)(3) and (a)(4) of this section shall be rounded to the same number of significant figures as the applicable standards in paragraph (a)(1) of this section using ASTM E29–93a (Incorporated by reference at § 86.1).

* * * * *

(b)(3) and (b)(4) [Reserved]. For guidance see § 86.004–11.

(c) No crankcase emissions shall be discharged directly into the ambient atmosphere from any new 2007 or later model year diesel HDE, with the following exception: HDEs equipped with turbochargers, pumps, blowers, or superchargers for air induction may discharge crankcase emissions to the ambient atmosphere if the emissions are added to the exhaust emissions (either physically or mathematically) during all emission testing. Manufacturers taking advantage of this exception must manufacture the engines so that all crankcase emission can be routed into a dilution tunnel (or other sampling system approved in advance by the Administrator), and must account for deterioration in crankcase emissions when determining exhaust deterioration factors. For the purpose of this paragraph (c), crankcase emissions that are routed to the exhaust upstream of exhaust aftertreatment during all operation are not considered to be “discharged directly into the ambient atmosphere.”

(d) Every manufacturer of new motor vehicle engines subject to the standards prescribed in this section shall, prior to taking any of the actions specified in section 203(a)(1) of the Act, test or cause to be tested motor vehicle engines in accordance with applicable procedures in subpart I or N of this part to ascertain that such test engines meet the requirements of paragraphs (a), (b), (c), and (d) of this section.

(e) [Reserved]. For guidance see § 86.004–11.

(f) (1) Model year 2007 and later diesel-fueled heavy-duty engines and vehicles for sale in Guam, American Samoa, or the Commonwealth of the Northern Mariana Islands shall be subject to the same standards and requirements as apply to 2006 model year diesel heavy-duty engines and vehicles, but only if the vehicle or engine bears a permanently affixed label stating:

THIS ENGINE (or VEHICLE, as applicable) CONFORMS TO US EPA EMISSION STANDARDS APPLICABLE TO MODEL YEAR 2006. THIS ENGINE (or VEHICLE, as applicable) DOES NOT CONFORM TO US EPA EMISSION REQUIREMENTS IN EFFECT AT TIME OF PRODUCTION AND MAY NOT BE IMPORTED INTO THE UNITED STATES OR ANY TERRITORY OF THE UNITED STATES EXCEPT GUAM, AMERICAN SAMOA, OR THE COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS.

(2) The importation or sale of such a vehicle or engine for use at any location U.S. other than Guam, American Samoa, or the Commonwealth of the Northern Mariana Islands shall be considered a

violation of section 203(a)(1) of the Clean Air Act. In addition, vehicles or vehicle engines subject to this exemption may not subsequently be imported or sold into any state or territory of the United States other than Guam, American Samoa, or Commonwealth of the Northern Mariana Islands.

(g) Phase-in options. (1) For model years 2007, 2008, and 2009, manufacturers may certify some of their engine families to the combined NO_x plus NMHC standard applicable to model year 2006 engines under § 86.004–11, in lieu of the separate NO_x and NMHC standards specified in paragraph (a)(1) of this section. These engines must comply with all other requirements applicable to model year 2007 engines. The combined number of engines in the engine families certified to the 2006 combined NO_x plus NMHC standard may not exceed 50 percent of the manufacturer's U.S.-directed production of heavy-duty diesel motor vehicle engines for model year 2007, 2008, or 2009, except as explicitly allowed by this paragraph (g).

(2)(i) Manufacturers certifying engines to all of the applicable standards listed in paragraph (a) and (c) of this section (without using credits) prior to model year 2007 may reduce the number of engines that are required to meet the standards listed in paragraph (a) of this section in model year 2007, 2008 and/or 2009, taking into account the phase-in option provided in paragraph (g)(1) of this section. For every two engines that are certified early, the manufacturer may reduce the number of engines that are required by paragraph (g)(1) of this section to meet standards listed in paragraph (a)(1) of this section by three engines. For example, if a manufacturer produces 100 heavy-duty diesel engines in 2006 that meet all of the applicable standards listed in paragraph (a) of this section, and it produced 10,000 heavy-duty diesel engines in 2007, then only 4,850 $((10,000)(0.50) - (100)(1.5))$ of the engines would need to comply with the standards listed in paragraph (a) of this section.

(ii) Manufacturers certifying engines to the PM standards listed in paragraph (a), and to all of the applicable standards in paragraph (c) of this section (without using credits) prior to model year 2007 may reduce the number of engines that are required to meet the PM standard listed in paragraph (a) of this section in model year 2007, 2008 and/or 2009. For every two engines that are certified to the PM standard early, the manufacturer may reduce the number of engines that are otherwise required to meet the PM

standard listed in paragraph (a)(1) of this section by three engines.

(3) Manufacturers may initially base compliance with the phase-in requirements of paragraph (g)(1) or (g)(2) of this section on projected U.S.-directed production estimates. This is allowed for model year 2007 and/or 2008. However, if a manufacturer's actual U.S. directed production volume of engines that comply with the model year 2007 NO_x and NMHC standards is less than the required amount, the shortfall (in terms of number of engines) must be made up prior to 2010. For example, if a manufacturer plans in good faith to produce 50 percent of its projected 10,000 2007 engines (i.e., 5,000 engines) in compliance with the 2007 NO_x and NMHC standard, but is only able to produce 4,500 such engines of an actual 10,000 2007 engines, the manufacturer would need to produce an extra 500 engines in 2008 or 2009 in compliance with the 2007 NO_x and NMHC standard. The deficit allowed by this paragraph (g)(3) may not exceed 25 percent of the U.S. directed production volume.

(4) Manufacturers certifying engines to a voluntary NO_x standard of 0.10 g/bhp-hr (without using credits) in addition to all of the other applicable standards listed in paragraphs (a) and (c) of this section prior to model year 2007 may reduce the number of engines that are required to meet the standards listed in paragraph (a)(1) of this section in model year 2007, 2008 and/or 2009, taking into account the phase-in option provided in paragraph (g)(1) of this section. For every engine that is certified early under this provision, the manufacturer may reduce the number of engines that are required by paragraph (g)(1) of this section to meet the standards listed in paragraph (a)(1) of this section by two engines.

(5) For engines certified under paragraph (g)(1) of this section to the NO_x+NMHC standard in § 86.004–11, the standards or FELs to which they are certified shall be used for the purposes of paragraphs (a)(3) and (a)(4) of this section.

(h)(1) For model years prior to 2012, for purposes of determining compliance after title or custody has transferred to the ultimate purchaser, for engines having a NO_x FEL no higher than 1.30 g/bhp-hr, the applicable compliance limit shall be determined by adding the applicable adjustment from paragraph (h)(2) of this section to the otherwise applicable standard or FEL for NO_x.

(2)(i) For engines with 110,000 or fewer miles, the adjustment is 0.10 g/bhp-hr.

(ii) For engines with 110,001 to 185,000 miles, the adjustment is 0.15 g/bhp-hr.

(iii) For engines with 185,001 or more miles, the adjustment is 0.20 g/bhp-hr.

(3) For model years prior to 2012, for purposes of determining compliance after title or custody has transferred to the ultimate purchaser, the applicable compliance limit shall be determined by adding 0.01 g/bhp-hr to the otherwise applicable standard or FEL for PM.

19. A new § 86.007—is added to Subpart A to read as follows:

§ 86.007–15 NO_x and particulate averaging, trading, and banking for heavy-duty engines.

Section 86.007–15 includes text that specifies requirements that differ from § 86.004–15. Where a paragraph in § 86.004–15 is identical and applicable to § 86.007–15, this may be indicated by specifying the corresponding paragraph and the statement “[Reserved]. For guidance see § 86.004–15.”

(a) through (l) [Reserved]. For guidance see § 86.004–15.

(m) The following provisions apply for model year 2007 and later engines (including engines certified during years 2007–2009 under the phase-in provisions of § 86.007–11(g)(1), § 86.005–10(a), or § 86.008–10(f)(1)). These provisions apply instead of the provisions of paragraphs § 86.004–15 (a) through (k) to the extent that they are in conflict.

(1) Manufacturers of Otto-cycle engines may participate in an NMHC averaging, banking and trading program to show compliance with the standards specified in § 86.008–10. The generation and use of NMHC credits are subject to the same provisions in paragraphs § 86.004–15 (a) through (k) that apply for NO_x plus NMHC credits, except as otherwise specified in this section.

(2) Credits are calculated as NO_x or NMHC credits for engines certified to separate NO_x and NMHC standards. NO_x plus NMHC credits (including banked credits and credits that are generated during years 2007–2009 under the phase-in provisions of § 86.007–11(g)(1), § 86.005–10(a), or § 86.008–10(f)(1)) may be used to show compliance with 2007 or later NO_x standards (NO_x or NMHC standards for Otto-cycle engines), subject to an 0.8 discount factor (e.g., 100 grams of NO_x plus NMHC credits is equivalent to 80 grams of NO_x credits).

(3) NO_x or NMHC (or NO_x plus NMHC) credits may be exchanged between heavy-duty Otto-cycle engine families certified to the engine standards of this subpart and heavy-duty Otto-cycle engine families certified

to the chassis standards of subpart S of this part, subject to an 0.8 discount factor (e.g., 100 grams of NO_x (or NO_x plus NMHC) credits generated from engines would be equivalent to 80 grams of NO_x credits if they are used in the vehicle program of subpart S, and vice versa).

(4) Credits that were previously discounted when they were banked according to paragraph (c) of § 86.004–15, are subject to an additional discount factor of 0.888 instead of the 0.8 discount factor otherwise required by paragraph (m)(2) or (m)(3) of this section. This results in a total discount factor of 0.8 ($0.9 \times 0.888 = 0.8$).

(5) For diesel engine families, the combined number of engines certified to FELs higher than 0.50 g/bhp-hr using banked NO_x (and/or NO_x plus NMHC) credits in any given model year may not exceed 10 percent of the manufacturer's U.S.-directed production of engines in all heavy-duty diesel engine families for that model year.

(6) The FEL must be expressed to the same number of decimal places as the standard (generally, one-hundredth of a gram per brake horsepower-hour). For engines certified to standards expressed only one-tenth of a gram per brake horsepower-hour, if the FEL is below 1.0, then add a zero to the standard in the second decimal place and express the FEL to nearest one-hundredth of a gram per brake horsepower-hour.

(7) Credits are to be rounded to the nearest one-hundredth of a Megagram using ASTM E29–93a (Incorporated by reference at § 86.1).

(8) Credits generated for 2007 and later model year diesel engine families, or generated for 2008 and later model year Otto-cycle engine families are not discounted (except as specified in paragraph (m)(2) or (m)(3) of this section), and do not expire.

(9) For the purpose of using or generating credits during a phase-in of new standards, a manufacturer may elect to split an engine family into two subfamilies (e.g., one which uses credits and one which generates credits). The manufacturer must indicate in the application for certification that the engine family is to be split, and may assign the numbers and configurations of engines within the respective subfamilies at any time prior to the submission of the end-of-year report required by § 86.001–23.

(i) Manufacturers certifying a split diesel engine family to both the Phase 1 and Phase 2 standards with equally sized subfamilies may exclude the engines within that split family from end-of-year NO_x (or NO_x+NMHC) ABT calculations, provided that neither

subfamily generates credits for use by other engine families, or uses banked credits, or uses averaging credits from other engine families. All of the engines in that split family must be excluded from the phase-in calculations of § 86.007–11(g)(1) (both from the number of engines complying with the standards being phased-in and from the total number of U.S.-directed production engines.)

(ii) Manufacturers certifying a split Otto-cycle engine family to both the Phase 1 and Phase 2 standards with equally sized subfamilies may exclude the engines within that split family from end-of-year NO_x (or NO_x+NMHC) ABT calculations, provided that neither subfamily generates credits for use by other engine families, or uses banked credits, or uses averaging credits from other engine families. All of the engines in that split family must be excluded from the phase-in calculations of § 86.008–10(f)(1) (both from the number of engines complying with the standards being phased-in and from the total number of U.S.-directed production engines.)

(iii) Manufacturers certifying a split engine family may label all of the engines within that family with a single NO_x or NO_x+NMHC FEL. The FEL on the label will apply for all SEA or other compliance testing.

(iv) Notwithstanding the provisions of paragraph (m)(9)(iii) of this section, for split families, the NO_x FEL shall be used to determine applicability of the provisions of § 86.007–11(a)(3)(ii), (a)(4)(i)(B), and (h)(1), and § 86.008–10(g).

(10) For model years 2007 through 2009, to be consistent with the phase-in provisions of § 86.007–11(g)(1), credits generated from engines in one diesel engine service class (e.g., light-heavy duty diesel engines) may be used for averaging by engines in a different diesel engine service class, provided the credits are calculated for both engine families using the conversion factor and useful life of the engine family using the credits, and the engine family using the credits is certified to the standards listed in § 86.007–11(a)(1). Banked or traded credits may not be used by any engine family in a different service class than the service class of the engine family generating the credits.

20. A new § 86.007–23 is added to Subpart A to read as follows:

§ 86.007–23 Required data.

Section 86.007–23 includes text that specifies requirements that differ from § 86.095–23, § 86.098–23, or § 86.001–23. Where a paragraph in § 86.095–23, § 86.098–23, or § 86.001–23 is identical

and applicable to § 86.007–23, this may be indicated by specifying the corresponding paragraph and the statement “[Reserved]. For guidance see § 86.095–23.”, “[Reserved]. For guidance see § 86.098–23.”, or “[Reserved]. For guidance see § 86.001–23.”.

(a) through (b)(1) [Reserved]. For guidance see § 86.098–23.

(b)(2) [Reserved]. For guidance see § 86.001–23.

(b)(3) and (b)(4) [Reserved]. For guidance see § 86.098–23.

(c) *Emission data.*—(1) *Certification vehicles.* The manufacturer shall submit emission data (including, methane, methanol, formaldehyde, and hydrocarbon equivalent, as applicable) on such vehicles tested in accordance with applicable test procedures and in such numbers as specified. These data shall include zero-mile data, if generated, and emission data generated for certification as required under § 86.000–26(a)(3). In lieu of providing emission data the Administrator may, on request of the manufacturer, allow the manufacturer to demonstrate (on the basis of previous emission tests, development tests, or other information) that the engine will conform with certain applicable emission standards of this part. Standards eligible for such manufacturer requests are those for idle CO emissions, smoke emissions, or particulate emissions from methanol-fueled or gaseous-fueled diesel-cycle certification vehicles, those for particulate emissions from Otto-cycle certification vehicles or gaseous-fueled vehicles, and those for formaldehyde emissions from petroleum-fueled vehicles. Also eligible for such requests are standards for total hydrocarbon emissions from model year 1994 and later certification vehicles. By separate request, including appropriate supporting test data, the manufacturer may request that the Administrator also waive the requirement to measure particulate or formaldehyde emissions when conducting Selective Enforcement Audit testing of Otto-cycle vehicles.

(2) *Certification engines.* The manufacturer shall submit emission data on such engines tested in accordance with applicable emission test procedures of this subpart and in such numbers as specified. These data shall include zero-hour data, if generated, and emission data generated for certification as required under § 86.000–26(c)(4). In lieu of providing emission data on idle CO emissions or particulate emissions from methanol-fueled or gaseous-fueled diesel-cycle certification engines, on particulate emissions from Otto-cycle engines, or

on CO emissions from diesel-cycle certification engines, the Administrator may, on request of the manufacturer, allow the manufacturer to demonstrate (on the basis of previous emission tests, development tests, or other information) that the engine will conform with the applicable emission standards of this part. In lieu of providing emission data on smoke emissions from methanol-fueled or petroleum-fueled diesel certification engines, the Administrator may, on the request of the manufacturer, allow the manufacturer to demonstrate (on the basis of previous emission tests, development tests, or other information) that the engine will conform with the applicable emissions standards of this part. In lieu of providing emissions data on smoke emissions from diesel-cycle engines when conducting Selective Enforcement Audit testing under subpart K of this part, the Administrator may, on separate request of the manufacturer, allow the manufacturer to demonstrate (on the basis of previous emission tests, development tests, or other information) that the engine will conform with the applicable smoke emissions standards of this part.

(d) through (e)(1) [Reserved]. For guidance see § 86.098–23.

(e)(2) and (e)(3) [Reserved]. For guidance see § 86.001–23.

(f) through (g) [Reserved]. For guidance see § 86.095–23.

(h) through (k) [Reserved]. For guidance see § 86.098–23.

(l) [Reserved]. For guidance see § 86.095–23.

(m) [Reserved]. For guidance see § 86.098–23.

21. A new § 86.007–25 is added to Subpart A to read as follows:

§ 86.007–25 Maintenance.

Section 86.007–25 includes text that specifies requirements that differ from § 86.094–25, § 86.098–25, or § 86.004–25. Where a paragraph in § 86.094–25, § 86.098–25, or § 86.004–25 is identical and applicable to § 86.007–25, this may be indicated by specifying the corresponding paragraph and the statement “[Reserved]. For guidance see § 86.094–25.”, “[Reserved]. For guidance see § 86.098–25.”, or “[Reserved]. For guidance see § 86.004–25.”.

(a) through (a)(2) [Reserved]. For guidance see § 86.004–25.

(b) introductory text through (b)(3)(ii) [Reserved]. For guidance see § 86.094–25.

(b)(3)(iii) through (b)(3)(v)(H) [Reserved]. For guidance see § 86.004–25.

(b)(3)(vi)(A) through (b)(3)(vi)(D) [Reserved]. For guidance see § 86.094–25.

(b)(3)(vi)(E) through (b)(3)(vi)(J) [Reserved]. For guidance see § 86.098–25.

(b)(4) introductory text through (b)(4)(iii)(C) [Reserved]. For guidance see § 86.004–25.

(b)(4)(iii)(D) Particulate trap or trap oxidizer systems including related components (adjustment and cleaning only for filter element, replacement of the filter element is not allowed during the useful life).

(b)(4)(iii)(E) [Reserved]. For guidance see § 86.004–25.

(F) Catalytic converter (adjustment and cleaning only for catalyst beds, replacement of the bed is not allowed during the useful life).

(b)(4)(iii)(G) through (b)(6) [Reserved]. For guidance see § 86.004–25.

(b)(7) through (h) [Reserved]. For guidance see § 86.094–25.

(i) Notwithstanding the provisions of § 86.004–25(b)(4)(iii) introductory text through (b)(4)(iii)(C), paragraph (b)(4)(iii)(D) of this section, § 86.004–25(b)(4)(iii)(E), paragraph (b)(4)(iii)(F) of this section, § 86.004–25(b)(4)(iii)(G), and § 86.004–25(b)(6), manufacturers of heavy-duty engines may schedule replacement or repair of particulate trap (or trap oxidizer) systems or catalytic converters (including NO_x adsorbers), provided:

(1) The manufacturer demonstrates to the Administrator's satisfaction that the repair or replacement will be performed according to the schedule; and

(2) The manufacturer pays for the repair or replacement.

22. A new § 86.007–35 is added to Subpart A to read as follows:

§ 86.007–35 Labeling.

Section 86.007–35 includes text that specifies requirements that differ from § 86.095–35. Where a paragraph in § 86.095–35 is identical and applicable to § 86.007–35, this may be indicated by specifying the corresponding paragraph and the statement “[Reserved]. For guidance see § 86.095–35.”.

(a) Introductory text through (a)(1)(iii)(L) [Reserved]. For guidance see § 86.095–35.

(a)(1)(iii)(M) [Reserved.]

(a)(1)(iii)(N)(1) For vehicles exempted from compliance with certain revised performance warranty procedures, as specified in § 86.096–21(j), a statement indicating the specific performance warranty test(s) of 40 CFR part 85, subpart W, not to be performed.

(2) For vehicles exempted from compliance with all revised performance warranty procedures, as

specified in § 86.096–21(k), a statement indicating:

(i) That none of the performance warranty tests of 40 CFR part 85, subpart W, is to be performed; and

(ii) The name of the Administrator-approved alternative test procedure to be performed.

(2) Light-duty truck and heavy-duty vehicles optionally certified in accordance with the light-duty truck provisions.

(i) A legible, permanent label shall be affixed in a readily visible position in the engine compartment.

(ii) The label shall be affixed by the vehicle manufacturer who has been issued the certificate of conformity for such vehicle, in such a manner that it cannot be removed without destroying or defacing the label. The label shall not be affixed to any equipment which is easily detached from such vehicle.

(iii) The label shall contain the following information lettered in the English language in block letters and numerals, which shall be of a color that contrasts with the background of the label:

(A) The label heading: Important Vehicle Information;

(B) Full corporate name and trademark of the manufacturer;

(C) Engine displacement (in cubic inches or liters), engine family identification, and evaporative/refueling family;

(a)(2)(iii)(D) through (a)(2)(iii)(E) [Reserved]. For guidance see § 86.095–35.

(a)(2)(iii)(F) [Reserved]

(a)(2)(iii)(G) through (a)(2)(iii)(K) [Reserved]. For guidance see § 86.095–35.

(a)(2)(iii)(L) [Reserved]

(a)(2)(iii)(M) through (a)(2)(iii)(N) [Reserved]. For guidance see § 86.095–35.

(a)(2)(iii)(O)(1) For vehicles exempted from compliance with certain revised performance warranty procedures, as specified in § 86.096–21(j), a statement indicating the specific performance warranty test(s) of 40 CFR part 85, subpart W, not to be performed.

(2) For vehicles exempted from compliance with all revised performance warranty procedures, as specified in § 86.096–21(k), a statement indicating:

(i) That none of the performance warranty tests of 40 CFR part 85, subpart W, is to be performed, and

(ii) The name of the Administrator-approved alternative test procedure to be performed.

(a)(3) heading through (b) [Reserved]. For guidance see § 86.095–35.

(c) Model year 2007 and later diesel-fueled vehicles must include permanent

readily visible labels on the dashboard (or instrument panel) and near all fuel inlets that state “Use Low-Sulfur Diesel Fuel Only” or “Low-Sulfur Diesel Fuel Only”.

(d) through (i) [Reserved]. For guidance see § 86.095–35.

23. A new § 86.007–38 is added to Subpart A to read as follows:

§ 86.007–38 Maintenance instructions.

Section 86.007–38 includes text that specifies requirements that differ from those specified in § 86.094–38 or § 86.004–38. Where a paragraph in § 86.094–38 or § 86.004–38 is identical and applicable to § 86.007–38, this may be indicated by specifying the corresponding paragraph and the statement “[Reserved]. For guidance see § 86.094–38.”, or “[Reserved]. For guidance see § 86.004–38.”.

(a) through (f) [Reserved]. For guidance see § 86.004–38.

(g) [Reserved]. For guidance see § 86.094–38.

(h) [Reserved]. For guidance see § 86.004–38.

(i) For each new diesel-fueled engine subject to the standards prescribed in § 86.007–11, as applicable, the manufacturer shall furnish or cause to be furnished to the ultimate purchaser a statement that “This engine must be operated only with low sulfur diesel fuel (that is, diesel fuel meeting EPA specifications for highway diesel fuel, including a 15 ppm sulfur cap).”

24. A new § 86.008–10 is added to subpart A to read as follows:

§ 86.008–10 Emission standards for 2008 and later model year Otto-cycle heavy-duty engines and vehicles.

Section 86.008–10 includes text that specifies requirements that differ from § 86.099–10. Where a paragraph in § 86.099–10 is identical and applicable to § 86.008–10, this may be indicated by specifying the corresponding paragraph and the statement “[Reserved]. For guidance see § 86.099–10.”.

(a)(1) Exhaust emissions from new 2008 and later model year Otto-cycle HDEs shall not exceed:

(i)(A) *Oxides of Nitrogen (NO_x)*. 0.20 grams per brake horsepower-hour (0.075 grams per megajoule).

(B) A manufacturer may elect to include any or all of its Otto-cycle HDE families in any or all of the NO_x and NO_x plus NMHC emissions ABT programs for HDEs, within the restrictions described in § 86.008–15 or § 86.004–15. If the manufacturer elects to include engine families in any of these programs, the NO_x FEL may not exceed 0.50 grams per brake horsepower-hour (0.26 grams per

megajoule). This ceiling value applies whether credits for the family are derived from averaging, banking, or trading programs. The NO_x FEL cap is 0.80 for model years before 2011 for manufacturers choosing to certify to the 1.5 g/bhp-hr NO_x+NMHC standard in 2003 or 2004, in accordance with § 86.005–10(f).

(ii)(A) *Non-methane Hydrocarbons (NMHC) for engines fueled with either gasoline, natural gas, or liquefied petroleum gas.* 0.14 grams per brake horsepower-hour (0.052grams per megajoule).

(B) *Non-methane Hydrocarbon Equivalent (NMHCE) for engines fueled with methanol.* 0.14 grams per brake horsepower-hour (0.052grams per megajoule).

(C) A manufacturer may elect to include any or all of its Otto-cycle HDE families in any or all of the NMHC emissions ABT programs for HDEs, within the restrictions described in § 86.008–15 or § 86.004–15. If the manufacturer elects to include engine families in any of these programs, the NMHC FEL may not exceed 0.30 grams per brake horsepower-hour. This ceiling value applies whether credits for the family are derived from averaging, banking, or trading programs. The NMHC FEL cap is 0.40 for model years before 2011 for manufacturers choosing to certify to the 1.5 g/bhp-hr NO_x+NMHC in 2004, as allowed in § 86.005–10.

(iii)(A) *Carbon monoxide.* 14.4 grams per brake horsepower-hour (5.36 grams per megajoule).

(B) *Idle Carbon Monoxide.* For all Otto-cycle HDEs utilizing aftertreatment technology, and not certified to the onboard diagnostics requirements of § 86.005–17: 0.50 percent of exhaust gas flow at curb idle.

(iv) *Particulate.* 0.01grams per brake horsepower-hour (0.0037grams per megajoule).

(2) The standards set forth in paragraph (a)(1) of this section refer to the exhaust emitted over the operating schedule set forth in paragraph (f)(1) of appendix I to this part, and measured and calculated in accordance with the procedures set forth in subpart N or P of this part.

(3) [Reserved]

(4) [Reserved]

(b) Evaporative emissions from heavy-duty vehicles shall not exceed the following standards. The standards apply equally to certification and in-use vehicles. The spitback standard also applies to newly assembled vehicles. For certification vehicles only, manufacturers may conduct testing to quantify a level of nonfuel background

emissions for an individual test vehicle. Such a demonstration must include a description of the source(s) of emissions and an estimated decay rate. The demonstrated level of nonfuel background emissions may be subtracted from emission test results from certification vehicles if approved in advance by the Administrator.

(1) Hydrocarbons (for vehicles equipped with gasoline-fueled, natural gas-fueled or liquefied petroleum gas-fueled engines).

(i) For vehicles with a Gross Vehicle Weight Rating of up to 14,000 lbs:

(A)(1) For the full three-diurnal test sequence described in § 86.1230–96, diurnal plus hot soak measurements: 1.4 grams per test.

(2) For the supplemental two-diurnal test sequence described in § 86.1230–96, diurnal plus hot soak measurements (gasoline-fueled vehicles only): 1.75 grams per test.

(B) Running loss test (gasoline-fueled vehicles only): 0.05 grams per mile.

(C) Fuel dispensing spitback test (gasoline-fueled vehicles only): 1.0 grams per test.

(ii) For vehicles with a Gross Vehicle Weight Rating of greater than 14,000 lbs:

(A)(1) For the full three-diurnal test sequence described in § 86.1230–96, diurnal plus hot soak measurements: 1.9 grams per test.

(2) For the supplemental two-diurnal test sequence described in § 86.1230–96, diurnal plus hot soak measurements (gasoline-fueled vehicles only): 2.3 grams per test.

(B) Running loss test (gasoline-fueled vehicles only): 0.05 grams per mile.

(2) Total Hydrocarbon Equivalent (for vehicles equipped with methanol-fueled engines).

(i) For vehicles with a Gross Vehicle Weight Rating of up to 14,000 lbs:

(A)(1) For the full three-diurnal test sequence described in § 86.1230–96, diurnal plus hot soak measurements: 1.4 grams carbon per test.

(2) For the supplemental two-diurnal test sequence described in § 86.1230–96, diurnal plus hot soak measurements: 1.75 grams carbon per test.

(B) Running loss test: 0.05 grams carbon per mile.

(C) Fuel dispensing spitback test: 1.0 grams carbon per test.

(ii) For vehicles with a Gross Vehicle Weight Rating of greater than 14,000 lbs:

(A)(1) For the full three-diurnal test sequence described in § 86.1230–96, diurnal plus hot soak measurements: 1.9 grams carbon per test.

(2) For the supplemental two-diurnal test sequence described in § 86.1230–96, diurnal plus hot soak measurements: 2.3 grams carbon per test.

(B) Running loss test: 0.05 grams carbon per mile.

(3)(i) For vehicles with a Gross Vehicle Weight Rating of up to 26,000 lbs, the standards set forth in paragraphs (b)(1) and (b)(2) of this section refer to a composite sample of evaporative emissions collected under the conditions and measured in accordance with the procedures set forth in subpart M of this part.

(ii) For vehicles with a Gross Vehicle Weight Rating of greater than 26,000 lbs., the standards set forth in paragraphs (b)(1)(ii) and (b)(2)(ii) of this section refer to the manufacturer's engineering design evaluation using good engineering practice (a statement of which is required in § 86.098–23(b)(4)(ii)).

(4) All fuel vapor generated in a gasoline- or methanol-fueled heavy-duty vehicle during in-use operations shall be routed exclusively to the evaporative control system (e.g., either canister or engine purge). The only exception to this requirement shall be for emergencies.

(c) No crankcase emissions shall be discharged into the ambient atmosphere from any new 2008 or later model year Otto-cycle HDE.

(d) Every manufacturer of new motor vehicle engines subject to the standards prescribed in this section shall, prior to taking any of the actions specified in section 203(a)(1) of the Act, test or cause to be tested motor vehicle engines in accordance with applicable procedures in subpart N or P of this part to ascertain that such test engines meet the requirements of this section.

(e) [Reserved]. For guidance see § 86.099–10.

(f) Phase-in options. (1)(i) For model year 2008, manufacturers may certify some of their engine families to the exhaust standards applicable to model year 2007 engines under § 86.005–10, in lieu of the exhaust standards specified in this section. These engines must comply with all other requirements applicable to model year 2008 engines, except as allowed by paragraph (f)(1)(ii) of this section. The combined number of engines in the engine families certified to the 2007 combined NO_x plus NMHC standard may not exceed 50 percent of the manufacturer's U.S.-directed production of heavy-duty Otto-cycle motor vehicle engines for model year 2008, except as explicitly allowed by paragraph (f)(2) of this section.

(ii) For model year 2008, manufacturers may certify some of their engine families to the evaporative standards applicable to model year 2007 engines under § 86.005–10, in lieu of the standards specified in this section.

These engines must comply with all other requirements applicable to model year 2008 engines, except as allowed by paragraph (f)(1)(i) of this section. The combined number of engines in the engine families certified to the 2007 standards may not exceed 50 percent of the manufacturer's U.S.-directed production of heavy-duty Otto-cycle motor vehicle engines for model year 2008.

(2)(i) Manufacturers certifying engines to all of the applicable exhaust standards listed in paragraph (a) of this section prior to model year 2008 (without using credits) may reduce the number of engines that are required to meet the NO_x and NMHC exhaust standards listed in paragraph (a) of this section in model year 2008 and/or 2009, taking into account the phase-in option provided in paragraph (f)(1) of this section. For every engine that is certified early, the manufacturer may reduce the number of engines that are required by paragraph (f)(1) of this section to meet the NO_x and NMHC standards listed in paragraph (a) of this section by one engine. For example, if a manufacturer produces 100 heavy-duty Otto-cycle engines in 2007 that meet all of the applicable standards listed in paragraph (a) of this section, and it produced 10,000 heavy-duty Otto-cycle engines in 2009, then only 9,900 of the engines would need to comply with the NO_x and NMHC

standards listed in paragraph (a) of this section.

(ii) Manufacturers certifying engines to all of the applicable evaporative standards listed in paragraph (b) of this section prior to model year 2008 may reduce the number of engines that are required to meet the evaporative standards listed in paragraph (a) of this section in model year 2008 and/or 2009, taking into account the phase-in option provided in paragraph (f)(1) of this section. For every engine that is certified early, the manufacturer may reduce the number of engines that are required by paragraph (f)(1) of this section to meet evaporative standards listed in paragraph (b) of this section by one engine.

(3) Manufacturers certifying engines to a voluntary NO_x standard of 0.10 g/bhp-hr (without using credits) in addition to all of the applicable standards listed in paragraphs (a) and (b) of this section prior to model year 2008 may reduce the number of engines that are required to meet the NO_x and NMHC standards listed in paragraph (a) of this section in model year 2008 and/or 2009, taking into account the phase-in option provided in paragraph (f)(1) of this section. For such every engine that is certified early, the manufacturer may reduce the number of engines that are required by paragraph (f)(1) of this section to meet the NO_x and NMHC standards listed in paragraph (a) of this section by two engines.

(g) For model years prior to 2012, for purposes of determining compliance after title or custody has transferred to the ultimate purchaser, for engines having a NO_x FEL no higher than 0.50 g/bhp-hr, the applicable compliance limits for NO_x and NMHC shall be determined by adding 0.10 g/bhp-hr to the otherwise applicable standards or FELs for NO_x and NMHC.

25. A new § 86.113-07 is added to subpart B to read as follows:

§ 86.113-07 Fuel specifications.

Section 86.113-07 includes text that specifies requirements that differ from § 86.113-94 or § 86.113-04. Where a paragraph in § 86.113-94 or § 86.113-04 is identical and applicable to § 86.113-07, this may be indicated by specifying the corresponding paragraph and the statement "[Reserved]. For guidance see § 86.113-94." or "[Reserved]. For guidance see § 86.113-04."

(a) [Reserved]. For guidance see § 86.113-04.

(b)(1) [Reserved]. For guidance see § 86.113-94.

(b)(2) Petroleum fuel for diesel vehicles meeting the following specifications, or substantially equivalent specifications approved by the Administrator, must be used in exhaust emissions testing. The grade of petroleum diesel fuel recommended by the engine manufacturer, commercially designated as "Type 2-D" grade diesel, must be used:

Item		ASTM test method No.	Type 2-D
(i) Cetane Number		D613	40-50
(ii) Cetane Index		D976	40-50
(iii) Distillation range:			
(A) IBP	°F	D86	340-400
	(°C)		(171.1-204.4)
(B) 10 pct. point	°F	D86	400-460
	(°C)		(204.4-237.8)
(C) 50 pct. point	°F	D86	470-540
	(°C)		(243.3-282.2)
(D) 90 pct. point	°F	D86	560-630
	(°C)		(293.3-332.2)
(E) EP	°F	D86	610-690
	(°C)		(321.1-365.6)
(iv) Gravity	°API	D287	32-37
(v) Total sulfur	ppm	D2622	7-15
(vi) Hydrocarbon composition:			
(A) Aromatics, minimum (Remainder shall be paraffins, naphthenes, and olefins) ..	pct.	D5186	27
(vii) Flashpoint, min.	°F	D93	130
	(°C)		(54.4)
(viii) Viscosity	centistokes	D445	2.0-3.2

(3) Petroleum fuel for diesel vehicles meeting the following specifications, or substantially equivalent specifications approved by the Administrator, shall be used in service accumulation. The grade of petroleum diesel fuel recommended by the engine manufacturer, commercially designated as "Type 2-D" grade diesel fuel, shall be used: (b)(4) through (g) [Reserved]. For guidance see § 86.113-94.

Item		ASTM test method No.	Type 2-D
(i) Cetane Number		D613	38-58

Item		ASTM test method No.	Type 2-D
(ii) Cetane Index		D976	min. 40
(iii) Distillation range:			
90 pct. point	°F	D86	540–630
(iv) Gravity	°API	D287	30–39
(v) Total sulfur	ppm	D2622	7–15
(vi) Flashpoint, min.	°F	D93	130
	(°C)		(54.4)
(vii) Viscosity	centistokes	D445	1.5–4.5

(h)(1) For model year 2004 through 2006 Tier 2 diesel-fueled vehicles that incorporate sulfur-sensitive technologies, the manufacturer may test the vehicle using a test fuel meeting the specifications listed in paragraphs (b)(2) and (b)(3) of this section, provided the manufacturer clearly recommends to the ultimate purchaser in the owner's manual that the vehicle should use fuel with no higher than 15 ppm sulfur.

(2) For model year 2004 through 2006 Tier 2 diesel-fueled vehicles that incorporate sulfur-sensitive technologies and that are certified for 50-state sale (*i.e.*, certified to California and EPA standards), the manufacturer may test the vehicle using a test fuel whose qualities, on a specification by specification basis, meet the requirements of either the specifications listed in paragraph (b)(2) of this section or the California test fuel specifications, provided the manufacturer clearly recommends to the ultimate purchaser in the owner's manual that the vehicle should use fuel with no higher than 15 ppm sulfur.

(3) Where a manufacturer uses a test fuel under paragraph (h)(1) or (h)(2) of this section, EPA shall use the same fuel for its compliance testing.

26. A new § 86.1213–04 is added to Subpart M to read as follows:

§ 86.1213–04 Fuel specifications.

The test fuels listed in § 86.1313–04 shall be used for evaporative emission testing.

27. A new § 86.1306–07 is added to subpart N to read as follows:

§ 86.1306–07 Equipment required and specifications; overview.

Section 86.1306–07 includes text that specifies requirements that differ from § 86.1306–96. Where a paragraph in § 86.1306–96 is identical and applicable to § 86.1306–07, this may be indicated by specifying the corresponding paragraph and the statement “[Reserved]. For guidance see § 86.1306–96.”.

(a) and (b) [Reserved]. For guidance see § 86.1306–96.

(c)(1) Upon request, the Administrator may allow a manufacturer to use some

of the test equipment allowed for model year 2006 and earlier engines instead of the test equipment required for model year 2007 and later engines, provided that good engineering judgment indicates that it would not adversely affect determination of compliance with the applicable emission standards of this part.

(2) A manufacturer may use the test equipment required for model year 2007 and later engines for earlier model year engines, provided that good engineering judgment indicates that it would not adversely affect determination of compliance with the applicable emission standards of this part.

(d) Approval of alternate test system.

(1) If on the basis of the information described in paragraph (d)(5) of this section, the Administrator determines that an alternate test system would consistently and reliably produce emission test results that are at least equivalent to the results produced using the test systems described in this subpart, he/she shall approve the alternate system for optional use instead of the test systems described in this subpart.

(2) Any person may submit an application for approval of an alternate test system.

(3) In approving an alternate test system, the Administrator may approve it for general use, or may approve it conditionally.

(4) The Administrator may revoke the approval on the basis of new information that indicates that the alternate test system is not equivalent. However, revocation of approval must allow manufacturers sufficient lead-time to change the test system to an approved system. In determining the amount of lead-time that is required, the Administrator will consider relevant factors such as:

(i) The ease with which the test system can be converted to an approved system.

(ii) The degree to which the alternate system affects the measured emission rates.

(iii) Any relevant conditions included in the approval.

(5) The application for approval must include:

(i) *An explanation of the theoretical basis of the alternate system.* This technical description should explain why the detection principle of the alternate system would provide equivalent results to the detection principle of the prescribed system for the full range of emission properties being measured. This description may include equations, figures, and references. For example, a NO_x measurement application should theoretically relate the alternate detection principle to the chemiluminescent detection principle of detecting nitric oxide for a typical range of NO to NO₂ ratios. A PM measurement application should explain the principle(s) by which the alternate system quantifies PM mass independent of PM composition, and how it is impacted by semi-volatile and volatile species= phase distributions. For any proportioning or integrating system, the application should compare the alternate system's theoretical response to the prescribed system's response.

(ii) *A technical description of the alternate system.* This section shall detail all of the hardware and software included in the alternate system. Dimensioned drawings, flow-charts, schematics, and component specifications shall be included. Any data manipulation (*i.e.* calculations) that the system performs shall be presented in this section.

(iii) *A description of the procedures used to operate the system including the level of training that an operator must have to achieve acceptable results.* This section of the application shall describe all of the installation, calibration, operation, and maintenance procedures in a step-by-step format. Note that empirical calibration with respect to another prescribed or approved measurement system is not acceptable. Calibration should be performed with NIST traceable standards, or equivalent national standards. Diagrams, schematics, and other graphics may be used to enhance the description.

(iv) A comparison of results from the alternate system and from the prescribed system (or other system approved by the Administrator). The two systems must be calibrated independently to NIST traceable standards or equivalent national standards for this comparison. While other statistical analyses may be acceptable, it is recommended that the comparison be based on a minimum of 7 collocated and simultaneous tests. This comparison shall be performed over the "hot-start" portion of the FTP test cycle. If the comparison is paired, it must demonstrate that the alternate system passes a two-sided, paired t-test described in this paragraph. If the test is unpaired, it must demonstrate that the alternate system passes a two-sided, unpaired t-test described in this paragraph. Other statistical criteria may be set by the Administrator. The average of these tests for the reference system must return results less than or equal to the applicable emissions standard. The t-test is performed as follows, where "n" equals the number of tests:

(A) Calculate the average of the alternate system results; this is A_{avg} .

(B) Calculate the average of the results of the system to which the alternate system was referenced; this is R_{avg} .

(C) For an unpaired comparison, calculate the "n-1" standard deviation for the alternate and reference averages; these are A_{sd} and R_{sd} respectively. A_{sd} must be less than or equal to R_{sd} . If A_{sd} is greater than R_{sd} , the Administrator will not approve the application.

(D) For an unpaired comparison, calculate the t-value:

$$t_{unpaired} = (A_{avg} - R_{avg}) / ((A_{sd}^2 + R_{sd}^2) / n)^{1/2}$$

(E) For a paired comparison, calculate the "n-1" standard deviation (squared) of the differences, d_i , between the paired results, where "i" represents the ith test of n number of tests:

$$S_D^2 = (S_d)^2 - ((S_d_i)^2 / n) / (n-1)$$

(F)(1) For a paired comparison, calculate the t-value:

$$t_{paired} = (A_{avg} - R_{avg}) / (S_D^2 / n)^{1/2}$$

(2) The absolute value of t must be less than the critical t value, t_{crit} at a 90% confidence interval for "n-1" degrees of freedom. The following table lists 90% confidence interval t_{crit} values for n-1 degrees of freedom:

90% Confidence interval critical t values vs. n-1 degrees of freedom for a two-sided, paired t-test	
n - 1	t_{crit}
6	1.94
7	1.89
8	1.86
9	1.83
10	1.81

90% Confidence interval critical t values vs. n-1 degrees of freedom for a two-sided, paired t-test

n - 1	t_{crit}
11	1.80
12	1.78
13	1.77
14	1.76
15	1.75
16	1.75
17	1.74
18	1.73
19	1.73
20	1.72

28. Section 86.1309-90 is amended by revising the section heading and paragraph (a)(1) to read as follows:

§ 86.1309-90 Exhaust gas sampling system; Otto-cycle and non-petroleum-fueled engines.

(a)(1) *General.* The exhaust gas sampling system described in this paragraph is designed to measure the true mass of gaseous emissions in the exhaust of either gasoline-fueled, natural gas-fueled, liquefied petroleum gas-fueled or methanol-fueled engines. In the CVS concept of measuring mass emissions, two conditions must be satisfied; the total volume of the mixture of exhaust and dilution air must be measured, and a continuously proportioned volume of sample must be collected for analysis. Mass emissions are determined from the sample concentration and total flow over the test period.

* * * * *

29. A new section 86.1310-07 is added to Subpart N to read as follows:

§ 86.1310-007 Exhaust gas sampling and analytical system for gaseous emissions from heavy-duty diesel-fueled engines and particulate emissions from all engines.

(a) *General.* The exhaust gas sampling system described in this paragraph is designed to measure the true mass of both gaseous and particulate emissions in the exhaust of heavy-duty diesel engines, and particulate emissions in the exhaust of all heavy-duty engines. (Gaseous emissions from non-petroleum-fueled diesel engines are measured using the system described in § 86.1309.) This system utilizes the CVS concept (described in § 86.1309) of measuring the combined mass emissions of THC, NO_x , CH_4 (if applicable) CO, CO_2 and particulate matter. For all emission measurement systems described in this section, multiple or redundant systems may be used during a single test. Statistical averages of data from multiple systems may be used to calculate test results, consistent with good engineering

judgment. Weighted averages are allowed, where appropriate. Statistical outliers may be discarded, but all results must be reported. If the Administrator determines that the statistical analysis is not consistent with good engineering judgment, he/she may determine compliance from the arithmetic mean of the results. A continuously integrated system may be used for THC, NO_x , CO and CO_2 measurement. The use of proportional bag sampling for sample integration is allowed for THC, NO_x , CO, and CO_2 measurement, but requirements specific to bag sampling from diesel exhaust must be met for the THC and NO_x emissions measurements. CH_4 measurement for calculation of NMHC (if applicable) is measured using GC-FID analysis of a proportional bag sample. The mass of gaseous emissions is determined from the sample concentration and total flow over the test period. The mass of particulate emissions is determined from a proportional mass sample collected on a filter and from the sample flow and total flow over the test period. As an option, the measurement of total fuel mass consumed over a cycle may be substituted for the exhaust measurement of CO_2 . General requirements are as follows:

(1) This sampling system requires the use of a CVS. The CVS system may use a PDP or a CFV. PDP systems must use a heat exchanger. CFV systems may use either a heat exchanger or electronic flow compensation. When electronic flow compensation is used, the CFV may be replaced by a subsonic venturi (SSV) as long as the CVS concept as defined in § 86.1309 is maintained (i.e., a constant volumetric flow-rate through the CVS is maintained for the duration of the test). Figure N07-1 is a schematic drawing of the CVS system.

(2) The THC analytical system for diesel engines requires a heated flame ionization detector (HFID) and heated sample system (191 ± 11 °C) using either:

(i) Continuously integrated measurement of diluted THC meeting the minimum requirements and technical specifications contained in paragraph (b)(3) of this section. Unless compensation for varying mass flow is made, a constant mass flow system must be used to ensure a proportional sample; or

(ii) Heated (191 ± 11 °C) proportional bag sampling systems for hydrocarbon measurement will be allowed if the bag sampling system meets the performance specifications for outgassing and permeability as defined in paragraph (b)(2) of this section.

(3) CH₄ measurement, if applicable, shall be conducted using a proportional bag sampling system with subsequent analysis using a gas chromatograph and FID. The CH₄ measurement shall be done in accordance with SAE Recommended Practice J1151, "Methane Measurement Using Gas Chromatography" (1994 SAE Handbook, Volume 1: Materials, Fuels, Emissions, and Noise, Section 13, Page 13.170), which is incorporated by reference pursuant to § 86.1(b)(2). As an alternative, the manufacturer may choose one of the options set forth in § 86.004–28(c)(8).

(4) [Reserved]

(5) [Reserved]

(6) The CO and CO₂ analytical system requires:

(i) Bag sampling (§ 86.1309) and analytical (§ 86.1311) capabilities, as shown in Figure N07–1; or

(ii) Continuously integrated measurement of diluted CO and CO₂ meeting the minimum requirements and technical specifications contained in paragraph (b)(5) of this section. Unless compensation for varying flow is made, a constant flow system must be used to ensure a proportional sample; and

(7) The NO_x analytical system requires:

(i) Continuously integrated measurement of diluted NO_x meeting the minimum requirements and technical specifications contained in paragraph (b)(5) of this section. Unless compensation for varying flow is made, a constant flow system must be used to ensure a proportional sample.

(ii) Bag sampling (§ 86.1309) and analytical (§ 86.1311) capabilities, as shown in Figure N07–1 (or Figure 07–2) will be allowed provided that sample gas temperature is maintained above the sample's aqueous dewpoint at all times during collection and analysis.

(8) The mass of particulate in the exhaust is determined via filtration. The particulate sampling system requires dilution of the exhaust to a temperature of 47 °C ± 5 °C, measured upstream of a single high-efficiency sample filter (as close to the filter as practical).

(9) Since various configurations can produce equivalent results, exact conformance with these drawings is not required. Additional components such as instruments, valves, solenoids, pumps, and switches may be used to provide additional information and coordinate the functions of the components of the system. Other components, such as snubbers, which are not needed to maintain accuracy on some systems, may be excluded if their exclusion is based upon good engineering judgment.

(10) Other sampling and/or analytical systems may be used if shown to yield equivalent results and if approved in advance by the Administrator (see § 86.1306–07).

(b) *Component description.* The components necessary for exhaust sampling shall meet the following requirements:

(1) *Exhaust dilution system.* The CVS shall conform to all of the requirements listed for the exhaust gas CVS systems in § 86.1309(b), (c), and (d). With respect to PM measurement, the intent of this measurement procedure is to perform the sample cooling primarily via dilution and mixing with air rather than via heat transfer to the surfaces of the sampling system. In addition the CVS must conform to the following requirements:

(i) The flow capacity of the CVS must be sufficient to maintain the diluted exhaust stream at the temperatures required for the measurement of particulate and hydrocarbon emission noted below and at, or above, the temperatures where aqueous condensation in the exhaust gases could occur. This is achieved by the following method. The flow capacity of the CVS must be sufficient to maintain the diluted exhaust stream in the primary dilution tunnel at a temperature of 191 °C or less at the sampling zone and as required to prevent condensation at any point in the dilution tunnel. Gaseous emission samples may be taken directly from this sampling point. An exhaust sample must then be taken at this point to be diluted a second time for use in determining particulate emissions. The secondary dilution system must provide sufficient secondary dilution air to maintain the double-diluted exhaust stream at a temperature of 47 °C ± 5 °C, measured at a point located between the filter face and 16 cm upstream of the filter face.

(ii) For the CVS, either a heat exchanger (*i.e.* CFV–CVS) or electronic flow compensation (*i.e.* EFC–CFV–CVS), which also includes the particulate sample flows is required. Refer to Figure N07–1.

(iii) When a heat exchanger is used, the gas mixture temperature, measured at a point immediately ahead of the critical flow venturi, shall be within ±11 °C of the average operating temperature observed during the test with the simultaneous requirement that aqueous condensation does not occur. The temperature measuring system (sensors and readout) shall have an accuracy and precision of ±1.9 °C. For systems utilizing a flow compensator to maintain proportional sampling, the

requirement for maintaining constant temperature is not necessary.

(iv) The primary dilution air and secondary dilution air:

(A) Shall have a primary and secondary dilution air temperature equal to or greater than 15 °C.

(B) Primary dilution air shall be filtered at the dilution air inlet. The manufacturer of the primary dilution air filter shall state that the filter design has successfully achieved a minimum particle removal efficiency of 98% (less than 0.02 penetration) as determined using ASTM test method F 1471–93 (incorporated by reference at section 86.1). Secondary dilution air shall be filtered at the dilution air inlet using a high-efficiency particulate air filter (HEPA). The HEPA filter manufacturer shall state the HEPA filter design has successfully achieved a minimum particle removal efficiency of 99.97% (less than 0.0003 penetration) as determined using ASTM test method F 1471–93. It is recommended that the primary dilution air be filtered using a HEPA filter. EPA intends to utilize HEPA filters to condition primary dilution air in its test facilities. It is acceptable to use of a booster blower upstream or downstream of a HEPA filter in the primary dilution tunnel (and upstream of the introduction of engine exhaust into the CVS) to compensate for the additional pressure loss associated with the filter. The design of any booster blower located downstream of the filter should minimize the introduction of additional particulate matter into the CVS.

(C) Primary dilution air may be sampled to determine background particulate levels, which can then be subtracted from the values measured in the diluted exhaust stream. In the case of primary dilution air, the background particulate filter sample shall be taken immediately downstream of the dilution air filter and upstream of the engine exhaust flow (Figure N07–1). The provisions of paragraphs (b)(7) of this section, and of § 86.1312–2007 also apply to the measurement of background particulate matter, except that the filter temperature must be maintained below 52 °C.

(2) *Heated proportional bag sampling systems.* If a heated (191 ± 11 °C) proportional bag sampling system is used for THC measurement, sample bags must demonstrate minimal outgassing and permeability by passing the following performance test:

(i) Performance test for sample bag HC outgassing and CO₂ permeability. Bring the bag system to its operational temperature. Fill the heated sample bag with a nominal mixture of 1% CO₂ in

N₂. Perform an initial measurement of CO₂ and THC from the sample bag, and repeat the measurement after one hour. Acceptable performance criteria are <2% decrease of the initial CO₂ reading and <1 ppmC THC.

(ii) [Reserved]

(3) *Continuous HC measurement system.* (i) The continuous HC sample system (as shown in Figure N07-1) uses an "overflow" zero and span system. In this type of system, excess zero or span gas spills out of the probe when zero and span checks of the analyzer are made. The "overflow" system may also be used to calibrate the HC analyzer per § 86.1321(b), although this is not required.

(ii) No other analyzers may draw a sample from the continuous HC sample probe, line or system, unless a common sample pump is used for all analyzers and the sample line system design reflects good engineering practice.

(iii) The overflow gas flow rates into the sample line shall be at least 105% of the sample system flow rate.

(iv) The overflow gases shall enter the heated sample line as close as practicable to the outside surface of the CVS duct or dilution tunnel.

(v) The continuous HC sampling system shall consist of a probe (which must raise the sample to the specified temperature) and, where used, a sample transfer system (which must maintain the specified temperature). The continuous hydrocarbon sampling system (exclusive of the probe) shall:

(A) Maintain a wall temperature of 191°C ± 11°C as measured at every separately controlled heated component (*i.e.*, filters, heated line sections), using permanent thermocouples located at each of the separate components.

(B) Have a wall temperature of 191°C ± 11°C over its entire length. The temperature of the system shall be demonstrated by profiling the thermal characteristics of the system at initial installation and after any major maintenance performed on the system. The temperature profile of the HC sampling system shall be demonstrated by inserting thermocouple wires (typically Teflon™ coated for ease of insertion) into the sampling system assembled in-situ where possible, using good engineering judgment. The wire should be inserted up to the HFID inlet. Stabilize the sampling system heaters at normal operating temperatures. Withdraw the wires in increments of 5 cm to 10 cm (2 inches to 4 inches) including all fittings. Record the stabilized temperature at each position. The system temperature will be monitored during testing at the

locations and temperature described in § 86.1310-90(b)(3)(v)(A).

Note: It is understood that profiling of the sample line can be done under flowing conditions also as required with the probe. This test may be cumbersome if test facilities utilize long transfer lines and many fittings; therefore it is recommended that transfer lines be kept as short as possible and the use of fittings should be kept minimal.

(C) Maintain a gas temperature of 191°C ± 11°C immediately before the heated filter and HFID. These gas temperatures will be determined by a temperature sensor located immediately upstream of each component.

(vi) The continuous hydrocarbon sampling probe shall:

(A) Be defined as the first 25.4 cm (10 in) to 76.2 cm (30 in) of the continuous hydrocarbon sampling system;

(B) Have a 0.483 cm (0.19 in) minimum inside diameter;

(C) Be installed in the primary dilution tunnel at a point where the dilution air and exhaust are well mixed (*i.e.*, approximately 10 tunnel diameters downstream of the point where the exhaust enters the dilution tunnel);

(D) Be sufficiently distant (radially) from other probes and the tunnel wall so as to be free from the influence of any wakes or eddies; and

(E) Increase the gas stream temperature to 191°C ± 11°C by the exit of the probe. The ability of the probe to accomplish this shall be demonstrated at typical sample flow rates using the insertion thermocouple technique at initial installation and after any major maintenance. Compliance with the temperature specification shall be demonstrated by monitoring during each test the temperature of either the gas stream or the wall of the sample probe at its terminus.

(vii) The response time of the continuous measurement system shall be no greater than:

(A) 1.5 seconds from an instantaneous step change at the port entrance to the analyzer to within 90 percent of the step change;

(B) 10 seconds from an instantaneous step change at the entrance to the sample probe or overflow span gas port to within 90 percent of the step change. Analysis system response time shall be coordinated with CVS flow fluctuations and sampling time/test cycle offsets if necessary; and

(C) For the purpose of verification of response times, the step change shall be at least 60 percent of full-scale chart deflection.

(4) *Primary-dilution tunnel.* (i) The primary dilution tunnel shall be:

(A) Small enough in diameter to cause turbulent flow (Reynolds Number

greater than 4000) and of sufficient length to cause complete mixing of the exhaust and dilution air. Good engineering judgment shall dictate the use of mixing plates and mixing orifices to ensure a well-mixed sample. To verify mixing, EPA recommends flowing a tracer gas (*i.e.* propane or CO₂) from the raw exhaust inlet of the dilution tunnel and measuring its concentration at several points along the axial plane at the sample probe. Tracer gas concentrations should remain nearly constant (*i.e.* within 2%) between all of these points.

(B) At least 8 inches (20 cm) in diameter.

(C) Constructed of electrically conductive material which does not react with the exhaust components.

(D) Electrically grounded.

(E) EPA recommends that the tunnel should have minimal thermal capacitance such that the temperature of the walls tracks with the temperature of the diluted exhaust.

(ii) The temperature of the diluted exhaust stream inside of the primary dilution tunnel shall be sufficient to prevent water condensation.

(iii) The engine exhaust shall be directed downstream at the point where it is introduced into the primary dilution tunnel.

(5) *Continuously integrated NO_x, CO, and CO₂ measurement systems.* (i) The sample probe shall:

(A) Be in the same plane as the continuous HC probe, but shall be sufficiently distant (radially) from other probes and the tunnel wall so as to be free from the influences of any wakes or eddies; and

(B) Heated and insulated over the entire length, to prevent water condensation, to a minimum temperature of 131°F (55°C). Sample gas temperature immediately before the first filter in the system shall be at least 131°F (55°C).

(ii) The continuous NO_x, CO, or CO₂ sampling and analysis system shall conform to the specifications of subpart D of this part, with the following exceptions:

(A) The system components required to be heated by subpart D need only be heated to prevent water condensation, the minimum component temperature shall be 131°F (55°C);

(B) The system response defined in § 86.329-79 shall be no greater than 10 seconds. Analysis system response time shall be coordinated with CVS flow fluctuations and sampling time/test cycle offsets, if necessary;

(C) Alternative NO_x measurement techniques outlined in § 86.346-79 are

not permitted for NO_x measurement in this subpart;

(D) All analytical gases shall conform to the specifications of § 86.1314;

(E) Any range on a linear analyzer below 100 ppm shall have and use a calibration curve conforming to § 86.1323–07; and

(F) The measurement accuracy requirements are specified in § 86.1338–07.

(iii) The signal output of analyzers with non-linear calibration curves shall be converted to concentration values by the calibration curve(s) specified in subpart D of this part (§ 86.330–79) before flow correction (if used) and subsequent integration takes place.

(6) *Particulate sampling system.* This method collects a proportional sample from the primary tunnel, and then transfers this sample to a secondary dilution tunnel where the sample is further diluted. The double-diluted sample is then passed through the collection filter. Proportionality (i.e., mass flow ratio) between the primary tunnel flow rate and the sample flow rate must be maintained within $\pm 5\%$, excluding the first 10 seconds of the test at start-up. The requirements for this system are:

(i) The particulate sample transfer tube shall be configured and installed so that:

(A) The inlet faces upstream in the primary dilution tunnel at a point where the primary dilution air and exhaust are well mixed.

(B) The particulate sample exits on the centerline of the secondary tunnel.

(ii) The entire particulate sample transfer tube shall be:

(A) Sufficiently distant (radially) from other sampling probes (in the primary dilution tunnel) so as to be free from the influence of any wakes or eddies produced by the other probes.

(B) 0.85 cm minimum inside diameter.

(C) No longer than 36 in (91 cm) from inlet plane to exit plane.

(D) Designed to minimize the diffusional and thermophoretic deposition of particulate matter during transfer (i.e., sample residence time in the transfer tube should be as short as possible, temperature gradients between the flow stream and the transfer tube wall should be minimized). Double-wall, thin-wall, air-gap insulated, or a controlled heated construction for the transfer tube is recommended.

(E) Constructed such that the surfaces exposed to the sample shall be an electrically conductive material, which does not react with the exhaust components, and this surface shall be electrically grounded so as to minimize

electrostatic particulate matter deposition.

(iii) The secondary dilution air shall be at a temperature equal to or greater than 15° C.

(iv) The secondary-dilution tunnel shall be constructed such that the surfaces exposed to the sample shall be an electrically conductive material, which does not react with the exhaust components, and this surface shall be electrically grounded so as to minimize electrostatic particulate deposition.

(v) Additional dilution air must be provided so as to maintain a sample temperature of 47° C $\pm$ 5° C upstream of the sample filter. Temperature shall be measured with a thermocouple with a $\frac{3}{16}$ " shank, having thermocouple wires with a gage diameter 24 AWG or smaller, a bare-wire butt-welded junction; or other suitable temperature measurement with an equivalent or faster time constant and an accuracy and precision of $\pm 1.9^\circ$ C.

(vi) The filter holder assembly shall be located within 12.0 in (30.5 cm) of the exit of the secondary dilution tunnel.

(vii) The face velocity through the sample filter shall not exceed 100 cm/s (face velocity is defined as the standard volumetric sample flow rate (i.e., scm³/sec) divided by the sample filter stain area (i.e., cm²)).

(7) *Particulate sampling.* (i) *Filter specifications.* (A) Polytetrafluoroethylene (PTFE or TeflonTM) coated borosilicate glass fiber high-efficiency filters or polytetrafluoroethylene (PTFE or TeflonTM) high-efficiency membrane filters with an integral support ring of polymethylpentene (PMP) or equivalent inert material are required. Filters shall have a minimum clean filter efficiency of 99% as measured by the ASTM D2986–95a DOP test (incorporated by reference at § 86.1).

(B) Particulate filters must have a diameter of 46.50 $\pm$ 0.6 mm (38 mm minimum stain diameter).

(C) The dilute exhaust is simultaneously sampled by a single high-efficiency filter during the cold-start test and by a second high efficiency filter during the hot-start test.

(D) It is recommended that the filter loading should be maximized consistent with temperature requirements.

(ii) *Filter holder assembly.* The filter holder assembly shall comply with the specifications set forth for ambient PM measurement in 40 CFR Part 50, Appendix L 7.3.5, figures L–25 and L–26, with the following exceptions:

(A) The material shall be 302, 303, or 304 stainless steel instead of anodized aluminum.

(B) The 2.84 cm diameter entrance to the filter holder may be adapted, using sound engineering judgment and leak-free construction, to an inside diameter no smaller than 0.85 cm, maintaining the 12.5° angle from the inlet of the top filter holder to the area near the sealing surface of the top of the filter cartridge assembly. Figure N07–2 shows acceptable variation from the design in 40 CFR Part 50, Appendix L. Similar variations using sound engineering design are also acceptable provided that they provide even flow distribution across the filter media and a similar leak-free seal with the filter cartridge assembly.

(C) If additional or multiple filter cartridges are stored in a particulate sampler as part of an automatic sequential sampling capability, all such filter cartridges, unless they are installed in the sample flow (with or without flow established) shall be covered or sealed to prevent communication of semi-volatile matter from filter to filter; contamination of the filters before and after sampling; or loss of volatile or semi-volatile particulate matter after sampling.

(iii) *Filter cartridge assembly.* The filter cartridge assembly shall comply with the specifications set forth for ambient PM measurement in 40 CFR Part 50, Appendix L 7.3.5, figures L–27, L–28, and L–29, with the following exceptions:

(A) In addition to the specified DelrinTM material, 302, 303, or 304 stainless steel, polycarbonate or acrylonitrile/butadiene/styrene (ABS) resin, or a combination of these materials may also be used.

(B) A bevel introduced on the inside diameter of the entrance to the filter cartridge, as used by some commercially available automated sequential particulate filter cartridge changers, is also acceptable (see Figure N07–3).

(iv) *Particle preclassifier.* A particle preclassifier shall be installed immediately upstream of the filter holder assembly (N07–1). The purpose of the preclassifier is to remove coarse, mechanically generated particles (e.g., rust from the engine exhaust system or carbon sheared from the sampling system walls) from the sample flow stream while allowing combustion-generated particles to pass through to the filter. The preclassifier may be either an inertial impactor or a cyclonic separator. The preclassifier manufacturer 50% cutpoint particle diameter shall be between 2.5 μ m and 10 μ m at the volumetric flow rate selected for sampling of particulate matter emissions. Sharpness of cut is not specifically defined, but the

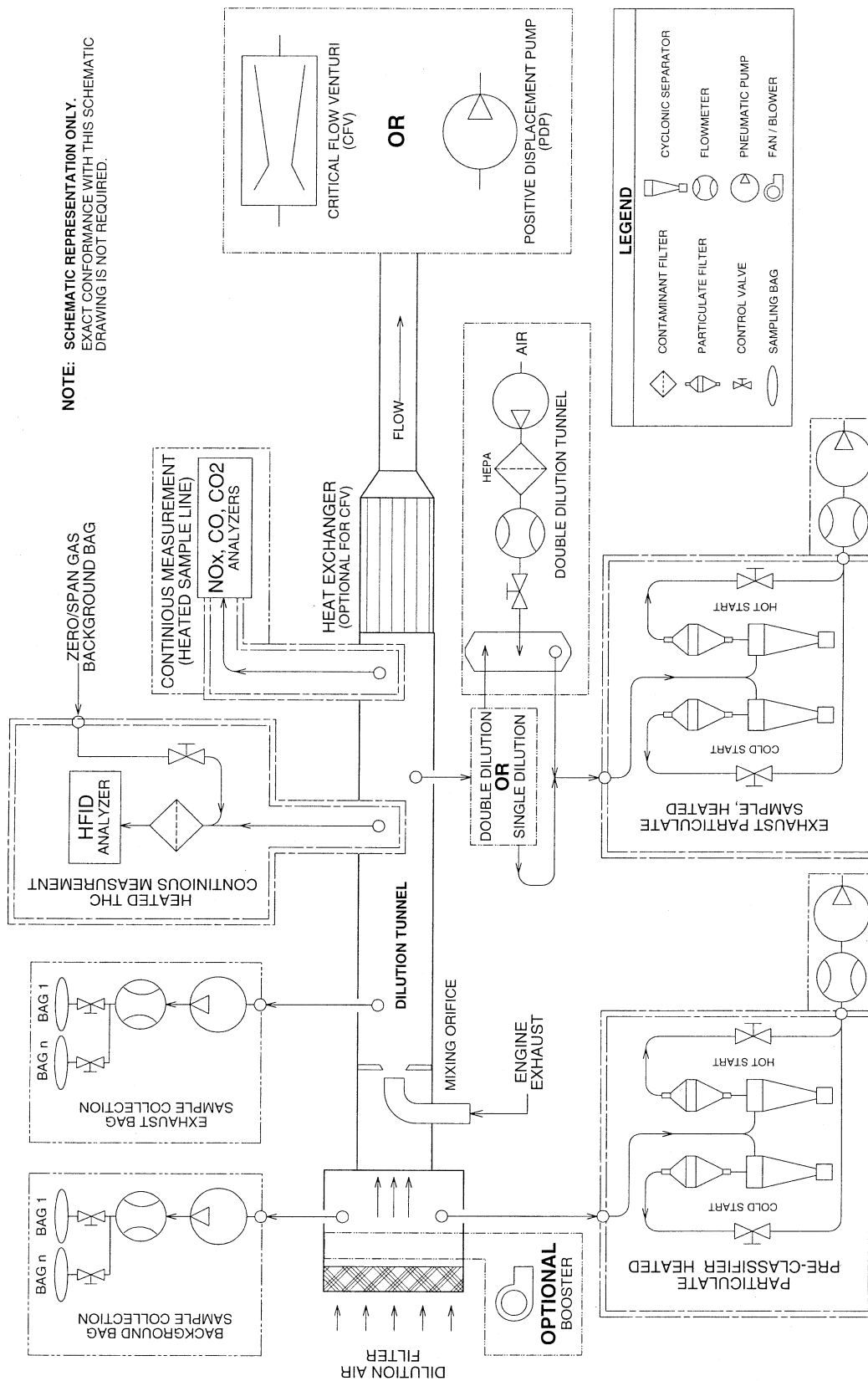
preclassifier geometry shall allow at least 99% of the mass concentration of 1 μm particles to pass through the exit of the preclassifier to the filter at the volumetric flow rate selected for sampling particulate matter emissions.

Periodic servicing of the preclassifier will be necessary to prevent a buildup of mechanically separated particles. The particle preclassifier may be made integral with the top of the filter holder assembly. The preclassifier may also be

made integral with a mixing-tee for introduction of secondary dilution air, thus replacing the secondary dilution tunnel; provided that the preclassifier provides sufficient mixing.

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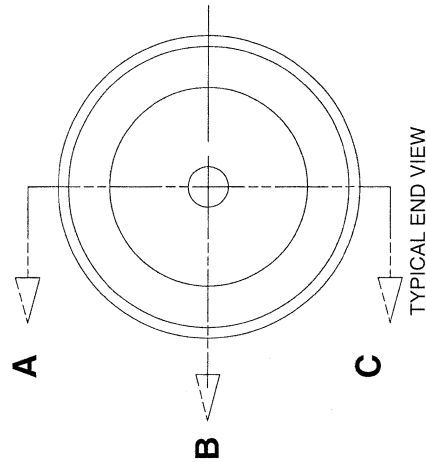
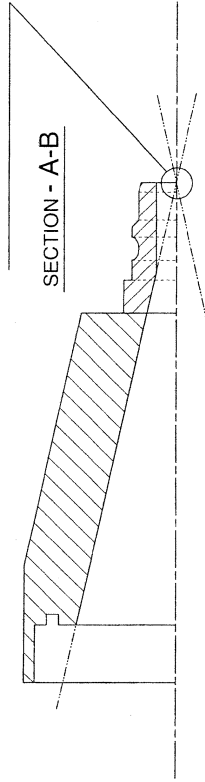
Figures to § 86.1310-2007



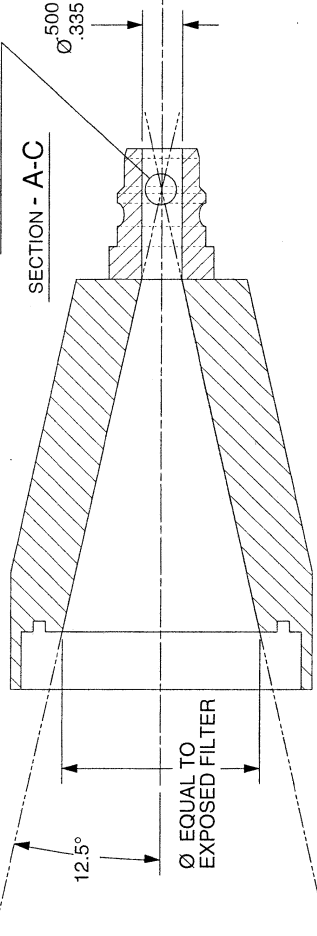
N07-1 GASEOUS AND PARTICULATE EMISSIONS SAMPLING SYSTEM (PDP - CFV CONSTANT VOLUME SAMPLER)

METRIC
mm

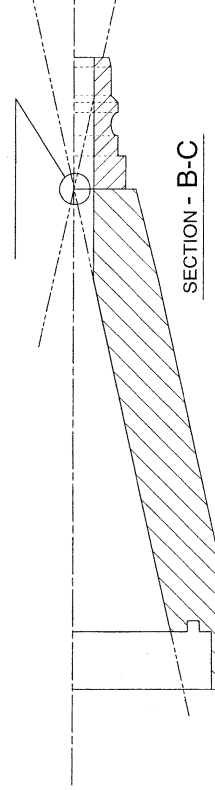
CONE CONVERGENCE ILLUSTRATED AT THE DOWNSTREAM END OF A FITTING WITH A MIN. I.D. 8.5 mm
NOTE: THE FITTING IS MODIFIED TO MAINTAIN 12.5° TO THE CONVERGENCE.



CONE CONVERGENCE ILLUSTRATED INSIDE A FITTING WITH A MIN. I.D. 8.5 mm

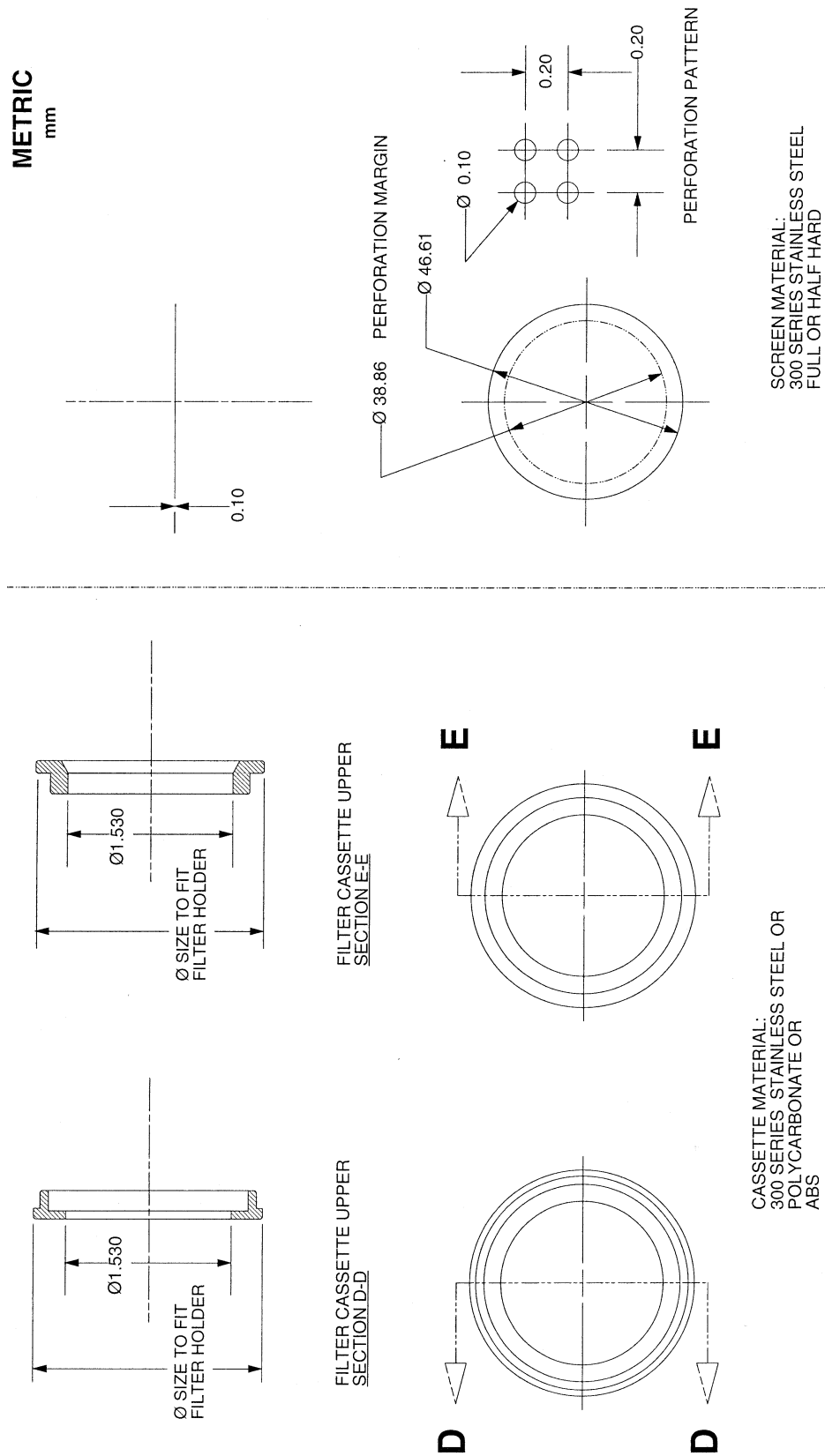


CONE CONVERGENCE ILLUSTRATED AT THE UPSTREAM END OF A FITTING WITH A MIN. I.D. 8.5 mm
NOTE: THE FILTER HOLDER IS MODIFIED TO MAINTAIN 12.5° TO THE CONVERGENCE.



- NOTES:
1) MATERIAL, TYPE 300 STAINLESS STEEL
2) ROUGHNESS, ALL WETTED SURFACES, 32 RMS
3) BREAK ALL SHARP EDGES

N07-2 FILTER HOLDER GEOMETRY



N07-3 FILTER CASSETTE AND SCREEN

30. A new section 86.1312–2007 is added to Subpart N to read as follows:

§ 86.1312–2007 Filter stabilization and microbalance workstation environmental conditions, microbalance specifications, and particulate matter filter handling and weighing procedures.

(a) *Ambient conditions for filter stabilization and weighing.*—(1) *Temperature and humidity.* (i) The filter stabilization environment shall be maintained at $22\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$ and a dewpoint of $9.5\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. Dewpoint shall be measured with an instrument that exhibits an accuracy of at least $\pm 0.25\text{ }^{\circ}\text{C}$ NIST traceable as stated by the instrument manufacturer. Temperature shall be measured with an instrument that exhibits an accuracy of at least $\pm 0.2\text{ }^{\circ}\text{C}$ or better.

(ii) The immediate microbalance workstation environment shall be maintained at $22\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ and a dewpoint of $9.5\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. If the microbalance workstation environment freely circulates with the filter stabilization environment, and this entire environment meets $22\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ and a dewpoint of $9.5\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$, then there is no requirement to measure temperature and dewpoint at the microbalance separate from the filter stabilization location. Otherwise, temperature at the microbalance workstation shall be measured with an instrument that exhibits an accuracy of at least $\pm 0.2\text{ }^{\circ}\text{C}$ or better, and dewpoint shall be measured with an instrument that exhibits an accuracy of at least $\pm 0.25\text{ }^{\circ}\text{C}$ NIST traceable as stated by the instrument manufacturer.

(2) *Cleanliness.* (i) The microbalance and filter stabilization environments shall be free of ambient contaminants (such as dust or other aerosols) that could settle on the particulate filters. It is recommended that these environments be built to conform with the Class 1000 specification (or cleaner) as determined by Federal Standard 209D or 209E for clean room classification (Available from the Institute of Environmental Standards and Technology website at www.iest.org or phone (847) 255–1561). An alternative recommendation would be to equilibrate and/or weigh the filters within a separate, smaller, particle-free, temperature and humidity-controlled chamber (*i.e.*, “glove box”).

(ii) Reference filters shall be used to monitor for gross particle contamination. It is required that at least two unused reference filters remain in the filter stabilization environment at all times in partially covered glass petri dishes, as in paragraph (c) (1) of this section. These reference filters shall be

placed in the filter stabilization environment. The reference filters shall be weighed within 2 hours of, but preferably at the same time as, the sample filters. The reference filters shall be changed at least once a month, but never while any sample filters are between their tare weight (pre-sampling) and gross weight (post-sampling) measurements. The reference filters shall be the same size and material as the sample filters.

(3) *Quality control of ambient conditions.* (i) If, before the start of a weighing session, the temperature or dewpoint of the filter stabilization environment are not within specifications, then filters must remain in the environment for at least 30 minutes after conditions are corrected. If the filter stabilization environment changes during a weighing session such that the specifications are no longer met, the weighing session shall be suspended until the environment has returned to within specifications for at least 30 minutes. Once the environment has returned to within specifications for at least 30 minutes, the reference filters shall be reweighed and the criteria in paragraph (a)(3)(ii) of this section shall apply. Note that temperature and dewpoint shall be sampled once per second, and an unweighted 5-minute moving average of this data shall be calculated once per second. This moving average shall be used to determine the environment temperature and dewpoint for the purpose of determining whether or not the environment is within specifications.

(ii) If the average change in weight of the reference filters is more than 10 micrograms (after correcting for buoyancy as described in paragraph (c)(3) of this section), then all filters in the process of stabilization shall be discarded and all data collected with respect to the discarded filters shall be considered void. Note that more than 2 reference filters may be used to achieve a more robust average of the change in weight of the reference filters.

(b) *Microbalance specifications.* The microbalance used to determine the weights of all filters shall have a precision (standard deviation) of at least ± 0.25 micrograms or better for repeated weighing of a calibration weight, a precision of at least ± 2.5 micrograms or better for repeated weighing of a clean filter, and a readability equal to or less than 0.1 micrograms. It is recommended that the microbalance be installed on a vibration isolation platform to isolate the microbalance's load cell from external vibration. It is also recommended that the microbalance should be shielded from convective

airflow by means of an electrically grounded static dissipative draft shield. Microbalance manufacturer specifications for all preventive maintenance, periodic certification, calibration, and re-zeroing shall be followed. All certification and calibration procedures shall be NIST traceable, or traceable to an equivalent national standard.

(c) *Particulate matter filter handling and weighing.* Care should be taken to prevent contamination of the sample filters and to prevent a buildup of static charge on the filters that could interfere with filter weighing. Static neutralizers, such as Po-210 sources, shall be used to neutralize charge on a filter prior to each weighing. A static neutralizer should be replaced at the interval recommended by its manufacturer, or when it is no longer able to reduce static charge on a filter to less than ± 2 VDC as measured with an electrostatic monitor at the microbalance workstation. The person weighing filters shall be grounded with respect to the microbalance to prevent imparting a static charge on the filters. This can be accomplished safely by using a grounding strap such as the wrist straps that are commonly used in the microelectronics industry, or by connecting a similar grounding strap to the tweezers. To prevent electrical shock, a 1-megohm resistor should be installed in series between the person weighing filters and ground.

(1) Within the filter stabilization environment, a pair of clean and electrically conductive tweezers shall be used to place a filter in the lower half of a filter cassette and the cassette shall be placed in a partially open glass petri dish. The petri dish lid should extend over the filter to prevent gross contamination, but it should be left slightly open on one edge to permit stabilization with the environment for at least 30 minutes.

(2) After at least 30 minutes of stabilization, each filter shall be weighed using the specified microbalance. The process of weighing a filter may be repeated and a statistical mean weight of a single filter may be calculated. Sound engineering judgment shall dictate the use of statistics to discard outliers and the weighting of averages. For a clean filter its single weight or statistical mean weight shall be considered the uncorrected tare weight of the filter.

(3) All filter weights shall be corrected for filter buoyancy in air. For the uncorrected tare weight of a filter, this calculated value is the corrected tare weight of the filter, and it must be recorded (see § 86.1344(e)(18)).

Barometric pressure of the microbalance environment shall be measured with an instrument that exhibits $\pm 0.01\%$ full-scale accuracy and 0.01% per-year full scale stability, and the full-scale value used for such a specification shall not exceed 200 kPa.

(i) Buoyancy correction calculation. (A) Calculate vapor pressure of liquid water using the dewpoint temperature in the Magnus formula:

$$P_w = 0.6113 \times 10^{\wedge} ((7.5 \times T_{dp}) / (237.3 + T_{dp}))$$

Where:

P_w =vapor pressure of liquid water, kPa.
 T_{dp} =dewpoint temperature, °C.

(B) Calculate air density using the ideal gas relationship and molecular weights of standard air and water:

$$A = (3.484 \times P - 1.317 \times P_w) / (T + 273.15)$$

Where:

A =air density, kg/m³.
 P =barometric pressure, kPa.
 P_w =vapor pressure of liquid water, kPa.
 T =temperature, °C.

(C) Buoyancy correction:

$$M = R \times (1 - (A / \rho_w)) / (1 - (A / \rho_s))$$

Where:

M =corrected mass in units of the balance display.
 R =uncorrected filter weight in units of the balance display.
 A =calculated air density, kg/m³.
 ρ_w =density of calibration weight used to calibrate the balance, kg/m³.
 ρ_s =density of filter material used to sample PM emissions, kg/m³.

(ii) For determining ρ_s note that PTFE (Teflon™) and borosilicate glass both have densities in the range of 2,200 to 2,400 kg/m³. Therefore, for PTFE-coated borosilicate glass fiber filters, an acceptable ρ_s is 2,300 kg/m³. Note also that polymethylpentene has a density of 850 kg/m³. Because Teflon PTFE membrane filters have an integral polymethylpentene support ring that accounts for 95% of the filter mass, an acceptable ρ_s for these filters is 920 kg/m³. Other ρ_s values for other filters may be obtained similarly. Information about “ ρ_s should be available from the calibration weight manufacturer.

(iii) This paragraph (c)(3)(iii) shows an example of the buoyancy correction. This example assumes the following inputs: Barometric pressure (P)=101.325 kPa, temperature (T)=22.0 °C, dewpoint temperature (T_{dp})=9.5 °C, balance

display (R)=100.0000 mg, calibration weight density (ρ_w)=8,000 kg/m³, and filter material density (ρ_s)=2,300 kg/m³. Then:

(A) The water vapor pressure (P_w) is calculated as:

$$P_w = 0.6113 \times 10^{\wedge} ((7.5 \times 9.5) / (237.3 + 9.5)) = 1.186 \text{ kPa.}$$

(B) The air density (A) is calculated as:

$$A = (3.484 \times 101.325 - 1.317 \times 1.186) / (22.0 + 273.15) = 1.191 \text{ kg/m}^3.$$

(C) The corrected mass (M) is calculated as:

$$M = 100.0000 \times (1 - (1.191 / 8000)) / (1 - (1.191 / 2300)) = 100.0369 \text{ mg.}$$

(4) The uncorrected weight, corrected weight, barometric pressure, temperature and humidity, of the filter shall be recorded. Afterward the filter shall be returned to the lower half of the filter cassette, and the upper half of the cassette shall be set in place. The cassette-with filter-shall then be stored in a covered glass petri dish or a sealed (i.e., ends plugged) filter holder assembly, either of which shall remain in the filter stabilization environment until needed for testing. It is recommended that the filter be transported between the filter stabilization environment and the location of the emissions test within a sealed filter holder assembly.

(5) After the emissions test, the filter cassette shall be removed from the filter holder assembly. If this removal is performed in the filter stabilization environment, the upper half of the cassette shall be removed using a properly designed separator tool, the lower half of the cassette-with filter-shall be placed in a partially covered petri dish, and allowed to stabilize for at least 30 minutes. Otherwise, the cassette and filter shall be placed in a closed petri dish until it can be returned to the filter stabilization environment. Once the closed petri dish is returned to the filter stabilization environment, the petri dish shall be opened, the upper half of the cassette shall be removed using a properly designed separator tool, the lower half of the cassette-with filter-shall be placed in a partially covered petri dish, and allowed to stabilize for at least one hour.

(6) After at least 30 minutes, but no more than 60 hours of stabilization, each filter may be weighed using the specified microbalance. The process of weighing a filter may be repeated and a statistical mean may be calculated. Sound engineering judgment shall dictate the use of statistics to discard outliers and the weighting of averages. For a used filter, its single weight or statistical mean weight shall be identified as the uncorrected gross weight of the filter. The uncorrected gross weight shall be corrected for filter buoyancy using the procedure in (c)(3) of this section. The uncorrected gross filter weight, corrected gross filter weight, barometric pressure, temperature, and dewpoint shall be recorded.

(7) The net particulate matter weight (Pf) of each filter shall be equal to the corrected gross filter weight minus the corrected tare filter weight.

(8) Should the particulate matter on the filters contact the petri dish, tweezers, microbalance or any other surface, the data with respect to that filter is void.

31. A new § 86.1313–2004 is added to subpart N to read as follows:

§ 86.1313–2004 Fuel specifications.

Section 86.1313–04 includes text that specifies requirements that differ from § 86.1313–94 and § 86.1313–98. Where a paragraph in § 86.1313–94 or § 86.1313–98 is identical and applicable to § 86.1313–04, this may be indicated by specifying the corresponding paragraph and the statement “[Reserved]. For guidance see § 86.1313–94.” or “[Reserved]. For guidance see § 86.1313–98.”.

(a) *Gasoline fuel.* (1) Gasoline having the following specifications will be used by the Administrator in exhaust and evaporative emission testing of petroleum-fueled Otto-cycle engines, except that the Administrator will not use gasoline having a sulfur specification higher than 0.0045 weight percent. Gasoline having the following specification or substantially equivalent specifications approved by the Administrator, must be used by the manufacturer in exhaust and evaporative testing except that octane specifications do not apply:

Item	ASTM test method No.	Value
(i) Octane, Research, Min.	D2699	93
(ii) Sensitivity, Min.		7.5
(iii) Lead (organic), maximum: g/U.S. gal. (g/liter)	D3237	0.050 (0.013)
(iv) Distillation Range:	D86	
(A) IBP 1: °F (°C)		75–95 (23.9–35)
(B) 10 pct. point: °F (°C)		120–135 (48.9–57.2)

Item	ASTM test method No.	Value
(C) 50 pct. point: °F (°C)		200–230 (93.3–110)
(D) 90 pct. point: °F (°C)		300–325 (148.9–162.8)
(E) EP, max: °F (°C)		415 (212.8)
(v) Sulfur, weight pct.	D1266	0.0015–0.008
(vi) Phosphorous, max. g/U.S. gal (g/liter)	D3231	0.005 (0.0013)
(vii) RVP ^{2,3}	D3231	8.7–9.2 (60.0–63.4)
(viii) Hydrocarbon composition:	D1319	
(A) Olefins, max. pct.		10
(B) Aromatics, max. pct.		35
(C) Saturates		Remainder

¹ For testing at altitudes above 1,219 m (4000 feet), the specified range is 75–105 deg. F (23.9–40.6 deg. C).

² For testing which is unrelated to evaporative emission control, the specified range is 8.0–9.2 psi (55.2–63.4 kPa).

³ For testing at altitudes above 1,219 m (4000 feet), the specified range is 7.6–8.0 psi (52–55 kPa).

(2) For engines certified for sale in the 50 United States, “California Phase 2” gasoline having the specifications listed in the table in this section may be used in exhaust emission testing as an option to the specifications in paragraph (a)(1) of this section. If a manufacturer elects to utilize this option, the manufacturer must conduct exhaust emission testing

with gasoline having the specifications listed in the table in this paragraph (a)(2). However, the Administrator may use or require the use of test fuel meeting the specifications in paragraph (a)(1) of this section for certification confirmatory testing, selective enforcement auditing and in-use testing. All fuel property test methods for this

fuel are contained in Chapter 4 of the California Regulatory Requirements Applicable to the National Low Emission Vehicle Program (October, 1996). These requirements are incorporated by reference (see § 86.1). The table follows:

Fuel property	Limit
(i) Octane, (R+M)/2 (min)	91
(ii) Sensitivity (min)	7.5
(iii) Lead, g/gal (max) (No lead added)	0–0.01
(iv) Distillation Range, °F:	
(A) 10 pct. point,	130–150
(B) 50 pct. point,	200–210
(C) 90 pct. point,	290–300
(D) EP, maximum	390
(v) Residue, vol % (max)	2.0
(vi) Sulfur, ppm by wt.	15–40, except that Administrator may use and approve for use, lower ranges where such ranges are consistent with current California requirements.
(vii) Phosphorous, g/gal (max)	0.005
(viii) RVP, psi	6.7–7.0
(ix) Olefins, vol %	4.0–6.0
(x) Total Aromatic Hydrocarbons (vol %)	22–25
(xi) Benzene, vol %	0.8–1.0
(xii) Multi-Substituted Alkyl Aromatic Hydrocarbons, vol %	12–14
(xiii) MTBE, vol %	10.8–11.2
(xiv) Additives	See Chapter 4 of the California Regulatory Requirements Applicable to the National Low Emission Vehicle Program (October, 1996). These procedures are incorporated by reference (see § 86.1).
(xv) Copper Corrosion	No. 1
(xvi) Gum, Washed, mg/100 ml (max)	3.0
(xvii) Oxidation Stability, minutes (min)	1000
(xviii) Specific Gravity	No limit; report to purchaser required
(xix) Heat of Combustion	No limit; report to purchaser required
(xx) Carbon, wt %	No limit; report to purchaser required
(xxi) Hydrogen, wt %	No limit; report to purchaser required

(3)(i) Unless otherwise approved by the Administrator, unleaded gasoline representative of commercial gasoline that will be generally available through retail outlets must be used in service accumulation. Unless otherwise approved by the Administrator, this gasoline must have a minimum sulfur content of 15 ppm. Unless otherwise approved by the Administrator, fuel

used for evaporative emission durability demonstration must contain ethanol as required by § 86.1824–01(a)(2)(iii). Leaded gasoline must not be used in service accumulation.

(ii) Unless otherwise approved by the Administrator, the octane rating of the gasoline used must be no higher than 1.0 Retail octane number above the lowest octane rating that meets the fuel

grade the manufacturer will recommend to the ultimate purchaser for the relevant production vehicles. If the manufacturer recommends a Retail octane number rather than a fuel grade, then the octane rating of the service accumulation gasoline can be no higher than 1.0 Retail octane number above the recommended Retail octane number. The service accumulation gasoline must

also have a minimum sensitivity of 7.5 octane numbers, where sensitivity is defined as the Research octane number minus the Motor octane number.

(iii) The Reid Vapor Pressure of the gasoline used must be characteristic of the motor fuel used during the season in which the service accumulation takes place.

(4) The specification range of the gasoline to be used under paragraph (a) of this section must be reported in accordance with § 86.094–21(b)(3).

(b) heading and (b)(1) [Reserved]. For guidance see § 86.1313–94.

(b)(2) [Reserved]. For guidance see § 86.1313–98.

(b)(3) through (g) [Reserved]. For guidance see § 86.1313–94.

32. A new § 86.1313–2007 is added to Subpart N to read as follows:

§ 86.1313–2007 Fuel specifications.

Section 86.1313–2007 includes text that specifies requirements that differ from § 86.1313–94 and § 86.1313–2004. Where a paragraph in § 86.1313–94 or § 86.1313–2004 is identical and applicable to § 86.1313–2007, this may be indicated by specifying the corresponding paragraph and the statement “[Reserved]. For guidance see § 86.1313–94.” or “[Reserved]. For guidance see § 86.1313–04.”.

(a) [Reserved]. For guidance see § 86.1313–2004.

(b) heading and (b)(1) [Reserved]. For guidance see § 86.1313–94.

(b)(2) Petroleum fuel for diesel engines meeting the specifications in Table N07–2, or substantially equivalent specifications approved by the Administrator, shall be used in exhaust emissions testing. The grade of

petroleum fuel used shall be commercially designated as “Type 2-D” grade diesel fuel except that fuel commercially designated as “Type 1-D” grade diesel fuel may be substituted provided that the manufacturer has submitted evidence to the Administrator demonstrating to the Administrator’s satisfaction that this fuel will be the predominant in-use fuel. Such evidence could include such things as copies of signed contracts from customers indicating the intent to purchase and use “Type 1-D” grade diesel fuel as the primary fuel for use in the engines or other evidence acceptable to the Administrator. (Note: Vehicles certified under § 86.007–11(f) must be tested using the test fuel specified in § 86.1313–2004, unless otherwise allowed by the Administrator.) Table N07–2 follows:

TABLE N07–2

Item		ASTM test method No.	Type 1–D	Type 2–D
(i) Cetane Number .....	.....	D613	40–54	40–50
(ii) Cetane Index .....	.....	D976	40–54	40–50
(iii) Distillation range:				
(A) IBP	°F	D86	330–390	340–400
	(°C) .....	.....	(165.6–198.9) ..	(171.1–204.4)
(B) 10 pct. point	°F	D86	370–430	400–460
	(°C) .....	.....	(187.8–221.1) ..	(204.4–237.8)
(C) 50 pct. point	°F	D86	410–480	470–540
	(°C) .....	.....	(210.0–248.9) ..	(243.3–282.2)
(D) 90 pct. point	°F	D86	460–520	560–630
	(°C) .....	.....	(237.8–271–1) ..	(293.3–332.2)
(E) EP	°F	D86	500–560	610–690
	(°C) .....	.....	(260.0–293.3) ..	(321.1–365.6)
(iv) Gravity	°API	D287	40–44	32–37
(v) Total sulfur	ppm	D2622	7–15	7–15
(vi) Hydrocarbon composition:				
(A) Aromatics, minimum (Remainder shall be paraffins, naphthenes, and olefins).	pct.	D5186	8	27
(vii) Flashpoint, min	°F	D93	120	130
	(°C) .....	.....	(48.9)	(54.4)
(viii) Viscosity	centistokes	D445	1.6–2.0	2.0–3.2

(3) Petroleum Diesel fuel for diesel engines meeting the specifications in table N07–3, or substantially equivalent specifications approved by the Administrator, shall be used in service accumulation. The grade of petroleum diesel fuel used shall be commercially designated as Type 2–D” grade diesel

fuel except that fuel commercially designated as “Type 1–D” grade Diesel fuel may be substituted provided that the manufacturer has submitted evidence to the Administrator demonstrating to the Administrator’s satisfaction that this fuel will be the predominant in-use fuel. Such evidence

could include such things as copies of signed contracts from customers indicating the intent to purchase and use “Type 1–D” grade diesel fuel as the primary fuel for use in the engines or other evidence acceptable to the Administrator. Table N07–03 follows:

TABLE N07–3

Item		ASTM test method No.	Type 1–D	Type 2–D
(i) Cetane Number .....	.....	D613	40–56	38–58
(ii) Cetane Index .....	.....	D976	min. 40	min. 40
(iii) Distillation range:				
90 pct. point	°F	D86	440–530	540–630
	(°C) .....	.....	(226.7–276–7) ..	(293.3–332.2)
(iv) Gravity	°API	D287	39–45	30–39
(v) Total sulfur	ppm	D2622	7–15	7–15

TABLE N07-3—Continued

Item		ASTM test method No.	Type 1-D	Type 2-D
(vi) Flashpoint, min	°F	D93	130	130
	(°C)		(54.4)	(54.4)
(vii) Viscosity	centistokes	D445	1.2-2.2	1.5-4.5

(b)(4) through (g) [Reserved]. For guidance see § 86.1313-94.

33. Section 86.1319-90 is amended by redesignating paragraph (e) as paragraph (f), and adding a new paragraph (e) to read as follows:

§ 86.1319-90 CVS calibration.

* * * * *

(e) *SSV calibration.* (1) The calibration of the SSV located in the tunnel shall be conducted in a similar manner as the CFV or PDP calibration. Gas flow within the SSV is a function of inlet pressure, P_1 , the inlet temperature, T_1 , and the pressure drop between the throat and the inlet, ΔP . Note that the following procedure is consistent with SAE J244. The

calibration procedure described in paragraph (e)(3) of this section establishes the values of the coefficients at measured values of pressure, temperature and airflow.

(i) The flow rate for a subsonic venturi is calculated as a volumetric flow rate (Q_s) or a mass flow rate (Q_m) as follows:

$$Q_s = \frac{Q_m}{\rho_s} = \frac{K_q}{\rho_s} \left(\frac{C_d * Y * d^2}{\sqrt{1 - \beta^4}} \right) \sqrt{\rho_i * \Delta P}$$

$$Q_m = K_q * C_d * Y * d^2 \left(\frac{\rho_i * \Delta P}{1 - \beta^4} \right)^{1/2}$$

$$Y = \left[r^{\frac{2}{k}} \left(\frac{k}{k-1} \right) \left(\frac{1 - r^{\left(\frac{k-1}{k} \right)}}{1 - r} \right) \left(\frac{1 - \beta^4}{1 - \beta^4 * r^{\frac{2}{k}}} \right) \right]^{\frac{1}{2}}$$

Where:

$$r = 1 - \frac{\Delta P}{P_{abs}}$$

$$\beta = \frac{d}{D}$$

d = Throat diam., in (mm)

D = Inlet Pipe diam., in (mm)

k = Ratio of Specific Heat (1.40 for Air)

Where:

$$P_{abs} = P_1 + P_B$$

$$T_{abs} = T_1 + 2731$$

$$R_{mix} = R_u / MW_{mix}$$

$$R_u = 8.3144 \text{ kJ/kg-mole-K}$$

(iii) The inlet density (ρ_1) is calculated as follows:

$$\rho_1 = \frac{P_{abs}}{R_{mix} * T_{abs}}$$

Where:

P_v = Vapor pressure, in Hg (kPa)

MW_{AIR} = 28.964 kg/kg-mole

MW_{H_2O} = 18.015 kg/kg-mole

Where:

K_q = 0.0021074 (SI units).

Q_s = Air Volume Flow, SCFM (m^3/min).

Q_m = Air Mass Flow, lbm/min (kg/min).

ρ_s = Density at Standard Conditions, lbm/ft³ (kg/m³) as specified in paragraph (e)(1)(v) of this section.

ρ_s = Density at inlet conditions, lbm/ft³ (kg/m³), as specified in paragraph (e)(1)(iii) of this section.

C_d = Coefficient of Discharge = Actual Air Flow/Theoretical Air Flow.

Y = Expansion factor, as specified in paragraph (e)(1)(ii) of this section.

d = Throat diameter, inch (mm).

β = Ratio of venturi throat diameter to approach pipe diameter.

ΔP = Pressure drop between inlet and throat, in. H₂O (kPa).

(ii) The expansion factor (Y) is calculated as follows:

MW_{mix} = the molecular weight of the mix, as calculated in paragraph (e)(1)(iv) of this section.

(iv) The molecular weight of the mix, is calculated as follows:

$$MW_{mix} = \frac{MW_{AIR} * (P_{abs} - P_v) + MW_{H_2O} * P_v}{P_{abs}}$$

(v) The density at standard conditions of 101.33 kPa and 20 °C is calculated as follows:

$$\rho_s = \frac{101.33}{\frac{8.3144}{28.964} * 293.15} = 1.2041 \text{ kg/m}^3$$

(2) The venturi manufacturer's recommended procedure shall be followed for calibrating electronic portions of the SSV.

(3) Measurements necessary for flow calibration of the SSV are as follows:

CALIBRATION DATA MEASUREMENT

Parameter	Sym	Units	Tolerance
(i) Barometric pressure (corrected to 32° F)	P _B	in. Hg (kPa) ..	± .01in. Hg (± .034kPa)
(ii) Air temperature, into calibration venturi	ETI	° F (° C)	±.5 °F (.28° C)
(iii) Pressure drop between the inlet and throat of calibration venturi (corrected to 68° F).	EDP	in. H ₂ O (kPa)	± .05 in. H ₂ O (±.012kPa)
(iv) Air Flow	Q _s	Std ft ³ /min (m ³ /min).	± 5% of NIST "true" value
(v) SSV inlet depression	P _I	in. H ₂ O (kPa)	± .23 in. H ₂ O (±.057kPa)
(vi) Pressure drop between the inlet and throat of SSV	DP	in. H ₂ O (kPa)	±.05 in. H ₂ O (±.012kPa)
(vii) Water vapor pressure of inlet air	P _V	in. Hg (kPa) ..	±.10 in. Hg (± .34kPa)
(vii) Temperature at SSV inlet	T _I	°F (°C)	±4.0 °F (2.2° C)

(4) Set up equipment similar to CFV or PDP calibration except the variable flow restrictor valve can be deleted or set in the open position, and the pressure drop reading device must be added. The calibration test must be conducted with the test subsonic venturi in place in its permanent position. Any subsequent changes in upstream or downstream configuration could cause a shift in calibration. Leaks between the calibration metering device and the SSV must be eliminated.

(5) Adjust the variable flow blower or restrictor valve to its maximum in-use flow rate. Allow the system to stabilize and record data from all instruments. Be sure to avoid choke condition.

(6) Vary the flow through a minimum of eight steps covering the intended in-use operating range of the SSV.

(7) Data analyses. If the calibration venturi is used at the tunnel inlet (free standing), then assume a value of β=0. If the SSV installed in the CVS tunnel, use the actual inside tunnel diameter and the throat diameter to compute β.

(i) Assume an initial value for Cd = 0.98 to calculate Q_m for the calculation of Reynolds number, Re,:

$$Re = \frac{6.667E4 * Q_m}{\pi * d * \mu}$$

Where: μ = viscosity of air, centipoise

$$\mu = K_{\mu} * \frac{T_k^{1.5}}{(T_k + 110.4)}$$

$$K_{\mu} = 1.458E-3$$

$$T_k = (T_i^{\circ}C + 273.16)$$

(ii) From the initial calibration of the venturi, establish an equation of Cd as a function of Re. The following functional forms should be reviewed, but a power series, least-squares fit

polynomial equation may result in the best fit. Many factors involved in the installation of SSV and the operating range of the Reynolds number can affect the functional relationship of the Cd with Re. Calculate Cd based on this initial equation of Re. Compute a final Q_m based on this calculated Cd for both the calibration nozzle and the inline SSV.

(8)(i) Compute the percent difference in air flow between the calibration venturi and the inline SSV. If the difference in percent of point is greater than 1%, compute a new Cd and Re for the in-tunnel venturi as follows:

$$Cd_{new} = \text{Actual Air Flow} / \text{Theoretical Air Flow} = Q_{m_{act}} / Q_{m_{theo}}$$

$$Re_{new} = \frac{0.8Q_{m_{cal}}}{\pi * d * \mu}$$

(ii) Q_{m_{act}} is flow measured by the calibration venturi and Q_{m_{theo}} is the theoretical calculated flow based on the in-tunnel SSV conditions with Cd set equal to 1. Re_{new} is based on the calibrated venturi flow, but the in-tunnel SSV properties. Recalculate a new curve fit of Cd_{new} for the inline venturi as a function of Re_{new} following the guidelines in paragraph (e)(7) of this section. Agreement of the fit should be within 1.0% of point. Install the new Cd curve fit in the test cell flow computing device and conduct the propane injection, flow verification test.

* * * * *

34. A new section 86.1323–2007 is added to Subpart N to read as follows:

§ 86.1323–2007 Oxides of nitrogen analyzer calibration.

This section describes the initial and periodic calibration of the

chemiluminescent oxides of nitrogen analyzer.

(a) Prior to introduction into service and at least monthly thereafter, the chemiluminescent oxides of nitrogen analyzer must be checked for NO₂ to NO converter efficiency. The Administrator may approve less frequent checks of the converter efficiency. Figure N84–9 is a reference for paragraphs (a) (1) through (11) of this section.

(1) Follow good engineering practices for instrument start-up and operation. Adjust the analyzer to optimize performance.

(2) Zero the oxides of nitrogen analyzer with zero-grade nitrogen.

(3) Connect the outlet of the NO_x generator to the sample inlet of the oxides of nitrogen analyzer, which has been set to the most common operating range.

(4) Introduce into the NO_x generator-analyzer system an NO-in-nitrogen (N₂) mixture with an NO concentration equal to approximately 80 percent of the most common operating range. The NO₂ content of the gas mixture shall be less than 5 percent of the NO concentration.

(5) With the oxides of nitrogen analyzer in the NO mode, record the concentration of NO indicated by the analyzer.

(6) Turn on the NO_x generator O₂ supply and adjust the O₂ flow rate so that the NO indicated by the analyzer is about 10 percent less than indicated in paragraph (a)(5) of this section. Record the concentration of NO in this NO + O₂ mixture.

(7) Switch the NO_x generator to the generation mode and adjust the generation rate so that the NO measured by the analyzer is 20 percent of that

measured in paragraph (a)(5) of this section. There must be at least 10 percent unreacted NO at this point. Record the concentration of residual NO.

(8) Switch the oxides of nitrogen analyzer to the NO_x mode and measure total NO_x. Record this value.

(9) Switch off the NO_x generator but maintain gas flow through the system. The oxides of nitrogen analyzer will indicate the NO_x in the NO + O₂ mixture. Record this value.

(10) Turn off the NO_x generator O₂ supply. The analyzer will now indicate the NO_x in the original NO-in-N₂ mixture. This value should be no more than 5 percent above the value indicated in paragraph (a)(4) of this section.

(11) Calculate the efficiency of the NO_x converter by substituting the concentrations obtained into the following equation:

$$\text{Percent efficiency} = \left(1 + \frac{a - b}{c - d}\right) \times 100$$

Where:

a = concentration obtained in paragraph

(a)(8) of this section,

b = concentration obtained in paragraph

(a)(9) of this section,

c = concentration obtained in paragraph

(a)(6) of this section,

d = concentration obtained in paragraph

(a)(7) of this section.

(12) If converter efficiency is not greater than 90 percent, repair the analyzer. The repaired analyzer must achieve a converter efficiency greater than 90 percent before the analyzer may be used.

(b) *Accuracy.* The accuracy at the minimum limit of the NO_x analyzer is defined in § 86.1338–2007. In general the analyzer's minimum limit shall be the lowest concentration within a given range, in which it has an accuracy of ±2 percent of point.

(c) *Initial and periodic calibration.* Prior to its introduction into service and monthly thereafter, the chemiluminescent oxides of nitrogen analyzer shall be calibrated on all normally used instrument ranges. Use the same flow rate as when analyzing samples. Proceed as follows:

(1) Adjust analyzer to optimize performance.

(2) Zero the oxides of nitrogen analyzer with zero-grade nitrogen (N₂).

(3) (i) Calibrate all operating ranges with a minimum of 9 NO-in-N₂ calibration gases (e.g., 10, 20, 30, 40, 50, 60, 70, 80, and 90 percent of that range) and one zero-grade N₂ gas. Sound engineering judgment shall dictate appropriate spacing and weighting of the calibration points.

(ii) For each range calibrated, if all deviations from a least-squares best-fit straight line are within ±2 percent of the value at each non-zero data point and within ±0.3 percent of full scale on the zero data point, then concentration values may be calculated using the linear calibration equation for that range. If the specified deviations are exceeded for ranges that have a minimum limit of 1 ppm or greater, then the best-fit non-linear equation that represents the data within these deviations may be used to determine concentration values. For ranges that have a minimum limit less than 1 ppm, only a linear or second order non-linear equation that represents the data within these deviations, may be used to determine concentration values.

(d) *Chemiluminescent NO_x analyzer interference check (i.e., quench check).* Prior to its introduction into service and at least once per year thereafter, the quench check described in this section shall be performed on CLD NO_x analyzers. CO₂ and water vapor interfere with the response of a CLD by collisional quenching. The combined quench effect at their highest expected concentrations shall not exceed 2 percent.

(1) *CO₂ quench check procedure:* (i) For the procedure described in this paragraph, variations are acceptable provided that they produce equivalent %CO₂quench results. Connect a pressure-regulated CO₂ span gas to one of the inlets of a three-way valve. Its CO₂ concentration should be approximately twice the maximum CO₂ concentration expected during testing. The valve must be leak-free, and its wetted parts must be made of a stainless steel or other inert material. Connect a pressure-regulated zero-grade N₂ gas to the other inlet of the three-way valve. Connect the single outlet of the valve to the balance-gas port of a properly operating gas divider. Connect a pressure-regulated NO span gas, which has approximately twice the typical NO concentration expected during testing, to the span-port of the gas divider. Configure the gas divider such that nearly equal amounts of the span gas and balance gas are blended with each other. Viscosity corrections shall be applied appropriately to ensure correct mass flow determinations.

(ii) With the CO₂ flowing to the balance port and the NO flowing to the span port, measure a stable CO₂ concentration from the gas divider's outlet with a properly calibrated NDIR analyzer. Record this concentration in percent (%); this is “%CO₂”. This value will be used in the water vapor quench check calculations that are detailed in

the following section. After the %CO₂ measurement, measure the NO concentration at the gas divider outlet with the CLD analyzer in the NO mode. Record this concentration in ppm; this is “NO_{CO₂””. Then switch the three-way valve such that 100 percent N₂ flows to the balance port inlet. Monitor the CO₂ concentration of the gas divider's outlet until its concentration stabilizes at zero. Then measure the stable NO concentration from the gas divider's outlet. Record this value in ppm; this is “NO_{N₂}”. Calculate %CO₂quench as follows:}

$$\%CO_{2\text{quench}} = (1.00 - (NO_{CO_2}/NO_{N_2})) \times 100$$

(2) *Water vapor quench check procedure:*

(i) For all dry CLD analyzers it must be demonstrated that for the highest expected water vapor concentration (i.e., “%H₂O_{exp}” as calculated later in this section), the water removal technique maintains CLD humidity at less than or equal to 5 g_{water}/kg_{dry air} (or about 0.008 percent H₂O), which is 100% RH at 3.9 °C and 101.3 kPa. This humidity specification is also equivalent to about 25% RH at 25 °C and 101.3 kPa. This may be demonstrated by measuring the temperature at the outlet of a thermal dehumidifier, or by measuring humidity at a point just upstream of the CLD. Humidity of the CLD exhaust might also be measured as long as the only flow into the CLD is the flow out of the dehumidifier.

(ii) For all “wet” CLD analyzers the following water vapor quench check procedure shall be followed. Measure an NO span gas, which has 90% to 100% of the typical NO expected during testing, using the CLD in the NO mode. Record this concentration in ppm; this is “NO_{dry}”. Then bubble the same NO span gas through distilled water in a sealed vessel at 25 °C ±10 °C. This temperature specification imposed to ensure that the H₂O_{vol} calculation (refer to (iii) of this section) returns an accurate result. To prevent subsequent condensation, this temperature must also be less than any temperature that the wetted sample will experience between the sealed vessel's outlet and the CLD. Record the vessel's water temperature in °C; this is “T_{sat}”. Record the vessel's absolute pressure in kPa; this is “P_{sat}”. Measure the wetted span gas with the CLD, and record this value in ppm; this is “NO_{wet}”.

(iii) Calculations for water quench must consider dilution of the NO span gas with water vapor and scaling of the water vapor concentration to that expected during testing.

(A) Calculate the volume fraction of water vapor in the wetted span gas, as $H_2O_{vol} = (\exp(3.69 - (81.28/T_{sat})) + 1.61)/P_{sat}$. This calculation approximates some of the thermodynamic properties of water based on the "1995 Formulation for the Thermodynamic Properties of Ordinary Water Substance for General and Scientific Use", issued by The International Association for the Properties of Water and Steam (IAPWS). However, this approximation should only be used as prescribed in this section because it is an exponential fit that is accurate for data at $25\text{ }^{\circ}\text{C} \pm 10\text{ }^{\circ}\text{C}$. Then, assuming a diesel fuel atomic hydrogen to carbon ratio of 1.8, and an

intake and dilution air humidity of 75 grains ($10.71\text{ g}_{\text{water}}/\text{kg}_{\text{dry air}}$ or 54.13 percent RH at $25\text{ }^{\circ}\text{C}$ and 101.3 kPa),

(B) Calculate the maximum percent water vapor expected during testing; as $\%H_2O_{exp} = (0.90 \times \%CO_2) + 1.69$. $\%CO_2$ is the value measured during the $\%CO_2$ quench check.

(C) Calculate the expected wet concentration of NO in ppm; as $NO_{exp} = NO_{dry} \times (1.00 - H_2O_{vol})$

(iv) Calculate the percent water vapor quench as:

$$\%H_2O_{quench} = ((NO_{exp} - NO_{wet})/NO_{exp}) \times (\%H_2O_{exp}/H_2O_{vol})$$

(3) Add the $\%CO_{2quench}$ and the $\%H_2O_{quench}$ values. Their sum may not

exceed the limit set in paragraph (d). If their sum is greater than this limit, then the CLD instrument may not be used to perform testing unless it is repaired. The analyzer must be shown to pass this quench check after the repair before it may be used for testing.

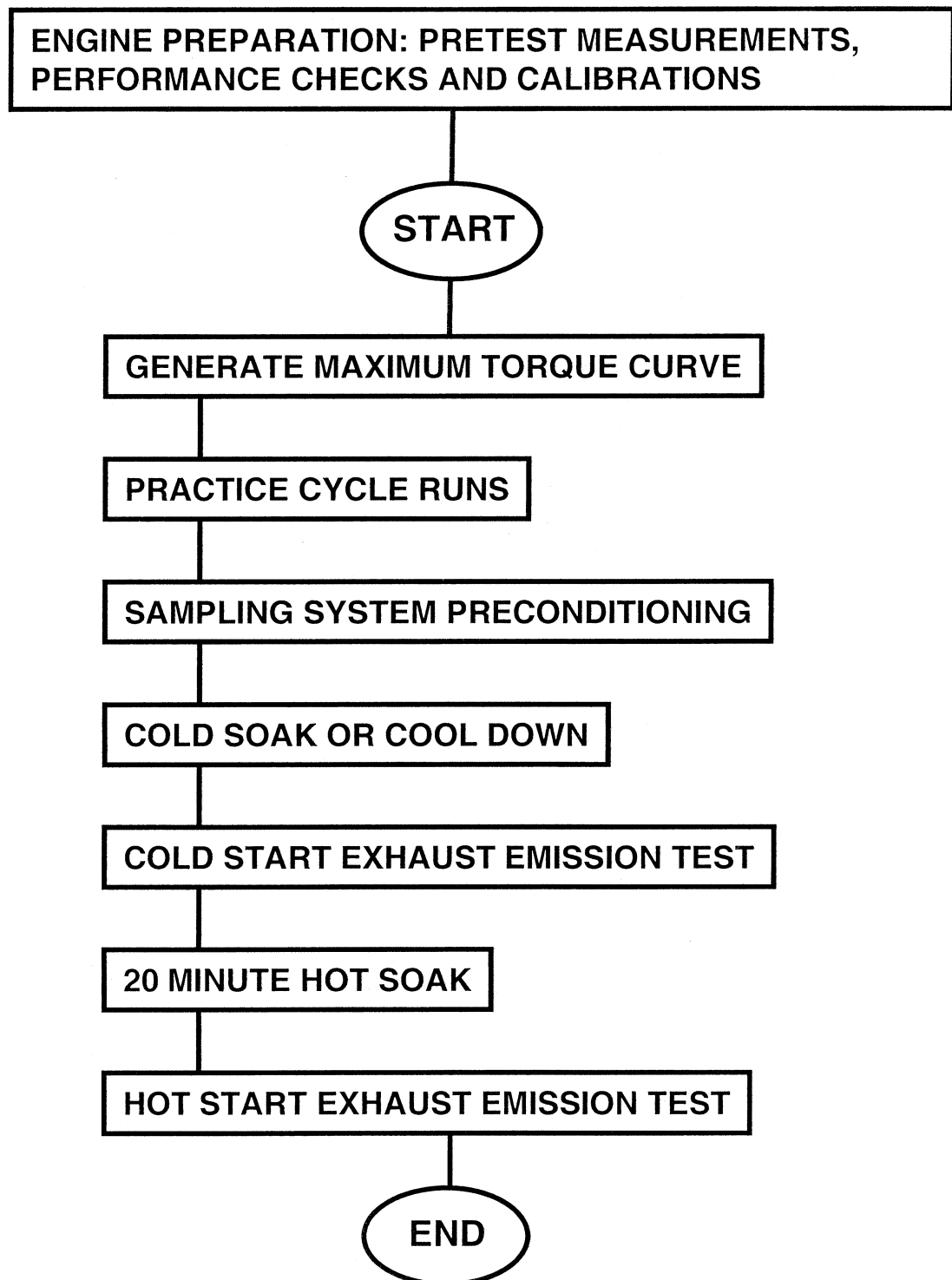
35. Section 86.1330–90 is amended by revising paragraph (a) to read as follows:

§ 86.1330–90 Test sequence; general requirements.

(a) The test sequence shown in Figure N90–10 shows the major steps of the test procedure, as follows:

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Figure N90-10 Test Sequence



* * * * *

36. Section 86.1334–84 is amended by revising paragraph (a)(1) and (a)(2) to read as follows:

§ 86.1334–84 Pre-test engine and dynamometer preparation.

(a) * * * (1) Before the cold soak or cool down:

(i) Final calibration of the dynamometer and throttle control systems may be performed. These calibrations may consist of steady-state operations and/or actual practice cycle runs, and must be completed before sampling system preconditioning (if applicable).

(ii) Conduct sampling system preconditioning for diesel engines (optional for model years prior to 2007) by operating the engine at a condition of rated-speed, 100 percent torque for a minimum of 20 minutes while simultaneously operating the CVS and secondary dilution system and taking particulate matter emissions samples from the secondary dilution tunnel. Particulate sample filters need not be stabilized or weighed, and may be discarded. Filter media may be changed during conditioning as long as the total sampled time through the filters and sampling system exceeds 20 minutes. Flow rates shall be set at the approximate flow rates selected for transient testing. Torque shall be reduced from 100 percent torque while maintaining the rated speed condition as necessary to prevent exceeding the maximum sample zone temperature specifications of § 86.1310–2007.

(2) Following sampling system preconditioning cycle, the engine shall be cooled per § 86.1335–90.

* * * * *

37. A new section 86.1337–2007 is added to subpart N to read as follows:

§ 86.1337–2007 Engine dynamometer test run.

(a) The following steps shall be taken for each test:

(1) Prepare for the cold-start test.

(i) For gasoline- and methanol-fueled engines only, evaporative emission canisters shall be prepared for use in this testing in accordance with the procedures specified in § 86.1232–96 (h) or (j). The size of the canisters used for testing shall correspond with the largest canister capacity expected in the range of vehicle applications for each engine. (The Administrator may, at his/her discretion, use a smaller canister capacity.) Attach the evaporative emission canister(s) to the engine, using the canister purge plumbing and controls employed in vehicle applications of the engine being tested.

Plug the canister port that is normally connected to the fuel tank.

(ii) Prepare the engine, dynamometer, and sampling system.

(iii) Change filters, etc., and leak check as necessary.

(2) Connect evacuated sample collection bags to the dilute exhaust and dilution air sample collection systems if bag sampling is used.

(3) For methanol-fueled vehicles, install fresh methanol and formaldehyde impingers (or cartridges) in the exhaust and dilution air sample systems for methanol and formaldehyde. A single dilution air sample covering the total test period may be utilized for methanol and formaldehyde background. (Background measurements of methanol and formaldehyde may be omitted and concentrations assumed to be zero for calculations in § 86.1344.)

(4) Attach the CVS to the engine exhaust system any time prior to starting the CVS.

(5) Start the CVS (if not already on), the sample pumps (except for the particulate sample pump(s), if applicable), the engine cooling fan(s), and the data collection system. The heat exchanger of the constant volume sampler (if used), and the heated components of any continuous sampling system(s) (if applicable) shall be preheated to their designated operating temperatures before the test begins. (See § 86.1340(e) for continuous sampling procedures.)

(6) Adjust the sample flow rates to the desired flow rates and set the CVS gas flow measuring devices to zero. CFV–CVS sample flow rate is fixed by the venturi design.

(7) For engines tested for particulate emissions, carefully install a clean, loaded particulate sample filter cartridge into the filter holder assembly. It is recommended that this be done within the filter stabilization environment, with both ends of the filter holder assembly plugged during transport to the emissions test facility. Install the assembled filter holder into the sample flow line.

(8) Follow the manufacturer's instructions for cold starting. Simultaneously start the engine and begin exhaust and dilution air sampling. For petroleum-fueled diesel engines (and natural gas-fueled, liquified petroleum gas-fueled or methanol-fueled diesels, if used) Turn on the hydrocarbon and NO_x (and CO and CO₂, if continuous) analyzer system integrators (if used), and turn on the particulate sample pumps and indicate the start of the test on the data collection medium.

(9) Allow the engine to idle freely with no-load for 24±1 seconds. This idle period for automatic transmission engines may be interpreted as an idle speed in neutral or park. All other idle conditions shall be interpreted as an idle speed in gear. It is permissible to lug the engine down to curb idle speed during the last 8 seconds of the free idle period for the purpose of engaging dynamometer control loops.

(10) Begin the transient engine cycles such that the first non-idle record of the cycle occurs at 25±1 seconds. The free idle time is included in the 25±1 seconds.

(i) During particulate sampling it must be demonstrated that the ratio of main tunnel flow to particulate sample flow does not change by more than ±5.0 percent of its set point value (except for the first 10 seconds of sampling). For double dilution operation, sample flow is the net difference between the flow rate through the sample filters and the secondary dilution air flow rate.

(ii) Record flow. If the set flow rate cannot be maintained because of high particulate loading on the filter, the test shall be terminated. The test shall be rerun using a lower sample flow rate or greater dilution.

(11) Begin the transient engine cycles such that the first non-idle record of the cycle occurs at 25±1 seconds. The free idle time is included in the 25±1 seconds.

(12) On the last record of the cycle, cease sampling. Immediately turn the engine off and start a hot-soak timer. Also turn off the particulate sample pumps, the gas flow measuring device(s) and any continuous analyzer system integrator and indicate the end of the test on the data collection medium. Sampling systems should continue to sample after the end of the test cycle until system response times have elapsed.

(13) Immediately after the engine is turned off, turn off the engine cooling fan(s) if used. As soon as possible, transfer the “cold start cycle” exhaust and dilution air bag samples to the analytical system and process the samples according to § 86.1340. A stabilized reading of the exhaust sample on all analyzers shall be obtained within 20 minutes of the end of the sample collection phase of the test. Analysis of the methanol and formaldehyde samples shall be obtained within 24 hours of the end of the sample collection period. For particulate measurements, carefully remove the filter holder from the sample flow apparatus

(14) Allow the engine to soak for 20±1 minutes.

(15) Prepare the engine and dynamometer for the hot start test.

(16) Connect evacuated sample collection bags to the dilute exhaust and dilution air sample collection systems.

(17) Install fresh methanol and formaldehyde impingers (or capsules) in the exhaust and dilution air sample systems for methanol and formaldehyde.

(18) Start the sample pumps (except the particulate sample pump(s), if applicable), the engine cooling fan(s) and the data collection system. The heat exchanger of the constant volume sampler (if used) and the heated components of any continuous sampling system(s) (if applicable) shall be preheated to their designated operating temperatures before the test begins. See § 86.1340(e) for continuous sampling procedures.

(19) Adjust the sample flow rates to the desired flow rate and set the CVS gas flow measuring devices to zero.

(20) For diesel engines tested for particulate, carefully install a clean, loaded particulate sample filter cartridge in the filter holder assembly and install the filter holder assembly in the sample flow line.

(21) Follow the manufacturer's choke and throttle instruction for hot starting. Simultaneously start the engine and begin exhaust and dilution air sampling. For diesel engines, turn on the hydrocarbon and NO_x (and CO and CO₂, if continuous) analyzer system integrator (if used), indicate the start of the test on the data collection medium, and turn on the particulate sample pump(s).

(22) [Reserved]

(23) Allow the engine to idle freely with no-load for 24±1 seconds. The provisions and interpretations of paragraph (a)(9) of this section apply.

(24) Begin the transient-engine cycle such that the first non-idle record of the cycle occurs at 25±1 seconds. The free idle is included in the 25±1 seconds.

(25) On the last record of the cycle, allow sampling system response times to elapse and cease sampling. Turn off the particulate sample pump(s) (if appropriate), the gas flow measuring device(s) and any continuous analyzer system integrator and indicate the end of the test on the data collection medium.

(26) As soon as possible, transfer the "hot start cycle" exhaust and dilution air bag samples to the analytical system and process the samples according to § 86.1340. A stabilized reading of the exhaust sample on all analyzers shall be obtained within 20 minutes of the end of the sample collection phase of the test. Analyze the methanol and

formaldehyde samples within 24 hours. (If it is not possible to perform analysis within 24 hours, the samples should be stored in a cold (approximately 0 deg.C) dark environment until analysis can be performed). For particulate measurements, carefully remove the filter holder assembly. It is recommended that the filter cartridge be transferred to and from the filter stabilization environment within the filter holder assembly with both ends plugged, and that the cartridge be removed from the filter holder assembly within the stabilization environment. Transfer the particulate filter to the stabilization environment for post-test stabilization. Filters may be stabilized in the petri dishes while still within the filter cartridges, or the cartridge tops may be removed for stabilization, or the filters may be entirely removed from the filter cartridges and stabilized in the petri dishes alone. Removal of the filters from the filter cartridges shall only take place within the stabilization environment.

(27) The CVS and the engine may be turned off, if desired.

(b) The procedure in paragraph (a) of this section is designed for one sample bag for the cold start portion and one for the hot start portion.

(c) If a dynamometer test run is determined to be void, corrective action may be taken. The engine may then be allowed to cool (naturally or forced) and the dynamometer test rerun.

38. A new section 86.1338–2007 is added to Subpart N to read as follows:

§ 86.1338–2007 Emission measurement accuracy.

(a) *Minimum limit.* (1) The minimum limit of an analyzer must be equal to or less than one-half of the average diluted concentration for an engine emitting the maximum amount of the applicable pollutant allowed by the applicable standard. For example, if with a given dilution and sampling system, an engine emitting NO_x at the level of the standard (e.g., 0.20 g/bhp-hr NO_x) would result in an average NO_x concentration of 1.0 ppm in the diluted sample, then the minimum limit for the NO_x analyzer must be less than or equal to 0.5 ppm.

(2) For the purpose of this section, "minimum limit" means the lowest of the following levels:

(i) The lowest NO_x concentration in the calibration curve for which an accuracy of ±2 percent of point has been demonstrated as specified in paragraph (a)(3) of this section; or

(ii) Any NO_x concentration for which the test facility has demonstrated sufficient accuracy to the

Administrator's satisfaction prior to the start of testing, such that it will allow a meaningful determination of compliance with respect to the applicable standard.

(3) For determination of the analyzer's minimum limit, a NO_x concentration that is less than or equal to one-half of the average NO_x concentration determined in paragraph (a)(1) of this section shall be measured by the oxides of nitrogen analyzer following the analyzer's monthly periodic calibration. This measurement must be made to ensure the accuracy of the calibration curve to within ±2 percent of point accuracy of the appropriate least-squares fit, at less than or equal to one half of the average expected diluted NO_x concentration determined in paragraph (a)(1) of this section.

(b) *Measurement accuracy—Bag sampling.* Analyzers used for bag analysis must be operated such that the measured concentration falls between 15 and 100 percent of full scale, with the following exception: concentrations below 15 percent of full scale may be used if the minimum limit of the analyzer within the range meets the requirement of paragraph (a) of this section.

(c) *Measurement accuracy—Continuous measurement.* (1) Analyzers used for continuous analysis must be operated such that the measured concentration falls between 15 and 100 percent of full scale, with the following exceptions:

(i) Concentrations below 15 percent of full scale may be used if the minimum limit of the analyzer within the range meets the requirement of paragraph (a) of this section.

(ii) Analyzer response over 100% of full scale may be used if it can be shown that readings in this range are accurate.

(2) If the analyzer response exceeds the level allowed by paragraph (c)(1)(ii) of this section, the test must be repeated using a higher range and both results must be reported. The Administrator may waive this requirement.

(d) If a gas divider is used, the gas divider shall conform to the accuracy requirements specified in § 86.1314–84(g), and shall be used according to the procedures contained in paragraphs (a) and (b) of this section.

39. Section 86.1339–90 is amended by adding paragraph (h) to read as follows:

§ 86.1339–90 Particulate filter handling and weighing.

* * * * *

(h) This section does not apply for tests conducted according to the provisions of § 86.1312–2007.

40. Section 86.1360–2007 is amended by revising the section heading, adding introductory text, and revising paragraphs (b), (e)(2), (e)(3), and (e)(6)(ii), to read as follows:

§ 86.1360–2007 Supplemental emission test; test cycle and procedures.

The test procedures of this subpart N apply for supplemental emission testing, except as specified otherwise in this section.

* * * * *

(b) *Test cycle.* (1)(i) The following 13-mode cycle must be followed in dynamometer operation on the test engine:

Mode number	Engine speed	Percent load	Weighting factor	Mode length (minutes)
1	Idle	.....	0.15	4
2	A	100	0.08	2
3	B	50	0.10	2
4	B	75	0.10	2
5	A	50	0.05	2
6	A	75	0.05	2
7	A	25	0.05	2
8	B	100	0.09	2
9	B	25	0.10	2
10	C	100	0.08	2
11	C	25	0.05	2
12	C	75	0.05	2
13	C	50	0.05	2

(ii) Upon Administrator approval, the manufacturer may use mode lengths other than those listed in paragraph (b)(1)(i) of this section.

(2) In addition to the 13 test points identified in paragraph (b)(1) of this section, for engines not certified to a NO_x standard or FEL less than 1.5 g/bhp-hr, EPA may select, and require the manufacturer to conduct the test using, up to 3 additional test points within the control area (as defined in paragraph (d) of this section). EPA will notify the manufacturer of these supplemental test points in writing in a timely manner before the test. Emissions sampling for the additional test modes must include all regulated gaseous pollutants. Particulate matter does not need to be measured.

* * * * *

(e) * * *

(2) *Test sequence.* The test must be performed in the order of the mode numbers in paragraph (b)(1) of this section. Where applicable, the EPA-selected test points identified under paragraph (b)(2) of this section must be performed immediately upon completion of mode 13. The engine must be operated for the prescribed time in each mode, completing engine speed and load changes in the first 20 seconds of each mode. The specified speed must be held to within ± 50 rpm and the specified torque must be held to within plus or minus two percent of the maximum torque at the test speed.

(3) *Particulate sampling.* One filter shall be used for sampling PM over the 13-mode test procedure. The modal weighting factors specified in paragraph (b)(1) of this section shall be taken into account by taking a sample proportional

to the exhaust mass flow during each individual mode of the cycle. This can be achieved by adjusting sample flow rate, sampling time, and/or dilution ratio, accordingly, so that the criterion for the effective weighting factors is met. The sampling time per mode must be at least 4 seconds per 0.01 weighting factor. Sampling must be conducted as late as possible within each mode. Particulate sampling shall be completed no earlier than 5 seconds before the end of each mode.

* * * * *

(6) * * *

(ii) For PM measurements, a single filter must be used to measure PM over the 13 modes. The brake-specific PM emission level for the test must be calculated as described for a transient hot start test in § 86.1343. Only the power measured during the sampling period shall be used in the calculation.

* * * * *

41. Section 86.1370–2007 is amended by revising paragraphs (a), (b)(6) and (d), removing and reserving paragraph (b)(5), and adding paragraphs (b)(7) and (g) to read as follows:

§ 86.1370–2007 Not-To-Exceed test procedures.

(a) *General.* The purpose of this test procedure is to measure in-use emissions of heavy-duty diesel engines while operating within a broad range of speed and load points (the Not-To-Exceed Control Area) and under conditions which can reasonably be expected to be encountered in normal vehicle operation and use. Emission results from this test procedure are to be compared to the Not-To-Exceed Limits specified in § 86.007–11 (a)(4), or to

later Not-To-Exceed limits. The Not-To-Exceed Limits do not apply for engine starting conditions.

(b) * * *

(5) [Reserved]

(6)(i) For petroleum-fueled diesel cycle engines, the manufacturer may identify particular engine-vehicle combinations and may petition the Administrator at certification to exclude operating points from the Not-to-Exceed Control Area defined in § 86.1370(b)(1) through (5) if the manufacturer can demonstrate that the engine is not capable of operating at such points when used in the specified engine-vehicle combination(s).

(ii) For diesel cycle engines that are not petroleum-fueled, the manufacturer may petition the Administrator at certification to exclude operating points from the Not-to-Exceed Control Area defined in § 86.1370(b)(1) through (5) if the manufacturer can demonstrate that the engine is not expected to operate at such points in normal vehicle operation and use.

(7) Manufacturers may petition the Administrator to limit NTE testing in a single defined region of speeds and loads. Such a defined region must generally be of elliptical or rectangular shape, and must share some portion of its boundary with the outside limits of the NTE zone. Under this provision testing would not be allowed with sampling periods in which operation within that region constitutes more than 5.0 percent of the time-weighted operation within the sampling period. Approval of this limit by the Administrator is contingent on the manufacturer satisfactorily demonstrating that operation at the

speeds and loads within that region accounts for less than 5.0 percent of all in-use operation (weighted by vehicle-miles-traveled or other EPA-approved weightings) for the in-use engines of that configuration (or sufficiently similar engines). At a minimum, this demonstration must include operational data from representative in-use vehicles.

* * * * *

(d) *Not-to-exceed control area limits.*

(1) When operated within the Not-To-Exceed Control Area defined in paragraph (b) of this section, diesel engine emissions shall not exceed the applicable Not-To-Exceed Limits specified in § 86.007–11(a)(4) when averaged over any period of time greater than or equal to 30 seconds, except where a longer averaging period is required by paragraph (d)(2) of this section.

(2) For engines equipped with emission controls that include discrete regeneration events, if a regeneration event occurs during the NTE test, then the averaging period must be at least as long as the time between the events multiplied by the number of full regeneration events within the sampling period. The requirement in this paragraph (d)(2) only applies for engines that send an electronic signal indicating the start of the regeneration event.

* * * * *

(g) *NO_x and NMHC aftertreatment warm-up.* For engines equipped with one or more aftertreatment devices that reduce NO_x or NMHC emissions, the NTE NO_x and NMHC emission limits do not apply when the exhaust gas temperature is measured within 12 inches of the outlet of the aftertreatment device and is less than 250°C. For multi-bed systems, it is the temperature at the outlet of the device with the maximum flow rate that determines whether the NTE limits apply.

42. § 86.1803–01 is amended by adding a definition of “U.S. heavy-duty vehicle sales” in alphabetical order to read as follows:

§ 86.1803–01 Definitions.

* * * * *

U.S. heavy-duty vehicle sales means sales of heavy-duty vehicles subject to the standards of this subpart, where the

sale takes place in any state of the United States except for California (or a state that has adopted California motor vehicle standards for that model year pursuant to section 177 of the Clean Air Act).

* * * * *

43. § 86.1806–05 is amended by revising paragraphs (b) introductory text, (b)(1), and (l) to read as follows:

§ 86.1806–05 On-board diagnostics.

* * * * *

(b) *Malfunction descriptions.* The OBD system must detect and identify malfunctions in all monitored emission-related powertrain systems or components according to the following malfunction definitions as measured and calculated in accordance with test procedures set forth in subpart B of this part (chassis-based test procedures), excluding those test procedures defined as “Supplemental” test procedures in § 86.004–2 and codified in §§ 86.158, 86.159, and 86.160.

(1) *Catalysts and particulate traps.* (i) *Otto-cycle.* Catalyst deterioration or malfunction before it results in an increase in NMHC emissions 1.5 times the NMHC standard or FEL, as compared to the NMHC emission level measured using a representative 4000 mile catalyst system.

(ii) *Diesel.* (A) If equipped, catalyst deterioration or malfunction before it results in exhaust emissions exceeding 1.5 times the applicable standard or FEL for NO_x or PM. This requirement applies only to reduction catalysts; monitoring of oxidation catalysts is not required. This monitoring need not be done if the manufacturer can demonstrate that deterioration or malfunction of the system will not result in exceedance of the threshold.

(B) If equipped with a particulate trap, catastrophic failure of the device must be detected. Any particulate trap whose complete failure results in exhaust emissions exceeding 1.5 times the applicable standard or FEL for NO_x or PM must be monitored for such catastrophic failure. This monitoring need not be done if the manufacturer can demonstrate that a catastrophic failure of the system will not result in exceedance of the threshold.

* * * * *

(l) *Phase-in for complete heavy-duty vehicles.* Complete heavy-duty vehicles weighing 14,000 pounds GVWR or less that are not Otto-cycle MDPVs must meet the OBD requirements of this section according to the following phase-in schedule, based on the percentage of projected vehicle sales. The 2004 model year requirements in the following phase-in schedule are applicable only to heavy-duty Otto-cycle vehicles where the manufacturer has selected Otto-cycle Option 1 or 2 for alternative 2003 or 2004 compliance according to § 86.004–01(c)(1) or (2). The 2005 through 2007 requirements in the following phase-in schedule apply to all heavy-duty vehicles weighing 14,000 pounds GVWR or less, excluding MDPVs. If the manufacturer has selected Otto-cycle Option 3 it may exempt 2005 model year complete heavy-duty engines and vehicles whose model year commences before July 31, 2004 from the requirements of this section. For the purposes of calculating compliance with the phase-in provisions of this paragraph (l), heavy-duty vehicles subject to the phase-in requirements of this section may be combined with heavy-duty vehicles subject to the phase-in requirements of paragraph § 86.005–17 (k). The phase-in schedule follows:

OBD COMPLIANCE PHASE-IN FOR COMPLETE HEAVY-DUTY VEHICLES WEIGHING 14,000 POUNDS GVWR OR LESS

Model year	Phase-in based on projected sales
2004 MY	Applicable only to Otto-cycle engines complying with Options 1 or 2; 40% compliance; alternative fuel waivers available.
2005 MY	60% compliance; alternative fuel waivers available.
2006 MY	80% compliance; alternative fuel waivers available.
2007 MY	80% compliance; alternative fuel waivers available.
2008+ MY	100% compliance.

44. A new § 86.1807–07 is added to subpart S to read as follows:

§ 86.1807–07 Vehicle labeling.

Section 86.1807–07 includes text that specifies requirements that differ from those specified in § 86.1807–01. Where a paragraph in § 86.1807–01 is identical and applicable to § 86.1807–07, this may be indicated by specifying the corresponding paragraph and the statement “[Reserved]. For guidance see § 86.1807–01.”

(a) through (g) [Reserved]. For guidance see § 86.1807–01.

(h) Model year 2007 and later diesel-fueled Tier 2 vehicles (certified using a test fuel with 15 ppm sulfur or less), must include permanent readily visible labels on the dashboard (or instrument panel) and near all fuel inlets that state “Use Low-sulfur Diesel Fuel Only” or “Low-sulfur Diesel Fuel Only”.

45. A new § 86.1808–07 is added to subpart S to read as follows:

§ 86.1808–07 Maintenance instructions.

Section 86.1808–07 includes text that specifies requirements that differ from those specified in § 86.1808–01. Where a paragraph in § 86.1808–01 is identical and applicable to § 86.1808–07, this may be indicated by specifying the corresponding paragraph and the statement “[Reserved]. For guidance see § 86.1808–01.”

(a) through (f) [Reserved]. For guidance see § 86.1808–01.

(g) For each new diesel-fueled Tier 2 vehicle (certified using a test fuel with 15 ppm sulfur or less), the manufacturer shall furnish or cause to be furnished to the purchaser a statement that “This vehicle must be operated only with low sulfur diesel fuel (that is., diesel fuel meeting EPA specifications for highway diesel fuel, including a 15 ppm sulfur cap).”

46. Section 86.1810–01 is amended by revising the introductory text to read as follows:

§ 86.1810–01 General standards; increase in emissions; unsafe conditions; waivers.

This section applies to model year 2001 and later light-duty vehicles and light-duty trucks fueled by gasoline, diesel, methanol, natural gas and liquefied petroleum gas fuels. This section also applies to MDPVs and complete heavy-duty vehicles certified according to the provisions of this subpart. Multi-fueled vehicles (including dual-fueled and flexible-fueled vehicles) shall comply with all requirements established for each consumed fuel (or blend of fuels in the case of flexible fueled vehicles). The standards of this subpart apply to both certification and in-use vehicles unless otherwise indicated. For Tier 2 and interim non-Tier 2 vehicles, this section

also applies to hybrid electric vehicles and zero emission vehicles. Unless otherwise specified, requirements and provisions of this subpart applicable to methanol fueled vehicles are also applicable to Tier 2 and interim non-Tier 2 ethanol fueled vehicles.

* * * * *

47. Section 86.1816–05 is amended by revising paragraph (g) to read as follows:

§ 86.1816–05 Emission standards for complete heavy-duty vehicles.

* * * * *

(g) *Idle exhaust emission standards, complete heavy-duty vehicles.* Exhaust emissions of carbon monoxide from 2005 and later model year gasoline, methanol, natural gas-and liquefied petroleum gas-fueled complete heavy-duty vehicles shall not exceed 0.50 percent of exhaust gas flow at curb idle for a useful life of 11 years or 120,000 miles, whichever occurs first. This does not apply for vehicles certified to the requirements of § 86.1806–05

* * * * *

48. A new § 86.1816–08 is added to subpart S, to read as follows:

§ 86.1816–08 Emission standards for complete heavy-duty vehicles.

Section 86.1816–08 includes text that specifies requirements that differ from those specified in § 86.1816–05. Where a paragraph in § 86.1816–05 is identical and applicable to § 86.1816–08, this may be indicated by specifying the corresponding paragraph and the statement “[Reserved]. For guidance see § 86.1816–05.” This section applies to 2008 and later model year complete heavy-duty vehicles (excluding MDPVs) fueled by gasoline, methanol, natural gas and liquefied petroleum gas fuels except as noted. Multi-fueled vehicles shall comply with all requirements established for each consumed fuel. For methanol fueled vehicles, references in this section to hydrocarbons or total hydrocarbons shall mean total hydrocarbon equivalents and references to non-methane hydrocarbons shall mean non-methane hydrocarbon equivalents.

(a) *Exhaust emission standards.* (1) Exhaust emissions from 2008 and later model year complete heavy-duty vehicles at and above 8,500 pounds Gross Vehicle Weight Rating but equal to or less than 10,000 Gross Vehicle Weight Rating pounds shall not exceed the following standards at full useful life:

(i) [Reserved]

(ii) *Non-methane hydrocarbons.* (A) 0.195 grams per mile; this requirement may be satisfied by measurement of

non-methane organic gas or total hydrocarbons, at the manufacturer's option. For alcohol-fueled vehicles, this standard is 0.195 grams per mile NMHCE.

(B) A manufacturer may elect to include any or all of its test groups in the NMHC emissions ABT programs for heavy-duty vehicles, within the restrictions described in § 86.1817–05. or § 86.1817–08. If the manufacturer elects to include test groups in any of these programs, the NMHC FEL may not exceed 0.28 grams per mile. This ceiling value applies whether credits for the family are derived from averaging, banking, or trading.

(iii) *Carbon monoxide.* 7.3 grams per mile.

(iv) *Oxides of nitrogen.* (A) 0.2 grams per mile.

(B) A manufacturer may elect to include any or all of its test groups in the NO_x emissions ABT programs for heavy-duty vehicles, within the restrictions described in § 86.1817–05 or § 86.1817–08. If the manufacturer elects to include test groups in any of these programs, the NO_x FEL may not exceed 0.9 grams per mile. This ceiling value applies whether credits for the family are derived from averaging, banking, or trading.

(v) *Particulate.* 0.02 grams per mile.

(vi) *Formaldehyde.* 0.032 grams per mile.

(2) Exhaust emissions from 2008 and later model year complete heavy-duty vehicles above 10,000 pounds Gross Vehicle Weight Rating but less than 14,000 pounds Gross Vehicle Weight Rating shall not exceed the following standards at full useful life:

(i) [Reserved]

(ii) *Non-methane hydrocarbons.* (A) 0.230 grams per mile; this requirement may be satisfied by measurement of non-methane organic gas or total hydrocarbons, at the manufacturer's option. For alcohol-fueled vehicles, this standard is 0.230 grams per mile NMHCE.

(B) A manufacturer may elect to include any or all of its test groups in the NMHC emissions ABT programs for heavy-duty vehicles, within the restrictions described in § 86.1817–05. or § 86.1817–08. If the manufacturer elects to include test groups in any of these programs, the NMHC FEL may not exceed 0.33 grams per mile. This ceiling value applies whether credits for the family are derived from averaging, banking, or trading.

(iii) *Carbon monoxide*. 8.1 grams per mile.

(iv) *Oxides of nitrogen*. (A) 0.4 grams per mile.

(B) A manufacturer may elect to include any or all of its test groups in the NO_x emissions ABT programs for heavy-duty vehicles, within the restrictions described in § 86.1817–05, or § 86.1817–08. If the manufacturer elects to include test groups in any of these programs, the NO_x FEL may not exceed 1.0 grams per mile. This ceiling value applies whether credits for the family are derived from averaging, banking, or trading.

(v) *Particulate*. 0.02 grams per mile.

(vi) *Formaldehyde*. 0.040 grams per mile.

(b) [Reserved]

(c) [Reserved]

(d) *Evaporative emissions*.

Evaporative hydrocarbon emissions from gasoline-fueled, natural gas-fueled, liquefied petroleum gas-fueled, and methanol-fueled complete heavy-duty vehicles shall not exceed the following standards. The standards apply equally to certification and in-use vehicles. The spitback standard also applies to newly assembled vehicles.

(1) For the full three-diurnal test sequence, diurnal plus hot soak measurements: 1.4 grams per test.

(2) Gasoline and methanol fuel only. For the supplemental two-diurnal test sequence, diurnal plus hot soak measurements: 1.75 grams per test.

(3) Gasoline and methanol fuel only. Running loss test: 0.05 grams per mile.

(4) Gasoline and methanol fuel only. Fuel dispensing spitback test: 1.0 grams per test.

(e) through (h) [Reserved]. For guidance see § 86.1816–05.

(i) *Phase-in options*. (1)(i) For model year 2008, manufacturers may certify some of their test groups to the standards applicable to model year 2008 vehicles under § 86.1816–05, in lieu of the exhaust standards specified in this section. These vehicles must comply with all other requirements applicable to model year 2007 vehicles. The combined number of vehicles in the test groups certified to the 2008 standards

may not exceed 50 percent of the manufacturer's U.S. heavy-duty vehicle sales of complete heavy-duty Otto-cycle motor vehicles for model year 2008, except as explicitly allowed by paragraph (i)(2) of this section.

(ii) For model year 2008, manufacturers may certify some of their test groups to the evaporative standards applicable to model year 2007 engines under § 86.1816–05, in lieu of the evaporative standards specified in this section. These vehicles must comply with all other requirements applicable to model year 2008 vehicles, except as allowed by paragraph (i)(1)(i) of this section. The combined number of vehicles in the test groups certified to the 2007 standards may not exceed 50 percent of the manufacturer's U.S. heavy-duty vehicle sales of complete heavy-duty Otto-cycle motor vehicles for model year 2008.

(2)(i) Manufacturers certifying vehicles to all of the applicable standards listed in paragraph (a) of this section prior to model year 2008 (without using credits) may reduce the number of vehicles that are required to meet the standards listed in paragraph (a) of this section in model year 2008 and/or 2009, taking into account the phase-in option provided in paragraph (i)(1) of this section. For every vehicle that is certified early, the manufacturer may reduce the number of vehicles that are required by paragraph (i)(1) of this section to meet the standards listed in paragraph (a) of this section by one vehicle. For example, if a manufacturer produces 100 heavy-duty Otto-cycle vehicles in 2007 that meet all of the applicable standards listed in paragraph (a) of this section, and it produced 10,000 heavy-duty Otto-cycle vehicles in 2009, then only 9,900 of the vehicles would need to comply with the standards listed in paragraph (a) of this section.

(ii) Manufacturers certifying vehicles to all of the applicable evaporative standards listed in paragraph (d) of this section prior to model year 2008 may reduce the number of vehicles that are required to meet the standards listed in paragraph (d) of this section in model

year 2008 and/or 2009, taking into account the phase-in option provided in paragraph (i)(1) of this section. For every vehicle that is certified early, the manufacturer may reduce the number of vehicles that are required by paragraph (i)(1) of this section to meet the evaporative standards listed in paragraph (d) of this section by one vehicle.

(3) Manufacturers certifying vehicles to all of the applicable standards listed in paragraph (i)(3)(i) or (ii) of this section (without using credits) and the evaporative standards listed in paragraph (d) of this section prior to model year 2008 may reduce the number of vehicles that are required to meet the standards listed in paragraph (a) of this section in model year 2008 and/or 2009, taking into account the phase-in option provided in paragraph (i)(1)(i) of this section. For every such vehicle that is certified early with sufficiently low emissions, the manufacturer may reduce the number of vehicles that are required by paragraph (i)(1)(i) of this section to meet the standards listed in paragraph (a) of this section by two vehicles. The applicable standards are:

(i) For complete heavy-duty vehicles at and above 8,500 pounds Gross Vehicle Weight Rating but equal to or less than 10,000 Gross Vehicle Weight Rating: 0.100 g/mile NMHC, 0.10 g/mile NO_x, 3.2 g/mile CO, 0.008 g/mile formaldehyde, and 0.02 g/mile PM.

(ii) For complete heavy-duty vehicles at or above 10,000 pounds Gross Vehicle Weight Rating but equal to or less than 14,000 Gross Vehicle Weight Rating: 0.117 g/mile NMHC, 0.20 g/mile NO_x, 3.7 g/mile CO, 0.010 g/mile formaldehyde, and 0.02 g/mile PM.

(j) (1) For model years prior to 2012, for purposes of determining compliance after title or custody has transferred to the ultimate purchaser, for vehicles meeting the applicable emission standards of this section, the applicable compliance limits shall be determined by adding the applicable adjustment from paragraph (j)(2) of this section to the otherwise applicable standard or FEL.

- (2) The in-use adjustments are:
(i) 0.1 g/bhp-hr for NO_x.
(ii) 0.100 g/bhp-hr NMHC.
(iii) 0.01 g/bhp-hr for PM.

49. A new § 86.1817-08 is added to Subpart S to read as follows:

§ 86.1817-08 Complete heavy-duty vehicle averaging, trading, and banking program.

Section 86.1817-08 includes text that specifies requirements that differ from § 86.1817-05. Where a paragraph in § 86.1817-05 is identical and applicable to § 86.1817-08, this may be indicated by specifying the corresponding paragraph and the statement “[Reserved]. For guidance see § 86.1817-05.”

(a) through (o) [Reserved]. For guidance see § 86.1817-05.

(p) The following provisions apply for model year 2008 and later engines. These provisions apply instead of the provisions of paragraphs § 86.1817-05 (a) through (o) to the extent that they are in conflict.

(1) Manufacturers of Otto-cycle vehicles may participate in an NMHC averaging, banking and trading program to show compliance with the standards specified in § 86.1806-08. The generation and use of NMHC credits are subject to the same provisions in paragraphs § 86.1817-05 (a) through (o) that apply for NO_x credits, except as otherwise specified in this section.

(2) NO_x or NMHC (or NO_x plus NMHC) credits may be exchanged between heavy-duty Otto-cycle test groups certified to the engine standards of subpart A of this part and heavy-duty Otto-cycle test groups certified to the chassis standards of this subpart, subject to an 0.8 discount factor (e.g., 100 grams of NO_x credits generated from vehicles would be equivalent to 80 grams of NO_x credits if they are used in the engine program of subpart A of this part, and vice versa). Credits that were previously discounted when they were banked according to § 86.1817-05(c), are subject to an additional discount factor of 0.888 instead of the 0.8 discount factor otherwise required by this paragraph (p)(2). This results in a total discount of 0.8 ($0.9 \times 0.888 = 0.8$).

(3) Credits are to be rounded to the nearest one-hundredth of a Megagram.

(4) To calculate credits relative to the NO_x standards listed in § 86.1816-08 (a)(1)(iv)(A) or (a)(2)(iv)(A) (0.2 or 0.4 grams per mile, respectively) express the standard and FEL to the nearest one-hundredth of a gram per mile prior to calculating the credits. Thus, either 0.20 or 0.40 should be used as the value for “Std”.

(5) Credits generated for 2008 and later model year test groups are not discounted (except as specified in

§ 86.1817-05(c) and paragraph (p)(2) of this section), and do not expire.

(6) For the purpose of using or generating credits during a phase-in of new standards, a manufacturer may elect to split an test group into two subgroups: one which uses credits and one which generates credits. The manufacturer must indicate in the application for certification that the test group is to be split, and may assign the numbers and configurations of vehicles within the respective subfamilies at any time prior to the submission of the end-of-year report described in § 86.1817-05 (i)(3). Manufacturers certifying a split test group may label all of the vehicles within that test group with the same FELs: either with a NO_x FEL and an NMHC FEL, or with a single NO_x+NMHC FEL. The FEL(s) on the label will apply for all SEA or other compliance testing.

(7) Vehicles meeting all of the applicable standards of § 86.1816-08 prior to model year 2008 may generate NMHC credits for use by 2008 or later test groups. Credits are calculated according to § 86.1817-05(c), except that the applicable FEL cap listed in § 86.1816-08(a)(1)(ii)(B) or (2)(ii)(B) applies instead of “Std” (the applicable standard).

50. A new § 86.1824-07 is added to subpart S, to read as follows:

§ 86.1824–07 Durability demonstration procedures for evaporative emissions.

§ 86.1824–07 includes text that specifies requirements that differ from those specified in § 86.1824–01. Where a paragraph in § 86.1824–01 is identical and applicable to § 86.1824–07, this may be indicated by specifying the corresponding paragraph and the statement “[Reserved]. For guidance see § 86.1824–01.”. This section applies to gasoline-, methanol-, natural gas- and liquefied petroleum gas-fueled LDV/Ts, MDPVs, and HDVs.

(a) through (f) [Reserved]. For guidance see § 86.1824–01.

51. § 86.1829–01 is amended by revising paragraph (b)(1)(iii)(B) and adding paragraph (b)(1)(iii)(F) to read as follows:

§ 86.1829–01 Durability and emission testing requirements; waivers.

* * * * *

(b) * * *

(1) * * *

(iii) * * *

(B) In lieu of testing an Otto-cycle light-duty vehicle, light-duty truck, or heavy-duty vehicle for particulate

emissions for certification, a manufacturer may provide a statement in its application for certification that such vehicles comply with the applicable standards. Such a statement must be based on previous emission tests, development tests, or other appropriate information.

* * * * *

(F) In lieu of testing a petroleum-fueled heavy-duty vehicle for formaldehyde emissions for certification, a manufacturer may provide a statement in its application for certification that such vehicles comply with the applicable standards. Such a statement must be based on previous emission tests, development tests, or other appropriate information.

* * * * *

52. A new § 86.1863–07 is added to subpart S, to read as follows:

§ 86.1863–07 Optional chassis certification for diesel vehicles.

(a) A manufacturer may optionally certify heavy-duty diesel vehicles under 14,000 pounds GVWR to the standards specified in § 86.1816–08. Such vehicles must meet all requirements of Subpart

S that are applicable to Otto-cycle vehicles, except for evaporative, refueling, and OBD requirements.

(b) Diesel vehicles optionally certified under this section are subject to the OBD requirements of § 86.005–17.

(c) Diesel vehicles optionally certified under this section may be tested using the test fuels, sampling systems, or analytical systems specified for diesel engines in Subpart N of this part.

(d) Diesel vehicles optionally certified under this section may not be included in any averaging, banking, or trading program.

(e) The provisions of § 86.004–40 apply to the engines in vehicles certified under this section.

(f) Diesel vehicles may be certified under this section to the standards applicable to model year 2008 prior to model year 2008.

(g) Diesel vehicles optionally certified under this section in model years 2007, 2008, or 2009 shall be included in phase-in calculations specified in § 86.007–11(g).

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Truck and Bus Regulation

On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation

This page last reviewed December 10, 2015



Background:

The regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Newer heavier trucks and buses must meet PM filter requirements beginning January 1, 2012. Lighter and older heavier trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent.

The regulation applies to nearly all privately and federally owned diesel fueled trucks and buses and to privately and publicly owned school buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds. The regulation provides a variety of flexibility options tailored to fleets operating low use vehicles, fleets operating in selected vocations like agricultural and construction, and small fleets of three or fewer trucks.

For other information about this regulation, other diesel engine regulations, or training programs, please contact an [ARB diesel representative](#) at 866-6DIESEL (866-634-3735) or visit [the Truck Stop website](#). This regulation does not apply to [drayage trucks](#) that transport marine containers.

Please sign up to receive email updates at the [Truck and Bus Regulation Listserve](#).

What's New:

The Truck and Bus Reporting System Now Available for 2016 (December 10, 2015)

- The Truck and Bus regulation [reporting system](#) is now available for fleet owners to report diesel vehicle information for 2016 at no cost. From this site, you can report your company and vehicle information. We encourage fleets to report early, before the January 31, 2016 reporting deadline. If you have previously reported, you can access to your account by using your user name and password.

Lighter Vehicle Compliance Options (September 21, 2015)

- [Frequently asked questions](#) about lighter vehicle compliance requirements has been posted.

Diesel Particulate Filter Evaluation (May 11, 2015)

- In October 2013, the Board directed staff to investigate stakeholder concerns regarding the cost, reliability, and fire safety of diesel particulate filters in on-road applications. Staff provided an update to the Board in April 2014, and the attached [report](#) discusses findings from the completed evaluation.

The Truck and Bus Reporting System Updated for 2015 Compliance Options (December 18, 2014)

- The Truck and Bus regulation reporting system and the [Online Reporting Guide](#) has been updated to include 2015 compliance requirements and options. January 1 of every compliance year, fleet owners that use flexibility options in the regulation must identify which vehicles will use a particular extension and provide any additional information required. We encourage fleets to report early, before the January 31, 2015 reporting deadline.

Early Access to Economic Hardship and Agricultural Vehicle Extensions (September 12, 2014)

- Advisory [MSC 14-13](#) provides early access to the economic hardship extension and compliance options for cattle trucks and other agricultural vehicles.

Modified Text of the Truck and Bus Regulation is Available for a 15 Day Public Comment Period (June 30, 2014)

- The [15-Day Notice of Public Availability of Modified Text](#) is now available. These modifications extend the compliance date for the second truck in the small fleet option, revise the new option for fleets that cannot afford to comply, modify the requirements for cattle livestock trucks, and include other minor modifications.

Advisory on Early Access to Certain Approved Amendments (June 27, 2014)

- The Board approved amendments to the Truck and Bus Regulation at its April 2014 meeting. An [Advisory](#) has been made available to explain how truck and bus owners can plan for and take advantage of recently approved amendments and describes the steps owners that previously claimed good faith efforts must now take to comply.

Amendments to the Truck and Bus Regulation Planned for April 2014 (March 7, 2014)

- The Air Resources Board will conduct a public meeting on April 24, 2014, in Sacramento, to discuss proposed amendments to the regulation. A brief [summary](#) of the proposed changes and information about the rulemaking are available.

[What's New Archive](#)

EXHIBIT L

Staff Report on Burrowing Owl Mitigation

State of California

Natural Resources Agency

Department of Fish and Game

March 7, 2012¹

¹ This document replaces the Department of Fish and Game 1995 Staff Report On Burrowing Owl Mitigation.

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INTRODUCTION AND PURPOSE

Maintaining California's rich biological diversity is dependent on the conservation of species and their habitats. The California Department of Fish and Game (Department) has designated certain species as "species of special concern" when their population viability and survival is adversely affected by risk factors such as precipitous declines or other vulnerability factors (Shuford and Gardali 2008). Preliminary analyses of regional patterns for breeding populations of burrowing owls (*Athene cunicularia*) have detected declines both locally in their central and southern coastal breeding areas, and statewide where the species has experienced modest breeding range retraction (Gervais et al. 2008). In California, threat factors affecting burrowing owl populations include habitat loss, degradation and modification, and eradication of ground squirrels resulting in a loss of suitable burrows required by burrowing owls for nesting, protection from predators, and shelter (See Appendix A).

The Department recognized the need for a comprehensive conservation and mitigation strategy for burrowing owls, and in 1995 directed staff to prepare a report describing mitigation and survey recommendations. This report, "1995 Staff Report on Burrowing Owl Mitigation," (Staff Report) (CDFG 1995), contained Department-recommended burrowing owl and burrow survey techniques and mitigation measures intended to offset the loss of habitat and slow or reverse further decline of this species. Notwithstanding these measures, over the past 15+ years, burrowing owls have continued to decline in portions of their range (DeSante et al. 2007, Wilkerson and Siegel, 2010). The Department has determined that reversing declining population and range trends for burrowing owls will require implementation of more effective conservation actions, and evaluating the efficacy of the Department's existing recommended avoidance, minimization and mitigation approaches for burrowing owls.

The Department has identified three main actions that together will facilitate a more viable, coordinated, and concerted approach to conservation and mitigation for burrowing owls in California. These include:

1. Incorporating burrowing owl comprehensive conservation strategies into landscape-based planning efforts such as Natural Community Conservation Plans (NCCPs) and multi-species Habitat Conservation Plans (HCPs) that specifically address burrowing owls.
2. Developing and implementing a statewide conservation strategy (Burkett and Johnson, 2007) and local or regional conservation strategies for burrowing owls, including the development and implementation of a statewide burrowing owl survey and monitoring plan.
3. Developing more rigorous burrowing owl survey methods, working to improve the adequacy of impacts assessments; developing clear and effective avoidance and minimization measures; and developing mitigation measures to ensure impacts to the species are effectively addressed at the project, local, and/or regional level (the focus of this document).

This Report sets forth the Department's recommendations for implementing the third approach identified above by revising the 1995 Staff Report, drawing from the most relevant and current knowledge and expertise, and incorporating the best scientific information

available pertaining to the species. It is designed to provide a compilation of the best available science for Department staff, biologists, planners, land managers, California Environmental Quality Act (CEQA) lead agencies, and the public to consider when assessing impacts of projects or other activities on burrowing owls.

This revised Staff Report takes into account the California Burrowing Owl Consortium's Survey Protocol and Mitigation Guidelines (CBOC 1993, 1997) and supersedes the survey, avoidance, minimization and mitigation recommendations in the 1995 Staff Report. Based on experiences gained from implementing the 1995 Staff Report, the Department believes revising that report is warranted. This document also includes general conservation goals and principles for developing mitigation measures for burrowing owls.

DEPARTMENT ROLE AND LEGAL AUTHORITIES

The mission of the Department is to manage California's diverse fish, wildlife and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. The Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitats necessary to maintain biologically sustainable populations of those species (Fish and Game Code (FGC) §1802). The Department, as trustee agency pursuant to CEQA (See CEQA Guidelines, §15386), has jurisdiction by law over natural resources, including fish and wildlife, affected by a project, as that term is defined in Section 21065 of the Public Resources Code. The Department exercises this authority by reviewing and commenting on environmental documents and making recommendations to avoid, minimize, and mitigate potential negative impacts to those resources held in trust for the people of California.

Field surveys designed to detect the presence of a particular species, habitat element, or natural community are one of the tools that can assist biologists in determining whether a species or habitat may be significantly impacted by land use changes or disturbance. The Department reviews field survey data as well as site-specific and regional information to evaluate whether a project's impacts may be significant. This document compiles the best available science for conducting habitat assessments and surveys, and includes considerations for developing measures to avoid impacts or mitigate unavoidable impacts.

CEQA

CEQA requires public agencies in California to analyze and disclose potential environmental impacts associated with a project that the agency will carry out, fund, or approve. Any potentially significant impact must be mitigated to the extent feasible. Project-specific CEQA mitigation is important for burrowing owls because most populations exist on privately owned parcels that, when proposed for development or other types of modification, may be subject to the environmental review requirements of CEQA.

Take

Take of individual burrowing owls and their nests is defined by FGC section 86, and prohibited by sections 3503, 3503.5 and 3513. Take is defined in FGC Section 86 as "hunt, pursue, catch, capture or kill, or attempt to hunt, pursue, catch, capture or kill."

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements various treaties and conventions between the United States and Canada, Japan, Mexico, and Russia for the protection of migratory birds, including the burrowing owl (50 C.F.R. § 10). The MBTA protects migratory bird nests from possession, sale, purchase, barter, transport, import and export, and collection. The other prohibitions of the MBTA - capture, pursue, hunt, and kill - are inapplicable to nests. The regulatory definition of take, as defined in Title 50 C.F.R. part 10.12, means to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to hunt, shoot, wound, kill, trap, capture, or collect. Only the verb "collect" applies to nests. It is illegal to collect, possess, and by any means transfer possession of any migratory bird nest. The MBTA prohibits the destruction of a nest when it contains birds or eggs, and no possession shall occur during the destruction (see Fish and Wildlife Service, Migratory Bird Permit Memorandum, April 15, 2003). Certain exceptions to this prohibition are included in 50 C.F.R. section 21. Pursuant to Fish & Game Code section 3513, the Department enforces the Migratory Bird Treaty Act consistent with rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Treaty Act.

Regional Conservation Plans

Regional multiple species conservation plans offer long-term assurances for conservation of covered species at a landscape scale, in exchange for biologically appropriate levels of incidental take and/or habitat loss as defined in the approved plan. California's NCCP Act (FGC §2800 et seq.) governs such plans at the state level, and was designed to conserve species, natural communities, ecosystems, and ecological processes across a jurisdiction or a collection of jurisdictions. Complementary federal HCPs are governed by the Endangered Species Act (7 U.S.C. § 136, 16 U.S.C. § 1531 et seq.) (ESA). Regional conservation plans (and certain other landscape-level conservation and management plans), may provide conservation for unlisted as well as listed species. Because the geographic scope of NCCPs and HCPs may span many hundreds of thousands of acres, these planning tools have the potential to play a significant role in conservation of burrowing owls, and grasslands and other habitats.

Fish and Game Commission Policies

There are a number of Fish and Game Commission policies (see FGC §2008) that can be applied to burrowing owl conservation. These include policies on: Raptors, Cooperation, Endangered and Threatened Species, Land Use Planning, Management and Utilization of Fish and Wildlife on Federal Lands, Management and Utilization of Fish and Wildlife on Private Lands, and Research.

GUIDING PRINCIPLES FOR CONSERVATION

Unless otherwise provided in a statewide, local, or regional conservation strategy, surveying and evaluating impacts to burrowing owls, as well as developing and implementing avoidance, minimization, and mitigation and conservation measures incorporate the following principles. These principles are a summary of Department staff expert opinion and were used to guide the preparation of this document.

1. Use the Precautionary Principle (Noss et al.1997), by which the alternative of increased conservation is deliberately chosen in order to buffer against incomplete knowledge of burrowing owl ecology and uncertainty about the consequences to burrowing owls of potential impacts, including those that are cumulative.
2. Employ basic conservation biology tenets and population-level approaches when determining what constitutes appropriate avoidance, minimization, and mitigation for impacts. Include mitigation effectiveness monitoring and reporting, and use an adaptive management loop to modify measures based on results.
3. Protect and conserve owls in wild, semi-natural, and agricultural habitats (conserve is defined at FGC §1802).
4. Protect and conserve natural nest burrows (or burrow surrogates) previously used by burrowing owls and sufficient foraging habitat and protect auxiliary “satellite” burrows that contribute to burrowing owl survivorship and natural behavior of owls.

CONSERVATION GOALS FOR THE BURROWING OWL IN CALIFORNIA

It is Department staff expert opinion that the following goals guide and contribute to the short and long-term conservation of burrowing owls in California:

1. Maintain size and distribution of extant burrowing owl populations (allowing for natural population fluctuations).
2. Increase geographic distribution of burrowing owls into formerly occupied historical range where burrowing owl habitat still exists, or where it can be created or enhanced, and where the reason for its local disappearance is no longer of concern.
3. Increase size of existing populations where possible and appropriate (for example, considering basic ecological principles such as carrying capacity, predator-prey relationships, and inter-specific relationships with other species at risk).
4. Protect and restore self-sustaining ecosystems or natural communities which can support burrowing owls at a landscape scale, and which will require minimal long-term management.
5. Minimize or prevent unnatural causes of burrowing owl population declines (e.g., nest burrow destruction, chemical control of rodent hosts and prey).
6. Augment/restore natural dynamics of burrowing owl populations including movement and genetic exchange among populations, such that the species does not require future listing and protection under the California Endangered Species Act (CESA) and/or the federal Endangered Species Act (ESA).
7. Engage stakeholders, including ranchers; farmers; military; tribes; local, state, and federal agencies; non-governmental organizations; and scientific research and education communities involved in burrowing owl protection and habitat management.

ACTIVITIES WITH THE POTENTIAL TO TAKE OR IMPACT BURROWING OWLS

The following activities are examples of activities that have the potential to take burrowing owls, their nests or eggs, or destroy or degrade burrowing owl habitat: grading, disking, cultivation, earthmoving, burrow blockage, heavy equipment compacting and crushing burrow tunnels, levee maintenance, flooding, burning and mowing (if burrows are impacted), and operating wind turbine collisions (collectively hereafter referred to as “projects” or “activities”

whether carried out pursuant to CEQA or not). In addition, the following activities may have impacts to burrowing owl populations: eradication of host burrowers; changes in vegetation management (i.e. grazing); use of pesticides and rodenticides; destruction, conversion or degradation of nesting, foraging, over-wintering or other habitats; destruction of natural burrows and burrow surrogates; and disturbance which may result in harassment of owls at occupied burrows.

PROJECT IMPACT EVALUATIONS

The following three progressive steps are effective in evaluating whether projects will result in impacts to burrowing owls. The information gained from these steps will inform any subsequent avoidance, minimization and mitigation measures. The steps for project impact evaluations are: 1) habitat assessment, 2) surveys, and 3) impact assessment. Habitat assessments are conducted to evaluate the likelihood that a site supports burrowing owl. Burrowing owl surveys provide information needed to determine the potential effects of proposed projects and activities on burrowing owls, and to avoid take in accordance with FGC sections 86, 3503, and 3503.5. Impact assessments evaluate the extent to which burrowing owls and their habitat may be impacted, directly or indirectly, on and within a reasonable distance of a proposed CEQA project activity or non-CEQA project. These three site evaluation steps are discussed in detail below.

Biologist Qualifications

The current scientific literature indicates that only individuals meeting the following minimum qualifications should perform burrowing owl habitat assessments, surveys, and impact assessments:

1. Familiarity with the species and its local ecology;
2. Experience conducting habitat assessments and non-breeding and breeding season surveys, or experience with these surveys conducted under the direction of an experienced surveyor;
3. Familiarity with the appropriate state and federal statutes related to burrowing owls, scientific research, and conservation;
4. Experience with analyzing impacts of development on burrowing owls and their habitat.

Habitat Assessment Data Collection and Reporting

A habitat assessment is the first step in the evaluation process and will assist investigators in determining whether or not occupancy surveys are needed. Refer to Appendix B for a definition of burrowing owl habitat. Compile the detailed information described in Appendix C when conducting project scoping, conducting a habitat assessment site visit and preparing a habitat assessment report.

Surveys

Burrowing owl surveys are the second step of the evaluation process and the best available scientific literature recommends that they be conducted whenever burrowing owl habitat or sign (see Appendix B) is encountered on or adjacent to (within 150 meters) a project site

(Thomsen 1971, Martin 1973). Occupancy of burrowing owl habitat is confirmed at a site when at least one burrowing owl, or its sign at or near a burrow entrance, is observed within the last three years (Rich 1984). Burrowing owls are more detectable during the breeding season with detection probabilities being highest during the nestling stage (Conway et al. 2008). In California, the burrowing owl breeding season extends from 1 February to 31 August (Haug et al. 1993, Thompson 1971) with some variances by geographic location and climatic conditions. Several researchers suggest three or more survey visits during daylight hours (Haug and Diduik 1993, CBOC 1997, Conway and Simon 2003) and recommend each visit occur at least three weeks apart during the peak of the breeding season, commonly accepted in California as between 15 April and 15 July (CBOC 1997). Conway and Simon (2003) and Conway et al. (2008) recommended conducting surveys during the day when most burrowing owls in a local area are in the laying and incubation period (so as not to miss early breeding attempts), during the nesting period, and in the late nestling period when most owls are spending time above ground.

Non-breeding season (1 September to 31 January) surveys may provide information on burrowing owl occupancy, but do not substitute for breeding season surveys because results are typically inconclusive. Burrowing owls are more difficult to detect during the non-breeding season and their seasonal residency status is difficult to ascertain. Burrowing owls detected during non-breeding season surveys may be year-round residents, young from the previous breeding season, pre-breeding territorial adults, winter residents, dispersing juveniles, migrants, transients or new colonizers. In addition, the numbers of owls and their pattern of distribution may differ during winter and breeding seasons. However, on rare occasions, non-breeding season surveys may be warranted (i.e., if the site is believed to be a wintering site only based on negative breeding season results). Refer to Appendix D for information on breeding season and non-breeding season survey methodologies.

Survey Reports

Adequate information about burrowing owls present in and adjacent to an area that will be disturbed by a project or activity will enable the Department, reviewing agencies and the public to effectively assess potential impacts and will guide the development of avoidance, minimization, and mitigation measures. The survey report includes but is not limited to a description of the proposed project or proposed activity, including the proposed project start and end dates, as well as a description of disturbances or other activities occurring on-site or nearby. Refer to Appendix D for details included in a survey report.

Impact Assessment

The third step in the evaluation process is the impact assessment. When surveys confirm occupied burrowing owl habitat in or adjoining the project area, there are a number of ways to assess a project's potential significant impacts to burrowing owls and their habitat. Richardson and Miller (1997) recommended monitoring raptor behavior prior to developing management recommendations and buffers to determine the extent to which individuals have been sensitized to human disturbance. Monitoring results will also provide detail necessary for developing site-specific measures. Postovit and Postovit (1987) recommended an analytical approach to mitigation planning: define the problem (impact), set goals (to guide mitigation development), evaluate and select mitigation methods, and monitor the results.

Define the problem. The impact assessment evaluates all factors that could affect burrowing owls. Postovit and Postovit (1987) recommend evaluating the following in assessing impacts to raptors and planning mitigation: type and extent of disturbance, duration and timing of disturbance, visibility of disturbance, sensitivity and ability to habituate, and influence of environmental factors. They suggest identifying and addressing all potential direct and indirect impacts to burrowing owls, regardless of whether or not the impacts will occur during the breeding season. Several examples are given for each impact category below; however, examples are not intended to be used exclusively.

Type and extent of the disturbance. The impact assessment describes the nature (source) and extent (scale) of potential project impacts on occupied, satellite and unoccupied burrows including acreage to be lost (temporary or permanent), fragmentation/edge being created, increased distance to other nesting and foraging habitat, and habitat degradation. Discuss any project activities that impact either breeding and/or non-breeding habitat which could affect owl home range size and spatial configuration, negatively affect onsite and offsite burrowing owl presence, increase energetic costs, lower reproductive success, increase vulnerability to predation, and/or decrease the chance of procuring a mate.

Duration and timing of the impact. The impact assessment describes the amount of time the burrowing owl habitat will be unavailable to burrowing owls (temporary or permanent) on the site and the effect of that loss on essential behaviors or life history requirements of burrowing owls, the overlap of project activities with breeding and/or non-breeding seasons (timing of nesting and/or non-breeding activities may vary with latitude and climatic conditions, which should be considered with the timeline of the project or activity), and any variance of the project activities in intensity, scale and proximity relative to burrowing owl occurrences.

Visibility and sensitivity. Some individual burrowing owls or pairs are more sensitive than others to specific stimuli and may habituate to ongoing visual or audible disturbance. Site-specific monitoring may provide clues to the burrowing owl's sensitivities. This type of assessment addresses the sensitivity of burrowing owls within their nesting area to humans on foot, and vehicular traffic. Other variables are whether the site is primarily in a rural versus urban setting, and whether any prior disturbance (e.g., human development or recreation) is known at the site.

Environmental factors. The impact assessment discusses any environmental factors that could be influenced or changed by the proposed activities including nest site availability, predators, prey availability, burrowing mammal presence and abundance, and threats from other extrinsic factors such as human disturbance, urban interface, feral animals, invasive species, disease or pesticides.

Significance of impacts. The impact assessment evaluates the potential loss of nesting burrows, satellite burrows, foraging habitat, dispersal and migration habitat, wintering habitat, and habitat linkages, including habitat supporting prey and host burrowers and other essential habitat attributes. This assessment determines if impacts to the species will result in significant impacts to the species locally, regionally and range-wide per CEQA Guidelines §15382 and Appendix G. The significance of the impact to habitat depends on the extent of habitat disturbed and length of time the habitat is unavailable (for example: minor – several days, medium – several weeks to months, high - breeding season affecting juvenile survival,

or over winter affecting adult survival).

Cumulative effects. The cumulative effects assessment evaluates two consequences: 1) the project's proportional share of reasonably foreseeable impacts on burrowing owls and habitat caused by the project or in combination with other projects and local influences having impacts on burrowing owls and habitat, and 2) the effects on the regional owl population resulting from the project's impacts to burrowing owls and habitat.

Mitigation goals. Establishing goals will assist in planning mitigation and selecting measures that function at a desired level. Goals also provide a standard by which to measure mitigation success. Unless specifically provided for through other FGC Sections or through specific regulations, take, possession or destruction of individual burrowing owls, their nests and eggs is prohibited under FGC sections 3503, 3503.5 and 3513. Therefore, a required goal for all project activities is to avoid take of burrowing owls. Under CEQA, goals would consist of measures that would avoid, minimize and mitigate impacts to a less than significant level. For individual projects, mitigation must be roughly proportional to the level of impacts, including cumulative impacts, in accordance with the provisions of CEQA (CEQA Guidelines, §§ 15126.4(a)(4)(B), 15064, 15065, and 16355). In order for mitigation measures to be effective, they must be specific, enforceable, and feasible actions that will improve environmental conditions. As set forth in more detail in Appendix A, the current scientific literature supports the conclusion that mitigation for permanent habitat loss necessitates replacement with an equivalent or greater habitat area for breeding, foraging, wintering, dispersal, presence of burrows, burrow surrogates, presence of fossorial mammal dens, well drained soils, and abundant and available prey within close proximity to the burrow.

MITIGATION METHODS

The current scientific literature indicates that any site-specific avoidance or mitigation measures developed should incorporate the best practices presented below or other practices confirmed by experts and the Department. The Department is available to assist in the development of site-specific avoidance and mitigation measures.

Avoiding. A primary goal is to design and implement projects to seasonally and spatially avoid negative impacts and disturbances that could result in take of burrowing owls, nests, or eggs. Other avoidance measures may include but not be limited to:

- Avoid disturbing occupied burrows during the nesting period, from 1 February through 31 August.
- Avoid impacting burrows occupied during the non-breeding season by migratory or non-migratory resident burrowing owls.
- Avoid direct destruction of burrows through chaining (dragging a heavy chain over an area to remove shrubs), disking, cultivation, and urban, industrial, or agricultural development.
- Develop and implement a worker awareness program to increase the on-site worker's recognition of and commitment to burrowing owl protection.
- Place visible markers near burrows to ensure that farm equipment and other machinery does not collapse burrows.
- Do not fumigate, use treated bait or other means of poisoning nuisance animals in areas where burrowing owls are known or suspected to occur (e.g., sites observed with nesting

- owls, designated use areas).
- Restrict the use of treated grain to poison mammals to the months of January and February.

Take avoidance (pre-construction) surveys. Take avoidance surveys are intended to detect the presence of burrowing owls on a project site at a fixed period in time and inform necessary take avoidance actions. Take avoidance surveys may detect changes in owl presence such as colonizing owls that have recently moved onto the site, migrating owls, resident burrowing owls changing burrow use, or young of the year that are still present and have not dispersed. Refer to Appendix D for take avoidance survey methodology.

Site surveillance. Burrowing owls may attempt to colonize or re-colonize an area that will be impacted; thus, the current scientific literature indicates a need for ongoing surveillance at the project site during project activities is recommended. The surveillance frequency/effort should be sufficient to detect burrowing owls if they return. Subsequent to their new occupancy or return to the site, take avoidance measures should assure with a high degree of certainty that take of owls will not occur.

Minimizing. If burrowing owls and their habitat can be protected in place on or adjacent to a project site, the use of buffer zones, visual screens or other measures while project activities are occurring can minimize disturbance impacts. Conduct site-specific monitoring to inform development of buffers (see Visibility and sensitivity above). The following general guidelines for implementing buffers should be adjusted to address site-specific conditions using the impact assessment approach described above. The CEQA lead agency and/or project proponent is encouraged to consult with the Department and other burrowing owl experts for assistance in developing site-specific buffer zones and visual screens.

Buffers. Holroyd et al. (2001) identified a need to standardize management and disturbance mitigation guidelines. For instance, guidelines for mitigating impacts by petroleum industries on burrowing owls and other prairie species (Scobie and Faminow, 2000) may be used as a template for future mitigation guidelines (Holroyd et al. 2001). Scobie and Faminow (2000) developed guidelines for activities around occupied burrowing owl nests recommending buffers around low, medium, and high disturbance activities, respectively (see below).

Recommended restricted activity dates and setback distances by level of disturbance for burrowing owls (Scobie and Faminow 2000).

Location	Time of Year	Level of Disturbance		
		Low	Med	High
Nesting sites	April 1-Aug 15	200 m*	500 m	500 m
Nesting sites	Aug 16-Oct 15	200 m	200 m	500 m
Nesting sites	Oct 16-Mar 31	50 m	100 m	500 m

* meters (m)

Based on existing vegetation, human development, and land uses in an area, resource managers may decide to allow human development or resource extraction closer to these area/sites than recommended above. However, if it is decided to allow activities closer than

the setback distances recommended, a broad-scale, long-term, scientifically-rigorous monitoring program ensures that burrowing owls are not detrimentally affected by alternative approaches.

Other minimization measures include eliminating actions that reduce burrowing owl forage and burrowing surrogates (e.g. ground squirrel), or introduce/facilitate burrowing owl predators. Actions that could influence these factors include reducing livestock grazing rates and/or changing the timing or duration of grazing or vegetation management that could result in less suitable habitat.

Burrow exclusion and closure. Burrow exclusion is a technique of installing one-way doors in burrow openings during the non-breeding season to temporarily exclude burrowing owls, or permanently exclude burrowing owls and close burrows after verifying burrows are empty by site monitoring and scoping. Exclusion in and of itself is not a take avoidance, minimization or mitigation method. Eviction of burrowing owls is a potentially significant impact under CEQA.

The long-term demographic consequences of these techniques have not been thoroughly evaluated, and the fate of evicted or excluded burrowing owls has not been systematically studied. Because burrowing owls are dependent on burrows at all times of the year for survival and/or reproduction, evicting them from nesting, roosting, and satellite burrows may lead to indirect impacts or take. Temporary or permanent closure of burrows may result in significant loss of burrows and habitat for reproduction and other life history requirements. Depending on the proximity and availability of alternate habitat, loss of access to burrows will likely result in varying levels of increased stress on burrowing owls and could depress reproduction, increase predation, increase energetic costs, and introduce risks posed by having to find and compete for available burrows. Therefore, exclusion and burrow closure are not recommended where they can be avoided. The current scientific literature indicates consideration of all possible avoidance and minimization measures before temporary or permanent exclusion and closure of burrows is implemented, in order to avoid take.

The results of a study by Trulio (1995) in California showed that burrowing owls passively displaced from their burrows were quickly attracted to adjacent artificial burrows at five of six passive relocation sites. The successful sites were all within 75 meters (m) of the destroyed burrow, a distance generally within a pair's territory. This researcher discouraged using passive relocation to artificial burrows as a mitigation measure for lost burrows without protection of adjacent foraging habitat. The study results indicated artificial burrows were used by evicted burrowing owls when they were approximately 50-100 m from the natural burrow (Thomsen 1971, Haug and Oliphant 1990). Locating artificial or natural burrows more than 100 m from the eviction burrow may greatly reduce the chances that new burrows will be used. Ideally, exclusion and burrow closure is employed only where there are adjacent natural burrows and non-impacted, sufficient habitat for burrowing owls to occupy with permanent protection mechanisms in place. Any new burrowing owl colonizing the project site after the CEQA document has been adopted may constitute changed circumstances that should be addressed in a re-circulated CEQA document.

The current scientific literature indicates that burrow exclusion should only be conducted by qualified biologists (meeting the Biologist's Qualifications above) during the non-breeding

season, before breeding behavior is exhibited and after the burrow is confirmed empty by site surveillance and/or scoping. The literature also indicates that when temporary or permanent burrow exclusion and/or burrow closure is implemented, burrowing owls should not be excluded from burrows unless or until:

- A Burrowing Owl Exclusion Plan (see Appendix E) is developed and approved by the applicable local DFG office;
- Permanent loss of occupied burrow(s) and habitat is mitigated in accordance with the Mitigating Impacts sections below. Temporary exclusion is mitigated in accordance with the item #1 under Mitigating Impacts below.
- Site monitoring is conducted prior to, during, and after exclusion of burrowing owls from their burrows sufficient to ensure take is avoided. Conduct daily monitoring for one week to confirm young of the year have fledged if the exclusion will occur immediately after the end of the breeding season.
- Excluded burrowing owls are documented using artificial or natural burrows on an adjoining mitigation site (if able to confirm by band re-sight).

Translocation (Active relocation offsite >100 meters). At this time, there is little published information regarding the efficacy of translocating burrowing owls, and additional research is needed to determine subsequent survival and breeding success (Klute et al. 2003, Holroyd et al. 2001). Study results for translocation in Florida implied that hatching success may be decreased for populations of burrowing owls that undergo translocation (Nixon 2006). At this time, the Department is unable to authorize the capture and relocation of burrowing owls except within the context of scientific research (FGC §1002) or a NCCP conservation strategy.

Mitigating impacts. Habitat loss and degradation from rapid urbanization of farmland in the core areas of the Central and Imperial valleys is the greatest of many threats to burrowing owls in California (Shuford and Gardali, 2008). At a minimum, if burrowing owls have been documented to occupy burrows (see Definitions, Appendix B) at the project site in recent years, the current scientific literature supports the conclusion that the site should be considered occupied and mitigation should be required by the CEQA lead agency to address project-specific significant and cumulative impacts. Other site-specific and regionally significant and cumulative impacts may warrant mitigation. The current scientific literature indicates the following to be best practices. If these best practices cannot be implemented, the lead agency or lead investigator may consult with the Department to develop effective mitigation alternatives. The Department is also available to assist in the identification of suitable mitigation lands.

1. Where habitat will be temporarily disturbed, restore the disturbed area to pre-project condition including decompacting soil and revegetating. Permanent habitat protection may be warranted if there is the potential that the temporary impacts may render a nesting site (nesting burrow and satellite burrows) unsustainable or unavailable depending on the time frame, resulting in reduced survival or abandonment. For the latter potential impact, see the permanent impact measures below.
2. Mitigate for permanent impacts to nesting, occupied and satellite burrows and/or burrowing owl habitat such that the habitat acreage, number of burrows and burrowing owls impacted are replaced based on the information provided in Appendix A. Note: A

minimum habitat replacement recommendation is not provided here as it has been shown to serve as a default, replacing any site-specific analysis and discounting the wide variation in natal area, home range, foraging area, and other factors influencing burrowing owls and burrowing owl population persistence in a particular area.

3. Mitigate for permanent impacts to nesting, occupied and satellite burrows and burrowing owl habitat with (a) permanent conservation of similar vegetation communities (grassland, scrublands, desert, urban, and agriculture) to provide for burrowing owl nesting, foraging, wintering, and dispersal (i.e., during breeding and non-breeding seasons) comparable to or better than that of the impact area, and (b) sufficiently large acreage, and presence of fossorial mammals. The mitigation lands may require habitat enhancements including enhancement or expansion of burrows for breeding, shelter and dispersal opportunity, and removal or control of population stressors. If the mitigation lands are located adjacent to the impacted burrow site, ensure the nearest neighbor artificial or natural burrow clusters are at least within 210 meters (Fisher et al. 2007).
4. Permanently protect mitigation land through a conservation easement deeded to a non-profit conservation organization or public agency with a conservation mission, for the purpose of conserving burrowing owl habitat and prohibiting activities incompatible with burrowing owl use. If the project is located within the service area of a Department-approved burrowing owl conservation bank, the project proponent may purchase available burrowing owl conservation bank credits.
5. Develop and implement a mitigation land management plan to address long-term ecological sustainability and maintenance of the site for burrowing owls (see Management Plan and Artificial Burrow sections below, if applicable).
6. Fund the maintenance and management of mitigation land through the establishment of a long-term funding mechanism such as an endowment.
7. Habitat should not be altered or destroyed, and burrowing owls should not be excluded from burrows, until mitigation lands have been legally secured, are managed for the benefit of burrowing owls according to Department-approved management, monitoring and reporting plans, and the endowment or other long-term funding mechanism is in place or security is provided until these measures are completed.
8. Mitigation lands should be on, adjacent or proximate to the impact site where possible and where habitat is sufficient to support burrowing owls present.
9. Where there is insufficient habitat on, adjacent to, or near project sites where burrowing owls will be excluded, acquire mitigation lands with burrowing owl habitat away from the project site. The selection of mitigation lands should then focus on consolidating and enlarging conservation areas located outside of urban and planned growth areas, within foraging distance of other conserved lands. If mitigation lands are not available adjacent to other conserved lands, increase the mitigation land acreage requirement to ensure a selected site is of sufficient size. Offsite mitigation may not adequately offset the biological and habitat values impacted on a one to one basis. Consult with the Department when determining offsite mitigation acreages.
10. Evaluate and select suitable mitigation lands based on a comparison of the habitat attributes of the impacted and conserved lands, including but not limited to: type and structure of habitat being impacted or conserved; density of burrowing owls in impacted and conserved habitat; and significance of impacted or conserved habitat to the species range-wide. Mitigate for the highest quality burrowing owl habitat impacted first and foremost when identifying mitigation lands, even if a mitigation site is located outside of

a lead agency's jurisdictional boundary, particularly if the lead agency is a city or special district.

11. Select mitigation lands taking into account the potential human and wildlife conflicts or incompatibility, including but not limited to, human foot and vehicle traffic, and predation by cats, loose dogs and urban-adapted wildlife, and incompatible species management (i.e., snowy plover).
12. Where a burrowing owl population appears to be highly adapted to heavily altered habitats such as golf courses, airports, athletic fields, and business complexes, permanently protecting the land, augmenting the site with artificial burrows, and enhancing and maintaining those areas may enhance sustainability of the burrowing owl population onsite. Maintenance includes keeping lands grazed or mowed with weed-eaters or push mowers, free from trees and shrubs, and preventing excessive human and human-related disturbance (e.g., walking, jogging, off-road activity, dog-walking) and loose and feral pets (chasing and, presumably, preying upon owls) that make the environment uninhabitable for burrowing owls (Wesemann and Rowe 1985, Millsap and Bear 2000, Lincer and Bloom 2007). Items 4, 5 and 6 also still apply to this mitigation approach.
13. If there are no other feasible mitigation options available and a lead agency is willing to establish and oversee a Burrowing Owl Mitigation and Conservation Fund that funds on a competitive basis acquisition and permanent habitat conservation, the project proponent may participate in the lead agency's program.

Artificial burrows. Artificial burrows have been used to replace natural burrows either temporarily or long-term and their long-term success is unclear. Artificial burrows may be an effective addition to in-perpetuity habitat mitigation if they are augmenting natural burrows, the burrows are regularly maintained (i.e., no less than annual, with biennial maintenance recommended), and surrounding habitat patches are carefully maintained. There may be some circumstances, for example at airports, where squirrels will not be allowed to persist and create a dynamic burrow system, where artificial burrows may provide some support to an owl population.

Many variables may contribute to the successful use of artificial burrows by burrowing owls, including pre-existence of burrowing owls in the area, availability of food, predators, surrounding vegetation and proximity, number of natural burrows in proximity, type of materials used to build the burrow, size of the burrow and entrance, direction in which the burrow entrance is facing, slope of the entrance, number of burrow entrances per burrow, depth of the burrow, type and height of perches, and annual maintenance needs (Belthoff and King 2002, Smith et al. 2005, Barclay et al. 2011). Refer to Barclay (2008) and (2011) and to Johnson et al. 2010 (unpublished report) for guidance on installing artificial burrows including recommendations for placement, installation and maintenance.

Any long-term reliance on artificial burrows as natural burrow replacements must include semi-annual to annual cleaning and maintenance and/or replacement (Barclay et al. 2011, Smith and Conway 2005, Alexander et al. 2005) as an ongoing management practice. Alexander et al. (2005), in a study of the use of artificial burrows found that all of 20 artificial burrows needed some annual cleaning and maintenance. Burrows were either excavated by predators, blocked by soil or vegetation, or experienced substrate erosion forming a space beneath the tubing that prevented nestlings from re-entering the burrow.

Mitigation lands management plan. Develop a Mitigation Lands Management Plan for projects that require off-site or on-site mitigation habitat protection to ensure compliance with and effectiveness of identified management actions for the mitigation lands. A suggested outline and related vegetation management goals and monitoring success criteria can be found in Appendix E.

Mitigation Monitoring and Reporting

Verify the compliance with required mitigation measures, the accuracy of predictions, and ensure the effectiveness of all mitigation measures for burrowing owls by conducting follow-up monitoring, and implementing midcourse corrections, if necessary, to protect burrowing owls. Refer to CEQA Guidelines Section 15097 and the CEQA Guidelines for additional guidance on mitigation, monitoring and reporting. Monitoring is qualitatively different from site surveillance; monitoring normally has a specific purpose and its outputs and outcomes will usually allow a comparison with some baseline condition of the site before the mitigation (including avoidance and minimization) was undertaken. Ideally, monitoring should be based on the Before-After Control-Impact (BACI) principle (McDonald et al. 2000) that requires knowledge of the pre-mitigation state to provide a reference point for the state and change in state after the project and mitigation have been implemented.

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Appendix A. Burrowing Owl Natural History and Threats

Diet

Burrowing owl diet includes arthropods, small rodents, birds, amphibians, reptiles, and carrion (Haug et al. 1993).

Breeding

In California, the breeding season for the burrowing owl typically occurs between 1 February and 31 August although breeding in December has been documented (Thompson 1971, Gervais et al. 2008); breeding behavior includes nest site selection by the male, pair formation, copulation, egg laying, hatching, fledging, and post-fledging care of young by the parents. The peak of the breeding season occurs between 15 April and 15 July and is the period when most burrowing owls have active nests (eggs or young). The incubation period lasts 29 days (Coulombe 1971) and young fledge after 44 days (Haug et al. 1993). Note that the timing of nesting activities may vary with latitude and climatic conditions. Burrowing owls may change burrows several times during the breeding season, starting when nestlings are about three weeks old (Haug et al. 1993).

Dispersal

The following discussion is an excerpt from Gervais et al (2008):

“The burrowing owl is often considered a sedentary species (e.g., Thomsen 1971). A large proportion of adults show strong fidelity to their nest site from year to year, especially where resident, as in Florida (74% for females, 83% for males; Millsap and Bear 1997). In California, nest-site fidelity rates were 32%–50% in a large grassland and 57% in an agricultural environment (Ronan 2002, Catlin 2004, Catlin et al. 2005). Differences in these rates among sites may reflect differences in nest predation rates (Catlin 2004, Catlin et al. 2005). Despite the high nest fidelity rates, dispersal distances may be considerable for both juveniles (natal dispersal) and adults (postbreeding dispersal), but this also varied with location (Catlin 2004, Rosier et al. 2006). Distances of 53 km to roughly 150 km have been observed in California for adult and natal dispersal, respectively (D. K. Rosenberg and J. A. Gervais, unpublished data), despite the difficulty in detecting movements beyond the immediate study area (Koenig et al. 1996).”

Habitat

The burrowing owl is a small, long-legged, ground-dwelling bird species, well-adapted to open, relatively flat expanses. In California, preferred habitat is generally typified by short, sparse vegetation with few shrubs, level to gentle topography and well-drained soils (Haug et al. 1993). Grassland, shrub steppe, and desert are naturally occurring habitat types used by the species. In addition, burrowing owls may occur in some agricultural areas, ruderal grassy fields, vacant lots and pastures if the vegetation structure is suitable and there are useable burrows and foraging habitat in proximity (Gervais et al 2008). Unique amongst North

American raptors, the burrowing owl requires underground burrows or other cavities for nesting during the breeding season and for roosting and cover, year round. Burrows used by the owls are usually dug by other species termed host burrowers. In California, California ground squirrel (*Spermophilus beecheyi*) and round-tailed ground squirrel (*Citellus tereticaudus*) burrows are frequently used by burrowing owls but they may use dens or holes dug by other fossorial species including badger (*Taxidea taxus*), coyote (*Canis latrans*), and fox (e.g., San Joaquin kit fox, *Vulpes macrotis mutica*; Ronan 2002). In some instances, owls have been known to excavate their own burrows (Thompson 1971, Barclay 2007). Natural rock cavities, debris piles, culverts, and pipes also are used for nesting and roosting (Rosenberg et al. 1998). Burrowing owls have been documented using artificial burrows for nesting and cover (Smith and Belthoff, 2003).

Foraging habitat. Foraging habitat is essential to burrowing owls. The following discussion is an excerpt from Gervais et al. (2008):

“Useful as a rough guide to evaluating project impacts and appropriate mitigation for burrowing owls, adult male burrowing owls home ranges have been documented (calculated by minimum convex polygon) to comprise anywhere from 280 acres in intensively irrigated agroecosystems in Imperial Valley (Rosenberg and Haley 2004) to 450 acres in mixed agricultural lands at Lemoore Naval Air Station, CA (Gervais et al. 2003), to 600 acres in pasture in Saskatchewan, Canada (Haug and Oliphant 1990). But owl home ranges may be much larger, perhaps by an order of magnitude, in non-irrigated grasslands such as at Carrizo Plain, California (Gervais et al. 2008), based on telemetry studies and distribution of nests. Foraging occurs primarily within 600 m of their nests (within approximately 300 acres, based on a circle with a 600 m radius) during the breeding season.”

Importance of burrows and adjacent habitat. Burrows and the associated surrounding habitat are essential ecological requisites for burrowing owls throughout the year and especially during the breeding season. During the non-breeding season, burrowing owls remain closely associated with burrows, as they continue to use them as refuge from predators, shelter from weather and roost sites. Resident populations will remain near the previous season’s nest burrow at least some of the time (Coulombe 1971, Thomsen 1971, Botelho 1996, LaFever et al. 2008).

In a study by Lutz and Plumpton (1999) adult males and females nested in formerly used sites at similar rates (75% and 63%, respectively) (Lutz and Plumpton 1999). Burrow fidelity has been reported in some areas; however, more frequently, burrowing owls reuse traditional nesting areas without necessarily using the same burrow (Haug et al. 1993, Dechant et al. 1999). Burrow and nest sites are re-used at a higher rate if the burrowing owl has reproduced successfully during the previous year (Haug et al. 1993) and if the number of burrows isn’t limiting nesting opportunity.

Burrowing owls may use “satellite” or non-nesting burrows, moving young at 10-14 days, presumably to reduce risk of predation (Desmond and Savidge 1998) and possibly to avoid nest parasites (Dechant et al. 1999). Successful nests in Nebraska had more active satellite burrows within 75 m of the nest burrow than unsuccessful nests (Desmond and Savidge

1999). Several studies have documented the number of satellite burrows used by young and adult burrowing owls during the breeding season as between one and 11 burrows with an average use of approximately five burrows (Thompson 1984, Haug 1985, Haug and Oliphant 1990). Supporting the notion of selecting for nest sites near potential satellite burrows, Ronan (2002) found burrowing owl families would move away from a nest site if their satellite burrows were experimentally removed through blocking their entrance.

Habitat adjacent to burrows has been documented to be important to burrowing owls. Gervais et al. (2003) found that home range sizes of male burrowing owls during the nesting season were highly variable within but not between years. Their results also suggested that owls concentrate foraging efforts within 600 meters of the nest burrow, as was observed in Canada (Haug and Oliphant 1990) and southern California (Rosenberg and Haley 2004). James et al. (1997), reported habitat modification factors causing local burrowing owl declines included habitat fragmentation and loss of connectivity.

In conclusion, the best available science indicates that essential habitat for the burrowing owl in California must include suitable year-round habitat, primarily for breeding, foraging, wintering and dispersal habitat consisting of short or sparse vegetation (at least at some time of year), presence of burrows, burrow surrogates or presence of fossorial mammal dens, well-drained soils, and abundant and available prey within close proximity to the burrow.

Threats to Burrowing Owls in California

Habitat loss. Habitat loss, degradation, and fragmentation are the greatest threats to burrowing owls in California. According to DeSante et al. (2007), "the vast majority of burrowing owls [now] occur in the wide, flat lowland valleys and basins of the Imperial Valley and Great Central Valley [where] for the most part,...the highest rates of residential and commercial development in California are occurring." Habitat loss from the State's long history of urbanization in coastal counties has already resulted in either extirpation or drastic reduction of burrowing owl populations there (Gervais et al. 2008). Further, loss of agricultural and other open lands (such as grazed landscapes) also negatively affect owl populations. Because of their need for open habitat with low vegetation, burrowing owls are unlikely to persist in agricultural lands dominated by vineyards and orchards (Gervais et al. 2008).

Control of burrowing rodents. According to Klute et al. (2003), the elimination of burrowing rodents through control programs is a primary factor in the recent and historical decline of burrowing owl populations nationwide. In California, ground squirrel burrows are most often used by burrowing owls for nesting and cover; thus, ground squirrel control programs may affect owl numbers in local areas by eliminating a necessary resource.

Direct mortality. Burrowing owls suffer direct losses from a number of sources. Vehicle collisions are a significant source of mortality especially in the urban interface and where owls nest alongside roads (Haug et al. 1993, Gervais et al. 2008). Road and ditch maintenance, modification of water conveyance structures (Imperial Valley) and disking to control weeds in fallow fields may destroy burrows (Rosenberg and Haley 2004, Catlin and Rosenberg 2006) which may trap or crush owls. Wind turbines at Altamont Pass Wind Resource Area are known to cause direct burrowing owl mortality (Thelander et al. 2003). Exposure to

pesticides may pose a threat to the species but is poorly understood (Klute et al. 2003, Gervais et al. 2008).

Appendix B. Definitions

Some key terms that appear in this document are defined below.

Adjacent habitat means burrowing owl habitat that abuts the area where habitat and burrows will be impacted and rendered non-suitable for occupancy.

Breeding (nesting) season begins as early as 1 February and continues through 31 August (Thomsen 1971, Zarn 1974). The timing of breeding activities may vary with latitude and climatic conditions. The breeding season includes pairing, egg-laying and incubation, and nestling and fledging stages.

Burrow exclusion is a technique of installing one-way doors in burrow openings during the non-breeding season to temporarily exclude burrowing owls or permanently exclude burrowing owls and excavate and close burrows after confirming burrows are empty.

Burrowing owl habitat generally includes, but is not limited to, short or sparse vegetation (at least at some time of year), presence of burrows, burrow surrogates or presence of fossorial mammal dens, well-drained soils, and abundant and available prey.

Burrow surrogates include culverts, piles of concrete rubble, piles of soil, burrows created along soft banks of ditches and canals, pipes, and similar structures.

Civil twilight - Morning civil twilight begins when the geometric center of the sun is 6 degrees below the horizon (civil dawn) and ends at sunrise. Evening civil twilight begins at sunset and ends when the geometric center of the sun reaches 6 degrees below the horizon (civil dusk). During this period there is enough light from the sun that artificial sources of light may not be needed to carry on outdoor activities. This concept is sometimes enshrined in laws, for example, when drivers of automobiles must turn on their headlights (called lighting-up time in the UK); when pilots may exercise the rights to fly aircraft. Civil twilight can also be described as the limit at which twilight illumination is sufficient, under clear weather conditions, for terrestrial objects to be clearly distinguished; at the beginning of morning civil twilight, or end of evening civil twilight, the horizon is clearly defined and the brightest stars are visible under clear atmospheric conditions.

Conservation for burrowing owls may include but may not be limited to protecting remaining breeding pairs or providing for population expansion, protecting and enhancing breeding and essential habitat, and amending or augmenting land use plans to stabilize populations and other specific actions to avoid the need to list the species pursuant to California or federal Endangered Species Acts.

Contiguous means connected together so as to form an uninterrupted expanse in space.

Essential habitat includes nesting, foraging, wintering, and dispersal habitat.

Foraging habitat is habitat within the estimated home range of an occupied burrow, supports suitable prey base, and allows for effective hunting.

Host burrowers include ground squirrels, badgers, foxes, coyotes, gophers etc.

Locally significant species is a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (CEQA §15125 (c)) or is so designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G). Examples include a species at the outer limits of its known range or occurring in a unique habitat type.

Non-breeding season is the period of time when nesting activity is not occurring, generally September 1 through January 31, but may vary with latitude and climatic conditions.

Occupied site or occupancy means a site that is assumed occupied if at least one burrowing owl has been observed occupying a burrow within the last three years (Rich 1984). Occupancy of suitable burrowing owl habitat may also be indicated by owl sign including its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance or perch site.

Other impacting activities may include but may not be limited to agricultural practices, vegetation management and fire control, pest management, conversion of habitat from rangeland or natural lands to more intensive agricultural uses that could result in “take”. These impacting activities may not meet the definition of a project under CEQA.

Passive relocation is a technique of installing one-way doors in burrow openings to temporarily or permanently evict burrowing owls and prevent burrow re-occupation.

Peak of the breeding season is between 15 April and 15 July.

Sign includes its tracks, molted feathers, cast pellets (defined as 1-2” long brown to black regurgitated pellets consisting of non-digestible portions of the owls’ diet, such as fur, bones, claws, beetle elytra, or feathers), prey remains, egg shell fragments, owl white wash, nest burrow decoration materials (e.g., paper, foil, plastic items, livestock or other animal manure, etc.), possible owl perches, or other items.

Appendix C. Habitat Assessment and Reporting Details

Habitat Assessment Data Collection and Reporting

Current scientific literature indicates that it would be most effective to gather the data in the manner described below when conducting project scoping, conducting a habitat assessment site visit and preparing a habitat assessment report:

1. Conduct at least one visit covering the entire potential project/activity area including areas that will be directly or indirectly impacted by the project. Survey adjoining areas within 150 m (Thomsen 1971, Martin 1973), or more where direct or indirect effects could potentially extend offsite. If lawful access cannot be achieved to adjacent areas, surveys can be performed with a spotting scope or other methods.
2. Prior to the site visit, compile relevant biological information for the site and surrounding area to provide a local and regional context.
3. Check all available sources for burrowing owl occurrence information regionally prior to a field inspection. The CNDDDB and BIOS (see References cited) may be consulted for known occurrences of burrowing owls. Other sources of information include, but are not limited to, the Proceedings of the California Burrowing Owl Symposium (Barclay et al. 2007), county bird atlas projects, Breeding Bird Survey records, eBIRD (<http://ebird.org>), Gervais et al. (2008), local reports or experts, museum records, and other site-specific relevant information.
4. Identify vegetation and habitat types potentially supporting burrowing owls in the project area and vicinity.
5. Record and report on the following information:
 - a. A full description of the proposed project, including but not limited to, expected work periods, daily work schedules, equipment used, activities performed (such as drilling, construction, excavation, etc.) and whether the expected activities will vary in location or intensity over the project's timeline;
 - b. A regional setting map, showing the general project location relative to major roads and other recognizable features;
 - c. A detailed map (preferably a USGS topo 7.5' quad base map) of the site and proposed project, including the footprint of proposed land and/or vegetation-altering activities, base map source, identifying topography, landscape features, a north arrow, bar scale, and legend;
 - d. A written description of the biological setting, including location (Section, Township, Range, baseline and meridian), acreage, topography, soils, geographic and hydrologic characteristics, land use and management history on and adjoining the site (i.e., whether it is urban, semi-urban or rural; whether there is any evidence of past or current livestock grazing, mowing, disking, or other vegetation management activities);
 - e. An analysis of any relevant, historical information concerning burrowing owl use or occupancy (breeding, foraging, over-wintering) on site or in the assessment area;
 - f. Vegetation type and structure (using Sawyer et al. 2009), vegetation height, habitat types and features in the surrounding area plus a reasonably sized (as supported with logical justification) assessment area; (Note: use caution in discounting habitat based on grass height as it can be a temporary condition variable by season and conditions (such as current grazing regime) or may be distributed as a mosaic).

- g. The presence of burrowing owl individuals or pairs or sign (see Appendix B);
- h. The presence of suitable burrows and/or burrow surrogates (>11 cm in diameter (height and width) and >150 cm in depth) (Johnson et al. 2010), regardless of a lack of any burrowing owl sign and/or burrow surrogates; and burrowing owls and/or their sign that have recently or historically (within the last 3 years) been identified on or adjacent to the site.

Appendix D. Breeding and Non-breeding Season Surveys and Reports

Current scientific literature indicates that it is most effective to conduct breeding and non-breeding season surveys and report in the manner that follows:

Breeding Season Surveys

Number of visits and timing. Conduct 4 survey visits: 1) at least one site visit between 15 February and 15 April, and 2) a minimum of three survey visits, at least three weeks apart, between 15 April and 15 July, with at least one visit after 15 June. Note: many burrowing owl migrants are still present in southwestern California during mid-March, therefore, exercise caution in assuming breeding occupancy early in the breeding season.

Survey method. Rosenberg et al. (2007) confirmed walking line transects were most effective in smaller habitat patches. Conduct surveys in all portions of the project site that were identified in the Habitat Assessment and fit the description of habitat in Appendix A. Conduct surveys by walking straight-line transects spaced 7 m to 20 m apart, adjusting for vegetation height and density (Rosenberg et al. 2007). At the start of each transect and, at least, every 100 m, scan the entire visible project area for burrowing owls using binoculars. During walking surveys, record all potential burrows used by burrowing owls as determined by the presence of one or more burrowing owls, pellets, prey remains, whitewash, or decoration. Some burrowing owls may be detected by their calls, so observers should also listen for burrowing owls while conducting the survey.

Care should be taken to minimize disturbance near occupied burrows during all seasons and not to “flush” burrowing owls especially if predators are present to reduce any potential for needless energy expenditure or burrowing owl mortality. Burrowing owls may flush if approached by pedestrians within 50 m (Conway et al. 2003). If raptors or other predators are present that may suppress burrowing owl activity, return at another time or later date for a follow-up survey.

Check all burrowing owls detected for bands and/or color bands and report band combinations to the Bird Banding Laboratory (BBL). Some site-specific variations to survey methods discussed below may be developed in coordination with species experts and Department staff.

Weather conditions. Poor weather may affect the surveyor’s ability to detect burrowing owls, therefore, avoid conducting surveys when wind speed is >20 km/hr, and there is precipitation or dense fog. Surveys have greater detection probability if conducted when ambient temperatures are >20° C, <12 km/hr winds, and cloud cover is <75% (Conway et al. 2008).

Time of day. Daily timing of surveys varies according to the literature, latitude, and survey method. However, surveys between morning civil twilight and 10:00 AM and two hours before sunset until evening civil twilight provide the highest detection probabilities (Barclay pers. comm. 2012, Conway et al. 2008).

Alternate methods. If the project site is large enough to warrant an alternate method, consult current literature for generally accepted survey methods and consult with the Department on the proposed survey approach.

Additional breeding season site visits. Additional breeding season site visits may be necessary, especially if non-breeding season exclusion methods are contemplated. Detailed information, such as approximate home ranges of each individual or of family units, as well as foraging areas as related to the proposed project, will be important to document for evaluating impacts, planning avoidance measure implementation and for mitigation measure performance monitoring.

Adverse conditions may prevent investigators from determining presence or occupancy. Disease, predation, drought, high rainfall or site disturbance may preclude presence of burrowing owls in any given year. Any such conditions should be identified and discussed in the survey report. Visits to the site in more than one year may increase the likelihood of detection. Also, visits to adjacent known occupied habitat may help determine appropriate survey timing.

Given the high site fidelity shown by burrowing owls (see Appendix A, Importance of burrows), conducting surveys over several years may be necessary when project activities are ongoing, occur annually, or start and stop seasonally. (See Negative surveys).

Non-breeding Season Surveys

If conducting non-breeding season surveys, follow the methods described above for breeding season surveys, but conduct at least four (4) visits, spread evenly, throughout the non-breeding season. Burrowing owl experts and local Department staff are available to assist with interpreting results.

Negative Surveys

Adverse conditions may prevent investigators from documenting presence or occupancy. Disease, predation, drought, high rainfall or site disturbance may preclude presence of burrowing owl in any given year. Discuss such conditions in the Survey Report. Visits to the site in more than one year increase the likelihood of detection and failure to locate burrowing owls during one field season does not constitute evidence that the site is no longer occupied, particularly if adverse conditions influenced the survey results. Visits to other nearby known occupied sites can affirm whether the survey timing is appropriate.

Take Avoidance Surveys

Field experience from 1995 to present supports the conclusion that it would be effective to complete an initial take avoidance survey no less than 14 days prior to initiating ground disturbance activities using the recommended methods described in the Detection Surveys section above. Implementation of avoidance and minimization measures would be triggered by positive owl presence on the site where project activities will occur. The development of avoidance and minimization approaches would be informed by monitoring the burrowing owls.

Burrowing owls may re-colonize a site after only a few days. Time lapses between project activities trigger subsequent take avoidance surveys including but not limited to a final survey conducted within 24 hours prior to ground disturbance.

Survey Reports

Report on the survey methods used and results including the information described in the Summary Report and include the reports within the CEQA documentation:

1. Date, start and end time of surveys including weather conditions (ambient temperature, wind speed, percent cloud cover, precipitation and visibility);
2. Name(s) of surveyor(s) and qualifications;
3. A discussion of how the timing of the survey affected the comprehensiveness and detection probability;
4. A description of survey methods used including transect spacing, point count dispersal and duration, and any calls used;
5. A description and justification of the area surveyed relative to the project area;
6. A description that includes: number of owls or nesting pairs at each location (by nestlings, juveniles, adults, and those of an unknown age), number of burrows being used by owls, and burrowing owl sign at burrows. Include a description of individual markers, such as bands (numbers and colors), transmitters, or unique natural identifying features. If any owls are banded, request documentation from the BBL and bander to report on the details regarding the known history of the banded burrowing owl(s) (age, sex, origins, whether it was previously relocated) and provide with the report if available;
7. A description of the behavior of burrowing owls during the surveys, including feeding, resting, courtship, alarm, territorial defense, and those indicative of parents or juveniles;
8. A list of possible burrowing owl predators present and documentation of any evidence of predation of owls;
9. A detailed map (1:24,000 or closer to show details) showing locations of all burrowing owls, potential burrows, occupied burrows, areas of concentrated burrows, and burrowing owl sign. Locations documented by use of global positioning system (GPS) coordinates must include the datum in which they were collected. The map should include a title, north arrow, bar scale and legend;
10. Signed field forms, photos, etc., as appendices to the field survey report;
11. Recent color photographs of the proposed project or activity site; and
12. Original CNDDDB Field Survey Forms should be sent directly to the Department's CNDDDB office, and copies should be included in the environmental document as an appendix. (<http://www.dfg.ca.gov/bdb/html/cnddb.html>).

Appendix E. Example Components for Burrowing Owl Artificial Burrow and Exclusion Plans

Whereas the Department does not recommend exclusion and burrow closure, current scientific literature and experience from 1995 to present, indicate that the following example components for burrowing owl artificial burrow and exclusion plans, combined with consultation with the Department to further develop these plans, would be effective.

Artificial Burrow Location

If a burrow is confirmed occupied on-site, artificial burrow locations should be appropriately located and their use should be documented taking into consideration:

1. A brief description of the project and project site pre-construction;
2. The mitigation measures that will be implemented;
3. Potential conflicting site uses or encumbrances;
4. A comparison of the occupied burrow site(s) and the artificial burrow site(s) (e.g., vegetation, habitat types, fossorial species use in the area, and other features);
5. Artificial burrow(s) proximity to the project activities, roads and drainages;
6. Artificial burrow(s) proximity to other burrows and entrance exposure;
7. Photographs of the site of the occupied burrow(s) and the artificial burrows;
8. Map of the project area that identifies the burrow(s) to be excluded as well as the proposed sites for the artificial burrows;
9. A brief description of the artificial burrow design;
10. Description of the monitoring that will take place during and after project implementation including information that will be provided in a monitoring report.
11. A description of the frequency and type of burrow maintenance.

Exclusion Plan

An Exclusion Plan addresses the following including but not limited to:

1. Confirm by site surveillance that the burrow(s) is empty of burrowing owls and other species preceding burrow scoping;
2. Type of scope and appropriate timing of scoping to avoid impacts;
3. Occupancy factors to look for and what will guide determination of vacancy and excavation timing (one-way doors should be left in place 48 hours to ensure burrowing owls have left the burrow before excavation, visited twice daily and monitored for evidence that owls are inside and can't escape i.e., look for sign immediately inside the door).
4. How the burrow(s) will be excavated. Excavation using hand tools with refilling to prevent reoccupation is preferable whenever possible (may include using piping to stabilize the burrow to prevent collapsing until the entire burrow has been excavated and it can be determined that no owls reside inside the burrow);
5. Removal of other potential owl burrow surrogates or refugia on site;
6. Photographing the excavation and closure of the burrow to demonstrate success and sufficiency;

7. Monitoring of the site to evaluate success and, if needed, to implement remedial measures to prevent subsequent owl use to avoid take;
8. How the impacted site will continually be made inhospitable to burrowing owls and fossorial mammals (e.g., by allowing vegetation to grow tall, heavy disking, or immediate and continuous grading) until development is complete.

Appendix F. Mitigation Management Plan and Vegetation Management Goals

Mitigation Management Plan

A mitigation site management plan will help ensure the appropriate implementation and maintenance for the mitigation site and persistence of the burrowing owls on the site. For an example to review, refer to Rosenberg et al. (2009). The current scientific literature and field experience from 1995 to present indicate that an effective management plan includes the following:

1. Mitigation objectives;
2. Site selection factors (including a comparison of the attributes of the impacted and conserved lands) and baseline assessment;
3. Enhancement of the conserved lands (enhancement of reproductive capacity, enhancement of breeding areas and dispersal opportunities, and removal or control of population stressors);
4. Site protection method and prohibited uses;
5. Site manager roles and responsibilities;
6. Habitat management goals and objectives:
 - a. Vegetation management goals,
 - i. Vegetation management tools:
 1. Grazing
 2. Mowing
 3. Burning
 4. Other
 - b. Management of ground squirrels and other fossorial mammals,
 - c. Semi-annual and annual artificial burrow cleaning and maintenance,
 - d. Non-natives control – weeds and wildlife,
 - e. Trash removal;
 - a. Property analysis record or other financial analysis to determine long-term management funding,
 - b. Funding schedule;
8. Performance standards and success criteria;
9. Monitoring, surveys and adaptive management;
10. Maps;
11. Annual reports.

Vegetation Management Goals

- Manage vegetation height and density (especially in immediate proximity to burrows). Suitable vegetation structure varies across sites and vegetation types, but should generally be at the average effective vegetation height of 4.7 cm (Green and Anthony 1989) and <13 cm average effective vegetation height (MacCracken et al. 1985a).
- Employ experimental prescribed fires (controlled, at a small scale) to manage vegetation structure;

- Vegetation reduction or ground disturbance timing, extent, and configuration should avoid take. While local ordinances may require fire prevention through vegetation management, activities like disking, mowing, and grading during the breeding season can result in take of burrowing owls and collapse of burrows, causing nest destruction. Consult the take avoidance surveys section above for pre-management avoidance survey recommendations;
- Promote natural prey distribution and abundance, especially in proximity to occupied burrows; and
- Promote self-sustaining populations of host burrowers by limiting or prohibiting lethal rodent control measures and by ensuring food availability for host burrowers through vegetation management.

Refer to Rosenberg et al. (2009) for a good discussion of managing grasslands for burrowing owls.

Mitigation Site Success Criteria

In order to evaluate the success of mitigation and management strategies for burrowing owls, monitoring is required that is specific to the burrowing owl management plan. Given limited resources, Barclay et al. (2011) suggests managers focus on accurately estimating annual adult owl populations rather than devoting time to estimating reproduction, which shows high annual variation and is difficult to accurately estimate. Therefore, the key objective will be to determine accurately the number of adult burrowing owls and pairs, and if the numbers are maintained. A frequency of 5-10 years for surveys to estimate population size may suffice if there are no changes in the management of the nesting and foraging habitat of the owls.

Effective monitoring and evaluation of off-site and on-site mitigation management success for burrowing owls includes (Barclay, pers. comm.):

- Site tenacity;
- Number of adult owls present and reproducing;
- Colonization by burrowing owls from elsewhere (by band re-sight);
- Evidence and causes of mortality;
- Changes in distribution; and
- Trends in stressors.



660 FW 2, Wetlands Classification System

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Part 660: Wetlands Conservation
Originating Office: Division of Habitat Conservation

2.1 Purpose. The purpose of this chapter is to provide guidance on using definitions and classifications of wetlands within the U.S. Fish and Wildlife Service (Service).

2.2 Scope. The Service's definition and classification system provides standardization of concepts and terms used to describe the biological limit of wetland types found in the United States, and is used nationwide by many Federal, State, and local agencies as part of the management of their wetland resources. In addition, other countries use this system as the basis for their own wetland definition and classification. However, there is not universal acceptance. Some Federal, State, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner and extent than covered by this wetland definition and classification for their agency's regulatory purposes.

2.3 Policy. Service personnel will use the Service's wetlands definition and classification system to describe wetland resources.

2.4 Wetlands Definition and Classification System.

A. Reference. The Service's wetlands definition and classification system is found in "Classification of Wetlands and Deepwater Habitats of the United States" by L.M. Cowardin, V. Carter, F.C. Golet, and E.T. LaRoe, which was published by the Service in 1979 (FWS/OBS-79/31, 131pp.)

B. Adoption. The system was officially adopted by the Service on September 15, 1980. The document is authorized as a handbook to the FWM and may be changed only by the Director.

C. Supersession. The current system superseded "Wetlands of the United States" by S.P. Shaw and C.G. Fredine which was published by the Service in 1956 (FWS Circular 39.)

D. Availability. Due sustained high demand, the publication was reprinted in 1992. Copies for official use are available from the Service Publications Unit (OTE) located in Arlington, Virginia. Regional and Field Offices also have copies. Copies are available for sale from: Superintendent of Documents, U.S. Government Printing Office, Mail Stop SSOP, Washington, D.C. 20402-9328. Telephone number (202) 783-3238; GPO Stock Number: 024-010-00665-0.

2.5 Definitions.

A. Wetlands. Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes (plants specifically adapted to live in wetlands); (2) the substrate is predominantly undrained hydric (wetland) soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year.

B. Classification System. The classification system is structured as a hierarchy in which descriptive categories proceed from the general to the specific. These categories are: System, Subsystem, Class, Subclass, Dominance Type, and Modifiers.

(1) System. A System is a complex of wetlands and deepwater habitats that share the influence of similar hydrologic, geomorphic, chemical, or biological factors. There are five Systems: Marine, Estuarine, Riverine, Lacustrine, and Palustrine.

(2) Subsystem. A Subsystem is a subdivision of the System category that further describes the System in terms of the degree of submergence, water level, water gradient, water velocity, type of substrate, or extent of floodplain development. The Palustrine System, which contains most of the freshwater wetlands found in the United States, does not have a Subsystem.

(3) Class. The Class describes the general appearance of the habitat in terms of either the dominant life form of the vegetation or the physiography and composition of the substrate. For example, Classes under the Palustrine System are: Rock Bottom, Unconsolidated Bottom, Aquatic Bed, Unconsolidated Shore, Moss-Lichen Wetland, Emergent Wetland, Scrub-Shrub Wetland, and Forested Wetland.

(4) Subclass. The Subclass describes finer differences in life forms or non-vegetated substrates and is named on the basis of the predominant life form or substrate type present. For example, Subclasses under the Forested Wetland Class are: Broad-Leaved Deciduous, Needle-leaved Deciduous, Broad-Leaved Evergreen, Needle-Leaved Evergreen, and Dead.

(5) Dominance Type. The Dominance Type is based upon the dominant plant or animal species. In the Palustrine Forested Wetland classification, examples of Dominance Types under the Broad-Leaved Deciduous Subclass are: red maple (*Acer rubrum*) and swamp white oak (*Quercus bicolor*).

(6) Modifiers. Modifiers are applied at the Class level and below to more accurately describe a wetland. These Modifiers are: Water Regime, Water Chemistry, Soil, and Special Modifiers.

(a) Water Regime. The Water Regime Modifiers are grouped under two major headings: tidal or nontidal. Each is further divided to describe the periodicity of surface inundation. Examples of Water Regime Modifiers under the nontidal heading are: Permanently Flooded, Intermittently Exposed, Semipermanently Flooded, Seasonally Flooded, Saturated, Temporarily Flooded, Intermittently Flooded, and Artificially Flooded.

(b) Water Chemistry. The Water Chemistry Modifiers are divided into salinity or hydrogen ion concentration (pH) categories. Salinity Modifiers are grouped into coastal and inland categories. The Salinity Modifiers for inland areas are: Hypersaline, Eusaline, Mixosaline, and Fresh. Hydrogen ion concentration modifiers are: Acid, Circumneutral, and Alkaline.

(c) Soil. The Soil Modifiers are either mineral or organic soil.

(d) Special Modifiers. Special Modifiers are used to describe wetlands that are man-made or have been altered by the activities of man or beavers. Examples of Special Modifiers are: Excavated, Impounded,

Diked, Partly Drained, Farmed, or Artificial.

C. Geomorphic. The term geomorphic means of or relating to the form of the earth or its solid surface features.

D. Lacustrine. The Lacustrine System includes wetlands and deepwater habitats with all of the following characteristics:

(1) situated in a topographic depression or a dammed river channel; (2) lacking trees, shrubs, persistent emergents, emergent mosses or lichens with greater than 30% areal coverage; and (3) total area exceeds 8 ha (20 acres). Similar wetland and deepwater habitats totalling less than 8 ha are also included in the Lacustrine System if an active wave-formed or bedrock shoreline feature makes up all or part of the boundary, or if the water depth in the deepest part of the basin exceeds 2 m (6.6 feet) at low water. Lacustrine waters may be tidal or nontidal, but ocean-derived salinity is always less than 0.5 parts per thousand.

E. Palustrine. The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean derived salts is below 0.5 parts per thousand. It also includes wetlands lacking such vegetation, but with all of the following four characteristics: (1) area less than 8 ha (20 acres); (2) active wave-formed or bedrock shoreline features lacking; (3) water depth in the deepest part of basin less than 2 m (6.6 feet) at low water; and (4) salinity due to ocean-derived salts is less than 0.5 parts per thousand.

F. Eusaline. Eusaline is the term used to characterize waters with salinity of 30 to 40 parts per thousand due to land-derived salts.

G. Mixosaline. Mixosaline is the term used to characterize waters with salinity of 0.5 to 30 parts per thousand due to land-derived salts.

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**W4**

California Coastal Commission
October 5, 2011 Briefing

Definition and Delineation of Wetlands in the Coastal Zone

Background Information Handout

How Does The California Coastal Act Protect Wetlands?

The California Coastal Act requires that most development avoid and buffer wetland resources. Policies include:

- **Section 30231**, which requires the maintenance and restoration (if feasible) of the biological productivity and quality of wetlands appropriate to maintain optimum populations of marine organisms and for the protection of human health.
- **Section 30233**, which limits the filling of wetlands to identified high priority uses, including certain boating facilities, public recreational piers, restoration, nature study, and incidental public services (such as burying cables or pipes). Any wetland fill must be avoided unless there is no feasible less environmentally damaging alternative, and authorized fill must be fully mitigated.

Why Do We Care About Wetlands?

Wetlands provide many important functions and values. These include:

- Supporting a large **diversity** of plant and animal species, including some that are found nowhere else except in wetlands.

- Providing **habitat** for hundreds of species of shore, wading, and migratory birds and for many commercial and non-commercial fish.
- Protecting **water quality** by serving as biological filters (a natural water treatment plant) absorbing and fixing certain chemical and mineral contaminants that would otherwise flow directly into lakes, rivers, streams, and the ocean.
- **Protecting the shoreline** by buffering the coast from waves and storms.
- Serving as a water conveyance and holding system, including providing **floodwater storage**.
- Allowing for **groundwater recharge**.
- Providing areas for **recreational activities** (fishing, boating, etc.).
- Enhancing viewsheds through contributing to **aesthetic values**.

How Do We Define Wetlands?

There is no single agreed-upon general definition of wetlands, although most definitions are similar. **Coastal Act Section 30121** defines the term “wetland” as:

[L]ands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens.

Similarly, the **U.S. Fish and Wildlife Service** (USFWS) uses a general definition from its wetlands classification system first published in 1979:

Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water (Cowardin, et al. 1979).

For purposes of implementing Section 404 of the federal Clean Water Act, the United States **Environmental Protection Agency** (EPA) and the **Army Corps of Engineers** (ACOE) define wetlands as:

Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas (40 CFR 232.2).

One Parameter Definition

Both the Coastal Commission and the federal government provide further specificity in their wetlands definitions to guide the process of wetlands delineation. The Coastal Commission’s

regulations (California Code of Regulations Title 14 (14 CCR)) establish a “**one parameter definition**” that only requires evidence of a single parameter to establish wetland conditions:

Wetland shall be defined as land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salts or other substances in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deep-water habitats. (14 CCR Section 13577)

The Commission’s one parameter definition is similar to the USFWS wetlands classification system, which states that wetlands must have **one or more** of the following three attributes:

(1) at least periodically the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year.

Three Parameter Definition

In contrast, the Army Corps of Engineers generally uses a **three parameter definition** for delineating wetlands. As discussed in the 1987 ACOE Wetlands Delineation Manual:

The FWS system requires that a positive indicator of wetlands be present for any one of the three parameters, while the [ACOE] technical guideline for wetlands requires that a positive wetland indicator be present for each parameter (vegetation, soils, and hydrology)...(ACOE, 1987, p.3).

How Do We Delineate Wetlands?

As opposed to wetlands definitions, which describe the general **parameters** that must be shown to establish wetland conditions (hydrology, soils, and vegetation), the delineation of wetlands in the field typically requires substantial evidence of **indicators**, which are the physical, chemical, or biological features of an area that can be easily observed or assayed and that are usually correlated with the presence of a wetland parameter; and **methodologies** that guide the process of distinguishing wetland from non-wetland conditions. Such field tools are needed because the various characteristics of wetlands typically occur on physical gradients (i.e., wet to dry conditions, hydric to nonhydric soils, and hydrophytic to meso/xerophytic vegetation).

The Coastal Commission's regulations acknowledge these distinctions by specifying some general decision rules for establishing the upland boundary of wetlands:

...the upland limit of a wetland shall be defined as:

- a. the boundary between land with predominantly hydrophytic cover and land with predominantly mesophytic or xerophytic cover;*
- b. the boundary between soil that is predominantly hydric and soil that is predominantly nonhydric; or*
- c. in the case of wetlands without vegetation or soils, the boundary between land that is flooded or saturated at some time during years of normal precipitation, and land that is not. (14 CCR Section 13577)*

However, the Coastal Commission's regulations do not provide guidance on other specific concerns important to the delineation process for wetlands, such as:

- What are hydric soils?
- What is hydrophytic vegetation?
- How do we determine if land is saturated at some time during years of normal precipitation?
- What is a predominance of hydrophytic cover?

Therefore, additional scientific methods and guidance are required to facilitate the wetland delineation process in the field. A common source of guidance for wetland delineators is the **1987 Army Corps of Engineers Wetland Delineation Manual**. In addition to discussion of definitions and scientific concepts applicable to wetlands delineation, this manual includes detailed discussions of potential data sources, various field methods such as vegetation mapping, and so forth. The 1987 Manual has been updated and improved through the development of Regional Supplements that address regional wetland characteristics and contain improved field procedures. In California, the supplements that are used are "Western Mountains, Valleys, and Coast Region" and "Arid West Region."

Another important guidance document is the U.S. Fish and Wildlife Service's **List of Plant Species that Occur in Wetlands**. According to the USFWS, this document lists plant species "that have demonstrated an ability...to achieve maturity and reproduce in an environment where all or portions of the soil within the root zone become, periodically or continuously, saturated or inundated during the growing season." In the future, maintaining and updating this document will be the responsibility of the Army Corps of Engineers. Guidance on the identification of hydric soils is provided by the Natural Resource Conservation Service in its **Field Indicators of Hydric Soils in the United States**.

Notwithstanding the availability of various technical guidance documents on wetlands and delineation methods, it is important to recognize that the application of scientific methods and the observations of indicators in the field are subject to uncertainty and error. This is particularly the case in atypical situations such as areas where wetlands hydrology, soils, or vegetation have been sufficiently altered to preclude the presence of an indicator of a particular

parameter. Therefore, wetland delineators must also exercise **professional judgment** in the wetland delineation process.

What Are Some Important Wetland Terms?

[Definitions are adapted from ACOE's 1987 *Army Corps of Engineers Wetland Delineation Manual* unless otherwise noted.]

Aerobic. A situation in which molecular oxygen is a part of the environment.

Anaerobic. A situation in which molecular oxygen is absent (or effectively so) from the environment.

Atypical situation. Areas in which one or more parameters (vegetation, soil, and/or hydrology) have been sufficiently altered by recent human activities or natural events to preclude the presence of wetland indicators of the parameter.

False Negative. Failing to identify a wetland when it is present.

False Positive. Falsely concluding that an upland area is a wetland.

Hydric soil. Soil that is formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part. The concept of hydric soils includes soils developed under sufficiently wet conditions to support the growth and regeneration of hydrophytic vegetation (NRCS, <http://soils.usda.gov/use/hydric/intro.html>).

Hydrologic zone. An area that is inundated or has saturated soils within a specified range of frequency and duration of inundation and soil saturation.

Hydrophyte. Any plant growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content (Cowardin et al, 1979).

Wetland Plant Indicator Categories. (U.S. Fish & Wildlife Service National Wetlands Inventory (http://www.fws.gov/nwi/bha/l96_intro.html))

Obligate Wetland (OBL). Occur almost always (estimated probability >99%) under natural conditions in wetlands.

Facultative Wetland (FACW). Usually occur in wetlands (estimated probability 67%-99%), but occasionally found in non-wetlands.

Facultative (FAC). Commonly occur in wetlands and non-wetlands (estimated probability of occurring in wetlands 34%-66%).

Facultative Upland (FACU). Usually occur in non-wetlands (estimated probability 67%-99%), but occasionally found in wetlands (estimated probability 1%-33%).

Obligate Upland (UPL). Occur in wetlands in another region, but occur almost always (estimated probability >99%) under natural conditions in non-wetlands in the region specified.

Indicator. Field indicators are physical, chemical, or biological features of an area that can be easily observed or assayed and that are usually correlated with the presence of a wetland parameter.

Macrophyte. Any plant species that can be readily observed without the aid of optical magnification. This includes all vascular plant species and mosses (e.g., *Sphagnum spp.*), as well as large algae (e.g. *Chara spp.*, kelp).

Mesophytic. Any plant species growing where soil moisture and aeration conditions lie between extremes. These species are typically found in habitats with average moisture conditions, neither very dry nor very wet.

Mottles. Spots or blotches of different color or shades of color interspersed within the dominant color in a soil layer, usually resulting from the presence of periodic reducing soil conditions.

Oxidation-reduction process. A complex of biochemical reactions in soil that influences the valence state of component elements and their ions. Prolonged soil saturation during the growing season elicits anaerobic conditions that shift the overall process to a reducing condition.

Parameter. A characteristic component of a defined unit. Vegetation, soil, and hydrology are three parameters that may be used to define wetlands.

Positive wetland indicator. Any evidence of the presence of hydrophytic vegetation, hydric soil, or wetland hydrology in an area.

Nonhydric soil. A soil that has developed under predominantly aerobic soil conditions. These soils normally support mesophytic or xerophytic species.

Plant community. All of the plant populations occurring in a shared habitat or environment.

Predominant (=prevalent) vegetation. The plant community or communities that occur in an area during a given period. The predominant vegetation is characterized by the dominant macrophytic species that comprise the plant community.

Redoximorphic features. Features formed by the processes of reduction, translocation, and/or oxidation of Fe and Mn oxides; formerly called mottles and low-chroma colors (USDA).

Saturated soil conditions. A condition in which all easily drained voids (pores) between soil particles in the root zone are temporarily or permanently filled with water to the soil surface at pressures greater than atmospheric.

Upland. Any area that does not qualify as a wetland because the associated hydrologic regime is not sufficiently wet to elicit development of vegetation, soils, and/or hydrologic characteristics associated with wetlands.

Wetland hydrology. The sum total of wetness characteristics in areas that are inundated or have saturated soils for a sufficient duration to support hydrophytic vegetation.

Wetland plant association. Any grouping of plant species that recurs wherever certain wetland conditions occur.

Wetland soil. A soil that has characteristics developed under reducing conditions, which exist when periods of prolonged soil saturation result in an anaerobic state. Hydric soils that are sufficiently wet to support hydrophytic vegetation are wetland soils.

Wetland vegetation. The sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present.

Xerophytic. A plant species that is typically adapted for life in conditions where a lack of water is a limiting factor for growth and/or reproduction. These species are capable of growth in extremely dry conditions as a result of morphological, physiological, and/or reproductive adaptations.

Selected References

- Cowardin, L. M., Carter, V., Golet, F. C., and LaRoe, E. T. 1979. "Classification of Wetlands and Deepwater Habitats of the United States," FWS/OBS79/31, U.S. Fish and Wildlife Service, Office of Biological Services, Washington, D.C.
- Environmental Laboratory. (1987). "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1, U.S. Army Engineer Waterways Experimental Station, Vicksburg, MS.
- U.S. Department of Agriculture, Natural Resources Conservation Service, 2005. National Soil Survey Handbook, title 430-VI. [Online] Available: <http://soils.usda.gov/technical/handbook/>



Miscellaneous Policies

AL TAUCHER'S PRESERVING HUNTING AND SPORT FISHING OPPORTUNITIES POLICY

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Through statutory policy, the California Legislature has directed the Department of Fish and Game and the Fish and Game Commission to maintain diversified recreational uses of wildlife, including the sport of hunting. California's hunters and sport anglers have assisted in the management and wise use of fish and wildlife resources since before the inception of the Commission in 1870. Sporting men and women of California have historically provided the major portion of the Department's financial base through payment of license fees and taxes on hunting and fishing equipment and by direct donations. Dollars from hunters and anglers have played a major role in the management, protection and preservation of fish and wildlife that are enjoyed by all Californians, including campers, hikers, bird watchers, photographers and other members of the public.

Therefore, it is the policy of the Fish and Game Commission that:

The Department shall emphasize programs that ensure and enhance hunting and fishing opportunities. These activities shall be integrated into all Department programs.

In its review of federal, state and local plans, special plans and proposed projects to determine consistency with Commission policy and the goals and objectives of the Department's management plans and programs, and in meeting its responsibilities as trustee for the State's fish and wildlife resources, the Department shall establish the goal of preventing loss of hunting and sport fishing opportunities.

To meet the objective of this policy, the Department shall establish a working group to develop enhancement strategies and shall meet semiannually with a Fishing and Hunting Opportunity Subcommittee of the Commission and its staff and members of the interested public to review program progress and future plans.

(Adopted 6/16/94)

CALIFORNIA POLICY FOR NATIVE PLANTS

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The California Fish and Game Commission recognizes the following:

1. The management and conservation of California's native flora are important to the State of California, and native plants, as vital components of the State's natural wildlife communities, are held in trust for the people of the State by and through the Department of Fish and Wildlife. [FGC Sec. 711.2(a), 711.7(a), and Sec. 1600]
2. 'Native plants' are generally defined as plants that occur naturally in California without direct or indirect human actions.
3. The California State Legislature recognized the essential value and importance of California native plants to the State's history, economy, landscape, and environment, as declared in Assembly Concurrent Resolution 173 (2010).
4. The State's policies and practices regarding native plants are in need of review and updating. More than 30 years ago state law focused on transplantation as a means of mitigating for listed plant species, however experience and numerous studies document that such practices are largely ineffectual over time and often damaging to species or population survival.
5. Growing concern for the effects of wild land fires continues to raise questions and uncertainty regarding appropriate course of action on such issues as fuels management, post fire salvage and seeding, among other actions that may have significance for native plant conservation.
6. It is incumbent upon the Commission and the Department to address the differing public agency opinions and ideas regarding native plant conservation objectives, survey and mitigation standards, genetic degradation, habitat protection, and other native plant issues. Better coordination between state agencies is necessary to overcome institutional and budget constraints.

Therefore, it is the policy and practice of the Fish and Game Commission that:

- The Commission shall encourage, support, and implement, on its own initiative and with the Department of Fish and Wildlife, strategies and tools to conserve native plants as integral elements of the State's wildlife. The Commission shall consider, as appropriate, native plant conservation when carrying out duties which may have a relevant link to plant conservation.
- Incorporating and using current scientific techniques, tools, and standards in the conservation of native plants is necessary to protect the integrity of natural communities and wildlife resources, make land use decisions, and meet the needs of human communities.
- Conservation planning and management for native plants require proactive approaches that address both naturally occurring and human-induced stressors.
- Data collection and sharing among public and private entities coupled with improved data analysis is critical to successful native plant conservation. This requires adequately trained and experienced human resources being available to the Department and other responsible parties.
- Laws, public policies, and natural resource management practices of public agencies, with regard to native plants, need to be reviewed, modernized, and coordinated to ensure consistent and effective native plant conservation based on current scientific and societal needs and understanding.

Adopted 06/11/15

COOPERATION

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It is the policy of the Fish and Game Commission that:

The Commission, its staff, and the Department shall cooperate with local, state and federal agencies and with all interested persons, groups or organizations in every way to further the aims and purposes of fish and game conservation, preservation, propagation, protection, management, and administration. To this end, agreements may be entered into with such agencies, groups or persons when authorized by law.

ENDANGERED AND THREATENED SPECIES

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It is the policy of the Fish and Game Commission to:

Protect and preserve all native species of fishes, amphibians, reptiles, birds, mammals, invertebrates and plants, and their habitats, threatened with extinction; or those experiencing a significant decline which, if not halted, would lead to a threatened or endangered designation. The Department will work with all interested persons, agencies and organizations to protect and preserve such sensitive resources and their habitats.

INTRODUCTION OF NON-NATIVE SPECIES

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It is the policy of the Fish and Game Commission that:

- I. Proposals to introduce exotic species shall be submitted to the Commission for approval. The Department will review and evaluate proposals to insure that the potential effects of such introductions will not have unacceptable negative impacts on native species, agriculture interests, and public health and safety.
- II. In considering proposed introductions, the Commission and Department will be guided by the following:
 - A. Introduction of exotic species will be authorized only after potential impacts have been carefully evaluated and it has been demonstrated that such impacts will be negligible or positive. Such an evaluation will consider the species' ability to disperse outside the introduction area.
 - B. Initial experimental introduction of an approved exotic species will be made under conditions that will permit the action to be reversed, such as introduction into a confined area or introduction of sterile individuals.
 - C. Benefits of the action will be described, including why the need cannot be satisfied through improved management to enhance native species or previously established non-native species.
- III. Introduction of previously established non-native species into areas of the state where they have not been established will be permitted only after it has been determined by the Department that they will have no significant negative impacts.
 - A. Introduction of previously established non-native animal species shall be done in a manner consistent with Section 671.6 of Title 14.
 - B. Stocking of "fish" into the waters of the State shall be done in a manner consistent with Section 238.5 of Title 14.
- IV. Definitions:
 - A **non-native species** is any of mammal, bird, fish, amphibian, reptile, invertebrate, or plant that is not native to California .
 - A **previously established non-native species** is an animal or plant that has become established in California by the aid of humans.

Amended: 06/23/05

KELP

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It is the policy of the Fish and Game Commission to:

- I. Endeavor to maintain an optimum sustained harvest and utilization of the state's kelp resources and derive an optimum return therefrom, whenever the same are in the best interest of fish and wildlife resources.
- II. Insure a supply of kelp for all interested harvesters. Approximately one-fourth of the total area of the state's kelp beds, as designated by the Department, shall remain unleased and thus open to any licensed harvester.

Amended 12/9/05

LAND USE PLANNING

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It is the policy of the Fish and Game Commission that:

The preservation, protection and restoration of fish and wildlife resources within the State is of significant public interest and is inseparable from the need to acquire, preserve, protect and restore fish and wildlife habitat to the highest possible level, and to maintain in a state of high productivity those areas that can be most successfully used to sustain fish and wildlife and which will provide appropriate consumptive and nonconsumptive public use. To carry out these purposes, it is essential that a comprehensive program be implemented by the Department to assure that there will be close coordination with state, federal and local planning agencies, including county boards of supervisors and other decision-making entities in the formulation and implementation of any plans including, but not limited to, county general plans and any modifications to such plans, which may impact fish or wildlife.

- I. Commensurate with this policy, the Commission recognizes that:
 - A. The land resources of the state provide an essential habitat component necessary for the annual renewability and well-being of the state's fish and wildlife resources;
 - B. The land resources are a limited resource subject to increasing demands;
 - C. Conservation, efficient planning and implementation of various land uses are necessary to meet the competing needs of urban communities, industry, agriculture, recreation, and fish and wildlife; and
 - D. There is a need for the Department to provide timely consultation with Federal, State and local governments and agencies on land use planning and projects with a view toward resolving conflicts with the Department management plans, programs and other responsibilities.
 - E. Locally developed regional landscape conservation planning is a forward-looking method which can provide early resolution of land use/wildlife resource protection conflicts and lead to the preservation of essential wildlife habitat while allowing for appropriate growth and economic development.
- II. To provide maximum protection and enhancement of fish and wildlife, the Department shall:
 - A. Promote the development of regional conservation planning at the ecosystem level through active participation in the local development of regional Natural Community Conservation Planning (NCCP) and other forward-looking multiple habitat conservation planning efforts.
 - B. Review, coordinate and provide comments and recommendations on federal, state, local general plans, special plans and proposed projects as appropriate, including the conservation and land use elements adopted by local government pursuant to provisions of Section 65300 et seq., of the Government Code for the purpose of determining the consistency of such plans with Commission policies, and the goals and objectives of the Department's management plans, programs and other responsibilities for the state's fish and wildlife resources. An initial review of local general plans will be completed by January 1986;
 - C. Carry out subsequent reviews of general and special plans and proposed projects and provide appropriate comments and recommendations to the affected federal, state and local government or agency, as needed to assure such plans remain consistent with the Commission's policies and the Department's management plans, programs and other responsibilities;
 - D. Notify the Commission prior to adoption, if possible, but as soon as feasible, when a federal, state or local general or special plan, or a proposed project authorized by such a plan, is determined to be in conflict with Commission policy or the Department's management plans and programs, and would have a significant adverse impact on fish or wildlife resources. In the case of local agency plans or special projects where changes are made late in the review and comment period or at an adoption hearing, notification of the Commission will be within 30 days following the receipt by the Department of the text of the approved plan or project;
 - E. Provide to the Commission as soon as feasible, the Department's remedial action or actions for responding to such findings and determinations or the Department's reasons for finding that no remedial action is necessary. In the case of local agency plans or special projects, notification of the Commission will be within 30 days following the receipt by the Department of the text of the approved plan or project;
 - F. Participate in the local land use planning process and project review implemented in connection with the requirements of Section 21,000, et seq., of the Public Resources Code, for the purpose of conserving and protecting fish or wildlife habitat consistent with the Department's management plans, programs and other responsibilities;
 - G. Oppose the adoption of plans or portions of plans for land use or approval of proposed projects if, after following diligent efforts to resolve issues affecting fish and wildlife resources, the Department finds that such actions are not consistent with the Department's management plans, programs and other responsibilities and will result in significant losses to fish and wildlife resources.

(Amended 3/3/94)

DESIGNATION OF DEPARTMENT CONTROLLED LANDS AS STATE WILDLIFE AREAS

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It is the policy of the Fish and Game Commission that:

The Department, within 30 days of the date of obtaining legal control of any lands which are to be managed as a state wildlife area or as a public hunting area, shall request that the Commission formally designate such lands as a "State Wildlife Area". The Commission will periodically, but not less than once every three years, consider taking regulatory action to add such formally designated lands to the list of "State Wildlife Areas" in Title 14, California Code of Regulations.

(Amended 8/18/05)

MANAGEMENT AND UTILIZATION OF FISH AND WILDLIFE ON FEDERAL LANDS

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It is the policy of the Fish and Game Commission that:

The Department manage and protect all fish and wildlife and threatened or endangered native plants within the state's jurisdiction on lands administered by the federal government in accordance with the laws of this state and regulations adopted pursuant thereto. This policy will not extend to lands over which the state has ceded exclusive jurisdiction nor to the right of the federal government to manage habitat and control access in its proprietary capacity. Management and protection of migratory fish and wildlife will be coordinated between the Department and the federal government on all lands under federal jurisdiction, if appropriate. It is recognized that the federal government has the right under treaty to regulate migratory, endangered and threatened species, and marine mammals under the appropriate Federal Statutes.

MANAGEMENT AND UTILIZATION OF FISH AND WILDLIFE ON PRIVATE LANDS

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It is the policy of the Fish and Game Commission that:

- I. Program Assistance
The owners or tenants of privately owned lands shall be actively encouraged to propagate, conserve, and promote the wise use of fish and wildlife populations on their lands, consistent with other reasonable uses. The Department shall, whenever possible, provide interested persons with guidance and information on programs for developing and employing management techniques to effect such purposes and which will protect and enhance native wildlife or vegetation, even though access to such private lands is subject to the owner's or tenant's control.
The Department, before processing any application for a license for a new Private Lands Wildlife Habitat Enhancement and Management Area (herein referred to as a Private Wildlife Management Area), shall determine that:
 - (a) The applicant has sent a copy of the application, by certified mail, to each adjoining landowner; and
 - (b) The applicant has published a notice in a paper of general circulation in the area affected. Such notice shall include: the applicant's name; the name of the Private Wildlife Management Area; the total acreage and its location by county, section, township, and range; the species to be taken; and the proposed seasons. That notice shall also specify that comments regarding the application should be sent to the Department of Fish and Game, Wildlife Management Division, 1416 Ninth Street, Sacramento, California 95814, within 15 days of the notice publication date.
- II. Private Wildlife Management Areas
Private Wildlife Management Area plans (PLM) shall be utilized as a vehicle to maintain and enhance habitat for wildlife.
To this end, except as provided herein, requirements for all plans shall include written findings by the Department that, when implemented, the terms and conditions of the management plan can reasonably be expected to result in:
 - (a) An increase in the carrying capacity for the species being managed. The aim of this provision is to ensure higher density and/or improved habitat conditions for the featured species. The net result of implementation of the plan is to benefit the species/population while enhancing native wildlife or vegetation.
If the Department makes written findings that the above enhancement measures would not be appropriate requirements of a plan for biological reasons, it may propose alternative management enhancement strategies which result in a net benefit to wildlife.
 - (b) Exceptions to enhancement requirement. The Department may make a written determination that habitat maintenance, rather than enhancement, is appropriate if:
 - (1) The landowner has, prior to entering the PLM program, consistently engaged in the best management practices beneficial to the species in question; or
 - (2) The land in question is designated, on the applicable county or city general and specific plan maps, for development at a density or with permitted uses which would have or could have a significant adverse impact on wildlife habitat values, and that such development activity or use is probable within the foreseeable future.
- III. Deer
All plans will be based upon sound biological data and will be consistent with the applicable deer herd management plan(s). Additionally, harvest plans will be submitted only if they:
 - (a) Are consistent with Department management goals and objectives for the species involved; and
 - (b) Assure seasons and methods of take which are consistent with biologically sound principles intended to achieve or maintain deer herd goals and objectives. Department recommendations for deer hunts during the rut shall include analysis and findings of consistency with these criteria; and
 - (c) Ensure that, when antlerless, either sex, or late season buck hunts are proposed for migratory deer herds, they are consistent with proposed harvest regimes for antlerless, either sex, or late season buck hunts in the same or adjacent zones unless the Department makes a specific finding that such special hunts are not biologically or statutorily feasible. The intent of this provision is to seek parity for the nonattached hunters.
- IV. Game Species Other Than Deer
Department recommendations for harvest programs involving species other than deer shall reflect an intent to provide parity for the nonattached hunters in the same general area, unless the Department makes a specific finding that such hunts are not biologically or statutorily feasible.
- V. Monitoring
All plans shall include provisions for at least annual monitoring of compliance with habitat enhancement provisions. The costs of monitoring shall be borne by the applicant to ensure compliance.
Accurate records of hunting activities conducted pursuant to the approved plans shall be maintained by all licensees and shall be made available to the Department upon request. Such information shall be analyzed annually by the Department.

(Amended 5/9/94)

MARINE PROTECTED AREAS

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It is the policy of the Fish and Game Commission to:

Cooperate with other State, Federal, and Local Government agencies in the consideration and designation of certain marine and estuarine submerged lands as marine protected areas under the Marine Life Protection Program which has all of the following goals:

- To protect the natural diversity and abundance of marine life, and the structure, function, and integrity of marine ecosystems.
- To help sustain, conserve, and protect marine life populations, including those of economic value, and rebuild those that are depleted.
- To improve recreational, educational, and study opportunities provided by marine ecosystems that are subject to minimal human disturbance, and to manage these uses in a manner consistent with protecting biodiversity.
- To protect marine natural heritage, including protection of representative and unique marine habitats in California waters for their intrinsic value.
- To ensure that California's marine protected areas have clearly defined objectives, effective management measures, and adequate enforcement, and are based on sound scientific guidelines.
- To ensure that the state's marine protected areas are designed and managed, to the extent possible, as a network.

Designation of individual or networks of marine protected areas is intended to protect marine habitats, ecosystems and living marine resources. Marine protected areas shall be selected based on sound, peer reviewed science readily available for public scrutiny and comment in a timely manner. Such marine protected area proposals shall be created using guidance contained in the Marine Life Protection Act Master Plan Framework concerning marine protected area design, management,

enforcement, monitoring, evaluation, and financing to satisfy one or more of the following purposes:

- Natural Heritage:
 - To protect unique or representative areas of marine habitat for their intrinsic values.
 - To protect unique or representative areas of marine habitat for their recreational values.
 - To insure continued public ownership and access.
 - To provide insurance against catastrophic loss of a significant portion of a habitat.
 - To provide a baseline for damage assessment of other areas.
- Ecosystem Biodiversity:
 - To protect a portion of an ecosystem with all its component parts.
 - To protect unique or representative species or species assemblages.
 - To provide for genetic diversity and stable stock compositions for species of concern.
 - To provide insurance against the catastrophic loss of a significant species or species assemblage.
- Education/Research:
 - To provide research areas subject to minimal human activities.
 - To foster stewardship of living marine resources and habitats.
 - To provide educational opportunities for schools, colleges, universities and the public.
 - To provide baseline areas or reference sites for comparison with other areas.
 - Protection of Marine Populations:
 - To help the recovery, restoration, or enhancement of one or more species of concern.
 - To provide for natural size and age compositions, and genetic diversity of populations in representative habitats.

Amended: 12/9/05

MULTIPLE USE OF LANDS ADMINISTERED BY THE DEPARTMENT OF FISH AND GAME

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It is the policy of the Fish and Game Commission that:

Lands under the administration of the Department be made available to the public for fishing, hunting or other forms of compatible wildlife dependent recreational use, and for scientific studies whenever such use or uses will not unduly interfere with the primary purpose for which such lands were acquired.

For the purposes of this policy, undue interference shall not mean that hunter and angler access to properties that would otherwise be available for access for passive recreational activities (i.e., bird watching, interpretive tours, etc.) is deemed to be necessarily incompatible. Further, hunting and fishing shall not be banned simply because a Department administered land was acquired primarily for the protection of various threatened and endangered species unless it can be clearly demonstrated that such activities would be likely to have a detrimental effect on listed species on the property in question.

Amended: 8/2/02

NAMING INSTALLATIONS

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It is the policy of the Fish and Game Commission that:

- I. No fish hatchery, game refuge, wildlife area or any installation, other than Marine Protected Areas (MPAs), shall be named for any person, living or dead. Installations shall be named in a manner which will indicate their geographical location, avoiding as far as possible the names of local political units. Vessels shall be named for fish.
- II. The Commission may commemorate an individual by including that individual's name after the geographic name of an MPA if all of the following criteria are met:
 - 1. The individual has been deceased for a minimum of 5 years;
 - 2. It has been determined the individual has made an extraordinary, unique, and long-lasting contribution to the conservation, use, and/or enjoyment of California's living marine resources;
 - 3. It has been determined with reasonable care and consideration that the individual's merit and/or contribution can stand the test of time;
 - 4. The individual and/or their efforts have a direct connection with the geographic location of the MPA or immediate vicinity.
- III. The Commission shall be represented at and may participate in all ceremonies dedicating the launching or inauguration of any of the facilities mentioned above. The Department and the Commission staff shall coordinate their work and efforts in setting up or arranging such programs.

(Amended 5/23/2012)

NATIONAL FORESTS

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It is the policy of the Fish and Game Commission that:

National forest lands provide habitat essential to the annual renewability and well-being of a host of fish and wildlife resources. The Fish and Game Commission and the Department of Fish and Game have the responsibility and authority to manage the fish and wildlife resources on national forest lands in this state. Management practices of the U.S. Forest Service can affect fish and wildlife and their habitat and can affect the management of fish and wildlife by the Commission and the Department.

To ensure effective communication between the Commission, Department and the U.S. Forest Service, the following procedures will be used:

- I. The Department shall cooperate and work closely with the U.S. Forest Service with the goal of ensuring adequate protection and conservation of fish and wildlife resources and their habitat during U.S. Forest Service planning and management activities.
- II. The Department shall request from the U.S. Forest Service an annual report summarizing plans, management practices and policies on national forest lands in California that have or may have impacts on fish and wildlife resources or their habitat.
- III. The Department shall provide the Commission with an analysis of this annual report and of existing management practices of which it is aware, with particular emphasis on specific plans, management practices and policies of the U.S. Forest Service in specific California national forests that are or may be adverse to fish and wildlife resources or their habitat.
- IV. The Department shall make specific recommendations to the U.S. Forest Service via the Commission intended to correct or alleviate any adverse conditions identified in its analysis of the annual report.
- V. The Department shall invite the U.S. Forest Service to appear before the Commission when it considers the annual report.

(Adopted 11/13/84)

NON-NATIVE TURTLES AND FROGS

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The Fish and Game Commission declares that:

- 1. The Fish and Game Commission and the Department of Fish and Game have been charged by the Legislature to protect and wisely manage the State's living natural resources and the habitats upon which they depend.
- 2. The importation of non-native turtles and frogs poses threats not only to the State's native turtles and frogs, but also to the native source populations of the

- imported turtles and frogs.
- 3. These threats include, but are not limited to: disease, hybridization, competition, and predation.

Therefore, it is the policy of the Fish and Game Commission that the Department of Fish and Game shall cease issuing importation permits for any live non-native turtles or frogs pursuant to Section 236, Title 14, CCR.

(Adopted: 4/8/2010)

PLANNING

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It is the policy of the Fish and Game Commission that:

- I. Proper management of the state's fish and wildlife resources can only be accomplished through sound planning.
- II. The Department shall prepare and submit annually to the Commission a report on the Department's progress in implementing the Comprehensive Management System adopted by the Department in March 1992. This report will include a status report on attaining the goals and objectives contained in the strategic planning component of the Comprehensive Management System.
- III. The Department operations shall be guided by the plan. Any proposed program not provided for in the plan shall be submitted to the Commission for approval unless mandated by the Legislature.

(Amended 5/9/94)

PROSPECTING ON FISH AND GAME LANDS

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It is the policy of the Fish and Game Commission to:

Oppose all applications for a prospecting permit on, or a lease of, any state land administered by the Department for the purpose of prospecting or producing any mineral, or commodity, including geothermal and petroleum resources unless no adverse effect to fish or wildlife or their habitat will occur.

The Department shall urge any state agency or agencies, empowered to grant such a permit or enter into such a lease, to provide for such protection and safeguards as the Department deems necessary to protect fish and wildlife and their habitat.

(Amended 5/9/94)

PUBLIC INFORMATION AND EDUCATION

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It is the policy of the Fish and Game Commission that:

- I. The Department shall disseminate to the maximum extent feasible information to the public through the news media, books, pamphlets, motion pictures and other appropriate means regarding all matters dealing with the conservation, protection, management and administration of the state's fish and wildlife resources. It shall also inform the public about the authority and activities of the Commission and the Wildlife Conservation Board.
- II. The Department shall develop education programs in conjunction with the Department of Education directed toward the state's youth, which emphasize the importance of the preservation, enhancement and proper management of California's fish, wildlife and habitat resources and which recognize the role and value of hunting and fishing as resource management tools. Young people will be encouraged to participate in conservation, hunting and fishing programs based on a sound renewable natural resource ethic.
- III. The Department shall encourage education programs that increase the public's respect and concern for wild animals; and their knowledge of the interrelationships between wild animals, their environment, and their human neighbors.

The Department shall not support any program increasing the demand for possession or ownership of wild animals as pets.

(Amended 3/2/95)

RESEARCH

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It is the policy of the Fish and Game Commission that:

- I. Research, including the investigation of disease, shall be performed to provide scientific and management data necessary to promote the protection, propagation, conservation, management or administration of fish and wildlife resources of this state when such data is not available by other means.
- II. Whenever possible and advantageous, the services of the University of California or other academic or research institutions, or federal, state or local agencies shall be used.
- III. The Department shall review the following information, which must be clearly stated in any proposed research programs: (a) goals and objectives of proposed research, including benefits to be derived from such research; (b) pertinent background information, including a literature review which supports this research; (c) experimental design, including methods of data collection and analysis; (d) estimated cost of program; (e) its estimated duration; and (f) how results will be presented to the Department. The provisions of this paragraph shall not extend to emergency investigations of disease.
- IV. The Department shall report regularly to the Commission on the status of major research programs in progress.

(Amended 6/16/94)

RESTRICTED ACCESS COMMERCIAL FISHERIES

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It is the policy of the Fish and Game Commission to:

The policies in this document provide a source of information for the public and a guide for the Commission and Department in preparing and reviewing legislation, regulations, or policies that propose to restrict access to commercial fisheries. The development and adoption of these policies do not represent an initiative to apply restricted access approaches to all California fisheries. The objective is primarily to guide the Commission and Department in responding to requests for restricted access programs.

1. Restricted Access as a Management Tool

The global context. Virtually every modern fishery faces--or has faced--similar intractable management problems. Because these problems recur in so many dissimilar fisheries, it is clear that they are not caused by the biology of the species harvested, nor do they depend on the type of gear or size of vessel employed by harvesters.

The one factor common to all of these fisheries is that the fishery resources are available to anyone who wants to pursue them. Once a fisheries management authority specifies the total catch, the season length, and the allowable gear, every fisherman competes with every other fisherman to catch as much as possible in the shortest time possible. In some fisheries, bigger and faster boats, more electronics, more gear, longer hours each day and fewer days each season are the result as each fisherman rushes to catch more than the other--the "race for fish" so often described in the fishery management and economics literature. In other fisheries, the problem may just be that the number of participants has increased to a level that jeopardizes the economic viability of the fishery. What makes sense for the individual makes no

sense in the aggregate because it results in too many vessels, too much gear, too much waste, and too little income for fishermen. Moreover, excess fishing capacity usually leads to overfished populations of fish, which eventually leads to confrontations between fishermen and fishery managers over the status of the resource and the need for more restrictive regulations. Debate then follows over the need for better data.

The race for fish does not result from inadequate biological information. Population surveys, stock assessments and biological samples are important components of sound fishery management, and improving the science on which management decisions are based is always a desirable objective. But management plans based on better biology alone will not solve problems caused by the economics of the harvest system. Economic problems must be addressed directly.

The most effective solutions to these fishery management problems restrict fishing effort in some way so that the "race for fish" is ended. New entry to a fishery is most often restricted by issuing only a certain number of licenses to participate in the fishery. Existing effort in a fishery is usually restricted by limiting the size of the vessel, limiting the size or amount of gear, or directly limiting the quantity of fish that can be landed. Theoretically, the "right" number of licenses fished by the "right" size of vessels using the "right" amount of gear can harvest fish more sustainably and efficiently than the unrestricted fleet.

The problems restricted access programs are meant to address can actually become worse if the programs are poorly designed. Because many restricted access programs have been seriously flawed, some fishermen and others lack confidence that they can work. For example, in setting up restricted access programs, fishery managers have sometimes issued licenses to many more participants than are possible for the fishery to be both sustainable and economically viable for its participants. Clearly, expanding the fleet can have no effect on slowing the race for fish. Just as important, effort restrictions, such as those on the size of vessels or amount of gear, have sometimes been insufficient to restrain fishing power. Finally, managers sometimes address only one dimension of the race for fish by restricting access without also restricting capacity expansion by existing fishermen.

Because these mistakes have been frequent, it is sometimes said that restricted access doesn't work. What does not work is a management system that lacks the clear policies, the will, and the compassion to design and implement restricted access systems that reconcile the need of fishermen to make a living with the need to restrict total harvest. The set of policies in this document are intended to provide guidance on restricted access programs for the Commission, the Department, the fishing industry, and other interested members of the public.

The California context. Because California historically did not restrict the number or amount of fishing effort allowed to harvest fish, the State's commercial fisheries generally are overcapitalized: they have the physical capacity to exert more fishing pressure than the resources are able to sustain. Loss and degradation of marine and anadromous habitats and other ecological changes have aggravated this condition of excess fishing capacity.

The build-up in harvest capacity began with the advent of ocean commercial fishing in the mid-1800s and accelerated following World War II. Vessels became larger and faster, have greatly increased fishing power and hold capacity, and use a wide variety of electronic innovations to find and catch fish. At the same time, increasing knowledge of the behavior of target species have made fishermen increasingly skilled at their trade.

Since the early 1980s, various programs have been implemented, through statute or regulation, to limit the number of commercial vessels or fishermen allowed to use specific types of fishing gear or to harvest specific species or species groups of fishes. These programs have seldom resulted in adequate reduction in the overall fishing capacity for those species. They sometimes have been effective in capping the number of fishery participants; however, an unintended consequence has been a shift in effort from restricted fisheries to open access fisheries that were already fully developed.

The lack of consistent policies for guiding the development of restricted access fisheries¹ has resulted in a myriad of laws and regulations. These are confusing to the industry, difficult for the Department to interpret and administer, and, in some cases, of questionable benefit to the fishery or the resource they were intended to protect.

Potential benefits. Properly designed, restricted access programs can enhance the State's ability to manage its commercial fishery resources. Restricted access programs should:

- Contribute to sustainable fisheries management by providing a means to match the level of effort in a fishery to the health of the fishery resource and by giving fishery participants a greater stake in maintaining sustainability;
- Provide a mechanism for funding fishery management, research, monitoring, and law enforcement activities;
- Provide long-term social and economic benefits to the State and fishery participants; and
- Broaden opportunities for the commercial fishing industry to share management responsibility with the Department.

Need for other fishery management tools. Restricted access programs are important tools for fishery managers, but they do not eliminate the need for other fishery management measures, such as gear restrictions, time and area closures, size limits, landing quotas, total allowable catches, and related measures. In all fisheries, a minority of vessels or divers catches most of the fish. Statistics show that a major fleet size reduction would be required to significantly reduce the fleet's fishing capacity. A severe restriction in the number of fishery participants, while perhaps contributing to fishery sustainability, can have other consequences that are undesirable: processors may have difficulty acquiring fishery product, for example, and the control of harvest might shift to a few individuals. Laws or regulations that limit the amount of gear that vessels may use or that restricts the amount or size of fish that may be taken are usually important in ensuring that restricted access initiatives achieve the desired benefits.

POLICY 1.1: The Commission and the Department may use restricted access programs as one of a number of tools to conserve and manage fisheries as a public trust resource.

2. General Restricted Access Policy/Goals and Objectives of Restricted Access Programs

California's fisheries are a public trust resource. As such they are to be protected, conserved and managed for the public benefit, which may include food production, commerce and trade, subsistence, cultural values, recreational opportunities, maintenance of viable ecosystems, and scientific research. None of these purposes need be mutually exclusive and, ideally, as many of these purposes should be encouraged as possible, consistent with resource conservation.

Fisheries are also a finite and renewable resource. If harvest and other human-caused factors affecting their health are not managed, fishery resources may be less than optimally productive or, in the worst case, may suffer serious declines. Therefore, as part of a program of controlling harvest, it is appropriate to control the amount of fishing effort applied in a fishery, including restrictions on the number of individuals or numbers of vessels participating. Restricting access to a fishery has become one of many standard fishery management tools that have been used by public agencies in carrying out their conservation and management responsibilities for publicly held finite fishery resources.

In general, the goals of restricting access to commercial fisheries are to contribute to the effective conservation and management of the State's marine living resources, provide long-term social and economic benefits to the commercial fishing industry and the State, and retain the public ownership status of those resources. More specifically, the Commission's purposes for restricting access or entry to a fishery are described as being to: 1) promote sustainable fisheries; 2) provide for an orderly fishery; 3) promote conservation among fishery participants; and 4) maintain the long-term economic viability of fisheries. Restricted access programs may be instituted in order to carry out one or more of these purposes in a given fishery.

Promote sustainable fisheries. Depending on the fishery, limiting the fishing capacity of the fishery by limiting the number of individual fishermen or vessels may be one means of reducing take in order to protect the fishery resource. In most instances, reducing the number of individuals or vessels alone will not in itself reduce take unless it is accompanied by complementary measures such as trip limits, quotas, seasons, or gear limitations. Together, restrictions on access coupled with other measures can be an effective way of controlling effort to protect fishery resources and contribute to sustainability.

Provide for an orderly fishery. Extreme overcapitalization can lead to unsafe conditions as part of the competition among fishery participants, as in the case of "derby" fisheries. Properly designed restricted access programs can promote safety in those circumstances. Where fishing grounds are limited due either to geographical factors or fish congregating in small areas where harvest occurs, it may be necessary to limit the number of individuals or vessels involved in the fishery. The herring roe fishery is one example of where restricted access was established primarily for the purpose of maintaining an orderly fishery.

Promote conservation among fishery participants. Limiting the number of individuals or vessels in a fishery can give those in the fishery a greater stake in the resource, a sense of ownership, and confidence that a long-term opportunity exists in the fishery that usually does not exist in open access fisheries. A well-designed restricted access program can give fishery participants greater incentive to be stewards of that resource and even to invest in rebuilding the fishery (the commercial salmon stamp program, for example). Limiting access can also increase compliance with fishery regulations since an individual with a restricted access permit is much less likely to risk losing the opportunity to participate in that fishery because of a fishery violation.

Maintain the long-term economic viability of fisheries. To assure the greatest economic benefit to society from the harvest of a public fishery resource, it may be necessary to limit the number of individuals or vessels to assure economically viable fishing operations. When open access contributes to the impoverishment of

fishery participants or illegal or unsavory behavior by participants competing for the limited resource, some form of restricted access based on economic viability may be necessary. Any restricted access program established, entirely or in part, for the purpose of economic viability must be crafted to avoid restricting access more than is necessary.

POLICY 2.1: The Commission may develop restricted access programs for fisheries that retain the public ownership status of the resource for one or more of the following purposes: 1) to promote sustainability; 2) to create an orderly fishery; 3) to promote conservation among fishery participants; 4) to maintain the long-term economic viability of fisheries.

3. Development and Review of Restricted Access Programs

Participation of stakeholders in program development. Restricted access programs should be developed with substantial support and involvement from stakeholders. Indeed, many of California's current restricted access programs were drafted by, or with considerable input from, the affected fishermen (the salmon, herring, Dungeness crab, and sea urchin fisheries, for example). Programs in which fishery participants and others have a substantial role in the design benefit from their knowledge of both the resource and the business aspects of the fishery. Such programs are also more likely to enjoy the support of fishery participants during implementation. Furthermore, any restricted access program must be developed consistent with the stakeholder participation requirements of Section 7059 of the Fish and Game Code.

Programs specific to the needs of the fishery. Standardization in the elements of restricted access programs is a laudable goal and could help reduce some of the complexity fishermen and the Department are faced with when dealing with different requirements for different fisheries. However, the overriding concern is that each restricted access program meets the needs of its particular fishery.

Each of the existing restricted access programs in California fisheries was designed to meet the needs of a particular fishery. As a result of periodic reviews of those programs, it may be possible to reduce some of the complexity that has resulted. However, a program should not be revised solely for the purpose of uniformity or consistency if there is a sound basis for the unique features of the program.

Program review. Restricted access programs need periodic review for possible revision. Restricted access programs should be reviewed periodically by the Department and fishery participants in the particular fishery to determine whether the program still meets the objectives of the State and the needs of the fishery participants. For the statutorily created restricted access programs, this review should take place preceding the expiration ("sunset") dates when the law is under consideration for extension. In addition, this restricted access policy should be reviewed at a regularly scheduled Commission meeting at least once every four years following its adoption.

POLICY 3.1: Restricted access programs shall be developed with the substantial involvement of participants in the affected fishery and others, consistent with the stakeholder participation requirements of Section 7059 of the Fish and Game Code. This approach shall balance the specific needs of the fishery with the desirability of increasing uniformity among restricted access programs in order to reduce administrative complexity.

POLICY 3.2: Each restricted access program shall be reviewed at least every four years and, if appropriate, revised to ensure that it continues to meet the objectives of the State and the fishery participants. Review of each restricted access program shall occur at least as often as the particular fishery is reviewed in the annual fishery status report required by Section 7065 of the Fish and Game Code. The general restricted access policy should be reviewed at a regularly scheduled Commission meeting at least once every four years following its adoption.

4. Elements of Restricted Access Programs

Categories of restricted access fisheries. Existing restricted access programs in California generally are based on target species or species groups of the fishery. The Commission expects that most new restricted access programs will follow that pattern.

Another option that may be appropriate for some fisheries, or groups of fisheries, is basing the restricted access system on gear type. Sixteen species or species groups of fishes comprise 90 percent of the State's commercial fish landings, although only a relatively few basic gear types produce the entire catch. As a means to minimize the number of programs and provide greater flexibility for fishery participants, the Commission and Department could base each restricted access program, first, on the gear type and then, if necessary, on endorsements for the species or species groups that are the target of that gear type. Where possible, the entire range of species (i.e., multi-species, ecosystem approach) contacted by a particular gear type would be included in the same program.

Additional flexibility would be provided in instances in which a fishery participant converted a restricted access permit from one gear type to another. Whether such conversions are allowed would be decided on a fishery-by-fishery basis depending on whether the conversion is consistent with the State's sustainable fisheries policies and the objectives of the two restricted access programs involved.

Each restricted access program should take into account possible impacts on open access fisheries and on other restricted access fisheries.

Fishery capacity goals and means to achieve capacity goals. Because a primary purpose of restricted access programs is to match the level of effort in a fishery to the health of the fishery resource, each restricted access program that is not based on harvest rights (see section on harvest rights) shall identify a fishery capacity goal intended to promote resource sustainability and economic viability of the fishery. Fishery capacity goals can be expressed as some factor or combination of factors that fairly represents the fishing capacity of the fleet. These factors may include the number of permitted fishery participants, number of permitted boats, net tonnage of the permitted fleet, amount of gear used in the fishery, and cumulative hold capacity. Fishery capacity goals should be based on such biological and economic factors as what is known about the size and distribution of the target species, historic fleet size or harvest capacity, and distribution of harvest within the current fleet. Conflicts with other fisheries or ocean interest groups and economic conditions (current and future) within the fishery may also be factored in to such determinations. Depending on the fishery, the fishery capacity goal may be expressed as a single number or as a range.

The preferred approach to determining the capacity goal is to conduct a biological and economic analysis of the fishery. The analysis should consider the probable level of resource sustainability and the impact of various fleet capacities on the fishery and local communities. When such an analysis is not feasible, the Commission, Department, and stakeholders should work together in reviewing available information to arrive at a reasonable capacity goal for the fishery.

Capacity goals should be included in each restricted access program review. A fishery capacity goal will not be useful in managing effort in a fishery unless the restricted access program includes mechanisms for achieving the goal. If the fishery is overcapitalized and above its fishery capacity goal, there must be a system to reduce capacity as a basic requirement of the restricted access program. If the fishery is below its capacity goal, there must be a method to increase participation. In fisheries that are above their fishery capacity goals, transfers of permits should be allowed only if they are consistent with the system for achieving the fishery capacity goal (see Permit Transfers section).

In restricted access fisheries in which the permit is vessel based, the system for achieving fishery capacity goals must include a means of comparing and controlling the fishing power of individual vessels. Without that ability, the system controls only one aspect of fishery capacity--the number of vessels--without providing a means to manage the fishing power of those vessels (see policies on Permit Transfers and Replacement Vessels). The system may be based on factors such as vessel length, displacement, horsepower, hold capacity, or allowable amount of gear.

There are several options available to reduce the number of permits to meet fishery capacity goals. A few examples include:

- Attrition--permit reduction when permit holders fail to renew their permits--has contributed to reducing effort in some fisheries. That process is slow, however, and only occurs when the outlook for the fishery is so poor that the permit has little value.
- "Two-for-one" or similar requirements in transfer of permits have been used in several fisheries to reduce capacity and are effective if there is an active market for permits.
- Annual "performance" standards can be required of each permit holder. For example a minimum number of landings could be required to qualify for permit renewal. This approach may be appropriated in some fisheries although it can artificially increase effort.
- Permit or vessel buybacks have been used in a few fisheries and being explored for others in the United States. California's experience with this system is limited to nearshore set gill nets in Southern California. Buyback programs have been funded by both industry (through permit transfer fees, landing fees, special permit fees, etc.) and the public.

POLICY 4.1: Each new restricted access program shall be based either on one or more species or species groups targeted by the fishery or on a type of gear. In programs based on a type of gear an endorsement may be required for one or more species or species groups targeted by the gear type. Each restricted access program should take into account possible impacts of the program on other fisheries.

POLICY 4.2: Each restricted access program that is not based on harvest rights shall have a capacity goal. The Commission, Department and stakeholders will use the best available biological and economic information in determining each capacity goal.

POLICY 4.3: Each restricted access fishery system shall have an equitable, practicable, and enforceable system for reducing fishing capacity when the fishery is exceeding its participation goal and for increasing fishing capacity when the fishery is below its fishery capacity goal.

POLICY 4.4: In fisheries that exceed their fishery capacity goals, permit transfers will be allowed only if they are consistent with the means for achieving the fishery capacity goal.

5. Permits

Issuance of initial permits. The public will be given reasonable notice of intent to limit access to the fishery. A legislative bill may serve as an initial notice of intent or the Commission may take an action that serves as a notice of intent.

The Commission may set a Control Date for determining qualification for a restricted access program. Some level of fishery participation may be required to qualify for an initial permit. Fishery qualification can be based upon fishery participation during a period of time preceding notification of intent. In determining criteria for qualifying for the program, the Commission may consider the balance of gear types currently or historically relying on the fishery or the specialty markets or niches that the fishery was intended to serve. Fish landing data maintained by the Department shall be the basis for documenting fishery participation. Affidavits of fishery participation, or medical statements of inability to meet qualification standards shall not be accepted unless a system for considering exceptions, consistent with Policy 5.1, is included in the design of the restricted access program. Vessels under construction or inoperable during the qualification period shall not be considered for a permit.

California has had a practice--shared with other states, the Federal government, and other nations--of giving preference for issuing permits into a restricted access fishery to fishermen or vessels with past participation in that fishery. The practice has meant, as well, that permits generally have been issued to licensed California commercial fishermen rather than to nonfishermen or persons not licensed in the State. The practice is a fair means to assure that those who rely on that fishery or who have invested in that fishery can remain in the fishery. In determining priorities for the issuance of permits in a restricted access fishery, first priority for permits shall be given to licensed commercial fishermen/vessels with past participation in that fishery. Among fishermen or vessels with past participation in the affected fishery, preference for permits may be based on factors such as years of participation in the fishery or level of participation (landings). Second priority for permits may be based on such factors as crew experience, number of years in California fisheries, or participation in fisheries similar to that for which a program is being developed. (An example of a similar fishery being considered for eligibility for a permit was when displaced abalone divers were added to those eligible for any new sea urchin permits.) Drawings or lotteries for permits should only be used when two or more applicants have identical qualifications (for example, the same number of points for eligibility for a herring permit).

When initiating a restricted access program with vessel-based permits, designing a formula for deciding which vessels qualify that is equitable but does not increase the number of permits or the amount of effort already in the fishery is difficult but necessary. Without such a formula, the program can easily exacerbate the fishery's problems. The Commission's policy on this issue has three elements. First, the policy for all restricted access fisheries begins with the premise that initiating a restricted access program must not increase the recent level of fishing effort. Second, the default approach in designing a new program will be to issue initial permits only to the current owners of qualifying vessels. Third, in order to meet the needs of a particular fishery, it may be desirable to modify the approach of giving permits only to current owners of qualifying vessels.

Such exceptions would be decided fishery by fishery, but in no case would the formula allow increasing the recent level of effort.

A permit issued for dive, gill net, and some trap fisheries shall be issued to qualifying fishermen. A permit issued for a boat-based fishery may be issued to: 1) an individual who owned a qualifying vessel during the period in which the vessel qualified, and 2) 20-year commercial fishermen (as provided in Section 8101 of the Fish & Game Code).

Issuance of new permits. In the case of restricted access fisheries that are below their fishery capacity goals, new permits may be issued. The factors used to determine priority for issuance of new permits might be the same as for the issuance of initial permits.

Permit renewal and duration. Permits are renewable annually upon application and payment of the permit fee if the permit holder meets the requirements of the restricted access program. Permits may be renewed annually for the life of the restricted access program. Limiting participation to a period less than the actual life of the limited access program has several drawbacks. First, it could eliminate incentive for conservation among permit holders if they know that their participation in the fishery will be limited. Second, a limitation on permit life would tend to discourage investment and diminish value of existing investment (vessels, for example) in the fishery. New investment in many fisheries is needed for safer, more fuel-efficient vessels, for equipment to maintain quality of the catch, and for changing gear. That will be discouraged if the duration of the permits is limited.

Substitutes. Each restricted access program with fisherman-based permits should determine whether substitutes for the permit holder will be allowed and, if so, in what circumstances and for what length of time. One option is that the permit holder must be present. Some programs have allowed temporary use of the permit by another in the case of death or disability of the permit holder.

POLICY 5.1: The Commission will give adequate public notice of intent to establish a restricted access program. The Commission may set a Control Date for determining qualification for a restricted access program. A new restricted access program shall not allow fishing effort to increase beyond recent levels. Some level of fishery participation may be required to qualify for an initial permit. Fishery qualification can be based upon fishery participation during a period of time preceding notification of intent or on other factors relevant to the particular fishery. Affidavits of fishery participation or medical statements of inability to meet qualification standards shall not be accepted. Vessels under construction or inoperable during the qualification period shall not be considered for a permit.

POLICY 5.2: New permits in a restricted access fishery shall only be issued when the fishery is below its fishery capacity goal.

POLICY 5.3: Restricted access fishery permits shall be of one year duration and are renewed upon annual application and payment of the permit fee and shall be valid, provided they are annually renewed and the permit holder meets the requirements of the restricted access program for the life of the program.

POLICY 5.4: Each fisherman-based program shall determine in what circumstances, if any, a substitute may fish the permit.

6. Permit Transfers.

Permits within a restricted access program may be transferable or not, depending on the fishery. California currently manages some restricted access fisheries in which the permits are not transferable. Although non-transferable permits may be appropriate for some fisheries, the Commission expects that the trend will be toward transferability. First, permit transferability can and should be used as part of the mechanism for reducing capacity in a fishery that is above its capacity goal. Second, permit transferability allows for new entry into a restricted access fishery, particularly for younger fishermen or crew. Third, permit transferability protects part of an individual's investment in a fishery.

In California, as in nearly all states and federally managed fisheries, most limited access permits are transferable. Although a number of limited access fishery programs in California initially did not allow for permit transfers, these systems were found unworkable. Permit holders, even the aged, the sick, or those seeking to leave the fishery, held on to their permits, attempting in many instances to have the permit fished by another, non-permitted, individual. Non-transferability encouraged some fishery participants to work around the program rather than within it. Moreover, fishing vessels, particularly the larger ones or those built for a specific fishery, were rendered useless if there was no permit to go with them at the time of sale. For fishermen, as is the case with small business owners or farmers, their retirement funds are derived from the sale of their business, which in the case of a fisherman may be his/her vessel.

Fully transferable permits in restricted access programs have been criticized for the following reasons: 1) sales of permits on the open market can make the cost of entry into a fishery for young fishermen or crew extremely expensive and does not assure that the most deserving individuals obtain permits, 2) sales of permits on the open market can result in windfall profits for those individuals who were initially issued a permit by the State and whose investment in the permit has only been the payment to the State of the permit fee; and 3) sales of permits on the open market can result in permits going to more active participants or to larger vessels deploying more fishing effort thereby increasing the fishing effort or capacity of the fleet. To the extent that these criticisms are valid, they can, and currently are in California, being addressed through conditions placed on permit transfers.

In order to prevent an increase in fishing power, in California's salmon limited entry program permits are transferable with the fishing vessel at the time of sale or to

another vessel of equal or less fishing capacity, under specified conditions.

In the herring fishery, where the permit is to the individual rather than the vessel, permit transfers may only be made to a fishing partner or an individual holding a maximum number of points in that fishery, with points based on years of crew experience and years in California fisheries. This limitation on transfers is intended to give an advantage to those who have spent time in the fishery. Thus, those deserving of a permit are given a preference. By limiting the market for permit sales, the cost of entry is lower than it would be if the permits were available on a wide open market.

It is also possible to prevent increases in fishery capacity and reduce speculation in permits by setting fishery participation criteria in selected qualifying years for a permit to be transferable, or by requiring that the permit be held for some minimum number of years before it can be sold.

It is possible, as well, for the State and other participants in the fishery to benefit from the sale of permits through transfer fees or two-for-one permit transfer requirements. In California, there are transfer fees in some restricted access fisheries where the fees exceed the cost of administering a change in the permit. A transfer fee addresses the concern that permit holders may be making windfall profits from the sale of permits and can allow the State to share in the economic benefits of good conservation and management measures. Other participants in the fishery can benefit if the permit transfer fees are re-invested in the fishery, such as through a permit buyback program. Both the State and participants in the fishery can benefit through two-for-one permit transfer requirements if they are used to help reach a fishery capacity goal.

POLICY 6.1: Restricted access permits may be transferable. In fisheries in which the permit is transferable, transfer may be subject to conditions that contribute to the objectives of the restricted access program. In new restricted access programs, permit transfers will not be allowed unless a fishery capacity goal and a system for achieving that goal are part of the restricted access program. In existing restricted access programs, the objective is to review and revise those programs to include fishery capacity goals and systems to achieve those goals. A restricted access program may include a fee on the transfer of permits, in excess of actual administrative costs for the permit change, to offset other costs involved in the conservation and management of that fishery.

7. Vessel Issues

Vessel retirement. All vessel-based restricted access programs should provide for the voluntary retirement of commercial fishing vessels so that these vessels are no longer eligible to compete with permitted vessels in future years. Any vessels requested by the owner to be retired will be permanently identified on registration documents required for commercial vessels. Permits from retired vessels may be allowed to transfer to replacement vessels within one year of retirement provided the replacement vessel is of equal or lower fishing capacity or to a larger vessel if the restricted access program provides for vessel upgrades (see section on vessel upgrades).

Replacement vessels. Replacement vessels of the same or lower fishing capacity as the permitted vessel will be allowed only if the permitted vessel is lost, stolen, or no longer able to participate as a commercial fishing vessel, as shown on State or government documents, or other sources of information that the Department might consider. This requirement is necessary to preclude effort shift to open-access and other restricted access fisheries. The Department will make replacement vessel determinations. The ownership of the replacement vessel, as shown on government documents, shall be same as the permitted vessel.

Vessel permit upgrades. Fishermen who hold vessel permits may want the option of acquiring a larger or more efficient vessel and transferring their existing permits or acquiring and adding new permits to the new vessel. The concern with allowing fishermen to upgrade their vessels is that by doing so the overall capacity of the fleet to catch fish increases, which should be allowed only to the extent that it is consistent with the fishery capacity goal. To offset this increase in fleet harvest capacity in fisheries that are above their fishery capacity goal, a permit consolidation process is needed whereby two or more permits can be combined to allow for the permitting of a single larger vessel. This is not a new concept in restricted access programs elsewhere. The Pacific Fishery Management Council, for example, uses a formula based on vessel length and capacity that allows for combining permits to allow for larger vessels in the groundfish fishery. In the California salmon fishery, vessel length is used by the Salmon Review Board in approving or denying vessel transfer requests for vessels in the 20-to 40-foot range.

Support vessels. In some fisheries, the use of support vessels can substantially increase the available fishing power of the fleet. In such restricted access fisheries with vessel-based permits, only vessels with a permit for that fishery should be allowed to support fishing operations of other permitted vessels. Non-permitted vessels shall not be allowed to attract fish for permitted vessels or to receive fish from permitted vessels for landing. In programs in which the permit is fisherman based, the use of support vessels may be allowed if they do not create significant enforcement problems or significantly add to the capacity of the fishery, but a registration fee may be required that is the same as the annual permit fee paid by a fishery participant.

POLICY 7.1: Vessels requested to be retired by the vessel owner will no longer be eligible to participate in commercial fisheries in California.

POLICY 7.2: Replacement vessels of the same or lower fishing capacity as the permitted vessel will be allowed only if the permitted vessel is lost, stolen, retired or no longer able to participate as a commercial fishing vessel.

POLICY 7.3: Each restricted access program that allows for vessel permit transfers may allow for vessel upgrades provided a permit consolidation/vessel retirement process consistent with the fishery capacity goal is made part of the program.

POLICY 7.4: A restricted access program may prohibit the use of support vessels or require that they be permitted in the fishery or that they pay a fee comparable to the permit fee.

8. Harvest Rights

Background. Harvest rights, often called individual transferable quotas (ITQs), involve the assignment of the exclusive rights to harvest a share of the annual total allowable catch (TAC) in a fishery. Harvest rights systems are a form of restricted access programs in that participation in the fishery is restricted to those who own quota shares. Setting TACs has been a key element in determining quota shares. The State or nation retains ownership of the fisheries resource. In most cases, individual quota systems have been implemented in fisheries with previously established limited entry programs. These individual quotas can be allocated for specific time periods, but most often are allocated in perpetuity. Individual quotas are often allocated for specific geographic areas such as the International Pacific Halibut Commission's zones. Usually, individual quotas are fully transferable (buy, sell, lease) to allow quota owners to optimize their business activities. Transferability of quota shares allows fishermen to move between fisheries. In exchange for this exclusive harvest right, quota owners usually are required to pay the costs of management, enforcement, and research. This cost recovery often leads to increased involvement of industry in research and management.

Harvest rights have usually been allocated to vessel owners. In some fisheries around the world quotas have also been allocated to communities, processors, and fishermen's organizations. Limits on the amount of quota harvest rights each entity can hold are set to prevent excessive aggregation. Aggregation limits currently range from 0.5 percent in Alaska's halibut fishery to 35 percent in some New Zealand offshore fisheries.

Similar management systems have been used to allocate fishing gear units instead of shares of a TAC. A tradable lobster trap certificate program developed by fishermen in the southeastern United States is an example.

When these restricted access policies were adopted (1999) industry comment was negative in regard to harvest rights systems. Nonetheless, these programs have become a tool for managing fisheries in various parts of the world, with the herring-roe-on-kelp fishery in California being one example. This policy acknowledges the existence of this tool as well as the complex issues that must be dealt with in developing any harvest rights program. The Commission may consider recommending development of a harvest rights program after careful consideration of stakeholder input.

The first 15 years of experience with individual quota management has shown that they end the race for fish and provide incentives to fishermen to change their business to maximize revenues and minimize costs. However, individual and community transferable quota systems have been controversial in the United States. In the Sustainable Fisheries Act of 1996, Congress placed a four-year moratorium on implementation of new ITQs and instructed the National Academy of Sciences to conduct a thorough study. In December 1998, the NAS study recommended that Congress end the moratorium.

Numerous issues have arisen when individual quotas are implemented and need to be considered:

- **1. Allocation of Initial Quotas.** This usually, but not always, has been based on historical catches and/or vessel fishing power. The NAS study recommends that alternative methods of initial allocation be considered in addition to catch histories. Who receives the allocations (fishermen, processors, communities, tribes, etc.) must be determined and other issues resolved. Will initial allocation be free? Will the harvest right be for a certain time or perpetuity? Who is and is not eligible to obtain quota?
- **2. Catch Histories.** If initial harvest rights are based to some degree on catch histories, accurate individual vessel or fisherman landing data is needed.

- **3. Transferability.** The degree to which quotas are transferable (buy, sell, lease, "fishing on behalf of") must be determined.
- **4. Total Allowable Catches.** Assuming individual quotas are a percentage of the TAC, in order to determine how much actual quota each quota owner may harvest, a TAC will have to be set. Setting TACs requires high quality resource assessment information and scientifically sound estimates of sustainable yields.
- **5. Aggregation Limits.** Limits on the amount of quota an individual, company, community or other entity may hold needs to be considered, perhaps on a fishery by fishery basis.
- **6. Enforcement and Monitoring.** Emphasis would likely shift towards enforcement methods to prevent quota holders from under-reporting their catches. Methods used elsewhere include increased record keeping/tracking of catches, limiting number of landing ports and increased use of industry-funded monitors at landing ports.
- **7. Cost Recovery.** Most individual quota systems include, at a minimum, methods for having quota owners pay the cost of managing the system.
- **8. Processor-Fishery Participant Relationships.** Depending on who winds up owning the harvest right, this relationship might change. Past experience shows that the quota owner will have increased influence on fishing decisions.
- **9. Quality Considerations.** Early experience with individual quotas shows a consistent trend towards maximizing quality to maximize prices received. This could affect the timing and location of fishing and the other types of regulations needed.

POLICY 8.1: It is the policy of the Commission that harvest rights systems such as individual transferable quotas may be considered only after careful consideration of stakeholder input. In establishing such management systems, the State should consider: (1) fair and equitable initial allocation of quota shares which considers past participation in the fishery, (2) resource assessment for establishing total allowable catch estimates, (3) fishery participation goals and aggregation limits, (4) cost recovery from quota owners, (5) quota transferability, and (6) recreational fisheries issues.

9. Administration of Restricted Access Programs

Administration. Administrative costs should be minimized by requiring easily understood regulatory or statutory language including a minimum of exceptions to the main provisions. The use of review or advisory boards may be considered on a program-by-program basis. Board members should be reimbursed for travel and per diem expenses. The total cost for administration of each program should be borne by that program.

The Department will determine what unit is responsible for program administration and make all determinations relating to vessel fishing capacity.

Cost Accounting. Fees collected from restricted access initiatives should, for cost accounting and reporting purposes, be deposited in a single, dedicated Restricted Access Fishery Account within the Fish and Game Preservation Fund. Charges would be made against the account for direct restricted access program support. A fund condition and activity report should be published annually and include the amount of funds received from each restricted access fishery and the distribution and expenditure of those funds.

Enforcement. Restricted access programs should provide specific disincentives for violations of pertinent laws and regulations. Provision for a Civil Damages schedule, pursuant to regulations of the Commission, can serve in this regard. Because restricted access programs confer benefits to permit holders that are denied to those not in the fishery, penalties should be high for violations of the provisions of restricted access programs.

Restricted access programs should minimize enforcement costs. New technologies such as satellite-based vessel tracking are available and can be required of commercial fisheries that operate under Federal fishery management plans. Commission authority to require such technology, if deemed desirable, should be a part of any legislation or regulation creating a restricted access fishery. Enforcement staff will be responsible for monitoring the vessels and enforcing the pertinent laws and regulations. Enforcement costs for restricted access fisheries should be borne by the restricted access programs.

POLICY 9.1: Administrative costs shall be minimized and those costs shall be borne by the respective programs. Review or advisory boards may be considered on a program-by-program basis. The programs shall be administered in their entirety within an existing department unit.

POLICY 9.2: Fees collected from restricted access initiatives may, for cost accounting and reporting purposes, be deposited in a single dedicated Restricted Access Fishery Account within the Fish and Game Preservation Fund. A fund condition and activity report should be published annually.

POLICY 9.3: Restricted access programs should provide specific disincentives for violations of pertinent laws and regulations. Enforcement costs of restricted access programs should be minimized through the use of new technologies or other means.

¹ Restricted access is used in this document to mean the application of laws, regulations, or policy that affect the number of fishing units or allowable take by individual units in a commercial fishery. [Return to body of policy](#)

Adopted: 06/18/99

SALTON SEA

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It is the policy of the Fish and Game Commission to:

Recognize that the Salton Sea has been designated as a repository for agriculture drainage water (Federal Public Water Reserve Number 90 and Number 114). The Commission recognizes the importance of this designation to agriculture.

The Commission also finds that the Salton Sea has unique and valuable fish and wildlife resources and associated recreational values, and the Commission and the Department shall be guided by the following objectives:

- I. Preserve the biological integrity of the Salton Sea and its associated wetland habitats.
- II. Protect and perpetuate the diverse fish and wildlife resources of the Salton Sea ecosystem for the use and enjoyment of present and future generations.
- III. Prevent or alleviate those aspects of projects, developments and activities which would or do exert adverse impact on the habitats and fish and wildlife resources of the Salton Sea ecosystems.

(Amended: 06/23/05)

SEASON OPENING DATES

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It is the policy of the Fish and Game Commission that:

Where and when practical, hunting and fishing seasons will open on a Saturday. In order that vacations and other plans can be scheduled well in advance, the following are designated as opening dates for the named species and will be adhered to unless there are strong reasons why the Commission should deviate:

- Trout: General - Last Saturday in April
- Pheasant: Second Saturday in November
- Dove: September 1
- Quail: Coastal Season north of San Francisco Bay - Last Saturday in September
- Quail: Remainder of State - Third Saturday in October
- Special Mountain Quail: Second Saturday in September
- Chukar: Statewide - Third Saturday in October
- Sage Grouse: Second Saturday in September (Lassen County), and first Saturday in October (Mono and Inyo counties)
- Sierra and Ruffed Grouse: Second Saturday in September
- Turkey: Fall Season - Second Saturday in November
- Turkey: Spring Season - Last Saturday in March

(Amended 8/1/2003)

SHELLFISH AND SEA OTTER CONFLICTS

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The Fish and Game Commission declares the following:

1. The management and conservation of marine resources are important to the State of California and fish and wildlife resources are held in trust for the people of the State by and through the Department of Fish and Game. [FGC Sec. 711.7(a) and Sec. 1600]
2. It is the policy of the State to encourage the conservation, maintenance, and utilization of marine resources for the benefit of all citizens and to promote the development of local fisheries, to encourage the growth of commercial fisheries, and to achieve the sustainable use of the state's fisheries. [FGC Sec. 1700 and Sec. 7055]
3. Significant legislation enacted in 1998 established the State policy that marine living resources are to be conserved, used and restored for the benefit of all citizens; that the health and diversity of entire marine ecosystems and all marine resources are to be conserved; and that State actions are to recognize the importance of sustainable fisheries to the economy and the culture of California. [AB 1241]
4. The Commission has previously adopted policies to encourage the development and expansion of commercial fishing and to cooperate with local, state and federal agencies and private persons and organizations to further the conservation of fish and wildlife.
5. In 1986 a federal law was enacted amending the Endangered Species Act. The amendment specifically provides authority for the U.S. Fish and Wildlife Service to cooperatively undertake, with the Department of Fish and Game, a zonal management plan for the threatened southern sea otter that has its primary objective to conserve both sea otters and local commercial fisheries. This federal law paved the way for a Memorandum of Understanding between the two agencies and initiated an extraordinary effort to balance apparently competing needs and give assurances to both wildlife conservation and commercial fishing interests.

Therefore, it is the policy of the Fish and Game Commission to:

1. Actively encourage on its own initiative and with the Department of Fish and Game, consistent with state law and legislatively established policy, a balanced solution to minimize shellfish fishery and sea otter conflicts that provides assurances for sea otter recovery, sustainable local commercial and sport fishing, healthy marine ecosystems, and strong local economies.
2. Support and encourage the Department in completing and maintaining a current comprehensive Sea Urchin management plan that considers among other issues the long-term impacts of various levels of fishing effort, predation, and habitat quality.
3. Confer with appropriate state and federal agencies, local governments, scientific experts, fishery participants, sea otter support groups, and other interests in exploring options for and identifying a balanced zonal management plan that protects the marine resources of the State and supports sustainable local commercial fishing industries.
4. Promote a healthy marine ecosystem as the single best way to recover sea otters and promote local fisheries and encourage appropriate federal and State agencies to undertake research efforts necessary to identify the cause or causes for the continued decline in the sea otter population.
5. Pursue financial resources to match federal funds in undertaking research and management efforts designed to promote recovery of California's sea otter population while minimizing conflicts with shellfish fisheries and other marine resource uses. These funds could include general State revenues and the State's share of federal funds from Section 6 of the Endangered Species Act, sections 109 and 110 of the Marine Mammal Protection Act, or Pittman-Robertson federal aid.

(Adopted April 2, 1999)

TRAINING, TESTING AND TRIALING OF HUNTING DOGS

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It is the policy of the Fish and Game Commission that:

The training, testing and trialing of hunting dogs facilitates hunting in that the use of a trained hunting dog is recognized as a conservation tool which will increase the recovery of downed game.

The use of a trained hunting dog is recognized as contributing to the enjoyment of the hunting experience.

The testing and trialing of hunting dogs is recognized as a recreational activity which is an extension of the hunting experience determines the best dogs for the improvement of hunting breeds, and provides means of evaluating the success of a training program.

The emphasis on programs that ensure and enhance hunting opportunities shall, where feasible, include opportunities to train, test and trial dogs to be used in hunting.

Adopted: 05/09/02

TRIBAL CONSULTATION POLICY

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The Policy

On September 19, 2011, Governor Edmund G. Brown, Jr., issued Executive Order B-10-11, which provides, among other things, that it is the policy of the administration that every state agency and department subject to executive control implement effective government-to-government consultation with California Indian Tribes.

Purpose of the Policy

The mission of the California Fish and Game Commission (FGC) is, on the behalf of California citizens, to ensure the long term sustainability of California's fish and wildlife resources by setting policies, establishing appropriate rules and regulations, guiding scientific evaluation and assessments, and building partnerships to implement this mission. California Native American Tribes, whether federally recognized or not, have distinct cultural, spiritual, environmental, economic and public health interests and unique traditional knowledge about the natural resources of California.

The purpose of this policy is to create a means by which tribes and FGC can effectively work together to realize sustainably-managed natural resources of mutual interest.

Policy Implementation

1. Communication. Both FGC and the tribes are faced with innumerable demands on their limited time and resources. In the interest of efficiency, FGC will annually host a tribal planning meeting to coordinate the upcoming regulatory and policy activities before FGC. The meeting will provide a venue for education about process, identifying regulatory and policy needs, and developing collaborative interests; this will include inviting sister agencies to participate.
2. Collaboration. In areas or subjects of mutual interest, FGC will pursue partnerships with tribes to collaborate on solutions tailored to each tribe's unique needs and capacity. The structure of these collaborative efforts can range from informal information sharing, to Memorandum Of Understanding with more specific agreements regarding working relationships and desired outcomes, to co-management agreements with specific responsibilities and authorities.
3. Record-keeping. FGC will maintain a record of all comments provided by tribes and will include them in administrative records where appropriate.
4. Training. FGC will provide training to interested tribes on its processes for regulation and policy development.

Adopted 06/10/15

USE OF DESIGNATED DEPARTMENT LANDS FOR PRIVATELY MANAGED PUBLIC HUNTING AREAS

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It is the policy of the Fish and Game Commission that:

Diversified uses of wildlife resources will be promoted by the Department including hunting of designated species subject to regulations consistent with maintaining

healthy, viable populations, public safety and a quality outdoor experience. Suitable Department administered lands may provide opportunities for public hunting programs, however, due to limitations on funding and staffing these lands may not be fully used. Therefore, the Department shall consider alternatives to its management of hunting programs on these lands, consistent with approved management plans, including leases to private parties for operating public hunting programs.

The Department shall review on an ongoing basis the status of lands under its jurisdiction and control to determine if there are lands which more properly could be leased to private enterprise to be managed as public hunting areas. If suitable, Department lands shall be made available to the private sector pursuant to appropriate Government Code provisions and General Services leasing procedures. In determining the qualifications of a proposed lessee, the Department shall take into account the experience of the proposed lessee in managing lands for wildlife habitat maintenance purposes and for providing hunting opportunities to the general public.

(Amended 8/4/94)

WATER

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It is the policy of the Fish and Game Commission that:

- I. The quantity and quality of the waters of this state should be apportioned and maintained respectively so as to produce and sustain maximum numbers of fish and wildlife. Commensurate with this policy, the Commission recognizes that:
 - A. The waters of the state are a limited resource subject to ever increasing demands; and that
 - B. Conservation and the efficient management of water resources are necessary to meet the competing needs of urban communities, industry, agriculture, recreation and fish and wildlife.
- II. Quantity:

To provide maximum protection and enhancement of fish and wildlife and their habitat, the Department shall:

 - A. Review and comment on proposed water development projects, on application for licenses or permits for water use, water development, and on projects affecting aquatic habitat.
 - B. Recommend and seek the adoption of proposals necessary or appropriate for the protection and enhancement of fish and wildlife and their habitat. The primary habitat objective is the maintenance of natural conditions in state waters, the adaption of impounded waters for fish and wildlife purposes, and the creation of new waters or areas which will support fish and wildlife, provided that such new waters enhance fish and wildlife.
 - C. Oppose the issuance of permits or licenses, or the authorization of appropriation of funds for water use projects which have not prevented or adequately compensated for damage to fish and wildlife resources.
 - D. Prepare and render reports on water use or development in relation to their effect on fish and wildlife at the request of federal or state agencies whenever the same may be required by law or otherwise be appropriate.
 - E. Monitor and maintain surveillance over existing water use projects to prevent avoidable damage to aquatic habitat and to insure compliance with fish and wildlife protection or enhancement requirements.
 - F. Take an active part in the planning of water development projects, and take appropriate action designed to insure adequate water supplies to maintain and enhance fish and wildlife habitat.
 - G. Assist, cooperate, and negotiate agreements with federal, state, public or private agencies or organizations, subject to the approval of the Commission, provided Commission approval shall not be required for agreements of a routine nature except when they call for a substantial augmentation of the budget.
 - H. Seek an allocation of water for fish and wildlife on an equitable basis with other uses, and protect fish and wildlife from the hazards created by such other uses.
 - I. Periodically reassess permit and license terms and conditions and where feasible, seek corrective action where original terms and conditions were inadequate.
 - J. Advise the Commission at one of its regularly scheduled meetings of any project which may have significant adverse impacts on fish and wildlife, and shall indicate the measures by which fish and wildlife resources will be protected from damage by the project in question. The Department shall also state the extent to which the agency or person preparing the plans for such project has incorporated therein plans for enhancing such resources.
 - K. Maintain field and technical expertise in all areas of instream flow assessment in order that the Department can provide recommendations which are biologically sound and technically defensible.
- III. Quality:

Encourage and support programs to maintain or restore a high quality of the waters of this state, and prevent the degradation thereof caused by pollution and contamination. The Department shall take all appropriate actions to further these ends. In addition, the Department shall inform the State Water Resources Control Board and Regional Water Quality Control Board of water quality problems affecting fish and wildlife and shall seek mutual cooperation in solving such problems.
- IV. Access:

Endeavor to keep as much water as possible open and accessible to the public for the use and enjoyment of fish and wildlife.

(Amended 11/3/94)

WETLANDS RESOURCES

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The Fish and Game Commission finds that:

- I. California's remaining wetlands provide significant and essential habitat for a wide variety of important resident and migratory fish and wildlife species.
- II. The quantity and quality of the wetlands habitat remaining in California have been significantly reduced; thus, maintenance and restoration are essential to meet the needs of the public for fish and wildlife resources and related beneficial uses. In addition, the protection, preservation, restoration, enhancement and expansion of wetlands as migratory bird breeding and wintering habitat are justly recognized as being critical to the long-term survival of such species. Wetland habitat is also recognized as providing habitat for over half of the listed endangered and threatened species in California.
- III. Projects which impact wetlands are damaging to fish and wildlife resources if they result in a net loss of wetland acreage or wetland habitat value.
- IV. Through the passage of Senate Concurrent Resolution 28 (January 1, 1983), the Legislature, in recognition of the importance of wetlands, indicated its "intent to preserve, protect, restore and enhance California's wetlands and the multiple resources which depend upon them for the benefit of the people of the State". In addition, on August 23, 1993, Governor Wilson issued the California Wetlands Conservation Policy which established a specific goal of "no net loss of wetlands." To achieve this goal, the policy emphasizes program elements that reduce procedural complexity with wetland conservation programs, and encourages landowner incentive programs and cooperative planning efforts such as Central Valley Joint Venture.

Therefore, it is the policy of the Fish and Game Commission to seek to provide for the protection, preservation, restoration, enhancement and expansion of wetland habitat in California.

Further, it is the policy of the Fish and Game Commission to strongly discourage development in or conversion of wetlands. It opposes, consistent with its legal authority, any development or conversion which would result in a reduction of wetland acreage or wetland habitat values. To that end, the Commission opposes wetland development proposals unless, at a minimum, project mitigation assures there will be "no net loss" of either wetland habitat values or acreage.

The Commission strongly prefers mitigation which would achieve expansion of wetland acreage and enhancement of wetland habitat values.

(Amended 8/18/05)

DEPARTMENT OF FISH AND GAME RECOMMENDED WETLAND DEFINITION, MITIGATION STRATEGIES, AND HABITAT VALUE ASSESSMENT METHODOLOGY

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INTRODUCTION

At the March 9, 1987 Fish and Game Commission hearing during which the Commission adopted a wetlands policy, the Commission assigned the Department two tasks. These tasks were: 1) to recommend a wetland definition for use in the implementation of the Commission's adopted policy, and 2) to recommend a means by which retention of wetland habitat values may be assured when it becomes necessary to compensate for the loss of wetland acreage and/or wetland habitat values resulting from the implementation of projects or other activities. This report is intended to respond to the Commission's request.

The Commission's wetland policy is not a regulatory program. The Department and the Commission possess only limited regulatory authority over potential uses within remaining wetlands not currently owned by the Department. Our role in wetland protection, as we have explained in our March 9, 1987 report to the Commission, is primarily advisory in nature. Therefore, this report identifies a wetland definition and an implementable procedure by which wetland acreage and habitat values will be retained when it has been determined that projects, plans or other activities will occupy or otherwise adversely impact wetlands.

WETLAND DEFINITION

It is apparent that the adequacy of the Commission's wetland policy is directly related to the adequacy of the wetland definition to which the policy relates. As we indicated in our previous report to the Commission, the Department has found the U.S. Fish and Wildlife Service (USFWS) wetland definition and classification system to be the most biologically valid of those definitions and classification systems presently utilized in California.

The USFWS definition utilizes [hybrid soils](#)², saturation or inundation, and vegetative criteria, and requires the presence of at least one of these criteria (rather than all three) in order to classify an area as a wetland. The USFWS definition has been employed in project review nationwide for over 8 years. It has been well tested and proven to be adequate. Further, because it requires the application of the same array of biological and physical parameters, it exhibits a degree of consistency and uniformity which is advantageous to biological and developmental planners alike. The Department's use of the USFWS wetland definition as the principal means of wetland identification, combined with on-site inspections to establish actual wetland acreage and habitat values, will substantially increase the consistency of our wetland determinations. This improved level of consistency should subsequently alleviate the past uncertainties and frustrations experienced by the development community. Lastly, and as will be explained in greater detail later, if a wetland compensation site is to be located within or adjacent to the project site, assurances regarding the establishment and long-term retention of fish and wildlife habitat values must be provided.

The USFWS definition is as follows:

"Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly [hydrophytes](#)³; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year." (Classification of Wetlands and Deepwater Habitats of the United States; FWS/OBS 79/31; December 1979).

The USFWS wetland classification publication also describes the upper (landward) and lower (waterward) limits of wetlands. These limits are described as follows:

"The upland limit of wetland is designated as (1) the boundary between land with predominantly hydrophytic cover and land with predominantly mesophytic or xerophytic cover; (2) the boundary between soil that is predominantly hydric and soil that is predominantly non-hydric; or (3) in the case of wetlands without vegetation or soil, the boundary between land that is flooded or saturated at some time each year and land that is not." (Ibid, page 4).

The lower limit of wetlands in estuarine or marine areas (i.e., those wetlands which are subject to the ebb and flow of the tide) is established as coincident with the extreme low spring tide.

The lower limit of wetlands in an inland setting (i.e., those wetlands associated with lakes, rivers, ponds, vernal pools, etc.) is established at a depth of two meters (6.6 feet) below low water; however, if emergents, shrubs, or trees grow beyond this depth at any time, then the deepwater edge of such vegetation is the boundary.

The USFWS definition includes, swamps; freshwater, brackish water, and saltwater marshes; bogs; vernal pools; periodically inundated saltflats; intertidal mudflats; wet meadows; wet pastures; springs and seeps; portions of lakes, ponds, rivers and streams; and all other areas which are periodically or permanently covered by shallow water; or dominated by hydrophytic vegetation, or in which the soils are predominantly hydric in nature. Therefore, for all of the reasons set forth above, the Department recommends the USFWS definition as its principal means of wetland identification in conjunction with on-site inspections for implementation of the Fish and Game Commission's policy.

RETENTION OF WETLAND ACREAGE AND HABITAT VALUES

The Commission's wetland policy contains essentially two considerations for offsetting adverse impacts to wetland resources. The policy stresses the need to compensate for the loss of wetland habitat on an acre-for-acre basis. That is, for every acre of wetland lost, no less than an acre of wetland must be created from non-wetland habitat. Compensation for the loss of wetland habitat values to fish and wildlife resources requires the creation of habitat values at the compensation site which at least duplicates those habitat values which are lost to project implementation. Requisite assurance that habitat values will, in fact, be at least retained shall be the subject of the remainder of this discussion.

Mitigation for habitat values lost to the implementation of a project may be accomplished in four ways taking into consideration mitigation site location and wetland type to be created. The term "out-of-kind" as used in mitigation scenarios 3 and 4 refers to different types of wetlands and does not include the replacement of wetland habitat with nonwetland habitat. These mitigation alternatives, in descending order of general acceptability are:

- I. "In-kind, On-site": This form of mitigation would seek to duplicate the physical nature of the wetland area to be negatively impacted within or adjacent to a project site. This mitigation technique, if properly applied, would tend to assure that the habitat derived from wetland creation is essentially identical to that which was lost to development; would concentrate on benefiting those fish and wildlife species and local populations adversely impacted by development; and would tend to provide a greater degree of certainty that the benefits provided by the impacted wetland to associated plant and animal communities in the project vicinity are retained.
- II. "In-kind, Off-site": This form of mitigation would be selected when "in-kind, on-site" mitigation would result in the creation of wetlands of demonstrably inferior quality to those which could be created elsewhere. In general, "in-kind, off-site" mitigation should be located as near to the impact site as is feasible. The advantage of "in-kind, off-site" mitigation is that it would, through duplication of the physical nature of the wetland area to be negatively impacted, tend to benefit those fish and wildlife species which would be adversely impacted at the project site and would also tend to maintain their population levels. This form of mitigation does not necessarily assure retention of the local fish and wildlife populations affected by the project.
- III. "Out-of-kind, On-site": It is conceivable that situations could exist where fish and wildlife resources would be better served from a regional standpoint if creation of wetlands of a different type than those adversely impacted through development were selected as mitigation. For example, it could be that, from a management perspective, a freshwater marsh is more valuable to fish and wildlife resources in a given region than an equivalent area of saltmarsh. In such a situation, the Department believes that an alternative to mandatory in-kind replacement of habitat values can be desirable. However, out-of-kind mitigation is generally inferior to in-kind mitigation, since it does little to provide assured benefit to those species which would be negatively impacted as a result of development. Therefore, only if a compelling biologically-based rationale exists for acceptance of out-of-kind mitigation should such a form of mitigation be employed. Application of out-of-kind compensation on-site would generally provide values which relate geographically to those values lost through development, and would generally result in benefiting that ecosystem, or collection of communities, with which the developed wetland was associated.
- IV. "Out-of-kind, Off-site": This form of mitigation would not result in the maintenance of those fish and wildlife values lost through development nor would it necessarily have any bearing upon the ecosystem involved at the project site. For these reasons, "out-of-kind, off-site" mitigation is a less acceptable means of compensating for adverse impacts to wetlands. However, if mitigation approaches 1, 2, and 3 cannot be employed, and if the choice is retention of wetland acreage through "out-of-kind, off-site" compensation or a net loss of wetland acreage, then, and only then, would the Department accept "out-of-kind, off-site" compensation.

For the reasons explained above, the Department will normally seek to compensate for adverse impacts to wetland through in-kind compensation. The controlling assumptions involved in this mitigation approach are: (1) Given duplication of the physical features associated with wetlands to be impacted, the vegetative component of the wetland to be impacted can also be duplicated either through a planting program or through natural colonization; and (2) If the physical feature and the vegetational components of the impacted area are duplicated, then fish and wildlife resources should become established at the mitigation site at levels which compensate for losses sustained at the project site. Physical features include substrate contours, water depth, duration of inundation, periodicity of inundations, salinity, and soil type.

When dealing with in-kind compensation, it is essential to consider each of the representative species or species groups present at a project site and to assure that

those representative species or species groups will not be negatively affected. This can be accomplished by taking into consideration existing values provided at the project site and comparing those to the values which would be provided at the compensation site. A habitat evaluation procedure, such as that used by the USFWS, could be used to assure no reduction in habitat value for any of the representative species or species groups present at the project site, provided that such a procedure presumes that there shall be no net loss of wetland acreage. When dealing with out-of-kind compensation, it is neither desirable nor reasonable to attempt to show equivalency between values foregone at the project site and those different values to be generated at the compensation site. As we have previously indicated, the rationale for acceptance of out-of-kind compensation shall be based upon a biological determination that, from a regional perspective, out-of-kind compensation is demonstrably superior to in-kind compensation.

Buffers between existing or proposed development and existing wetlands or wetland compensation sites should be included as an integral component of all mitigation plans in order to assure the attainment and maintenance of habitat values sufficient to compensate for project impacts. Buffers should be of sufficient width and should be designed to eliminate potential disturbance of fish and wildlife resources from noise, human activity, feral animal intrusion, and any other potential sources of disturbance. The size and character of buffers shall ultimately be determined by the requirements of the affected species most sensitive to such disturbances. When feasible, buffers should be designed in a manner which complements the habitat values associated with adjacent wetland. For example, a buffer located near freshwater ponds could be planted with those grasses and forages known to support high density nesting by waterfowl. In no case shall such buffers be credited as wetland acreage necessary to achieve compliance with the requirements of the Commission's policy regarding retention of wetland acreage.

The loss of wetland acreage and habitat values to project implementation is permanent. Therefore, it is necessary to maintain the mitigation area in perpetuity in order to compensate for the permanent effects of development. It follows then that the project sponsor and his successor(s) must be responsible for the acquisition, development, and permanent maintenance of the compensation site in a manner which fully mitigates the projects impacts to fish and wildlife resources. For this reason, the Department recommends that permanent maintenance of compensation sites be required as a condition of the granting of any permits which might be required for project construction.

As was pointed out by several public speakers at the Commission's March 9, 1987 hearing, the art of wetland creation and enhancement is not yet a science. The Department is confident that wetlands can be created in such a manner as to duplicate or exceed the acreage and those habitat values associated with wetland areas which may, in the future, be developed. However, we are also aware of the possibility that wetland creation sites may not develop all of those fish and wildlife values which were projected at their inception. Therefore, the Department recommends the universal application of requirements that fish and wildlife values at compensation sites shall be thoroughly assessed after their construction pursuant to appropriate permit conditions; that these values be compared to the values which were lost through project development; and that the project sponsor or his successor(s) be required to take such actions as may be necessary to offset any habitat value shortfall which may be discovered as a result of follow-up studies.

The foregoing discussion relates primarily to individual project review, and provides a framework for assuring retention of wetland habitat values lost through project implementation. However, a related, but somewhat less obvious, problem threatens the preservation of wetland habitat values on a statewide basis. This problem involves the direct impacts of large-scale urban expansion upon upland plant communities, and the indirect impact of such upland development upon wetland habitat values. The problem revolves around the fact that wetlands generally exist as biologically valuable components of larger aggregations of biological communities including a variety of upland communities. Wetlands and associated uplands complement one another. Numerous animals found in wetland areas are, nevertheless, at least partially dependent upon associated uplands. For example, waterfowl, which rest and forage in wetlands, are also, at times, dependent upon associated upland areas for nesting. If, in this example, we protected the wetland but lost the associated upland to development, then the wetland would provide reduced habitat values for waterfowl. So it is with many animals. In spite of the fact that elimination of the ecological bond between wetlands and associated uplands often reduces the value of wetlands to fish and wildlife resources, relatively little regulatory authority exists for dealing with this issue on a project review, or permit review, basis. It seems that the most effective means of addressing this ongoing problem is to place increased emphasis upon the future review of county general plans in an attempt to steer unavoidable future urban expansion into patterns which provide for retention of upland/wetland relationships. Failure to retain this ecological bond between wetland and associated uplands will result in the creation of isolated wetland enclaves scattered throughout highly urbanized areas, and will result in indirect loss of wetland habitat values. The Commission should be aware that no universal regulatory framework exists for effectively dealing with this issue. Nevertheless, the Department shall attempt to address this issue through county general plan review and the review of other long-range planning documents and actions by local, state, and federal agencies.

The Department believes that a concerted effort to protect California's remaining wetlands can result in achieving compliance with the Commission's wetland policy. In order to retain and to expand California's wetland acreage and wetland habitat values, it will be necessary, in light of the non-regulatory nature of the Commission's policy, to work closely with the development community and various local, state, and federal governmental entities. Given a mutual commitment on the part of all concerned parties, maintenance of wetland acreage and attendant fish and wildlife values is possible. Through a combination of such cooperation and a continuation of ongoing wetland acquisition, enhancement, and creation activities by local, state, and federal agencies as well as similar efforts by various sportsmen's groups and other conservation organizations, the Department is optimistic that expansion of California's wetland acreage and considerable increases in attendant wetland habitat values are both achievable.

The Department wishes to thank the Commission for the opportunity to recommend a comprehensive wetland definition and identification process, and to recommend the means by which the Commission's wetland policy may be implemented.

NOTES:

2 Hydric soils are those soils identified as such by the U.S. Soil Conservation Service criteria. ([return to body of text](#))

3 Pursuant to the USFWS document *List of Plant Species That Occur in Wetlands Region O*. (Region O is California.) ([return to body of text](#))

FISH AND GAME COMMISSION COMMENT TO THE DEPARTMENT OF FISH AND GAME ON THE WETLAND POLICY IMPLEMENTATION PROPOSAL

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PRINCIPLES OF APPLICATION

The Fish and Game Commission accepts the wetland definition, mitigation strategies and habitat value assessment methodologies recommended by the Department in its report submitted to the Commission Wetland Subcommittee on June 24, 1987. The Commission expects the Department of Fish and Game to apply the Commission's wetland policy and the Department's proposed implementing procedures with scientific accuracy; sound judgment; and in a manner which assures the protection and enhancement of the state's wetland resources. The Department, in its application of the policy and implementation procedures to specific situations, should strive to maximize the long-term interests of the fish and wildlife resources involved and to make recommendations that are both timely and appropriate to this end. The Department may depart from the letter of the policy only when such departure will better serve the long-term interests of wetland resource protection. The Department shall report such departure and the rationale for such departure to the Commission at its next scheduled meeting.

SCOPE OF POLICY

The Commission has found the policy and implementation procedures to be nonregulatory in nature. Their intended application is in those circumstances where the Department's role is advisory, as in, but not limited to, the application of the California Environmental Quality Act, National Environmental Protection Act, California Coastal Act, Clean Water Act, and other applicable state and federal laws and regulations.

The Commission does not wish the policy and the implementing procedures to be applied to projects or actions previously reviewed and commented upon by the Department and for which relevant permits have been issued. However, when further Department review is authorized or required due to project modification or additional public actions, the Department should consider any prior recommendations or agreements when applying the Commission's wetland policy.

DEFINITION

The Commission concurs with the Department's recommendation to use the U.S. Fish and Wildlife Service's (USFWS) definition as the basis for wetland identification. When all three wetland indicators (i.e., hydric soils, wetland vegetation, and hydrology) are present, the presumption of wetland existence shall be conclusive. Where less than three indicators are present, policy application shall be supported by the demonstrable use of wetland areas by wetland associated fish or wildlife resources, related biological activity, and wetland habitat values.

The USFWS wetland identification system should be applied by professionals trained in its methodology. The accuracy of existing wetland inventory mapping should

not necessarily be assumed. The Commission supports the Department's current practice of on-site inspections of projects which would impact wetlands and strongly encourages the Department to conduct on-site inspections of such projects and particularly whenever requested to do so by project proponents or concerned public agencies.

LANDOWNER COOPERATION

Both the Commission and the Department recognize that the response of landowners, private and public, is an important factor in the success or failure of any State policy to create, protect, restore or enhance wetland habitat. The Commission acknowledges that landowners are not normally obligated to either create or enhance wetlands on their property except as may be otherwise required by law, thus, many wetlands and wetland values exist primarily because of voluntary actions taken by landowners. Therefore, the Commission urges the Department to proceed with the development and implementation of a comprehensive program of incentives that will encourage and facilitate landowner cooperation with the State in achieving its wetland objectives, including the voluntary retention of existing wetlands and the creation of new wetlands and enhanced habitat values, and the elimination of disincentives to accomplishing these objectives. This program should be viewed as an important component of the Commission's wetland policy, and a desirable complement to programs based directly or indirectly on regulatory authority.

(Amended 8/4/94)

WILDERNESS AREAS

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It is the policy of the Fish and Game Commission to:

- I. Support selected habitat management programs when they are vital to the perpetuation of fish and wildlife populations. Such programs must be conducted in such a manner as to have minimum impact on the natural resource values of the wilderness area.
- II. Support restrictions on the opening of any primitive wilderness or wild areas in California to commercial interests of any kind that will adversely affect the natural resource values of such areas.

(Amended 8/4/94)

EXHIBIT P

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FEMA Region 9 National Flood Insurance Program

FEMA and Risk MAP

The [National Flood Insurance Program](#) (NFIP) is administered by the [Federal Emergency Management Agency](#) (FEMA) within the Department of Homeland Security (DHS). FEMA and its partners develop and provide flood hazard data and maps in support of the NFIP. Recently, FEMA led an unprecedented effort to update these flood hazard maps, known as Flood Insurance Rate Maps (FIRMs) into a digital format. This FEMA-led effort to create digital versions of the FIRMs is referred to as [Map Modernization](#) (Map Mod). FEMA is building on the Map Mod effort by implementing its [Risk Mapping, Assessment, and Planning \(Risk MAP\)](#) Strategy. New flood studies/mapping projects undertaken as part of the Risk MAP Program build upon data developed under Map Mod to continually improve the flood hazard and risk information provided to communities.

Event Calendar

< April 2016 >						
Su	Mo	Tu	We	Th	Fr	Sa
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
1	2	3	4	5	6	7

Region IX Map Navigator



Coastal Studies

Region IX is initiating flood studies/mapping projects in coastal areas as a result of Congressional appropriations for Flood Hazard Mapping under [Risk MAP](#). These efforts will address gaps in required engineering and mapping for high flood risk areas impacted by coastal flooding. Cumulatively, these flood studies/mapping projects are being referred to as the California Coastal Analysis and Mapping Project (CCAMP).

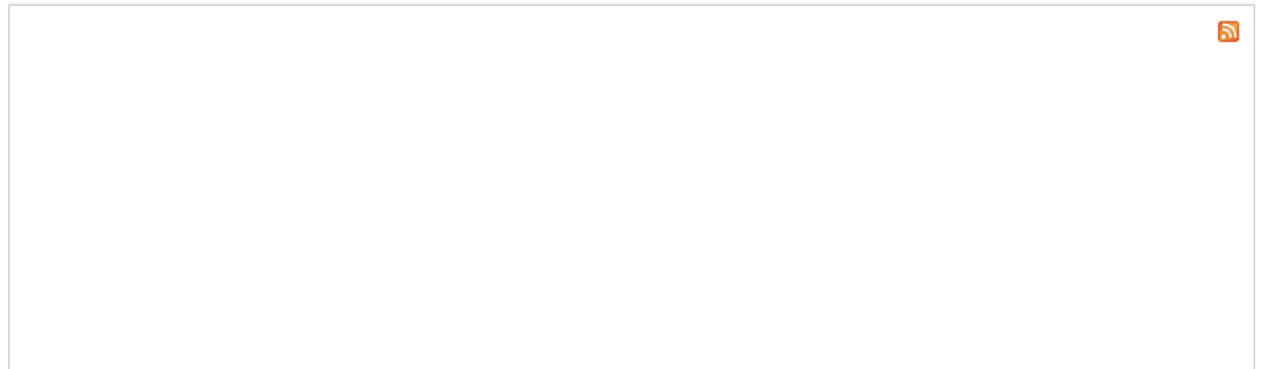
To learn more about the Open Pacific Coast Study, click [here](#) or click the right side of the CCAMP logo.

To learn more about the San Francisco Bay Area Coastal Study, click [here](#) or click the left side of the CCAMP logo.

To learn more about FEMA coastal mapping projects in other Regions, access links to technical bulletins, coastal modeling software, and additional resources visit the FEMA coastal page [here](#).

To learn more about mitigating coastal flood risks and achieving resilience, visit the FEMA coastal page [here](#).

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Region IX Hosts Annual
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Frequently Asked Questions | Related Santa Clara



The Project

What is Related Santa Clara?

Related Santa Clara is a unique partnership between the City of Santa Clara and Related Companies to create a LEED-certified, multi-phased, transit-oriented, mixed-use destination adjacent to Levi's Stadium. The 240-acre development consists of both a pedestrian-friendly urban City Center and office campuses, which altogether will offer residential housing, restaurants, entertainment venues, hotels, office space, and retail shopping.

What will be included in the City Center portion of the project?

The City Center is the central core of the development and will incorporate retail shopping, restaurants, entertainment venues, hotels, office space and residential housing. It will feature multiple walkable districts, each with its own unique character and lifestyle affiliation.

Where is the project site located?

The project site is located just north of Levi's Stadium and California's Great America amusement park. It is south of Highway 237 and fronts Tasman Drive to the south, Great America Parkway to the west and Guadalupe River to the east with Lafayette Street bisecting the project site.

Who owns the land?

The City of Santa Clara owns the land. Related Companies will be entering into 99-year lease agreements with the City for the purpose of development and the developed property will revert to City ownership at the end of the lease agreements.

What is currently located on the project site?

The 240-acre project site is currently occupied by the Santa Clara Golf & Tennis Club, Fire Station 10, a Bicycle-Motocross (BMX) track, a vacant lot used for parking, David's Restaurant and Banquet Facility, an Ameresco power generation facility, and other city service structures.

What will happen to the BMX track?

The relocation process is being managed by the City of Santa Clara in cooperation with Related Companies.

What will happen to Fire Station 10?

It is anticipated that Fire Station 10 will remain fully operational during construction of the initial phases of the project. However, at such time as project plans require the station relocation, a new fire station will be built either within the project site or in the immediate vicinity.

Is the City providing funding for the project?

No, the entire project is financed by Related Companies.

Why does Santa Clara need a new City Center?

Santa Clara is home to a state-of-the-art stadium, some of the most innovative businesses in the country, and the University of Santa Clara, one of the first universities established in the state of California. City Center, which will be the first three or four phases of Related Santa Clara to be built, is meant to provide residents with a new inclusive, urban-scale, mixed-use community where they can “live, work, and play.”

How many jobs will the project create for Santa Clara residents?

Upon completion, the project will create approximately 25,000 new jobs – a number of which will be in the restaurant, retail, and hotel industries – providing employment options for Santa Clara City and County residents who work outside of the technology industry. It is envisioned that the office campuses will provide needed space for technology companies to locate within Santa Clara.

What financial benefit does the project provide to the City?

With completion of the City Center phase, the new annual tax revenue will be approximately \$42 million and upon full build-out, it will increase to \$70 million. In addition to tax revenue, at full build-out the project will also pay the city approximately \$12 million annually for ground rent.

What community outreach has been conducted for the project?

The project team has spent over two years working with city officials, government agencies and community members developing the program and concept plans for Related Santa Clara. During that time, there have been numerous publically noticed hearings, study sessions, and community meetings.



Timelines/Construction

Is the project undergoing environmental review?

Yes. A Draft Environmental Impact Report (DEIR) was issued on October 9, 2015 and comments were received through December 8, 2015. A copy of the DEIR is available on the City of Santa Clara's website: www.santaclaraca.gov/CEQA.

Will the development be built all at once or in phases?

The development will be built in multiple phases. Construction will start with the City Center, which is located on the land directly north of Levi's Stadium bordering Tasman Drive. Later phases will include the construction of office campuses, subject to market demand.

What is the construction timeline?

Construction of the City Center – which includes the majority of the residential, entertainment, retail, hotel, and restaurant space – is projected to begin in 2017 and complete in several phases concluding in approximately 2022. Future phases of construction primarily consisting of office space with a potential mix of retail and food and beverage options, will be developed over a period of 10-15 years subject to market demand.

How tall will the development be?

While the City Center is built on a human scale, it is an urban environment and the proposed project allows for several taller, higher-density buildings to create that environment as well as take advantage of its proximity to mass transit. The maximum height of the buildings, which is determined by FAA restrictions, will likely be around 190 feet (approximately 17 stories). As a comparison, Levi's Stadium is 200 feet tall.

Given the size of the project, is there any possibility Related Companies won't be able to complete the development?

No. Related Companies is one of the largest and strongest privately held real estate companies in the nation, giving it the financial stability and expertise to design and complete very large development projects. The company has a proven track record of completing extremely complex, large-scale, multi-phase projects similar to Related Santa Clara in other parts of the country.

Will the construction disrupt public transportation in the area?

No. The transit systems will continue to function throughout the construction process. Also, new access roads and pathways will be built to service facilities such as the Santa Clara Great America Train Station.



Housing

How much housing will be built?

The project includes 1,360 residential housing units that will be located directly above retail and/or parking structures. Multiple housing types are under consideration, including traditional mixed-use and loft-style mid-rise buildings that range in height from three to six stories, along with buildings that may be up to 17 stories.

Will any of the housing be available for sale?

It is anticipated that all of the units built on the landfill portion of the project will be rental housing. It is

possible that the residential on the non-landfill area could be offered as for-sale housing.

What steps are required when building on top of a landfill?

The City and Related Companies engaged national environmental firms and local government agencies to develop engineering systems and mitigations that will ensure the community's safety. One mitigation example is the construction of a concrete platform over a portion of the landfill that incorporates a vapor membrane and a methane collection system to extract and remove the landfill vapors. These details are available in the DEIR, which can be accessed at www.santaclaraca.gov/CEQA.



Retail, Restaurants and Entertainment

How much retail space is being proposed?

The plan includes over 1.5 million square feet for retail, restaurant and entertainment uses.

What types of retail uses are being considered?

Related Santa Clara will feature everything from anchor retail stores to local boutiques, surrounded by wide sidewalks that will allow space for retail kiosks and outdoor gathering. These stores will be distributed throughout four unique districts in the City Center, each of which will be connected by wide walkways to accommodate outdoor dining and special event space. Unlike other nearby retail destinations, Related Santa Clara will be a mixed-use hub, with residential housing, offices, and hotels interspersed throughout, making it unique to the region.

What types of restaurants will be included?

The restaurant collection will offer an assortment of the best chef-driven, locally-sourced eateries and an unrivaled array of international cuisines, from casual to formal dining.

What entertainment venues will be included?

The entertainment spaces being considered include a cinema, live performance space, nightclubs, bowling alley, and venues that specialize in virtual entertainment.



Hotels and Office Space

What types of hotels will be included?

The development will include two hotels that offer a total of 700 hotel rooms: a business hotel that will cater to the local and visiting business community, and a boutique hotel that may include a full-scale health club and spa. The hotels will incorporate meeting spaces and restaurants.

What type of office space will be included?

The office campuses will surround the project's City Center and feature an exclusive mix of office space, convenience retail, and food and beverage offerings. Workers can expect everything from customizable, build-to-suit headquarters to flexible, co-working spaces. Inside City Center, several of the office buildings will be loft-like and more suitable for start-ups and smaller ventures looking for inspiration in an urban setting.



Transportation

How will people get to Related Santa Clara?

Related Santa Clara will be well-served by a local and regional transportation system, including convenient commuter and light rail connections that provide access to cities located throughout the South Bay, East Bay, and San Francisco. Given its proximity to a variety of public transit options and extensive pedestrian and bicycle networks, this urban mixed-use destination is heavily focused on mobility options that support alternative modes of transportation. The Santa Clara Valley Transit Authority light rail, bus system, commuter rail, commuter shuttles, easy bicycle access, and the upcoming BART extension all make the project easily accessible through alternative modes of transportation.

Will the project include shuttle service?

Yes. A shuttle system will be included and will provide a convenient way to traverse across the development or to other nearby locations such as the ACE and Capital Corridor Train Station.

Will the VTA station stay on Tasman Boulevard?

Yes, there are no anticipated changes to VTA's light rail station system on Tasman Drive.

How much vehicle parking will be provided?

At full build-out, the project will include approximately 25,000 parking spaces for visitors, office workers, and residents. Almost 12,000 of these will be exclusively for visitors to the City Center. Parking will be strategically located along the perimeter of the City Center to reduce the amount of vehicular traffic within its pedestrian-oriented districts.

Will the project provide parking for stadium events?

Related Santa Clara will provide a total of 3,000 parking spaces to the 49ers approximately 10-12 days per year, limited to NFL football games. The spaces will be provided within both the southern end of the City Center along Tasman Boulevard and elsewhere throughout the project, including future office parcels. A similar parking arrangement is being made with the City for other special events at Levi's Stadium.



Bicycle and Pedestrian Access

Will new bike lanes be added?

Yes, Related Santa Clara is developing a bike and pedestrian network that will integrate with already-existing systems throughout the area. Extensive pedestrian paths make the whole development walkable – 10 minutes from end to end – and multiple access points from bike paths provide easy access for cyclists. Related Santa Clara will include an on-site network of multi-use trails and designated bicycle lanes to make grabbing a coffee, going shopping, catching a train, heading to the office, or simply going out for a bike ride an enjoyable experience.

Will there be any bicycle amenities on-site?

Yes. Ample on-site amenities such as secure bike parking with concierge services, bike repair shops, bike rentals, and shower facilities will be provided at strategic locations within the development.

Will new pedestrian paths be incorporated throughout the development?

Yes. A continuous network of dedicated pedestrian pathways will secure safe and convenient connections between transit stops, parking facilities, building entrances, and shared open spaces. Stroll between shopping districts along streets that boast wide sidewalks, enhanced crosswalks, paseos, and pedestrian amenities such as street furniture and active storefronts.



Open Space / Recreation

Will open space be included?

Open space is a critical element of urban design for a variety of reasons. While building denser projects near mass transit is a key sustainable feature of Related Santa Clara, so is providing both active and passive outdoor open spaces. For this reason, Related Santa Clara incorporates a vast network of outdoor spaces including streetscapes, landscaped areas, active and flexible plazas, and restful campus greens. With an eye towards sustainability, drought-resistant landscapes will be planted throughout the site and irrigated using technologically advanced irrigation systems with reclaimed water.



Sustainability

What kind of sustainable systems will be incorporated in the development?

The City Center will be built to meet LEED for Neighborhood Development (LEED ND) certification with

the commercial buildings designed for LEED v2009 Gold certification and residential buildings designed for LEED v2009 Silver certification.

As a LEED-certified project, Related is exploring a number of sustainable options that will minimize water and energy usage. The large scope of the project allows the design team to take advantage of technologies – such as water reclamation, cogeneration, and other sustainability options – that aren't available to projects of a smaller scale. Related is also examining additional options to limit potable water usage and incorporate additional alternative energy sources to increase the amount of power generated on-site and to reduce greenhouse gases.

Will there be enough resources, such as water, to support a development of this size?

A Water Supply Assessment (WSA) report prepared and approved by the City of Santa Clara demonstrates that the City has sufficient water capacity to serve the project. Other options being explored by the project to further reduce water usage include planting drought-tolerant vegetation, low flow fixtures in kitchens and bathrooms and the use of recycled water for landscaping and mechanical demands.



Related Santa Clara



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Memorandum

DATE: 06/28/16

RE: Technical Comments on City of Santa Clara's "City Place Fair Share and Voluntary Contribution Fee" Memo¹

In its "Fair Share" memo, the City of Santa Clara ("City") asserts that fair share calculations based on comparing to new traffic and discounting existing traffic does not work well for the City Place Project ("Project") because projects of this size "potentially change existing traffic patterns." The City asserts that discounting existing traffic would produce an inaccurate fair share because "existing users of roadways such as Tasman Drive, Great America Parkway, Highway 237 or Montague Expressway may divert to other roadways or modes."

San Jose disagrees with the City's assertion and illustrates the point in the bar chart shown below.

Components of the bar chart (not drawn in scale) are defined as such:

Existing Conditions

- *Area A* $\equiv$ Existing, non-Project trips at the intersection that would be diverted to other roadways or modes after operations of the Project
- *Area B* $\equiv$ Existing, non-Project trips that would continue to utilize the intersection in their routes after operations of the Project
- *Existing traffic* = *Area A* + *Area B*

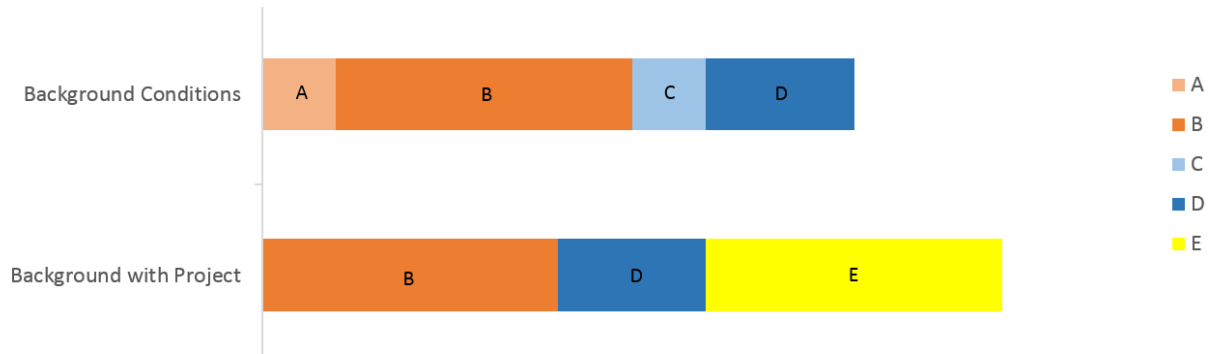
Background Conditions

- *Area C* $\equiv$ New future, non-Project trips that would be diverted to other roadways or modes after operations of the Project
- *Area D* $\equiv$ New future, non-Project trips that would continue to utilize the intersection in their routes after operations the Project
- *Background traffic* = *Area A* + *Area B* + *Area C* + *Area D*

Background with-Project Conditions

- *Area E* $\equiv$ New future, Project trips that would utilize the intersection in their routes
- *Background with-Project traffic* = *Background traffic* + *Area E* – *Area A* – *Area C*
= *Area B* + *Area D* + *Area E*

¹ This document was prepared by Karen Mack, Traffic Manager/Engineer, City of San Jose Department of Public Works Division of Development Services and Wilson Tam, Associate Engineer (B.S. in Civil Engineering; M.S. in Transportation), City of San Jose Department of Transportation.



By calculating the Project's fair share contribution based on total traffic at the intersection (i.e. the total of Areas B, D and E), the City assumed that those existing users that would not be diverted to other roadways or modes of transportation after operation of the Project (i.e. Area B) would be financially responsible for Project mitigation measures. San Jose disagrees with this methodology and further notes that it works *only* in the event the Project displaces all existing users of the intersection (i.e. Area B is zero).

The information presented in the Draft EIR (see Tables K-2 and K-3, Volume III, Appendix 3.3K), clearly demonstrates the problem with the City's assumptions. Based on these tables, it is evident that traffic diversion resulting from the Project (rather than displacing all existing users) would displace only a small percentage of existing users (i.e., non-Project traffic). (See Area B which is much greater than Area A). In the absence of the total displacement of existing intersection users assumed in the EIR, a fair share calculation based on total intersection traffic does not reflect the Project's contribution.

San Jose continues to assert that only *new* roadways users (i.e. the total of Areas D and E) contribute to the cost of mitigation measures. The Draft EIR provides information regarding new Project trips at each intersection (Area E), but does not quantify the new future, non-Project trips that would utilize the intersection (Area D). As a result, in its fair share calculations, San Jose used the information provided in Tables K-2 and K-3 to reasonably estimate the Project's fair share contribution based on the percent increase due to Project traffic as compared to the total new future traffic at the intersection.



**City of
Santa Clara**
The Center of What's Possible

AGENDA ITEM #: 14A.

AGENDA REPORT

Date: June 28, 2016

To: City Manager / Contract Administrator / Executive Director / Executive Officer
for Action

From: Executive Assistant to the Mayor & City Council

Subject: Correspondence received regarding Item #14.A – Acceptance of
Planning Commission's recommendations for the CityPlace Santa
Clara project.

From Wednesday afternoon, June 22, 2016 through Tuesday evening, June 28, 2016, the Mayor & Council Offices have received the attached communications regarding Item # 14.A.

Lynn Garcia
Executive Assistant to the
Mayor & City Council

Documents Related to this Report:
1) *Communications received*

L:\Agenda Reports & Memos\Communications Received Memos\6-28-16City Place

POST MEETING MATERIAL

Lynn Garcia

From: Mayor and Council
Subject: FW: City Place Comments and Questions

From: clysta [<mailto:clysta@earthlink.net>]
Sent: Tuesday, June 28, 2016 11:28 AM
To: Mayor and Council; City Attorney; Clerk
Cc: teresa.oneillsc@gmail.com; lisagillmor@gmail.com
Subject: City Place Comments and Questions

Honorable Mayor and Council Members,

I have been following the study sessions and attended various public hearings on the City Place project. This is a very ambitious project and I have a few comments and questions. I am unable to attend the meeting in person today and would like my questions answered in the public meeting.

It was impossible to read and analyze all of the latest paperwork in such a short time period. It takes a long time to search this material with a home computer and internet connection.

I have asked some of these questions in public meetings and sent a public information request on many of these questions on March 23, 2016, but have received no response from the City.

Comments:

Thank you for including the Multi-Modal improvement plan supporting sustainable transportation.

Please look at reducing multi-use corridors and expanding separated corridors for cycling, automobiles and pedestrian trails/throughways via an Area Plan which includes Tasman East. The very vulnerable pedestrian populations of seniors, toddlers, youth and persons with disabilities in densely populated/visited areas should have safe options for mobility away from vehicular traffic as should cyclists.

If City Place is approved, please set, measure and report on transportation and housing goals as this project moves through its phases.

Questions (Please note that I am not an attorney, my use of words is as an average citizen using normal conversation not legal definitions of words):

1. Land: Are there any provisions, clauses or options in these agreements which encumber the underlying land owned by the City or by any of its agencies/corporations that are outside of a typical land lease? eg., future rights to purchase/own underlying land? If so, what are they? How do the lease charges compare with the norm?

2. Water/Power: Are there special provisions or capital expenditures needed to expand the use of water and power to this site which will have to be paid for by any entity in the City? If so what are they and what costs have been estimated? (The Northside storage tanks improvements are already in the Capital Improvement Project. I mean beyond that.) This would include the projected cost (if any) of facilities to pump water to the top of the old landfills to service the site and its occupants/users.

3. Pricing/Usage: Are there below cost or special pricing agreements promised to the lessee for the cost of water and power in the City Place project (below what commercial customers get today)? In some of the study sessions the former City Manager stated the developer envisioned a 24/7 entertainment destination with exciting lighting effects visible across the valley. If we are 'saving power' by using LEDs in our neighborhood streets does it make sense to then 'use up more' by adding additional uses 24/7 around our creek and river at City Place?

4. Mix of water supply: What is the planned percentage mix for the sources of water to be piped to the City Place project?

5. Open Space: In one of the study sessions the former City Manager commented that "concrete...special

materials...open space would be used to provide gathering areas in this new city within a city", perhaps featuring fountains or public art. With Parcel 3 (old map) now being discussed as park/open space I request that the Mayor and Council clarify now if it will be open green space or is it intended to be for dedicated hardscape recreation uses such as skatepark, BMX racetrack, hardscaped tennis courts, etc.

Thank you for all your work for the citizens of Santa Clara on evaluating this use of public land.

Clysta Seney
Santa Clara, CA

Lynn Garcia

From: Mayor and Council
Subject: FW: letter from ACE
Attachments: 160628 City Place ACE.pdf

From: Corinne Winter [<mailto:corinne@winter.associates>]
Sent: Tuesday, June 28, 2016 10:59 AM
To: Mayor and Council
Subject: letter from ACE

Dear Mayor and City Council:

Please find the attached letter from the Altamont Corridor Express regarding the City Place development and future Great America Station needs.

My best,

Corinne M. Winter
Winter Consulting Group
mobile: 510-316-9049

Lynn Garcia

From: Mayor and Council
Subject: FW: City Place

From: ed.maurer.1@gmail.com [<mailto:ed.maurer.1@gmail.com>] **On Behalf Of** Ed Maurer
Sent: Tuesday, June 28, 2016 10:08 AM
To: Mayor and Council
Subject: City Place

Dear Mayor and Council Members,

I am writing to urge the inclusion of more sustainable development goals for the CityPlace project. As also supported by others, I would see a 25% trip reduction goal as a good minimum, and as a forward-thinking city, we should aim higher than that. The development that is approved today will shape Santa Clara for many decades; building toward a future much less reliant on inefficient travel will improve our air quality, make our public spaces safer, and ultimately produce a healthier environment for us all.

Also, the CityPlace project does not have a healthy balance of retail/commercial space with residential. Increasing the number of residential units dramatically would help toward providing desperately needed housing, and also provide residences near employment and mass transit options. I would emphasize that more 'luxury' units are not needed. We need adequate and affordable options.

Thank you for your consideration on these important issues.
Ed Maurer
Santa Clara, CA



**SAN JOAQUIN
REGIONAL
RAIL COMMISSION**

Commissioner, **Bob Johnson**, Chair, City of Lodi
Commissioner, **Michael Maciel**, Vice-Chair, City of Tracy
Commissioner, **Moses Zapfen**, San Joaquin County
Commissioner, **Scott Haggerty**, Alameda County

Executive Director, **Stacey Mortenson**

Commissioner, **Steve Dresser**, City of Lathrop
Commissioner, **Vince Hernandez**, City of Manteca
Commissioner, **Christina Fugazi**, City of Stockton
Commissioner, **Bill Harrison**, City of Fremont

June 23, 2016

Santa Clara City Council
1500 Warburton Avenue
Santa Clara, CA 95050

Members of the City Council:

We are pleased that near-term improvements for Great America Station are being considered as a City Place component, and we encourage the Council to require these be incorporated as a component of the near-term Project build out. These include improvements to the station platform, pedestrian connectivity to and through the project, as well as better bus stops and storage bays in the transit center adjacent to the station. These improvements are as shown in the attached drawing submitted to us by the developer.

In addition to these near-term improvements, we ask that the Council contemplate a new visionary, world-class transit center where the outdated Santa Clara-Great America Station now stands. The funding, potentially either provided by the Project Development Agreements or through the Multimodal Improvement Plan, would ideally serve as local matching funds for the project, or at minimum, contribute around \$500,000 to support an initial planning and engineering study.

The City Place project under consideration, when fully built-out, will create a new and dynamic City Center for Santa Clara, drawing people from across the city, county, and greater Bay Area. Many of those people will be arriving by transit. It makes sense, as a mitigation for additional traffic in the area, for the development to contribute funds at this time towards the planning of a visionary station.

I'd like you to consider what the gateway to your new city center will look like for these people. Today, around 8,000 people enter Santa Clara at Great America Station each day, disembarking from ACE (Altamont Corridor Express) and Capitol Corridor trains. In just 10-15 years, well before the City Place project is likely to be fully built-out, that number will grow to roughly 50,000 people per day—nearly enough to fill Levi's stadium.

It is important that the City Council develops a vision for accommodating the anticipated significant population and tourist growth and begins to take concrete steps to sufficiently plan for increased demand on public transit. By adequately accommodating the demand through near-term improvements and construction of a new transit center in the long-term, the city can take significant measures to curb traffic delays, improve air quality, and increase Santa Clara's overall quality of life.

The existing train platform is a narrow, drab, concrete strip, which is not an appropriate gateway to your new City Center. In your deliberations over City Place, please consider taking immediate steps to support the creation of a welcoming, world-class transit gateway that recognizes and



rewards people for doing their part to reduce traffic congestion and fight climate change. Let's turn Santa Clara's inadequate rail-side platform into a truly grand central station.

Thank you for your consideration. We look forward to partnering with the City as you move forward with this exciting project. I have enclosed several examples of transit stations from across the region for your reference. If you would like more information or have questions, please don't hesitate to reach out to Corinne Winter, our Santa Clara outreach lead, at (530) 316-9049 or Corinne@winter.associates.

Sincerely,

Stacey Moretensen
Executive Director

A handwritten signature in blue ink, reading "Stacey Moretensen", is written over a horizontal line.

Date: June 28, 2016

Near term station adjacent improvements

Exhibit A

VTa Comments on City Place Santa Clara Draft Environmental Impact Report 11-23-15

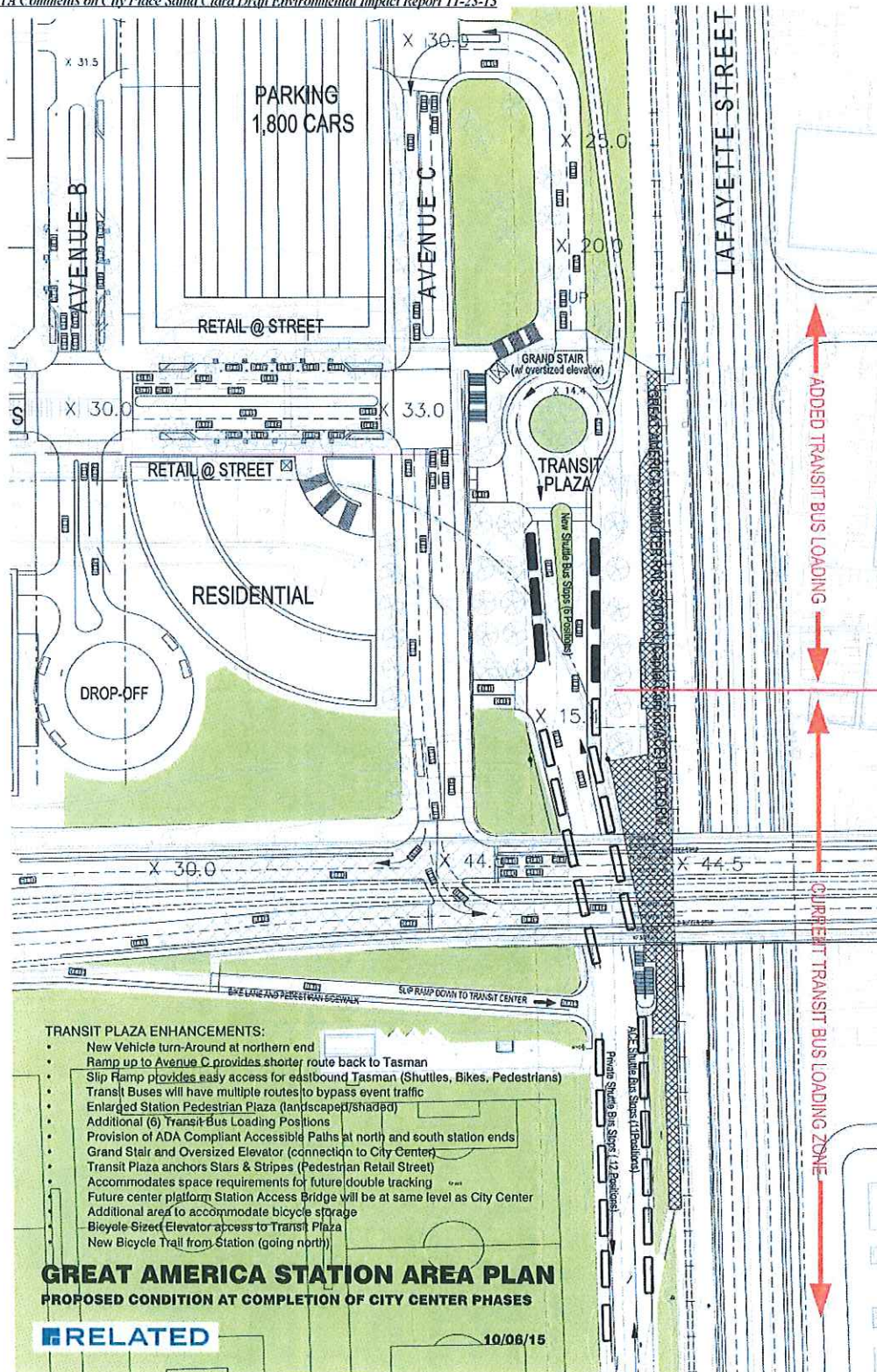


Figure 1: Existing Santa Clara – Great America Station (Santa Clara, CA)



Figure 2: Santa Clara Depot (Santa Clara, CA)



Figure 3: Palo Alto Station (Palo Alto, CA)



Figure 4: Sunnyvale Station (Sunnyvale, CA)



Lynn Garcia

Subject: FW: City Place Santa Clara
Attachments: 4310012.20160606.City Place.pdf

From: Nishimoto, Karen@Waterboards [<mailto:Karen.Nishimoto@waterboards.ca.gov>]
Sent: Monday, June 27, 2016 2:46 PM
To: Mayor and Council; Lisa Gillmor; Manager
Cc: Lacy, Eric@Waterboards
Subject: City Place Santa Clara

Good Afternoon,

Please see attached for a copy of the June 6, 2016 letter sent by the State Water Resource Control Board Division of Drinking Water to the City of Santa Clara regarding the City Place Santa Clara Project.



EDMUND G. BROWN JR.
GOVERNOR



MATTHEW RODRIGUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board
Division of Drinking Water

June 6, 2016

Mr. Chris de Groot
Director of Water and Sewer Utilities
City of Santa Clara
1500 Warburton Avenue
Santa Clara, CA 95050

CITY PLACE SANTA CLARA
City of Santa Clara, Water System No. 4310012

Dear Mr. de Groot:

This letter is in response to the proposed City Place Santa Clara (City Place) development at the site of the former Santa Clara All-Purpose Landfill submitted by the City of Santa Clara (City). The State Water Resources Control Board Division of Drinking Water (Division) has serious concerns regarding the viability of this project due to the proposed proximity of water mains to the landfill.

Specifically, Section 64572(f), Title 22, California Code of Regulations (CCR) states that, "New water mains shall not be installed within 100 horizontal feet of the nearest edge of any sanitary landfill." The City is requesting a waiver from this requirement due to planned mitigations. Based on the information provided thus far, it does not appear that adequate mitigations have been proposed in order to allow for less than a 100 horizontal foot separation between new water mains and the sanitary landfill. Due to the Division's concerns regarding this proposed project, the following items need to be addressed.

Due to the highly technical nature of this project, please provide information regarding the experience of the contractors and design team. Also of interest would be any examples that can be provided of similar existing projects of the same scale.

The provided documentation appears to be concept oriented. The Division is interested in receiving information that demonstrates a design based on past experiences, engineering analysis, and other such methods in order to show a proposed engineered design. The design should demonstrate that it provides a comparable or better protection than maintaining a 100-foot horizontal separation. The proposal included two different designs, Type A and Type B. Please provide a rationale for how the proposed mitigation measures for each design type provides a comparable protection as maintaining a 100-foot separation.

FELICIA MARCUS, CHAIR | THOMAS HOWARD, EXECUTIVE DIRECTOR

850 Marina Bay Parkway, Bldg. P, 2nd Floor, Richmond, CA 94804-6403 | www.waterboards.ca.gov

Due to the site being a closed landfill, on-going control measures for gas collection and remediation as well as leachate collection and removal are required as part of the Post-Closure Land Use Plan. It appears that the City is proposing to use some of the of the landfill closure mitigations as part of the mitigation measures for not maintaining a 100-foot separation between new water mains and the sanitary landfill. The Division recommends that mitigation measures be individualized to their particular purpose and feels that it is not appropriate to apply landfill closure mitigations as mitigations for failure to meet separation requirements.

The Division is interested in learning more about the landfill leachate system; specifically, how the leachate system was built and how it will drain. The Division is also interested in any proposed modifications to the leachate system and the rationale behind the modifications.

Part of the proposal included reconstruction of the clay cap. The clay cap is a low permeability layer over all landfill refuse, and maintaining its integrity is an integral part of preventing contamination. Please explain how the City will verify the construction and integrity of the clay cap following construction activities.

Due to the construction style and location of the proposed project, the Division has concerns regarding the impact of a major seismic event. The Division is interested in the susceptibility of the proposed development to a major seismic event and how both the utilities and mitigation measures will be designed to withstand a seismic event.

The proposed design appears to rely heavily on the membrane functioning as a barrier; however, the proposal does not appear to include a means to verify the integrity of the membrane. Please demonstrate how the City will verify the integrity of the membrane both during construction and throughout the lifetime of the project. Additionally, please document what actions the City would take should the membrane fail.

The proposal should explain how surface water infiltration would be controlled, particularly around the membrane. Provide information explaining the effect of surface water infiltration on the membrane and other materials that are part of the proposed design. The City should also explain what measures will be taken to counter any negative effects of surface infiltration.

If the Division considers the proposed design of the project favorably, additional plans and contingencies must be prepared, funded, and implemented for the life of the project.

The Division is interested in the long-term viability of the development. Specifically, how land settlement over an extended period of time may affect the pipelines and connections, how they will be protected, and what plans will be put in place if there is differential settlement that affects the pipelines. Also, please provide information explaining the impact to the membrane during any repair work to nearby pipelines and how the integrity of the membrane will be maintained both during and after repairs.

Due to the long-term nature of this development, and the on-going operational impact of the proposal, please provide a post-construction management plan. Specifically, describe how resources, expertise, and finances will be assured for the longevity of maintaining this development. The City should demonstrate adequate technical, managerial, and financial capacity to maintain City Place. An Operations Plan should be created to deal with the unique situation at the City Place development, which differs from the rest of the City's water system. The City will also need to ensure that appropriately trained staff is available. Due to the financial responsibility

represented by this project, the City will need to identify a separate, dedicated funding source to operate and maintain the project.

A contingency plan will also need to be established in the event of catastrophic failures that may occur during the life of the project such as seismic events, backflow incidents, or main breaks. Also, include how an incident within the City Place project may affect the rest of the City's water system and any proposed actions the City would take.

In order to assist the City with the review of the City Place project, the Division highly encourages the City to convene an Expert Panel to get specialized input and opinions from experts in a variety of fields in order to help the City to put forth the best possible alternative and help protect their community from potential harm.

Based on a review of the documentation provided thus far, it appears the only unique mitigation measure for failing to meet the 100-foot separation requirement is the proposed membrane. The City has not adequately demonstrated proposed mitigations to allow a waiver of Section 64572(f), Title 22, CCR. This project appears to not be in the best interest of public health and insufficient mitigation measures have been proposed in order to ameliorate the risks to the public drinking water system associated with this project.

If you have any questions regarding this letter, please feel free to contact me at (510) 620-3453.

Sincerely,

A handwritten signature in black ink, appearing to read "Eric Lacy", with a stylized flourish at the end.

Eric Lacy, P.E.
District Engineer, Santa Clara District
Division of Drinking Water
State Water Resources Control Board

cc: Santa Clara County Environmental Health Department

Lynn Garcia

From: Mayor and Council
Subject: FW: Slides for Public Cmment during Council meeting 6-28-16

From: Gita Dev, FAIA [<mailto:gd@devarchitects.com>]
Sent: Monday, June 27, 2016 2:43 PM
To: Mayor and Council; Media
Subject: Slides for Public Cmment during Council meeting 6-28-16

Dear Lynn,

Please Could you forward these slides to the appropriate person for the public comment period of tomorrow's Council Meeting.

We would appreciate being able to use these slides during the comment period.

These comments are for Sierra Club as well as Friends of Caltrain combined .

Thank you

Gita

--

Gita Dev FAIA
Sierra Club Loma Prieta
415-722-3355

www.devarchitects.com

Item 1. Parcel 1&2 – Parking

Include flexibility for future changes

- Currently 3 spaces/1,000 sf for office parking
- Change to
Minimum 1.5 spaces/ maximum 3 spaces per 1,000 sf

Allows flexibility to respond to changing future parking and TDM for both City and developer

Reduced parking reduces development footprint

Item 1. Parcel 1&2 - Parking

No surface parking at TOD

TABLE 3-3: CITYPLACE PARKING SUPPLY REQUIREMENTS

Land Use	City Place Parking Supply Rate
Residential	1.5 per unit
Retail	4.5 per 1,000 sq.ft.*
Office	Minimum 1.5 / Maximum 3 per 1,000 sq. ft.**
Restaurants	1.5 per 1,000 sq.ft.*
Entertainment	2.5 per 1,000 sq.ft.*
Hotel	1.0 per room

*Additional parking spaces would be shared with adjacent land uses.

* Reference Appendix 3.3 F Travel Demand Model Validation of the EIR for full parking analysis.

**** With no surface parking at build-out to preserve land for open space.**

Item 2. Minimum F.A.R. for TOD

Typical Station Area Plans have minimum FAR of 2.0

Currently Parcel 5: FAR 2.52 Parcel 4: FAR 1.13
 Parcel 1: FAR 0.83 Parcel 2: FAR 0.98

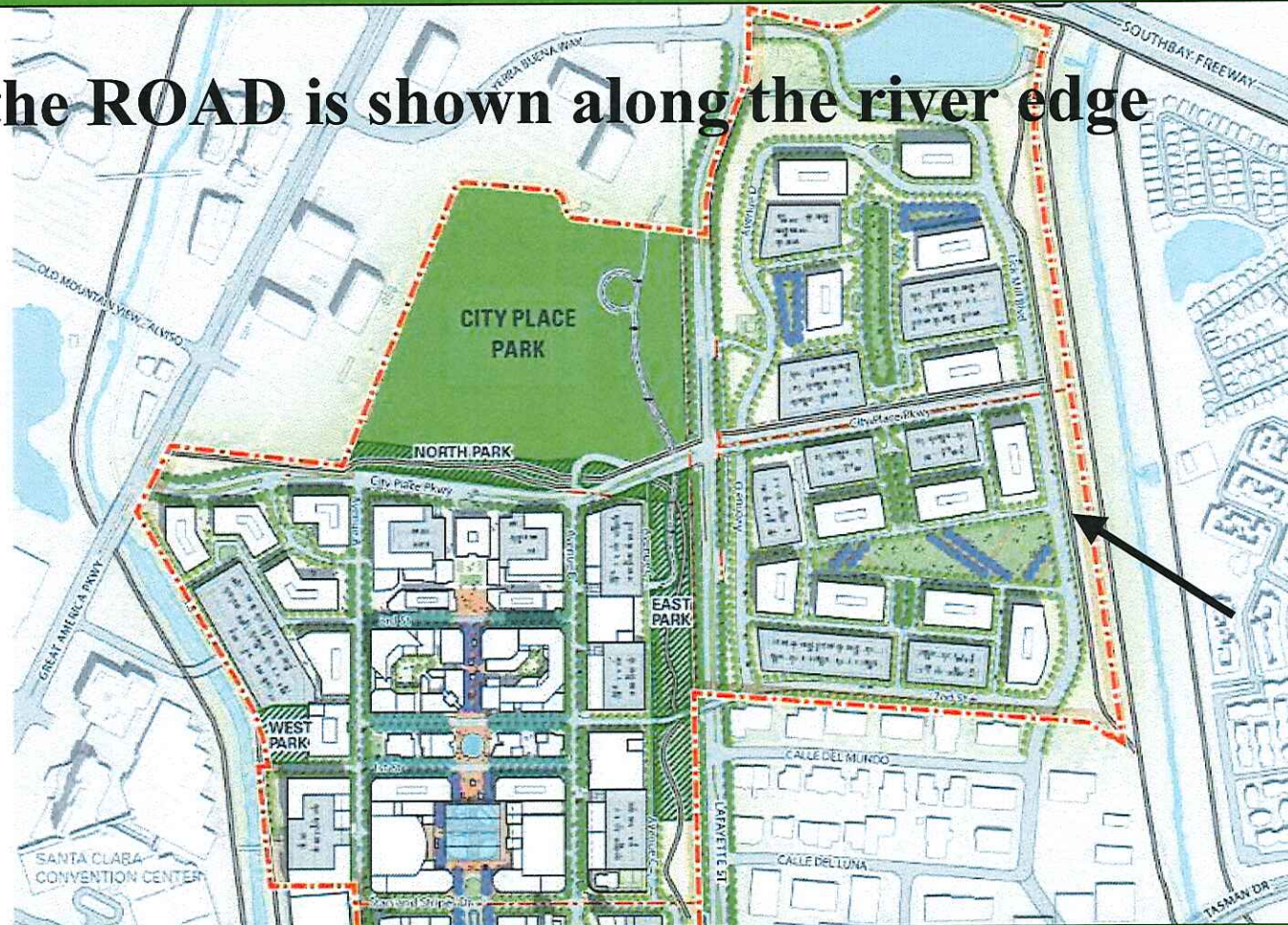
Suggest **Minimum FAR 1.0**

With no change in allowable area

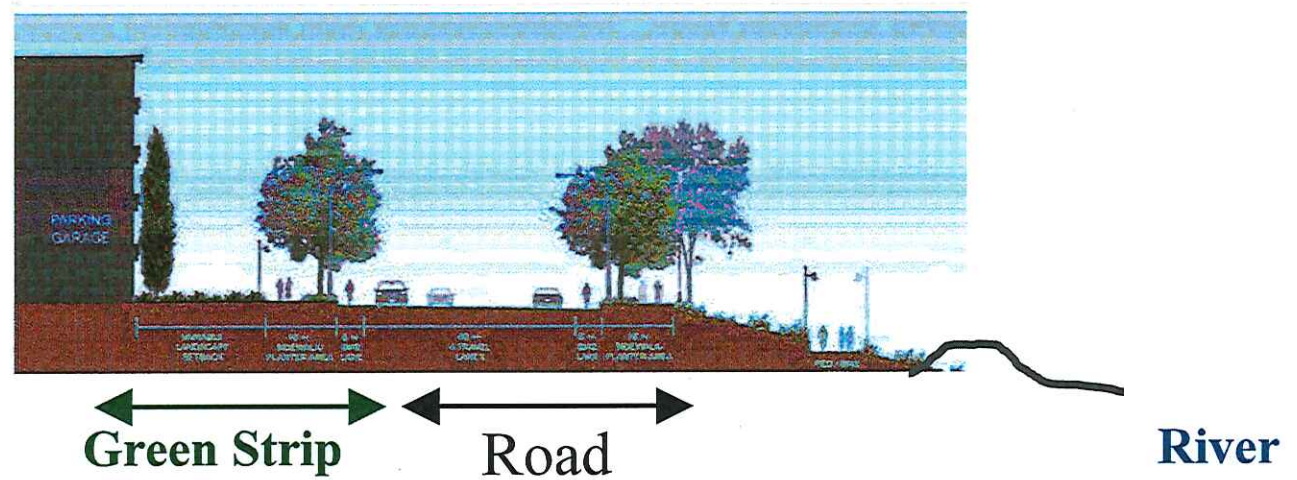
- Clarifies City objective of compact development at City Place
- Slightly compacts development footprint on Parcels 1&2

Item 3. Green strip - move to along river

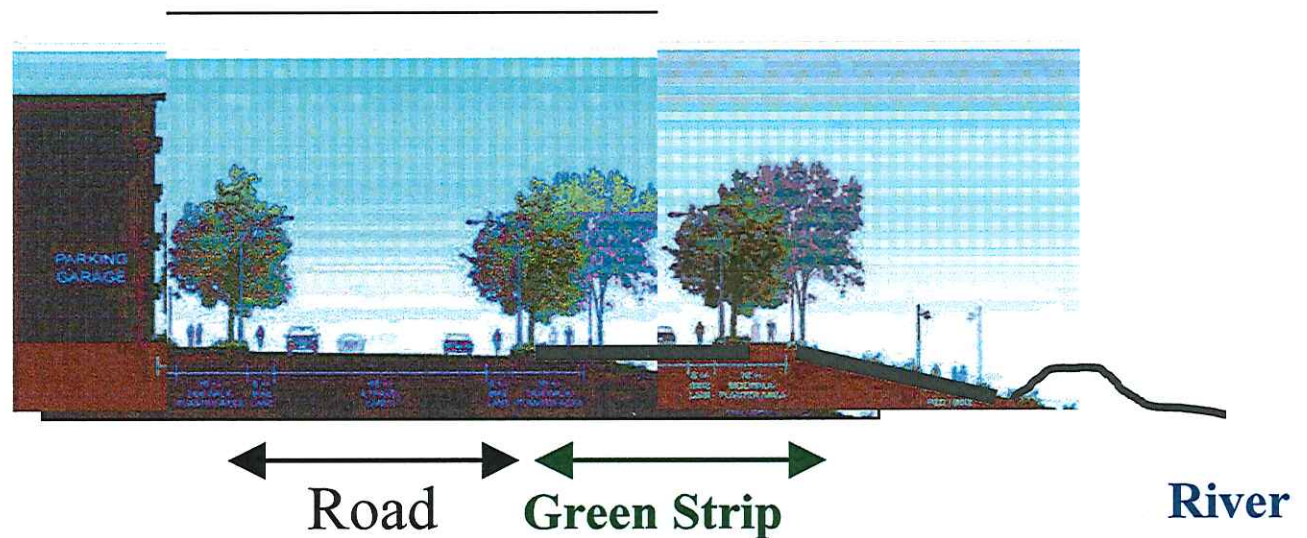
Currently the ROAD is shown along the river edge



Instead
of this
diagram
in MCP



Prefer to
move the
**Green
Strip to
the edge**



Example of green strip along a slough

Note the BAY TRAIL used as ped/bike path



Example of a green strip along a slough

Narrow strip along OPEN SPACE (slough or river) has a HUGE impact



Kids using Bay Trail as ped/bike path



Note mature trees along possible green strip

View of golf course from levee trail

View - Aug 2009



Friends of Caltrain:

Friends of Caltrain:

Need to include a target in MIP

City consultant will do MIP:

Which strategies will get studied depends on TARGET set now in the MIP

- We suggest: **Reduce drive-alone rate by 25% (to 67% drive-alone)**
- **HOWEVER, add an Intermediate target of 18 - 20%**

MIP

Include a multi-modal station

- **Reducing drive-alone depends on making alternate modes attractive, quick and efficient**
- **Include an initial study for a multi-modal station at Lafayette and Tasman in MIP**

Summary- Suggested Changes

1. Parcels 1&2 –1.5 spaces min/ 3 spaces max at Office
2. FAR minimum 1.0
3. A green strip between road and slope edge along river
4. Include TDM target of 25% reduction in drive-alone rate, with an intermediate target of 18-20% reduction
5. Include planning for a Multi-modal station

Lynn Garcia

From: Mayor and Council
Subject: FW: Council Meeting June 28, 2016, Agenda Item 14A, Santa Clara CityPlace
Attachments: Letter to Mayor and City Council dtd 6.27.16.pdf

From: Tonia S. Antonio [<mailto:tantonio@hopkinscarley.com>]
Sent: Monday, June 27, 2016 2:01 PM
To: Mayor and Council
Cc: Chuck R. Reed
Subject: Council Meeting June 28, 2016, Agenda Item 14A, Santa Clara CityPlace

Sent on behalf of Chuck Reed

Attached for your review is Chuck Reed's letter relating to Agenda Item 14A.



Toni Antonio

Legal Secretary to Ross G. Adler, Joan R. Gallo,
Chuck Reed and Elizabeth Cheng

70 South First Street
San Jose, CA 95113-2406
Direct: 408.299.1361
Main: 408.286.9800
Fax: 408.998.4790
tantonio@hopkinscarley.com

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June 24, 2016

Ms. Heather Tannehill-Plamondon
Executive Director
Silicon Valley Regional Interoperability Authority (SVRIA)
601 El Camino Real
Santa Clara, CA 95050

RE: SVRIA Representative and Alternate for Santa Clara, Sunnyvale, and Milpitas Grouping

Dear Executive Director Tannehill-Plamondon:

On behalf of the undersigned cities, this letter presents the recommended rotation schedule for the SVRIA seat representing the cities of Santa Clara, Sunnyvale, and Milpitas. It is our intention that representatives from this three-city grouping would rotate, as follows:

<u>June 2016</u>	<u>June 2019</u>	<u>June 2022</u>
Sunnyvale (Primary)	Santa Clara (Primary)	Milpitas (Primary)
Santa Clara (Alternate)	Milpitas (Alternate)	Sunnyvale (Alternate)

Our three cities agree that, from this point forward, this rotation schedule can only be approved via action by the three Mayors of these cities. Additionally, in the event a vacancy occurs, prior to completion of a representative's term, that city would have the first opportunity to fill a replacement that would be selected to serve the remainder of that term.

Please contact Yvette Blackford, Senior Management Analyst, in the Sunnyvale Office of the City Manager should you have any questions (yblackford@sunnyvale.ca.gov, 408-730-7475).

Sincerely,

Glenn Hendricks
Mayor
City of Sunnyvale



Lisa M. Gillmor
Mayor
City of Santa Clara



Jose Esteves
Mayor
City of Milpitas



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June 27, 2016

CHUCK REED
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408-299-1409
Fax 408-998-4790

Mayor and City Council
City of Santa Clara
1500 Warburton Avenue
Santa Clara, CA 95050

Re: Council Meeting June 28, 2016, Agenda Item 14A, Santa Clara CityPlace

Dear Mayor Gillmor and Members of the City Council:

This letter is submitted on behalf of David and Jean Ebrahimi, owners and operators of David's Restaurant and Banquet Center.

David's Restaurant has served City of Santa Clara residents for nearly 30 years and has great goodwill in the community.

The uncertainty and timing of the Santa Clara CityPlace project has already adversely affected their banquet business and damaged their ability to future book events. The City has also damaged their restaurant business on game days by restricting access for patrons.

As the CityPlace project moves forward, it may destroy the restaurant and banquet center and all the goodwill that has been built over 30 years. That would be a loss for the community and devastating to the Ebrahimi family.

While the City has grand plans for the Ebrahimi's property, the City also has the obligation to fairly compensate them for their losses under state and federal law.

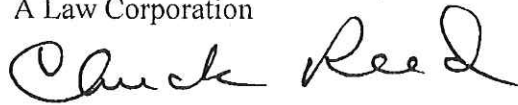
Perhaps those losses can be mitigated with an agreed upon solution. The Ebrahimis are willing to work with the City and Related to find a reasonable resolution as the project moves forward. However, the Ebrahimis have rights under their leases and under law, and the City must abide by its obligations under the leases and the law until a mutually agreeable solution has been found.

Mayor and City Councilmembers
June 27, 2016
Page 2

We are ready to begin a discussion of how the CityPlace project can proceed consistent with Ebrahimi's rights pursuant to a Lease (in which City is the landlord) that grants D.E. Restaurants Inc. the option to extend its leasehold until 2030. Please contact Jeff Essner, Dori Yob or me to move forward with that discussion.

Sincerely,

HOPKINS & CARLEY
A Law Corporation

A handwritten signature in black ink that reads "Chuck Reed". The signature is written in a cursive, flowing style.

Chuck Reed

CRR/tsa

06/28/16

14.0

Lynn Garcia

From: Mayor and Council
Subject: FW: conflict

From: JC Rowen [<mailto:jcrowensanjosestate@yahoo.com>]

Sent: Monday, June 27, 2016 7:58 AM

To: Mayor and Council; Rajeev Batra; Gloria Sciara; Richard Nosky; Ramona Giwargis; Debby Fernandez; Richard Doyle

Subject: conflict

I find it interesting that the Sohaigi Law Group represents SANTA VALLEY WATER DISTRICT. They also represent the City of San Jose?----CITY PLACE

Lynn Garcia

Subject: FW: City Council hearing on 06/28/16 Agenda item # 14 a reg.arding Related Project
Attachments: Related GF current proposal.pdf; Related GF Proposed.pdf

From: Raj Chahal [<mailto:rajchahal@yahoo.com>]
Sent: Monday, June 27, 2016 12:41 AM
To: Mayor and Council
Subject: City Council hearing on 06/28/16 Agenda item # 14 a reg.arding Related Project

Honorable Mayor Lisa Gillmor and Council Members,

As a resident of Santa Clara I have reviewed the Related project and devoted some time in analyzing the various options for the city. This may be the biggest ever project involving our land and residents are depending upon the due diligence of the council to make a decision which should be in best interest of city not only today but for the next 99 plus years. Some of the aspects need to be kept in mind:

- **This (239 acres) is the largest chunk of land City has as open space**
- **Once the decision is made, it will impact not only the current generation but many more to come**
- **Primary objective of the development has been:**
 - **a) Develop a business district and**
 - **b) Adding long term general fund to fiscal health of city**
- **Impact on jobs to housing ratio**
- **Traffic impacts on the neighborhood in particular and whole city at large**

The development plans as submitted does not seem to address the following:
"What if the 1480 housing units are not approved by the state agencies"?

I know the "Fiscal/Economic Benefit Analysis" report was submitted at the very last moment and city council has primary role to pay utmost attention to it as one of the primary objective of this development is to generate general funds for the city in a smart way. Unfortunately, many residents did not get a chance to analyze the "Fiscal/Economic Benefit Report" and all the residents are dependent on council due diligence as their elected representatives.

As a resident I have prepared the following "Fiscal/Economic Benefit" sheets which are worth considering.:

Sheet # 1 (attached): General Fund to city as per development square footage as proposed by developer.

Sheet # 2 (attached): General fund to city with scaled down development – this is the scenario where the development plans are scaled down from 9.1 Million sq ft to 5.8 million square foot with very nominal effect to our general fund revenues. We still get 89% of general fund for the city. This also get us open space of 110.5 Acres instead of just 35 acres as per the current proposal. **Leasing out more than 75.6 acres of city land for 99 years just for annual general fund revenue of 2.187 Million dollars (as per current projections) a year does not make sense. This open space of**

75.6 acres is valued much more than this to city residents. The "Fiscal/Economic Benefit" report should be considered with all due diligence by council.

Please note, in case developer needs to increase the total sq. footage to 7,514K as per "Scheme A Variant" (with which developer is ok with), the council can look into increasing the density for parcel #3, #4, #5, this should make the project fully financially viable for developer.

We are approving/considering the project with a big "IF" of 1480 housing units approval subject to state agencies approval, I would highly request that our approval/consideration should also be conditional on this approval. In case the state agencies do not approve 1480 housing units, the jobs to housing ratio will be impacted in a big way and the development will cause lots of traffic issues. In case the housing units are not approved, the sheet # 2 proposal makes even more sense.

My suggestions will save us the BMX (Parcel#1) and Parcel #2. Having a park on Parcel # 2 will also be beneficial in a way that it is right next to our future high density development (Tasman East) and the single family residents on the east of Lafayette St., these residents can also use the same just by walking. Parcel#2 can be used for a senior center for the northside of the city.

With these options, we will have open space of 110.5 acres left with the city, this can be used for parks and for any future development in future.

Hope you will consider these options for the sake of saving precious land resource and open space for city.

I would request that in future the residents should have more time to review the "Fiscal/Economic Benefit Analysis" for a project of this magnitude.

Thanks for your service and time to review this document.

Regards,

Raj Chahal
P;408-690-3219

Current OPTION - Annual GF Revenue

Parcel - Acres	Usage	Bldg Sq Ft	Property Tax City share @10.17%	Sales Tax - City Share	Transit Tax /CFD	Total Annual GF Revenue
P-1 - 49.6 Acre						
	Office	1,200,000	\$781,000			\$781,000
P-2 - 60.9 Acre						
	Office	2,160,000	\$1,406,000			\$1,406,000
P-3 - 34.9 Acre						
	Office	720,000	\$469,000			\$469,000
P-4 - 86.6 Acre						
	Office	1,386,400	\$2,709,000	\$6,602,000	\$3,143,000	\$12,454,000
	Commercial/retail	1,415,000				
	Residential	1,160,000				
Total 4259K	Hotel	298,000				
P-5 - 8 Acres						
	Office	258,000	\$507,000	\$547,000	\$3,853,000	\$4,907,000
	Commercial/retail	87,000				
	Residential	200,000				
Total -825K	Hotel	280,000				
	Total	9,164,400	\$5,872,000	\$7,149,000	\$6,996,000	
			Total Annual Revenue to GF			\$20,017,000
*** Please note the sq footage of Parcel#3 will be distributed across other parcels.***						
*** Just to have apples to apples comparison with "fiscal studies" as presented, I have not made that change above**						

PROPOSED OPTION - no build out on Parcel 1 and 2 - Annual GF Revenue

Parcel - Acres	Usage	Bldg Sq Ft	Property Tax City share @10.17%	Sales Tax - City Share	Transit Tax /CFD	Total Annual GF Revenue
P-1 - 49.6 Acre						
	Office	0	\$0			\$0
P-2 - 60.9 Acre						
	Office	0	\$0			\$0
P-3 - 34.9 Acre						
	Office	720,000	\$469,000			\$469,000
P-4 - 86.6 Acre						
	Office	1,386,400	\$2,709,000	\$6,602,000	\$3,143,000	\$12,454,000
	Commercial/retail	1,415,000				
	Residential	1,160,000				
	Hotel	298,000				
P-5 - 8 Acres						
	Office	258,000	\$507,000	\$547,000	\$3,853,000	\$4,907,000
	Commercial/retail	87,000				
	Residential	200,000				
	Hotel	280,000				
	Total	5,804,400	\$3,685,000	\$7,149,000	\$6,996,000	
NOTES:				Total Annual Revenue to GF		\$17,830,000
	Total Acres used 129.5			GF % age of current Scenario		89%
	Open space left 110.5 Acres					
	We have additional 75.6 Acres of open space and our annual GF revenue is still at 89%					
	Jobs to Housing ratio will be much better					
	Traffic issues will be much better					
We can increase the office space at Parcel 3 to 1,238,000 sq ft. (Same FAR ratio as for Parcel 2) - total office space 2,882K sq ft. with total sq ft to be 6,322,000 sq ft. (As per Scheme A Variant Developer is ok with 7,514K total sq.ft)						
Total GF revenue will be \$18,167,000 which will be 90.75% of current scenario.						

Lynn Garcia

Subject:

FW: Suds comments on Santa Clara City Place Agenda Item: 14A

From: Sudhanshu Jain <suds@sudsjain.com>

Date: June 26, 2016 at 11:43:51 PM PDT

To: Mayor and Council <MAYORANDCOUNCIL@santaclaraca.gov>, Teresa O'Neill <teresa.oneillsc@gmail.com>, Dominic Caserta <djcaserta@gmail.com>, "patkolstad@aol.com" <patkolstad@aol.com>, Rajeev Batra <RBatra@santaclaraca.gov>

Subject: Suds comments on Santa Clara City Place Agenda Item: 14A

Reply-To: suds@sudsjain.com

Dear City Manager Batra, Mayor Gillmor, and Councilmembers,

You may know that I voted against accepting the resolutions for the Santa Clara City Place projects.

My main objections were that Planning Commissioners did not have enough time to read an 1100 page

packet and that studies had not been done regarding uses of the 35 acre park on Parcel 3 and that

traffic and housing studies for the larger area are needed especially for a project that is 4 times larger

than the Stadium. I asked for postponement of the planning commission vote but that did not happen.

I ask that you delay your vote on this project until we have more data regarding impacts.

Here are my main comments:

1. June 28th City Council packet does not reflect the fact that two Planning commissioners voted against approval

2. Planning commission meeting minutes which should reflect discussion points by commissioners are not available. They for

some reason are being delayed and were not available for Planning Commission acceptance at the following meeting.

3. All the agreement documents that were made available to Planning Commissioners are missing from

the City Council packet so Councilmembers and the public don't have easy access to the actual documents

that they are approving.

4. Planning Commissioners did not have enough time to read the packets before the PC meeting and some

had asked for a delay in the process. No where is this history reflected in the City Council Packet

5. No research has been done regarding what the City can put on the 35 acre park parcel -- what is

the feasibility of putting tennis courts or soccer or cricket fields there?

6. The city needs a more comprehensive plan for the entire area which will consider traffic, housing and

recreation when including impact of Tasman East and Le-Eco developments. City Place and Le-Eco will

bring 40,000 workers to Tasman. That completely violates the general plan.

7. The City already has a bad jobs to housing ratio. This project will make that ratio worse.

Mitigation plans are inadequate.

8. The City Manager and Clerk's offices have known that this project would be on the Council agenda for

weeks and yet the general public was only noticed 4 days in advance. When will council agenda's be

released 7 days in advance and tentative agendas be made available weeks in advance like other

cities do? We need our city government and documents to be more open, transparent and widely accessible to the public.

-- Suds Jain

Cell: 408-499-2955