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OA/ID Number: 19511
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Climate Change Other Federal Use/Transportation

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001. list	[Personally Identifiable Information] [partial] (1 page)	00/00/1999	b(6)

COLLECTION:

Clinton Presidential Records
Office of Environmental Initiatives
Roger Ballentine
OA/Box Number: 19511

FOLDER TITLE:

Climate Change Other Federal Use/Transportation

2017-1093-F
rs3166

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P1 National Security Classified Information [(a)(1) of the PRA]
P2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P3 Release would violate a Federal statute [(a)(3) of the PRA]
P4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
P6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Personal record misfile defined in accordance with 44 U.S.C. 2201(3).

RR. Document will be reviewed upon request.

Freedom of Information Act - [5 U.S.C. 552(b)]

b(1) National security classified information [(b)(1) of the FOIA]
b(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
b(3) Release would violate a Federal statute [(b)(3) of the FOIA]
b(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
b(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
b(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
b(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
b(9) Release would disclose geological or geophysical information concerning wells [(b)(9) of the FOIA]

MEMORANDUM TO JOHN PODESTA

FROM: ROGER BALLENTINE

RE: ENERGY EFFICIENCY EXECUTIVE ORDER

DATE: JULY 19, 2000

Recent developments regarding government-wide implementation of energy efficiency Executive Order:

- OMB has scheduled a meeting on Thursday, August 3 for the Senior Officials at each agency with responsibility for the Executive Order. A request was made that each agency submit a 1-2 page summary of their recent implementation activities. (Roger – I have attached the invite and the memo that suggests metrics they can report on. This is in response to your/Podesta's wish to get some detail early).
- The next Senior Energy Officials Meeting will be announced for October 13, 2000.
- DOE has announced its intention to speed the use of energy saving performance contracting in its own facilities. They have announced a new plan and internal review process, circulated guidance to DOE field offices, and invited energy saving performance contractors to send proposals immediately for consideration. If successful, it is expected that other agencies will adopt these procedures.
- Wesley Warren at OMB is scheduling a lunch with his counterparts (PADS) on July 28th to tout energy savings and to ask them to urge their agencies to participate to the maximum. OMB has circulated A-11 budget guidance to each agency that included instructions for submitting budget requests for adequate funds for energy efficiency activities.
- All Federal agencies have now received guidance as required in the EO on how to be successful in reporting, submitting information for the 2000 scorecard, creating their agency implementation plans and more.
- OMB is sending letters to all agencies letting them know that their 2000 Implementation Plans were largely inadequate (with the exception of GSA, NASA, DOE, DOD and USDA which are getting an alternate, positive letter) and telling them how to do better in 2001.
- DOE is preparing special sessions for agency energy officials at their August 20-23 conference in Pittsburgh called ENERGY 2000. OMB has asked all Senior Energy Officials to send their agency energy teams to this how-to conference.
- One-on-one agency meetings have begun to assist lagging agencies in doing better on EO compliance.
- OMB has made this activity a Priority Management Objective, increasing the likelihood that agencies will participate.

All of these activities would be aided immeasurably by a letter or other communication from POTUS or his Chief of Staff telling agency heads that this issue remains a priority and that agency performance lags potential for savings.

June 22, 2000

MEMORANDUM TO ROGER BALLENTINE

FROM SHELLEY FIDLER

RE ACTIONS TO BOOST COMPLIANCE WITH EO 13123

After meeting with Sally Katzen, Ken Oscar, Wesley Warren and other OMB staff we have developed the following work plan for the next few months:

June

Missed the meeting - Memo to Podesta asking POTUS to mention EO in next Cabinet Meeting WHCCTF/Ballentine

- Invite Senior Energy Officials to July 29 meeting (include draft agenda so agencies have a list of expectations for the meeting) OMB/WHCCTF Done – meeting will be Thursday, August 3 – 1:30-3:30 – Agenda attached.
- Finalize and circulate 2000 Scorecard, FEMP reporting guidance, implementation plan outline along with schedule for agencies of all deliverables expected this year OMB/FEMP
- Clear and circulate DOE Guidance package OMB/FEMP Done
- Review and provide feedback on agency 2000 implementation plans – send successful plans OMB – In progress (reviewing letters today)
- Draft responses to POTUS letter from Senator Bingaman, AGA and the Alliance to Save Energy, circulate for review WHCCTF – Drafts to Leg Affairs and Presidential Correspondence
- Begin one-on-one meetings with agencies WHCCTF/FEMP/DOE – In progress
- Finalize and issue DOE ESPC Guidance for DOE installations DOE/FEMP/OMB – Done – working on OMB/DOE meeting with ESCO's.
- Request agencies send agency teams to Energy 2000 in August, design special session for energy teams into conference FEMP/OMB – Session included, notice sent, is on agenda for 8/3 meeting.

July

- Circulate A-11 budget guidance OMB – Done in draft to all agencies – awaiting final OMB action
- Continue one-on-one agency meetings WHCCTF/FEMP – In progress
- OMB memo to agencies on importance of PMO/EO
- OMB briefs RMOs (budget examiners) – In discussion with OMB
- OMB briefs PADS – Wesley scheduling lunch for PADS
- Sally Katzen addresses next Sr. Agency Official and PMC meetings on EO OMB/WHCCTF – OK for 8/3
- Push to finalize and circulate FAR rule (for energy efficient procurement) OMB – Ken Oscar has circulated

- Work on green power FAR rule OMB - DEAD
- Hold meeting of Interagency Energy Task Force July 10 to prepare for July 29 Sr. Energy Official Meeting on FEMP - DONE
- Kickoff meeting with ESCO's on new DOE policy OMB/DOE – DOE held meeting – Wesley will have followup
- Select Presidential winner award for 1999 WHCCTF/OMB/FEMP
- Approve and circulate letter to Procurement Executives OMB (awaiting Ken Oscar formally coming on board) - Done
- Brief Ken Oscar OMB/WHCCTF
- Complete action to include a notice on EO for all Federal credit card holders OMB/GSA

August

- Develop criteria for Presidential award and circulate to agencies WHCCTF/OMB/FEMP
- Issue retention of funds guidance OMB
- Complete appointment of private advisory committee DOE
- Continue and complete one-on-one agency meetings

June 22, 2000

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- Begin one-on-one meetings with agencies WHCCTF/FEMP/DOE
- Finalize and issue DOE ESPC Guidance for DOE installations DOE/FEMP/OMB
- Request agencies send agency teams to Energy 2000 in August, design special session for energy teams into conference FEMP/OMB

July

- Circulate A-11 budget guidance OMB
- Continue one-on-one agency meetings WHCCTF/FEMP
- OMB memo to agencies on importance of PMO/EO
- OMB briefs RMOs (budget examiners)
- OMB briefs PADS
- Sally Katzen addresses next Sr. Agency Official and PMC meetings on EO OMB/WHCCTF
- Push to finalize and circulate FAR rule (for energy efficient procurement) OMB
- ~~cancel~~ - Work on green power FAR rule OMB
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June 22, 2000

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June

- Memo to Podesta asking POTUS to mention EO in next Cabinet Meeting *when*
- Invite Senior Energy Officials to July 29 meeting (include draft agenda so agencies have a list of expectations for the meeting) OMB/WHCCTF
- Finalize and circulate 2000 Scorecard, FEMP reporting guidance, implementation plan outline along with schedule for agencies of all deliverables expected this year OMB/FEMP ?
- Clear and circulate DOE Guidance package OMB/FEMP
- Review and provide feedback on agency 2000 implementation plans – send successful plans OMB
- Draft responses to POTUS letter from Senator Bingaman, AGA and the Alliance to Save Energy, circulate for review WHCCTF
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- Finalize and issue DOE ESPC Guidance for DOE installations DOE/FEMP/OMB
- Request agencies send agency teams to Energy 2000 in August, design special session for energy teams into conference FEMP/OMB

July

- Circulate A-11 budget guidance OMB
- Continue one-on-one agency meetings WHCCTF/FEMP
- OMB memo to agencies on importance of PMO/EO
- OMB briefs RMOs (budget examiners)
- OMB briefs PADS
- Sally Katzen addresses next Sr. Agency Official and PMC meetings on EO OMB/WHCCTF
- Push to finalize and circulate FAR rule (for energy efficient procurement) OMB
- Work on green power FAR rule OMB → *id like more info.*
- Hold meeting of Interagency Energy Task Force July 10 to prepare for July 29 Sr. Energy Official Meeting on FEMP
- Kickoff meeting with ESCO's on new DOE policy OMB/DOE
- Select Presidential winner award for 1999 WHCCTF/OMB/FEMP
- Approve and circulate letter to Procurement Executives OMB (awaiting Ken Oscar formally)

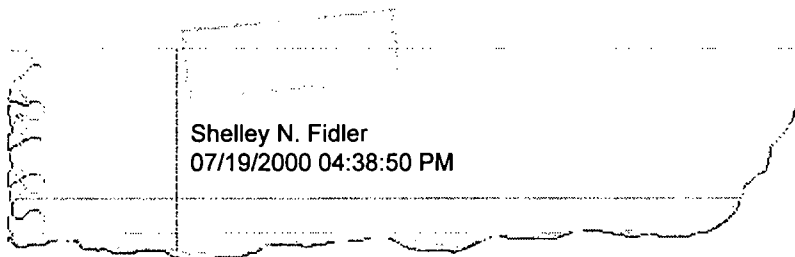
coming on board)

- Brief Ken Oscar OMB/WHCCTF
- Complete action to include a notice on EO for all Federal credit card holders OMB/GSA

August

- Develop criteria for Presidential award and circulate to agencies WHCCTF/OMB/FEMP
- Issue retention of funds guidance OMB
- Complete appointment of private advisory committee DOE — ??
- Continue and complete one-on-one agency meetings

What about setting new,
earlier reporting deadline?
Have we done that?



Record Type: Record

To: Roger S. Ballentine/WHO/EOP@EOP
cc: Angela C. Mizeur/WHO/EOP@EOP
Subject: OMB Energy Management Meeting - NOTICE SECOND DATE CHANGE

Here's invite for 8/3 meeting, agenda, Goes with other e mail.

----- Forwarded by Shelley N. Fidler/WHCCTF/EOP on 07/19/2000 04:33 PM -----



Cynthia A. Vallina
07/14/2000 04:55:36 PM
.....

Record Type: Record

To: See the distribution list at the bottom of this message
cc: Sarah E. Cottrell/CEQ/EOP@EOP, Shelley N. Fidler/WHCCTF/EOP@EOP, Christine McDonald/OMB/EOP@EOP, Robert Sandoli/OMB/EOP@EOP
Subject: OMB Energy Management Meeting - NOTICE SECOND DATE CHANGE

I apologize for the confusion it may cause, but the OMB meeting of Senior Energy Officials will now be held on **Thursday, August 3, 2000 in the Truman Room of the White House Conference Center**. It will not be held on July 26 or August 1. This meeting is for senior energy officials designated under Executive Order 13123. An official announcement, tentative agenda and list of metrics for the meeting are attached.

MEMORANDUM FOR AGENCY SENIOR ENERGY OFFICIALS DESIGNATED UNDER SECTION 304 OF EXECUTIVE ORDER 13123

FROM: Sally Katzen
Counselor to the Director

SUBJECT: **August 3 Senior Energy Officials Meeting on Federal Energy Management**

On Thursday, August 3, 2000 from 1:30 until 3:30 p.m., in the Truman Room of the White

House Conference Center, there will be a meeting of Senior Energy Officials to discuss agencies= recent efforts to implement Executive Order 13123. A tentative agenda is attached.

At the meeting, we will discuss agencies= potential use of Energy Savings Performance Contracting (ESPC) and Utility Energy Savings Contracts (UESC). There will also be a presentation on the new Whole Building Design Guide, a web-based tool to assist you in identifying and selecting sustainable building design criteria. In addition, OMB will review agencies= FY 2000 reporting obligations and guidance required by the Executive Order.

Also attached to this memorandum is a list of metrics for energy efficient management. The categories outlined in the list are not comprehensive and are only a guide to help you identify opportunities for improving compliance. We would like each agency to submit at the meeting a 1-2 page summary of recent actions taken to implement Executive Order 13123. Please be prepared to give a brief oral description of your efforts as well.

Only *designated* Senior Energy Officials should attend the meeting. Additional agency representatives may attend, space permitting. To confirm your attendance at the meeting, please contact Sarah Cottrell at 202-395-2313 on or before Friday, July 28.

Attachments



AGENDA700.WPMETRICSfinal.d

Message Sent To: _____

Metrics for Energy Efficient Management

7-7-00

The following metrics are suggested items on which Senior Energy Officials may choose to report during the upcoming quarterly meetings. All agencies should submit a 1-2 page summary on their implementation progress on Executive Order 13123, and several agencies should be prepared to orally discuss their successful efforts at the July meeting. This list is not intended to be comprehensive and if agencies have taken other actions to implement the Order, they too may be reported. Comments and suggestions on other issues that we should emphasize are welcome. Please call Christine McDonald at OMB (202-395-7868) with your ideas.

1. Management and Administration - Improvements to management procedures or administration processes

- Incorporate energy efficiency and other Executive Order responsibilities into new hire orientation, procurement training, credit card training, etc.
- Institute annual energy efficiency and renewable energy awareness training.
- Issue memorandum from senior procurement executive stressing the importance of energy efficiency initiatives.
- Notify employees of Executive Order/Energy Efficiency priority.
 - Memorandum to employees - lights & equipment off when not in use.
 - Post signs in common areas as reminders to conserve energy.
- Establish an internal energy conservation audit system.
 - Designate individual responsible for review of building(s).
 - Establish rotating schedule of auditors.
- Create an internal 'Energy Scorecard' for the agency, even for each building or facility.
- Define performance metrics for energy efficiency and renewable energy.
 - Include performance goals and measures in GPRA annual & strategic plans.
 - Document metrics in performance plans of senior officials, energy team members and other key individuals.
- Institute an award program for recognizing employees for exemplary efforts.
- Establish regular internal 'Energy Workshops' to review compliance status, discuss success stories, and promote efficient energy management.
- Meet with GSA to emphasize importance of energy efficiency in GSA-managed buildings.
- Develop instructions for including energy efficiency funds in budget requests.
- Send Energy Team members to DOE's "Energy 2000" conference, Aug. 21-23 in Pittsburgh, PA.
- Implement plans for quick demand reduction at facilities located in areas vulnerable to summer blackouts and brownouts in heat emergencies.

2. Operation & Maintenance/ Retrofits - Implementation of specific energy saving improvements to facilities or equipment

- Finalize and award all Energy Savings Performance Contract (ESPC) delivery orders or Utility Energy Service Contracts (UESC) that are currently in process.

Metrics for Energy Efficient Management

7-7-00

- Look for more UESC and ESPC opportunities where appropriate.
- Implement procedures to reduce energy use during 'heat emergencies'
 - Work with local utilities to manage peak demand situations.
- Upgrade back-up power systems to renewable or other energy efficient equipment.
- Create and document a full facility audit program with metrics and schedule.
- Install water and electricity meters on all buildings.
- Install timer systems on window air conditioner units.
- Install energy-reducing controls on building HVAC systems.

3. Product Procurement - Purchase of energy saving or energy efficient products

- Purchase off-grid power generation systems.
- Install solar water heating systems.
- Purchase and install compact fluorescent lighting wherever possible.
 - Make use of Defense Logistics Agency's (DLA's) 2-for-1 bulb purchase option.
- Implement procurement procedures to require the consideration and purchase of ENERGY STAR- and energy efficient equipment where applicable.
- Initiate procurement preferences for energy efficiency and ENERGY STAR- products.

4. Building Construction and Renovations - Construction of new energy efficient facilities

- Ensure that all new buildings incorporate ENERGY STAR- Building criteria (www.epa.gov/buildings/label).
- Use Whole Building Design tools (www.wbdg.org) to utilize sustainable building design principles.
- Modify contracts to require that renovations and new construction include energy efficiency criteria.
- Designate Showcase Facilities at major or visible sites.

5. Green Power Purchasing (grid-connected power) - Integration of renewable power (solar, wind, biomass, geothermal) into energy portfolio

- Improve existing contracts with utilities to include more renewable power.
- Include renewable portfolio requirement in contract bidding system.
- Contact the DOE or GSA to participate in innovative green power purchases.

THE WHITE HOUSE

WASHINGTON

August 22, 2000

Dear Jeff:

Thank you for your letter marking the anniversary of the issuance of Executive Order 13123, Greening the Government Through Efficient Energy Management. As you know, I strongly believe that by fully utilizing all of the innovative tools available to the Federal government, we can decrease spending on energy costs, protect the environment, reduce the emissions that lead to global warming, and speed new, clean energy technologies to the market.

My Administration is committed to delivering on the promise of the Executive Order, and I can assure you that the agencies with responsibilities under the Order are working hard to get the appropriate guidance out so that all Federal agencies can achieve the savings we are counting on. In addition, I have asked my staff to see if we can accelerate some of the performance and reporting guidelines.

I appreciate your interest in this important matter, and I look forward to continuing our efforts together to reduce energy costs and protect our environment for future generations of Americans.

Sincerely,

A handwritten signature in black ink, appearing to read "Bill Clinton", with a long horizontal stroke extending to the right.

The Honorable Jeff Bingaman
United States Senate
Washington, D.C. 20510

Electric Vehicle Association of the Americas Natural Gas Vehicle Coalition

October 21, 1999

Mr. Roger Ballentine
Deputy Assistant to the President
for Environmental Initiatives
115 OEOB
Washington, DC 20502

Mr. George Frampton
Chairman,
Council on Environmental Quality
360 OEOB
Washington, DC 20503

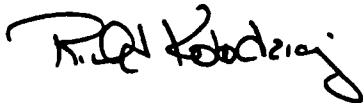
Dear Sirs:

We understand that the Administration is nearing completion of its new Executive Order concerning the use of alternative fuels and more efficient vehicles in the federal fleet. The Natural Gas Vehicle Coalition and the Electric Vehicle Association of the Americas are strong supporters of federal vehicle procurement efforts and, therefore, have a direct interest in the successful development and implementation of the proposed Executive Order. We are particularly concerned that the Final Order ensure that increasing the use of non-petroleum fuels and the efficiency of federal fleet vehicles are compatible goals.

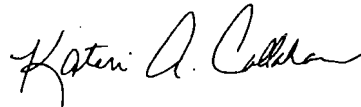
We would like to meet with you and others involved in the drafting of this document in advance of its issuance to share ideas for improving the federal fleet's performance. Our member companies have had extensive experience in the sale of natural gas and electric vehicles to GSA and other federal agencies and the provision of fuel for these vehicles. We believe there are many issues that have plagued and continue to hamper the use of alternative fuels in federal fleet vehicles. We believe that an effective Executive Order is critical if the federal government truly is to be a model for other government and private fleets.

Please have your office call Mr. Paul Kerkhoven at (703) 527-2237 so we can schedule a mutually convenient time to meet and discuss these issues. Your consideration is deeply appreciated.

Sincerely,



Richard R. Kolodziej
President
Natural Gas Vehicle Coalition



Kateri A. Callahan
Executive Director
Electric Vehicle Association
of the Americas

cc: Shelley Fidler, White House Climate Change Task Force
Joshua Gotbaum, Office of Management and Budget
Linda Lance, Council on Environmental Quality
Wesley Warren, Council on Environmental Quality

**PHOTOCOPY
PRESERVATION**

DOE
9/27/99

SO DRAFT
ITS ALMOST
NOT WRITTEN
YET

Fuel Economy Review Model Year 2000

Introduction

This model year marks many changes in automobile technology that shows how advanced technologies can dramatically improve fuel economy while still delivering vehicles that Americans want to buy. It also marks a change in how the Federal government distributes fuel economy data—using web-based databases and tools so prospective car buyers can stay fully informed about the fuel economy and environmental consequences of their vehicle choices. That's the good news. The bad news is that gas-guzzling SUVs and large trucks keep getting bigger and less efficient. America's best-selling pickups are also America's biggest gas-guzzlers.

The Honda Insight – Top Fuel Economy Honors Made Possible by Advanced Technology

How do they do it? With breathtaking roll-out this fall, Honda delivered a 65 mpg coupe that also gets ultra-low emissions. The vehicle combines a super-efficient 1 liter gasoline engine with advanced electric vehicle technology to create what's called a hybrid. The electric motor, powered by a battery, improves acceleration, allowing the small gasoline engine to operate at its most fuel efficient. Braking energy is recovered and used to re-charge the electric battery. Aerodynamic styling and reduced weight from an innovative aluminum frame and body also contribute to very high fuel economy. This vehicle has a rated fuel economy of 61 mpg in the city and 70 on the highway. Many drivers will get higher.

The Insight's annual fuels costs are estimated to be about \$275, nearly \$100 lower than the next most fuel efficient vehicle, and over a thousand dollars less than SUVs you've seen carry nothing more than a driver and a coffee cup. Better still, the Honda Insight breaks our long-held presumption that fuel efficient vehicles have to be cheap, poorly appointed, and no-fun to drive. Using advanced technologies, Honda's designers and engineers were able to deliver a high-satisfaction vehicle that is also an environmentally friendly vehicle.

Featured in Consumer Reports, New York Times, Wall Street Journal, and other papers and magazines, the Honda Insight has raised the bar in what appears to be a growing competition among auto manufacturers to build environmentally sound vehicles. Toyota plans to bring a hybrid vehicle to the U.S. market by mid-year, 2000, and other companies have hybrids on the drawing boards.

Popular Vehicles That Deliver Leading Fuel Economy

Fuel economy is not restricted to just small cars or just advanced technology vehicles. Fuel efficient vehicles are available in every class of vehicles that Americans buy. In years past, publication of "Top Ten" lists erroneously left the impression that consumers should feel guilty if they couldn't buy a sub-compact with high fuel economy. Instead, Americans deserve information on the fuel economy leaders in the top-selling categories so they can make a more informed decision. In the table below, we have summarized some of these fuel economy leaders. All of this data is available on our web-site, www.fueleconomy.gov, and will be printed in the guide. The web-site allows consumers to search and compare vehicles within a class and across classes, and for all types of fuels.

Please be aware that many of these vehicles come with either automatic or manual transmissions which can effect fuel economy. Gasoline and diesel vehicles are listed, but alternative fuel vehicles are also becoming increasingly available. These vehicles are also available in a range of engine sizes and trim lines, resulting in different fuel economy values. Check the fuel economy guide or the fuel economy sticker on new vehicles to find the values for a particular version of a vehicle.

www.fueleconomy.gov

TEST SITE edman.ed.ornl.gov userid & pw "feg"

Fuel Economy Leaders in Popular Classes				
		Transmission	City MPG	Highway MPG
HIGHEST OF ALL:	Honda Insight	Manual	61	70
SUBCOMPACT CARS:	Volkswagen New Beetle Diesel	Manual	42	49
	Chevrolet Metro	Manual	39	46
	Volkswagen New Beetle Diesel	Automatic	34	45
	Honda Civic HX	Automatic	34	38
COMPACT CARS:	Volkswagen Golf/Jetta Diesel	Manual	42	49
	Volkswagen Golf/Jetta Diesel	Automatic	34	45
	Toyota Echo	Manual	34	41
	Toyota Echo	Automatic	31	38
MIDSIZE CARS:	Mazda 626	Manual	26	32
	Saturn LS	Automatic	23	32
	Honda Accord	Automatic	23	30
	Toyota Camry	Automatic	23	30
LARGE CARS:	Toyota Avalon	Automatic	21	29
	Chevrolet Impala	Automatic	20	32
	Chrysler Concorde/Dodge Intrepid	Automatic	20	29
	Ford Taurus	Automatic	20	28
PICKUP TRUCKS:	Chevrolet S10/GMC Sonoma/ Isuzu Hombre	Manual	23	29
	Ford Ranger/ Mazda 2500	Manual	22	27
	Toyota Tacoma	Automatic	21	24
	Chevrolet S10/GMC Sonoma/ Isuzu Hombre	Automatic	19	26
MINIVANS:	Dodge Caravan/ Plymouth Voyager	Automatic	20	26
	Chevrolet Venture/ Oldsmobile Silhouette/ Pontiac Montana	Automatic	19	26
SMALL SUVs:	Chevrolet Tracker/ Suzuki Vitara	Automatic/Manual	25	27/28
	Toyota RAV4	Automatic/Manual	24	29/29
	Subaru Forester	Automatic	22	27
LARGE SUVs: 3.0 liter engines and larger	Jeep Cherokee	Manual	18	24
	Ford Explorer	Manual	18	23
	Jeep Grand Cherokee	Automatic	17	22
	Toyota 4Runner	Automatic	17	21
	Mitsubishi Montero Sport/Nativa	Automatic	17	20

*Note: This chart is likely to be shown landscape with bars indicating annual fuel costs.

The Top Ten--Most Fuel Efficient Vehicles in MY 2000

Although the Honda Insight leads all vehicles by a wide margin, there are numerous vehicles that deliver very high fuel economy. Obviously, many companies have the engineers and the technology to design and manufacture high fuel economy vehicles. This year's top ten includes vehicles from Honda, Volkswagen, Chevrolet, Suzuki, Toyota, and Mitsubishi.

1	HONDA	INSIGHT	65 (m)
2	VOLKSWAGEN	GOLF	45 (m)/38 (a)
3	VOLKSWAGEN	JETTA	45 (m)/38 (a)
4	VOLKSWAGEN	NEW BEETLE	45 (m)/38 (a)
5	CHEVROLET	METRO	42(m)/39 (a)
6	SUZUKI	SWIFT	39 (m)
7	HONDA	CIVIC HX	38 (m)/36 (a)
8	TOYOTA	ECHO	37(m)
9	MITSUBISHI	MITSUBISHI MIRAGE	35(m)
10	CHEVROLET	PRIZM	34(m)

The least fuel efficient vehicle in the top 10 gets 34 mpg, the best gets double that. Although the most efficient vehicle in MY 2000 uses gasoline in a hybrid configuration, diesel technology demonstrates its benefits with 3 vehicles in the top 10, the best of which gets 45 mpg. Although diesel vehicles currently are allowed to emit slightly higher levels of pollution which can contribute to ozone, manufacturers, fuel suppliers, the Department of Energy and the Environmental Protection Agency are all studying how to reduce diesel emissions.

The Bottom Ten--Biggest Gas Guzzlers in History

As in the past, high-performance sports cars are the biggest gas guzzlers on the market. But then, one might not expect more than 10-12 mpg in a Ferrari. The big news in MY 2000, however, is that top-selling, gas guzzling big trucks account for 5 of the 10 biggest guzzlers, and 20 of the worst 50. Sales weighted averages show that big trucks are far and away the biggest gas-guzzlers on the market today. The Dodge Dakota Pickup gets only 13 mpg, just one mpg better than a Ferrari. The best selling truck in American, the Ford F150 gets only 14 mpg. Cargo vans and huge passenger vans, though still guzzlers, do better at 15 mpg!! And while the Ferrari pays a gas-guzzler tax of about \$TBD, trucks are exempt.

Big sport utility vehicles (SUVs) based on these trucks are just as bad. There are 30 models that get 16 mpg or worse, with 14 at 16 mpg, with 9 at 15 mpg, 5 at 14 mpg, and 2 at 13 mpg. The best SUV with 3.0 liter or larger engine gets 18 mpg. The best small SUV, by comparison, gets 26 mpg. With annual driving of about 15,000 miles, the gas guzzling 13 mpg SUV costs drivers almost \$700 more at gasoline prices of \$1.20 per gallon.

BAC KUP

Worst Fuel Economy MY 2000

	Manufacturer	carline name	displ	cyl	trans	cty	hwy	cmb	drv	Class	cls
1	FERRARI	FERRARI 550 MARANELLO	5.5	12	Manual(M6)	8	13	10	R	TWO SEATERS	1
2	FERRARI	FERRARI 456 MGT/MGTA	5.5	12	Auto(L4)	10	15	11	R	SUBCOMPACT CARS	3
3	FERRARI	FERRARI 456 MGT/MGTA	5.5	12	Manual(M6)	10	16	12	R	SUBCOMPACT CARS	3
4	DODGE	DAKOTA PICKUP 4WD	5.9	8	Auto(L4)	12	16	13	4	STANDARD PICKUP TRUCKS 4WD	13
5	DODGE	B2500 WAGON 2WD	5.2	8	Auto(L4)	12	15	13	R	VANS, PASSENGER TYPE	15
6	ASTON MARTIN	DB-7 VANTAGE COUPE	5.9	12	Manual(M6)	11	18	13	R	MINICOMPACT CARS	2
7	ASTON MARTIN	DB-7 VANTAGE VOLANTE	5.9	12	Auto(L5)	11	18	13	R	MINICOMPACT CARS	2
8	ASTON MARTIN	DB-7 VANTAGE VOLANTE	5.9	12	Manual(M6)	11	18	13	R	MINICOMPACT CARS	2
9	FORD	F150 PICKUP 2WD	5.4	8	Auto(L4)	13	17	14	R	STANDARD PICKUP TRUCKS 2WD	12
10	DODGE	RAM 1500 PICKUP 4WD	5.2	8	Manual(M5)	13	17	14	4	STANDARD PICKUP TRUCKS 4WD	13
	DODGE	RAM 1500 PICKUP 2WD	5.9	8	Auto(L4)	12	18	14	R	STANDARD PICKUP TRUCKS 2WD	12
	DODGE	DAKOTA PICKUP 2WD	5.9	8	Auto(L4)	12	17	14	R	STANDARD PICKUP TRUCKS 2WD	12
	CHEVROLET	C2500 SILVERADO 2WD	6.0	8	Auto(L4)	12	16	14	R	STANDARD PICKUP TRUCKS 2WD	12
	GMC	C2500 SIERRA 2WD	6.0	8	Auto(L4)	12	16	14	R	STANDARD PICKUP TRUCKS 2WD	12
	DODGE	RAM 1500 PICKUP 4WD	5.9	8	Auto(L4)	12	17	14	4	STANDARD PICKUP TRUCKS 4WD	13
	DODGE	RAM 1500 PICKUP 4WD	5.2	8	Auto(L4)	12	16	14	4	STANDARD PICKUP TRUCKS 4WD	13
	DODGE	B2500 VAN 2WD	5.9	8	Auto(L4)	12	18	14	R	VANS, CARGO TYPE	14
	DODGE	B1500 VAN 2WD	5.9	8	Auto(L4)	12	17	14	R	VANS, CARGO TYPE	14
	DODGE	B2500 WAGON 2WD	5.9	8	Auto(L4)	12	18	14	R	VANS, PASSENGER TYPE	15
	ASTON MARTIN	DB-7 VANTAGE COUPE	5.9	12	Auto(L5)	11	19	14	R	MINICOMPACT CARS	2
	FORD	F150 PICKUP 4WD	5.4	8	Auto(L4)	14	18	15	4	STANDARD PICKUP TRUCKS 4WD	13
	TOYOTA	TOYOTA TUNDRA 4WD	4.7	8	Auto(L4)	14	17	15	4	STANDARD PICKUP TRUCKS 4WD	13
	CHEVROLET	G1500/2500 CHEVY VAN 2WD	5.7	8	Auto(L4)	14	18	15	R	VANS, CARGO TYPE	14
	FORD	E250 ECONOLINE 2WD	4.2	6	Auto(L4)	14	18	15	R	VANS, CARGO TYPE	14
	GMC	G1500/2500 SAVANA 2WD CARGO	5.7	8	Auto(L4)	14	18	15	R	VANS, CARGO TYPE	14
	CHEVROLET	G1500/2500 CHEVY EXPRESS 2W	5.7	8	Auto(L4)	14	18	15	R	VANS, PASSENGER TYPE	15
	GMC	G1500/2500 SAVANA PASSENGER	5.7	8	Auto(L4)	14	18	15	R	VANS, PASSENGER TYPE	15
	CHEVROLET	G1500/2500 CHEVY EXPRESS 2W	5.0	8	Auto(L4)	14	17	15	R	VANS, PASSENGER TYPE	15
	FORD	E150 CLUB WAGON	4.2	6	Auto(L4)	14	17	15	R	VANS, PASSENGER TYPE	15
	GMC	G1500/2500 SAVANA PASSENGER	5.0	8	Auto(L4)	14	17	15	R	VANS, PASSENGER TYPE	15
	DODGE	B1500 WAGON 2WD	3.9	6	Auto(L3)	14	16	15	R	VANS, PASSENGER TYPE	15
	DODGE	RAM 1500 PICKUP 2WD	5.2	8	Auto(L4)	13	18	15	R	STANDARD PICKUP TRUCKS 2WD	12
	MERCEDES-BENZ	SL600	6.0	12	Auto(L5)	13	19	15	R	TWO SEATERS	1
	DODGE	B1500 VAN 2WD	5.2	8	Auto(L4)	13	19	15	R	VANS, CARGO TYPE	14
	DODGE	B2500 VAN 2WD	5.2	8	Auto(L4)	13	19	15	R	VANS, CARGO TYPE	14
	FORD	E250 ECONOLINE 2WD	5.4	8	Auto(L4)	13	18	15	R	VANS, CARGO TYPE	14
	DODGE	B1500 WAGON 2WD	5.2	8	Auto(L4)	13	19	15	R	VANS, PASSENGER TYPE	15
	FORD	E150 CLUB WAGON	5.4	8	Auto(L4)	13	17	15	R	VANS, PASSENGER TYPE	15
	FORD	F150 PICKUP 2WD	5.4	8	Auto(L4)	15	19	16	R	STANDARD PICKUP TRUCKS 2WD	12
	TOYOTA	TOYOTA TUNDRA 2WD	4.7	8	Auto(L4)	15	18	16	R	STANDARD PICKUP TRUCKS 2WD	12
	CHEVROLET	K1500 SILVERADO 4WD	4.8	8	Manual(M5)	15	19	16	4	STANDARD PICKUP TRUCKS 4WD	13
	DODGE	DAKOTA PICKUP 4WD	3.9	6	Manual(M5)	15	19	16	4	STANDARD PICKUP TRUCKS 4WD	13
	GMC	K1500 SIERRA 4WD	4.8	8	Manual(M5)	15	19	16	4	STANDARD PICKUP TRUCKS 4WD	13
	NISSAN	FRONTIER TRUCK V6-4WD	3.3	6	Auto(L4)	15	19	16	4	STANDARD PICKUP TRUCKS 4WD	13
	CHEVROLET	K1500 SILVERADO 4WD	4.3	6	Manual(M5)	15	18	16	4	STANDARD PICKUP TRUCKS 4WD	13
	CHEVROLET	K1500 SILVERADO 4WD	4.8	8	Auto(L4)	15	18	16	4	STANDARD PICKUP TRUCKS 4WD	13
	CHEVROLET	K1500 SILVERADO 4WD	5.3	8	Auto(L4)	15	18	16	4	STANDARD PICKUP TRUCKS 4WD	13
	FORD	F150 PICKUP 4WD	4.2	6	Manual(M5)	15	18	16	4	STANDARD PICKUP TRUCKS 4WD	13
	GMC	K1500 SIERRA 4WD	4.3	6	Manual(M5)	15	18	16	4	STANDARD PICKUP TRUCKS 4WD	13

Best Fuel Economy MY 2000

BAC KUP

	Manufacturer	carline name	displ	cyl	trans	cty	hwy	cmb	drv	Class	cls
1	HONDA	INSIGHT	1.0	3	Manual(M5)	61	70	65	F	TWO SEATERS	1
2	VOLKSWAGEN	GOLF	1.9	4	Manual(M5)	42	49	45	F	COMPACT CARS	4
3	VOLKSWAGEN	JETTA	1.9	4	Manual(M5)	42	49	45	F	COMPACT CARS	4
4	VOLKSWAGEN	NEW BEETLE	1.9	4	Manual(M5)	42	49	45	F	SUBCOMPACT CARS	3
5	CHEVROLET	METRO	1.0	3	Manual(M5)	39	46	42	F	SUBCOMPACT CARS	3
6	CHEVROLET	METRO	1.3	4	Manual(M5)	36	42	39	F	SUBCOMPACT CARS	3
7	SUZUKI	SWIFT	1.3	4	Manual(M5)	36	42	39	F	SUBCOMPACT CARS	3
8	HONDA	CIVIC HX	1.6	4	Manual(M5)	35	43	38	F	SUBCOMPACT CARS	3
9	VOLKSWAGEN	GOLF	1.9	4	Auto(L4)	34	45	38	F	COMPACT CARS	4
10	VOLKSWAGEN	JETTA	1.9	4	Auto(L4)	34	45	38	F	COMPACT CARS	4
11	VOLKSWAGEN	NEW BEETLE	1.9	4	Auto(L4)	34	45	38	F	SUBCOMPACT CARS	3
12	TOYOTA	ECHO	1.5	4	Manual(M5)	34	41	37	F	COMPACT CARS	4
13	HONDA	CIVIC HX	1.6	4	Auto(AV)	34	38	36	F	SUBCOMPACT CARS	3
14	MITSUBISHI	MITSUBISHI MIRAGE	1.5	4	Manual(M5)	33	40	35	F	SUBCOMPACT CARS	3
15	HONDA	CIVIC	1.6	4	Manual(M5)	32	37	34	F	SUBCOMPACT CARS	3
16	CHEVROLET	PRIZM	1.8	4	Manual(M5)	31	38	34	F	COMPACT CARS	4
17	TOYOTA	COROLLA	1.8	4	Manual(M5)	31	38	34	F	COMPACT CARS	4
18	TOYOTA	ECHO	1.5	4	Auto(L4)	31	38	34	F	COMPACT CARS	4
19	SUZUKI	ESTEEM	1.6	4	Manual(M5)	30	37	33	F	SUBCOMPACT CARS	3
20	SATURN	SL	1.9	4	Manual(M5)	29	40	33	F	COMPACT CARS	4
21	SATURN	SC	1.9	4	Manual(M5)	28	40	33	F	SUBCOMPACT CARS	3
22	SUZUKI	ESTEEM WAGON	1.6	4	Manual(M5)	30	36	32	F	SMALL STATION WAGONS	7
23	HONDA	CIVIC	1.6	4	Manual(M5)	30	35	32	F	SUBCOMPACT CARS	3
24	CHEVROLET	METRO	1.3	4	Auto(A3)	30	34	32	F	SUBCOMPACT CARS	3
25	SUZUKI	SWIFT	1.3	4	Auto(A3)	30	34	32	F	SUBCOMPACT CARS	3
26	CHEVROLET	PRIZM	1.8	4	Auto(L4)	29	37	32	F	COMPACT CARS	4
27	TOYOTA	COROLLA	1.8	4	Auto(L4)	29	37	32	F	COMPACT CARS	4
28	MAZDA	PROTEGE	1.6	4	Manual(M5)	29	34	31	F	COMPACT CARS	4
29	HYUNDAI	ACCENT/BRIO	1.5	4	Manual(M5)	28	36	31	F	COMPACT CARS	4
30	DODGE	NEON (DODGE)	2.0	4	Manual(M5)	28	35	31	F	COMPACT CARS	4
31	PLYMOUTH	NEON (PLYMOUTH)	2.0	4	Manual(M5)	28	35	31	F	COMPACT CARS	4
32	MITSUBISHI	MITSUBISHI MIRAGE	1.5	4	Auto(L4)	28	36	31	F	SUBCOMPACT CARS	3
33	MITSUBISHI	MITSUBISHI MIRAGE	1.8	4	Manual(M5)	28	36	31	F	SUBCOMPACT CARS	3
34	HONDA	CIVIC	1.6	4	Auto(L4)	28	35	31	F	SUBCOMPACT CARS	3
35	SUZUKI	ESTEEM	1.8	4	Manual(M5)	28	35	31	F	SUBCOMPACT CARS	3
36	SATURN	SL	1.9	4	Auto(L4)	27	38	31	F	COMPACT CARS	4
37	SATURN	SL	1.9	4	Manual(M5)	27	38	31	F	COMPACT CARS	4
38	SATURN	SW	1.9	4	Manual(M5)	27	38	31	F	SMALL STATION WAGONS	7
39	SATURN	SC	1.9	4	Manual(M5)	27	38	31	F	SUBCOMPACT CARS	3
40	CHEVROLET	PRIZM	1.8	4	Auto(L3)	28	32	30	F	COMPACT CARS	4
41	TOYOTA	COROLLA	1.8	4	Auto(L3)	28	32	30	F	COMPACT CARS	4
42	HONDA	CIVIC	1.6	4	Auto(L4)	28	35	30	F	SUBCOMPACT CARS	3
43	TOYOTA	CELICA	1.8	4	Manual(M5)	28	34	30	F	SUBCOMPACT CARS	3
44	FORD	FOCUS	2.0	4	Manual(M5)	27	35	30	F	COMPACT CARS	4
45	SATURN	SW	1.9	4	Auto(L4)	27	36	30	F	SMALL STATION WAGONS	7
46	SUZUKI	ESTEEM WAGON	1.8	4	Manual(M5)	27	34	30	F	SMALL STATION WAGONS	7
47	SATURN	SC	1.9	4	Auto(L4)	27	36	30	F	SUBCOMPACT CARS	3
48	SUZUKI	ESTEEM	1.6	4	Auto(L4)	27	34	30	F	SUBCOMPACT CARS	3
49	TOYOTA	CELICA	1.8	4	Auto(L4)	27	34	30	F	SUBCOMPACT CARS	3

Worst in Class for FY 2000

Manufacturer	carline name	displ	cyl	trans	Class	cls
MERCEDES-BENZ	SL600	6.0	12	Auto(L5)	TWO SEATERS	1
FERRARI	FERRARI 550 MARANELLO	5.5	12	Manual(M6)	TWO SEATERS	1
ASTON MARTIN	DB-7 VANTAGE	5.9	12	Auto(L5)	MINICOMPACT CARS	2
ASTON MARTIN	DB-7 VANTAGE	5.9	12	Manual(M6)	MINICOMPACT CARS	2
FERRARI	FERRARI 456 MGT/MGTA	5.5	12	Manual(M6)	SUBCOMPACT CARS	3
FERRARI	FERRARI 456 MGT/MGTA	5.5	12	Auto(L4)	SUBCOMPACT CARS	3
BMW	540i	4.4	8	Manual(M6)	COMPACT CARS	4
BMW	540i	4.4	8	Auto(L5)	COMPACT CARS	4
AUDI	A6 QUATTRO	2.7	6	Manual(M6)	MIDSIZE CARS	5
BMW	740i, 740i SPORT	4.4	8	Auto(L5)	MIDSIZE CARS	5
BMW	750iL, 750iL PROTECTION	5.4	12	Auto(L5)	LARGE CARS	6
AUDI	A4 AVANT QUATTRO	2.8	6	Manual(M5)	SMALL STATION WAGONS	7
BMW	540i SPORT WAGON	4.4	8	Auto(L5)	SMALL STATION WAGONS	7
VOLVO	V70	2.3	5	Manual(M5)	MIDSIZE STATION WAGONS	8
AUDI	A6 AVANT QUATTRO	2.8	6	Auto(L5)	MIDSIZE STATION WAGONS	8
GMC	SONOMA 2WD	4.3	6	Manual(M5)	SMALL PICKUP TRUCKS 2WD	10
ISUZU	HOMBRE PICKUP 2WD	4.3	6	Auto(L4)	SMALL PICKUP TRUCKS 2WD	10
DODGE	RAM 1500 PICKUP 2WD	5.2	8	Manual(M5)	STANDARD PICKUP TRUCKS 2WD	12
CHEVROLET	C2500 SILVERADO 2WD	6.0	8	Auto(L4)	STANDARD PICKUP TRUCKS 2WD	12
GMC	C2500 SIERRA 2WD	6.0	8	Auto(L4)	STANDARD PICKUP TRUCKS 2WD	12
DODGE	RAM 1500 PICKUP 4WD	5.2	8	Manual(M5)	STANDARD PICKUP TRUCKS 4WD	13
DODGE	DAKOTA PICKUP 4WD	5.9	8	Auto(L4)	STANDARD PICKUP TRUCKS 4WD	13
DODGE	RAM 1500 PICKUP 4WD	5.2	8	Auto(L4)	STANDARD PICKUP TRUCKS 4WD	13
DODGE	B1500 VAN 2WD	5.9	8	Auto(L4)	VANS, CARGO TYPE	14
DODGE	B2500 WAGON 2WD	5.2	8	Auto(L4)	VANS, PASSENGER TYPE	15
VOLKSWAGEN	EUROVAN	2.8	6	Auto(L4)	SPEC PURP VEH - MINIVAN - 2WD	20
DODGE	CARAVAN AWD	3.8	6	Auto(L4)	SPEC PURP VEH - MINIVAN - 4WD	21
larger SUVs -- 3.0 liter and above						
LINCOLN	NAVIGATOR 2WD	5.4	8	Auto(L4)	SPEC PURP VEH - S.U.V. - 2WD	22
DODGE	DURANGO 2WD	5.9	8	Auto(L4)	SPEC PURP VEH - S.U.V. - 2WD	22
HONDA	PASSPORT 2WD	3.2	6	Manual(M5)	SPEC PURP VEH - S.U.V. - 2WD	22
ISUZU	RODEO 2WD	3.2	6	Manual(M5)	SPEC PURP VEH - S.U.V. - 2WD	22
LAND ROVER	RANGE ROVER	4.6	8	Auto(L4)	SPEC PURP VEH - S.U.V. - 4WD	23
CHEVROLET	BLAZER 4WD	4.3	6	Manual(M5)	SPEC PURP VEH - S.U.V. - 4WD	23
GMC	JIMMY 4WD	4.3	6	Manual(M5)	SPEC PURP VEH - S.U.V. - 4WD	23
smaller SUVs--below 3.0 liter						
TOYOTA	4RUNNER 2WD	2.7	4	Manual(M5)	SPEC PURP VEH - S.U.V. - 2WD	22
FORD	EXPLORER 2WD	4.0	6	Manual(M5)	SPEC PURP VEH - S.U.V. - 2WD	22
KIA	KIA SPORTAGE	2.0	4	Auto(L4)	SPEC PURP VEH - S.U.V. - 2WD	22
JEEP	WRANGLER 4WD	2.5	4	Auto(L3)	SPEC PURP VEH - S.U.V. - 4WD	23
TOYOTA	4RUNNER 4WD	2.7	4	Manual(M5)	SPEC PURP VEH - S.U.V. - 4WD	23



The Secretary of Energy
Washington, DC 20585
August 13, 1999

MEMORANDUM FOR THE PRESIDENT

FROM:

BILL RICHARDSON

99 AUG 13 AM 11:47

SUBJECT:

Proposed Action Plan to Address Power Outages

The heat wave that gripped the eastern two-thirds of the Nation during July put enormous strains on many electric utility systems. Utilities cut-off power to industrial customers, reduced voltage and made urgent appeals to their customers to reduce their electricity consumption. While major system-wide outages were narrowly avoided, some utilities were forced to impose rolling blackouts. In addition, the stress on distribution cables and transformers caused power outages in a number of cities and localities.

On July 19, 1999, I announced a Department of Energy initiative designed to reduce the prospects for future weather-related power outages. However, more needs to be done to alleviate the public's fears about the reliability of their electricity supply when the thermostat rises. Your leadership in the following endeavors would be helpful.

- **Presidential Directive** – We expect heat-related power outages to continue to be a problem in the short-term. Electricity consumption continues to set records while supply has remained stagnant. Although the situation should improve when Congress and the States enact electric restructuring legislation to establish the rules of the road which are necessary to attract new capital investment, changes in the way we generate, transmit and consume electricity are needed to alleviate this situation now. You should direct the Department of Energy to develop an Administration strategy to address these changes.



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- **Leading by Example** – The Federal Government, which is the largest electricity consumer in the country, is making progress in reducing our consumption. Your recent Executive Order directing agencies to further reduce energy use will have a substantial beneficial impact. However, we do not have a formal agency-wide process for undertaking emergency measures to reduce electricity consumption in Federal buildings and facilities when utilities make urgent appeals for customers to cut back on usage. You should direct each Agency to implement emergency measures when conditions warrant and form an interagency task force led by the Department of Energy and the General Services Administration to develop a comprehensive plan so that we can lead by example.
- **Funding for Existing Programs** – Through the Administration's climate change initiative and other programs, we are engaged in a variety of activities designed to improve efficiency in the ways we generate, transmit and consume electricity in a manner that helps to grow the economy and protect the environment. Unfortunately, Congress has failed to fund these programs at the levels you have requested. You should call on Congress to increase funding for them as a means of reducing the burden on our power supply system.

95 JUN 9 14:15

6/9/99

MEMORANDUM FOR THE PRESIDENT

FROM: Maria Echaveste
Deputy Chief of Staff

Re: Compressed Natural Gas Buses

You asked if the federal government purchases compressed natural gas (CNG) buses. According to GSA, the Federal government currently owns 14 CNG buses.

Air Force	7
Marine Corps	3
EPA	1
State	1
NASA	1
GSA	1

Currently there are no plans to purchase additional CNG buses.

Page B.
shouldn't
we
push this?
(J6th)

THE PRESIDENT HAS SEEN
6/1/99

Cap 2.1
Schwartz
Podesta

Mailed
are we ordering
any 745 truck body
combs and contr. Does
for Jotix buy such bus?

Per

the United States. But he wouldn't be a leading candidate for president." **THE CHAIRMAN** "He outlined his agenda and doesn't get distracted by the issue du jour," Hughes said. "If Gov. Bush had not pushed a bold agenda of tax cuts in 1997 and 1999, the money would all have been spent on new government programs. Had he not campaigned on specific welfare reforms in 1994, they never would have been enacted; had he not campaigned on tort reform, it would not have happened."

Romer's unusually early offensive against Bush, who has not even formally declared his candidacy yet, underscores the extent to which Democrats expect to be facing the Texas governor in next year's presidential race.

Looking at Romer's remarks through that lens, Karen Hughes, Bush's communications director, dismissed them as a sign of Democratic anxiety. "The chairman of the DNC is very worried that Gov. Bush will be the next Republican nominee, because he knows that if he (is), Gov. Bush will be the next president," she said.

Romer acknowledged he made his comments now because Bush has emerged as "such a clear front-runner" and is poised for his first campaign swings later next month, first to Iowa and New Hampshire, then to a wider list of states, including California.

"I just think everybody in Iowa and New Hampshire and New York and California need to begin to focus on the real questions," said Romer, a former governor of Colorado. "The real question is having the name George W. Bush isn't going to get you there; it is do you have the leadership, the experience, the issues."

For months, national polls have shown Bush, 52, holding a commanding lead in the Republican presidential primary and a double-digit advantage over Vice President Al Gore in early tests of sentiment for next year's general election. But Bush has remained in Texas and has kept a low profile in most national debates while focusing on the state legislative session that is scheduled to conclude Monday.

Previewing what are likely to become common Democratic refrains as Bush finally steps onto the campaign trail, Romer criticized the Texas governor along two principal lines. First, he questioned whether Bush, whose sole service in public office has been the five years he has served as Texas governor since 1994, has sufficient experience to serve as "leader of the free world," as Romer put it.

"Somebody who has just been a governor for five years, you have to ask some tough questions: Is this the kind of experience that qualifies you to run and occupy (the presidency) and lead?" he said.

Second, Romer accused Bush of ducking a series of controversial recent issues. Romer cited three examples: Bush's ambiguous initial comments on Kosovo and his refusal to support legislation in the Texas House to punish hate crimes and require background checks at gun shows even though, in both cases, he has said he has supported the concept.

More and More Buses Using Alternative Fuels **By Marla Cone** **Los Angeles Times**

Soot-belching buses seem as symbolic of city life as crime and traffic. But gradually, they are vanishing from America's streets.

Cleaner-burning natural gas has become so popular with transit agencies that experts predict diesel buses will be virtually eliminated within a dozen years in many urban areas. One of every five new buses ordered in the United States is powered by alternative fuels.

Diesel buses are "on their last gasp," said Rick Hittinger, a general manager at the Los Angeles-based Metropolitan Transportation Authority, which operates the world's largest fleet of alternative-fuel buses.

Replacing diesel in trucks is a problem in part because of the lack of fueling stations that sell alternative fuels, such as natural gas. But urban buses return home to a central spot to fuel and stay within a local area, making them ideal for new technologies.

Of the 2,100-bus fleet in Los Angeles, 591 are fueled by compressed natural gas, or CNG, which puts out about half the carcinogenic particles and smog-forming gases of a brand-new diesel bus. The MTA has ordered 764 more, which are expected to arrive within two years.

The transition, however, "is not cheap and it's not easy," Hittinger said.

In 1993, Houston's Metropolitan Transit Authority was the first to try liquefied natural gas, or LNG, buses. Unfortunately, the engines had serious defects: the gas valves stuck, so the cylinders burned out.

It was a painful lesson about the cost of being a pioneer of new technologies. Recent models have been vastly improved, and the agency recently purchased more, said Richard Rotenberry, supervisor of

To: Jack Lew
Gene Sperling
Bruce Reed
David Beier
Todd Stern
George Frampton

From: Duncan Moore
Morley Winograd

DT: February 11, 1999

RE: Draft Statement of Administration Strategy on Fuels for America in the 21st Century

An inter-agency group, led by Henry Kelly from the Office of Science and Technology Policy and facilitated by the National Partnership for Reinventing Government, has developed the enclosed draft of a possible statement of the administration's strategy for fuels in the 21st Century. EPA, DOE, DOT, and DOC were the principle departments who provided resources and ideas to this effort. We are submitting this draft for your review and comment to determine if it would be worthwhile from your perspective to formalize a version of this document in order to create a statement of administration policy.

The effort was originally undertaken in order to try and bring some semblance of order to the many programs under way in a variety of agencies that touched upon the question of what kind of fuels will America require to meet the economic and environmental challenges of the next century. The existing activities of each agency have been catalogued as an attachment to this draft in order to provide people throughout the administration a guide and potentially useful handbook on the scope of the work already under way. It became obvious however that no sorting of these activities could be done unless we were clear about the goals we were seeking to achieve.

The document therefore lays out a vision for our nation's fuel supplies in the future, attempts to translate that vision into a specific statement of mission and goals and then outlines a strategy for achieving those goals. This document was prepared to help decision makers throughout the administration recognize the complexity of the issue that their individual programs and proposals need to recognize as they proceed. The group, however, has explicitly not discussed the forthcoming regulations on Tier 2 emission and sulfur content standards, except to make it clear the major impact that decision will have

on any strategy or set of goals for fuels in this country. We would hope that by providing a clearer direction or path for our future, this statement might facilitate the creation of a framework for policy making throughout the government.

Please direct your comments to either one of us or directly to Henry Kelly at 6-6031 by phone or at hkelly@ostp.eop.gov by email.

Withdrawal/Redaction Sheet

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DOCUMENT NO. AND TYPE	SUBJECT/TITLE	DATE	RESTRICTION
001. list	[Personally Identifiable Information] [partial] (1 page)	00/00/1999	b(6)

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Roger Ballentine
OA/Box Number: 19511

FOLDER TITLE:

Climate Change Other Federal Use/Transportation

2017-1093-F

rs3166

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

- P1 National Security Classified Information [(a)(1) of the PRA]
- P2 Relating to the appointment to Federal office [(a)(2) of the PRA]
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- b(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
- b(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
- b(9) Release would disclose geological or geophysical information concerning wells [(b)(9) of the FOIA]

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2/11/99 vers.

...a strong economy and a healthy environment go hand in hand. Working together, we can ensure that future generations breathe cleaner air, and we can protect them from the grave risks of global warming.

President Clinton, January 25, 1999

I believe the right approach is to view the vehicle and its fuel as a single system, which can be optimized.

BP Amoco chief executive, Sir John Browne January 25, 1999

FUELS FOR THE 21ST CENTURY

Our vision is an American economy fueled by the cleanest, most sustainable energy sources our collective resources and innovation can offer for the free choice of the American public.

Making this vision a reality will require constant technological innovation. The first principle of public programs in this area must be to support a vigorous, competitive market for these innovations.

Goals

Federal programs will play a critical role in shaping the incentives for innovations in both fuels and vehicles during the next few years. A unique opportunity is provided by the regulatory decisions that will be made later this year about automobile emissions and fuel sulfur content requirements under timetables established in the 1990 Clean Air Act. Decisions made under the terms of this Act will have an enormous impact on future markets for vehicles and fuels. They will also directly affect the economic interests of two of the nation's largest industries: petroleum refining and automobile manufacturing. Clearly, Administration guidance needs to support a strategy for achieving a broad set of policy objectives within a market-based economy. This paper is designed to guide government and government-industry decisions and to provide a context for these upcoming actions.

Our fuels policy should advance five distinct public goals:

1. Ensure that personal and commercial transportation remains affordable;
2. Improve air quality;
3. Reduce emission of gases that contribute to global climate change;
4. Strengthen our nation's economy and improve our balance of trade by ensuring the

competitiveness of domestic automobile and fuels industries and reducing the need to import fuels;

5. Improve the safety of all vehicles.

There is no technical reason why these any of these goals cannot be achieved, but each goal must be approached simultaneously as part of a whole thrust. The following technologies are key:

1. Improvements in vehicle propulsion systems (for instance, high efficiency engines, fuel cells and hybrid drivetrains – See Table 1),
2. Improvements in emission control technology (capable of achieving very low NO_x, VOC and particulate emissions), and
3. Improve availability of cleaner, fuels, and fuels from renewable resources (including low-sulfur petroleum derived and blended fuels, alternative fuels including fuels from agricultural and forestry products -- See Table 1).

These technologies are highly interdependent. Advanced gasoline and diesel engines, for example, are very attractive because they offer fuel economy improvements of 20-30% or more above conventional gasoline engines in light-duty vehicles. Clean burning fuels are essential to achieve these improvements while meeting very low emission levels. At this time, it appears impossible, however, for light-duty diesels to achieve the very low levels of emission required by California's clean air standards without *both* very clean fuels and significant advances in engine designs and emission control technology.

Active research programs are currently underway on advanced diesel engines, emission control technology and advanced fuels. Initial results are very promising that a diesel engine can eventually achieve very low levels of NO_x and particulate emissions with low sulfur diesel fuel or an alternative fuel. Technology-forcing emission goals will provide strong incentives for both the automobile and fuel industry to invest heavily in innovation – including advanced diesels and fuels for diesels. Auto and engine representatives have expressed concern that if Clean Air Act regulations are introduced too quickly, the regulations could lead the industry to focus narrowly on air emissions at the expense of investments that could, over the long-term, provide both higher efficiency and improved air quality (such as advanced diesels). A well-crafted set of rules may be able to provide both needed clean air benefits in the midterm (2004 – 2007) and strong incentives to develop advanced diesels and other technologies over the long run. The blunt fact, however, is that no one knows what combination of technologies is most likely to achieve the combination of national goals outlined above. Federal investment in long-term research and technology-forcing regulations need to ensure strong investment in a broad portfolio of fuels and propulsion systems.

A National Strategy for Fuels of the 21st Century

Given this complex environment, a national strategy for fuels should consist of the following:

- Support intensive investment in research and development of advanced technologies for vehicles, engines, power units, fuels, and emission control systems both to broaden technical options and to give private and public decision-makers better information with which to guide Administration policy in the future. (Strong funding for vehicles and fuels research and development are part of the President's FY2000 Climate Change Technology Initiative.)
- Promote regulatory decisions made under the Clean Air Act and other Administration policies that encourage production of cleaner fuels consistent with highly efficient new vehicle power unit and emission control technologies and encourage decisions that foster private investment in a broad range of innovative technologies including highly efficient, ultra-clean engines.
- Engage in a visible process of *watchful waiting* to determine when additional policy actions are needed to encourage introduction of fuels consistent with achieving the five goals stated above. Such action might be triggered, for example, by concerns that a balkanized national fuel market was harmful to both fuel producers and vehicle producers as well as being poor environmental policy. In all cases, action should only be taken when it appears the market is not likely to enable us to attain policy goals in the absence of government intervention.
- Promote the President's FY2000 budget proposal for tax incentives to stimulate the adoption of fuel cell and hybrid vehicles
- Continue to support alternative fuel programs under the Energy Policy Act, Clean Air Act, and the Transportation Equity Act for the 21st Century (TEA-21), while studying how to better integrate these programs and make them more effective at introducing new fuels into the transportation sector in Federal fleets and in commercial markets.
- Support a vigorous program of research in vehicles, advanced emission control devices, and fuels.
- As we transition during the 21st century to a more diverse mix of vehicle fuels, make every effort to minimize the disruption and cost created from likely fuel and service infrastructure changes. Multiple changes in the fuel infrastructure are unlikely to be attractive.

This process of *watchful waiting* should include the following next steps:

- Prepare periodic reviews of technical options for simultaneously achieving the five stated goals together with assessments of promising combinations of vehicle power units, fuel, and emission control technologies which appear to have the greatest merit

in the next 3-5 years and in 5-15 years. Review all federal research planned for fuels, cars, and trucks on an annual basis to ensure that funded research reflects these priorities.

- Continue to monitor actions other nations are taking to encourage introduction of clean, efficient vehicles and clean, advanced fuels.
- Work actively with business, university, state and local governments, and public interest groups to explore other options for encouraging development and introduction of technologies capable of achieving the goals.

Catalogue of Current Activities

In addition to these new steps for *watchful waiting*, an attachment provides details on the federal programs already underway which affect the fuels market directly or indirectly. They include:

1. Research and Development

	FY99 enacted (millions)	FY00 proposed (millions)
Advanced Petroleum Based Fuels	6.6	12.4
Natural Gas	11.2	11.1
Fuels from Biomass	45.4	47.4
Natural Gas and Coal to Liquid Fuels	12.0	11.0
Hydrogen	12.1	19.8
TOTAL	87.3	101.7

2. Major Programs

The Partnership for a New Generation of Vehicles (PNGV) – PNGV is a Presidential initiative between the United States Government and the United States Council for Automotive Research (USCAR), representing DaimlerChrysler, Ford, and General Motors. PNGV is focused on developing by 2004 production prototype mid-size, safe, affordable passenger cars capable of up to 80 miles per gallon fuel economy and drastically reduced emissions. At the midpoint of this ten year program, it is apparent that improved fuels and emissions control technologies are necessary to simultaneously achieve the PNGV fuel economy and emissions goals.

Medium and Heavy Duty Vehicles – DOT and DOE have research programs aimed to improve fuel efficiency and explore the potential use for alternative fuels for fuel cells, buses and ships.

Biofuels -The Office of Transportation Technologies at DOE is developing and demonstrating

the utilization of renewable fuels production technologies (biofuels) for the transportation sector. DOE's primary focus is on the development of bioethanol conversion technologies from agricultural residues and energy crops to build on the existing corn ethanol industry. A secondary focus of the program is the deployment of biodiesel made from waste greases and oils. The near-term application for these fuels are blend markets with neat markets following in the long term. DOE is presently supporting the commercial demonstration of technology for converting cellulose (such as waste materials and wood chips) to ethanol at various locations throughout the United States.

3. Regulatory

- **Tier II emissions** EPA is currently drafting proposed regulations that would establish the next round of emission standards for passenger cars and light trucks. The Clean Air Act requires EPA to determine through these regulations whether more stringent standards are necessary, feasible and cost effective. Any new standards may not have an effective date prior to the 2004 model year.
- **Sulfur in gasoline** The auto industry has petitioned EPA to reduce the levels of sulfur in gasoline. California already requires low sulfur gasoline (30 ppm) and the auto companies, state air pollution control officials and environmental groups have supported a requirement that sulfur in all U.S. gasoline be reduced to similar levels. *Something was released* The oil industry has proposed a much less stringent, regional sulfur reduction program.
- **Sulfur in diesel fuel** In 1993 EPA issued regulations limiting the amount of sulfur in diesel fuel to 500 ppm. Recently, manufacturers of diesel engines have informed EPA that much lower sulfur levels will be needed to achieve future advances in low-emission diesel engine technology. To build a technical record that may support regulatory action, EPA in early 1999 will issue an Advance Notice of Proposed Rulemaking to request public comments on the need for further diesel sulfur control.
- **Phase 2 of reformulated gasoline** Regulations are in place that will require the second phase of reformulated gasoline (RFG) to be implemented in January 2000. Among other changes that will result in cleaner burning gasoline, Phase 2 RFG is expected to result in average sulfur levels of 150 ppm. RFG currently accounts for about 30 percent of U.S. gasoline usage. California, Maine and other states are seeking to discontinue use of MTBE as an RFG additive because of concerns about groundwater contamination. (see Table 1).
- **CAFE** gives large fuel economy credits for alternative fuel vehicles including both dedicated and dual fuel automobiles - vehicles that can operate on (1) gasoline or diesel fuel and (2) alcohol, electricity or compressed natural gas (or propane). Alternative fuels are defined in the statute as alcohol blends containing 85 percent or more of methanol, ethanol, or other alcohol; natural gas; liquefied petroleum gas (propane); hydrogen; coal derived liquid fuels; other fuels derived from biological materials; electricity, including electricity derived from solar energy; and any other

fuel prescribed by the Secretary of Transportation that is substantially not petroleum and that would yield substantial energy security and environmental benefits.

- **Biofuels** The Biofuels program could be significantly impacted (positively or negatively) by the conditions contained in the new Farm Bill currently being drafted for consideration and passage in 2000-2002.

2. Tax Incentives

- **Credits for ethanol (TEA-21)** The Federal excise tax rate on 10% alcohol blends is reduced at the pump by 5.4 cents/gallon for ethanol. LNG, propane, CNG, and methanol derived from natural gas are also subject to varying rates of reduced taxes based on the energy equivalence of these fuels to gasoline. Gasohol, particularly at 10 percent ethanol levels, also receives partial exemption from some State highway fuel excise taxes. TEA 21 reduces the excise tax benefit for gasohol (for 10 percent blends) at the pump to 5.1 cents/gallon per gallon by 2005.
- **Proposed credits for fuel efficient vehicles** The President's FY 2000 budget contains a proposal for extending the existing \$4000 tax credits for all electric vehicles and fuel cell vehicles (scheduled to begin phasing out in 2002) and providing tax credits for hybrid vehicles which range from \$1000 for early hybrids achieving fuel economy 1/3 greater than today's comparable vehicles to \$4000 for vehicles three times today's vehicles.

Procurement

- Federal procurement of alternative fuel vehicles
- TEA-21 funds for purchasing alternative fuel buses, ferries, etc.
- TEA-21 also provides greater access to CMAQ funds for the purchase of privately owned vehicles or fleets using alternative fuels. For the first time, funds may also be used to finance the cost of refueling infrastructure that will be used by privately owned alternatively fueled vehicles or fleets, in coordination with public-private partnerships.

TABLE 1. FUEL/ENGINE OPTIONS FOR HIGHWAY TRANSPORTATION VEHICLES

FUEL TYPE	SOURCE	ENGINE/ POWER UNIT	ADVANTAGES	PROBLEMS
Gasoline	Petroleum	Spark-Ignition (SI)	Inexpensive; infrastructure in place.	Emissions; increasingly dependent on imported product; SI engine less efficient than diesel or fuel cell; efficiency likely too low to achieve PNGV fuel economy goal.
Low-Sulfur Gasoline (30 ppm)	Petroleum	Direct-Injection Spark-Ignition	Higher efficiency (20–30 %); low sulfur enables very low emissions.	Direct injection engine is just entering production in Japan and Europe; emission control automotive catalysts not yet developed; higher cost to produce gasoline (1.5–3 cents/gallon); U.S firms may lag foreign producers; unlikely to achieve PNGV 3x fuel economy goal, engine cost higher than SI.
Low-Sulfur Gasoline (0-30 ppm)	Petroleum	Fuel cell	Can using existing gasoline infrastructure; very low vehicle emissions, high efficiency	30 ppm may cost 2-5 cents/gal more than conventional gasoline. costs for 5ppm would be higher (double ?) Fuel cells very expensive and not yet in production; requires onboard reformer; fuel cell and reformer are bulky and complex.

MTBE in Gasoline	Petroleum & Natural Gas	Spark-Ignition	Reduced CO emissions, increased octane; can be implemented quickly on a large scale.	Environmental concerns (see methanol below)
ETBE in Gasoline	Petroleum & Biomass	Spark-Ignition	Reduced CO emissions, increased octane; can be implemented quickly on a large scale.	Water pollution from spills; cost; possible fuel economy penalty.
Ethanol in Gasoline	Petroleum & Biomass	Spark-Ignition	Reduced CO emissions, increased octane; potential for reduced GHGs.	Increased evaporative emissions and/or special blend stock needed; phase separation from water pick up; cost; possible fuel economy penalty.
Diesel Fuel	Petroleum	Direct-Injection Diesel Engine	Inexpensive fuel, infrastructure in place; engine has high efficiency (30+ % more efficient than conventional gasoline) - leading candidate to achieve PNGV fuel economy goals.	Toxic air emissions (may be listed as a carcinogen); GHGs, increasingly non-domestic; particulates may be a “show-stopper”; sulfur in diesel fuels must be reduced (30 ppm or lower) to enable emission controls to meet 2004 emission standards; poor reputation among consumers; engine cost significantly higher than for gasoline engines; advances made in conventional diesel engine design and catalysts are possible but uncertain by 2007.
Oxygenated Diesel Fuel	Petroleum & Biomass or Natural Gas	Direct-Injection Diesel Engine	Reduced particulate emissions; can use diesel fuel infrastructure.	Potential for phase separation; fungibility concerns; cost likely to be higher.

Compressed natural gas (CNG)	Natural Gas	Spark-Ignition	Inexpensive fuel; low-emission; lower GHGs than petroleum (0-20%); pipeline distribution infrastructure in place.	Retailing infrastructure expensive and limited, low energy storage density; perceived safety concerns; vehicles more expensive and have limited operating range.
Liquified natural gas (LNG)	Natural Gas	Spark-Ignition	Inexpensive fuel, low-emission; lower GHGs than petroleum (10-20%); higher energy storage density than CNG; retailing infrastructure less expensive than CNG.	Retailing infrastructure expensive (though less than CNG); low energy storage density (though greater than CNG); perceived safety concerns; boil-off containment; vehicles more expensive than CNG.
Ethanol	Biomass	Spark-Ignition	High Octane, potential for lower GHGs; can use existing gasoline infrastructure.	High fuel cost using current production technology; limited production capacity, production cost. Energy density roughly 2/3 that of gasoline.
Ethanol	Biomass	Fuel Cell	Very low emissions and high efficiency; can use existing gasoline infrastructure, potential for lower GHGs.	Needs onboard reformer; fuel cells are currently expensive; bulky; complex; and not yet in production.
Methanol	Natural Gas	Spark-Ignition	High Octane; can use existing gasoline infrastructure after moderate modification;; lower GHGs relative to gasoline. Low emissions.	Methanol mixes easily with water and can spread rapidly in groundwater from leaking tanks and spills; cost; possible fuel economy penalty. Possible toxicity and health problems; energy density is half of gasoline and diesel fuel. Reliance on foreign natural gas resources at high transportation fuel volumes.

Methanol	Natural Gas	Fuel cell	Can using existing gasoline infrastructure very low vehicle emissions, lower GHGs relative to gasoline. high efficiency	see fuel cells and methanol above.
Methanol	Biomass	Spark-Ignition	High octane; potential for GHGs; can use existing gasoline infrastructure.	see methanol above. Methanol from biomass currently costs more than methanol produced from natural gas.
Methanol	Biomass	Fuel cell	Very low emissions and high efficiency; potential for lower GHGs; can use existing gasoline infrastructure.	Needs onboard reformer; fuel cells are very expensive, bulky, complex and not yet in production.
Hydrogen	Natural Gas	Fuel cell	Zero emissions; lower GHGs; no reformer needed for use; preferred fuel for fuel cells.	Difficult to store (needs high pressure tanks); no distribution or retailing infrastructure in place; "Hindenburg Syndrome" (uninformed safety concerns); Fuel cells very expensive, bulky, complex, and not yet in production.
Hydrogen	Natural Gas	Spark-Ignition	Very low emissions; no carbon dioxide from the vehicle; lower GHGs.	see above

Fischer-Tropsch	Natural Gas	Direct-Injection Diesel Engine	Reduced and particulate emissions relative to diesel fuel; can use diesel fuel infrastructure; no sulfur enables very effective emission control technology; high cetane number.	Cold-temperature handling (though easily overcome); reliance on foreign natural gas resources at significant transportation fuel volumes; much higher GHGs than conventional fuels; higher cost than conventional diesel fuel.
Fischer-Tropsch	Syngas from Biomass	Direct-Injection Diesel Engine	Reduced and particulate emissions relative to diesel fuel; can use diesel fuel infrastructure, no sulfur enables very effective emission control technology; high cetane number; potential for lower GHGs.	Cold-temperature handling (though easily overcome);, higher cost than conventional diesel fuel.
Electricity	Coal, Natural Gas, Petroleum, and Nuclear	Batteries and electric motors	No vehicle emissions, "refuel" at home; inexpensive electricity at off-peak rates, quiet vehicles.	Battery technology not competitive - electric vehicles only viable for niche markets at present; on-peak electricity cost is expensive relative to other fuels; electric vehicles have limited operating range; electric vehicles typically twice the price of conventional vehicles at present; likely increase in utility emissions.
Biodiesel	Petroleum & Biomass	Direct-Injection Diesel Engine	Reduced particulate emissions; potential for lower GHGs; can use diesel fuel infrastructure; improved lubricity.	Cold-temperature handling (though easily overcome); limited production capacity and resources at present; cost.

Naphtha	Petroleum	Fuel cells	Less expensive than gasoline; lower evaporative emissions; no octane or cetane requirement.	May impact price and availability of gasoline and diesel fuel; fuel cells very expensive and not yet in production; requires onboard reformer; fuel cell and reformer are bulky and complex.
DME and related oxygenate fuels	Natural Gas	Direct-Injection Diesel Engine	No particulate emissions from diesel engines, enables high efficiency emission control systems.	Expensive; major engine modifications required; no production or distribution system in place; reliance on foreign natural gas resources at significant transportation fuel volumes; higher GHGs; fuel technology is still emerging.

Schedule

<u>TIME PERIOD</u>	<u>PROPULSION SYSTEM</u>	<u>FUELS</u>
2002 - 2008	Need for heavy-duty efficiency and emissions technologies to recoup and improve upon pre-2002 fuel economy in over the road trucks.	Low sulfur diesel fuel
2003 - 2008	Expected introduction of spark-ignited direct injection (i.e. gasoline lean-burn) engine technology for light-duty vehicles.	Low sulfur gasoline
2000 - 2008	Development of emission control systems to allow light duty diesel engines to meet Tier II and California LEV-II emission standards	Low sulfur diesel fuel
2003 - 2005	Expected introduction of high efficiency, low emission hybrid propulsion systems for urban commercial, transit, and personal vehicles.	Petroleum fuels, electricity, possibly alcohol fuels or natural gas.
2004	Start of 2.4 g/bHP-hr + NOx standard for heavy duty vehicle	Diesels
2004	Start of Federal Tier II Emissions Standards.	All fuels
2004 - 2008	Phase in of California LEV-II Emissions Standards	All fuels
2004 - 2010	Expected introduction of fuel cell powered vehicles	Low sulfur gasoline, Ethanol, Methanol, Hydrogen, Naphtha
2008-2010	Domestic production at commercial scale of 250,000 Bpd of Fischer-Tropsch motor fuel attainable using remote natural gas and other low-cost, carbon bearing feedstock.	Low sulfur diesel fuel
2008 (?) - 2015	Need for significant carbon emission reduction drives major fuel economy improvements (fuel cells, CIDI engines, etc.)	Renewable fuels most effective

FEDERAL AGENCY CATALOG OF FUELS ACTIVITIES

(2/19/99)

NOT FOR ATTRIBUTION

This catalog aims to include all fuels agency programs in research and development (R&D), regulation and procurement that have any direct or indirect impact on the fuels market in the coming decade.

I. EXECUTIVE ORDER (EO), GREENING THE GOVERNMENT: FEDERAL FLEET AND TRANSPORTATION EFFICIENCY (to be released):

This White House Order is expected to increase the use of alternative fuels and vehicles by governments fleets, ensuring that government fleets will lead by example in the goal of petroleum displacement under the Energy Policy Act (EPACT) of 1992. This EO requires that the government fleet adopts plans to displace 20% of each of their vehicles total petroleum usage by FY2005, compared to FY1999, and outlines a program for financial assistance for such fleets.

II. DEPARTMENT OF ENERGY FUELS ACTIVITIES INVENTORY:

A. Major Fuels Projects in the Office of Transportation Technologies (DOE)

	FY99	FY00
(proposed)		
Advanced Petroleum Based Fuels Funding	\$6,615K	\$12,400K
1. Fuels Initiative - In response to the OSTP, the Office of Energy Efficiency and Renewable Energy is coordinating the Fuels Initiative. The intent of the initiative is to work with energy companies, automotive companies and heavy duty engine manufacturers to develop fuels for Direct Injected Engines and fuel cells that will help meet emissions and efficiency goals. An initial meeting was held on July 23, 1998 with 14 energy companies, the three domestic automobile companies and five government organizations. In cooperation with automakers and energy companies, the objective is to develop a direct injection power system technical roadmap and a fuel cell power system technical roadmap to integrate fuels research and development with development of engine and emissions treatment technologies.		
2. Ad Hoc Auto/Energy Working Group - Since 1997 the DOE, automobile and energy companies have been working on fuels related projects. The major project for this group at this time is for each automobile company and the DOE to test advanced fuels provided by the energy companies on advanced engines.		
3. Oxygenates Working Group - The purpose of this group is to determine the most promising oxygenate to be added to diesel fuel that will help to reduce particulates. Lubrication Oil Working Group - Since the particulate research goal is so low		

(0.01gm/mile) there is an increasing need to look at all sources of particulates. This group will evaluate the contribution to particulates from lube oil.

4. **Toxicity Working Group** - This group will study the toxicity of particles emitted from the advanced diesel fuels being tested.
5. **Fuels Evaluation** - Evaluation of advanced diesel fuels in light duty and heavy duty engines
6. **Combustion Research** - Combustion characterization of gasoline in spark ignited direct injection engines and diesel fuel in light duty and heavy duty engines.

B. Alternative Fuels Projects in the Office of Transportation Technologies (DOE)

	FY99	FY00 (proposed)
Total Alternative Fuels Funding	\$11,170K	\$11,100K
1. Natural Gas Projects - Work will continue on advanced liquified natural gas (LNG) and compressed natural gas (CNG) on-vehicle storage concepts. Projects to develop smart sensor technology will be incorporated into natural gas tank design. Develop high efficiency natural gas engines and start development of a class 6 hybrid electric power system. Develop advanced storage and fuel delivery systems in support of direct injection natural gas engine technology. Work is to begin on the design of a combined LNG/CNG fueling station.		
2. Natural Gas Derived Fuels - Evaluate dimethyl ether and methanol in PNGV and light truck direct injection engines and fuel cells.		
3. C-1 Research -		
1. Use of methanol as oxygenates in diesel fuel		
- Technology will be developed for conversion of methanol to a number of oxygenated compounds that should make excellent diesel and diesel fuel additives.		
- Research will be conducted on the conversion of methanol to higher ethers and alcohols which can be used as additives to improve the performance of gasoline and diesel fuel.		
2. Method to utilize more of the Fischer-Tropsch product as diesel fuel		
- Develop a method to treat the C12-C60 Fischer-Tropsch fraction into usable diesel fuel and lubricating oil.		
3. Reforming natural gas to hydrogen for use in fuel cells		
- Novel methods of producing hydrogen will be investigated, including catalytic decomposition of methane or other hydrocarbons.		

- Development of water-gas shift catalysts that are more active at lower temperatures.
Catalytic reforming of methanol to hydrogen and carbon dioxide.

4. **Emissions Characterization** - Evaluate the contribution of heavy vehicle emissions to the PM_{2.5} and regional haze regulations. Conduct research on health effects of diesel and gasoline and compare the toxicity of particulates from gasoline and diesel engines.
5. **Heavy Duty Alternative Fuel Technologies** - Continue to develop and evaluate advanced heavy duty alternative fuel technologies.

C. Biofuels Projects in the Office of Transportation Technologies (DOE)

	FY99	FY00 (proposed)
Total Biofuels Funding	\$35,950K	\$37,441K

1. **Advanced Fermentation Organisms R&D** - Research and development of advanced fermentation organisms to improve process efficiency, including the development of *Zymomonas mobilis* with enhanced capabilities (FY 1998) and the development of organisms with increased stability and robustness, and ability to ferment mixed sugars from waste feedstocks and the model energy crop switchgrass (FY 1999) will improve process efficiency and lower the cost of ethanol production from biomass. Testing of these strains at pilot scale and small scale commercial facilities will be completed to demonstrate reliable performance of these first generation organisms. Research and development of advanced organisms (second generation), such as Lactobacillus, with greater efficiencies that can ferment additional biomass feedstocks provide further costs reductions and the potential for expanding biomass ethanol applications. (FY2000).

	<u>FY99</u>	<u>FY00 (proposed)</u>
Subtotal	\$2,200K	\$3,000K

2. **Advanced Cellulase R&D** - Analyses indicate that the production of ethanol, using enzymes for the breakdown of biomass materials to sugars for fermentation is limited to a great degree by the high cost of enzymes. Research and development partnerships with enzyme producers will provide highly productive, low cost cellulase systems. Collaborations with enzyme and biomass ethanol producers will accelerate the use of commercially-available cellulase systems.

	<u>FY99</u>	<u>FY00 (proposed)</u>
Subtotal	\$4,547K	\$5,500K

3. **Pretreatment R&D** - Physical and/or chemical pretreatment of biomass facilitates enzyme and fermentation reactions, thereby improving process efficiency and lowering costs. An advanced pretreatment reactor, the countercurrent pretreatment reactor, was

designed, fabricated and delivered to the National Renewable Energy Laboratory process development unit in FY 1998. In FY1999, focus is on installation, shakedown and initial operation of the reactor system. In addition, bench scale testing of cost-effective technology for softwood feedstocks and potential chemical co-product, will improve process economics of producing ethanol from thinnings from forests.

In FY 2000, **shakedown and testing** of the countercurrent reactor system will be completed and an industrial partnership will be established for commercial demonstration of the pretreatment technology.

	<u>FY99</u>	<u>FY00 (proposed)</u>
Subtotal	\$2,800K	\$5,508K

4. **Consortium for Plant Biotechnology Research** - The 50:50 cost-shared, long term R&D projects with The Consortium for Plant Biotechnology Research, Inc., (CPBR) for peer-reviewed university research will not be continued in order to focus on more applied research activities that support program goals and objectives.

	<u>FY99</u>	<u>FY00 (proposed)</u>
Subtotal	\$1,250K	\$00

4. **Integrated Process Development** - In FY 1998 integrated bench-scale studies were conducted to evaluate and optimize unit operations, with emphasis on detoxification studies, to improve the overall process. The performance of a genetically improved fermentation organism capable of fermenting available sugars was validated at the bench scale. In FY 1999, integrated bench-scale studies will evaluate the overall process and performance of softwood thinning from private and public forests, including National Forests, in cooperation with industrial partners. **Technologies for the coproduction of ethanol and high value products will be researched and developed by the Michigan Biotechnology Institute (MBI). DOE will provide \$3.0M to MBI, in accordance with Congressional guidance.**

In FY 2000, integrated bench-scale and pilot-scale testing of the overall process (handling, pretreatment, fermentation) will evaluate performance, efficiency, and costs for agricultural waste feedstocks, such as rice straw. Softwood feedstocks, such as thinnings from private and public forests, will be tested at the NREL Biofuels User Facility/Process Development Unit in support of commercial partners for the production of ethanol and integrated co-products. Analytical studies will be conducted to assess the process economic goal. **The development of coproducts and byproduct utilization will continue to provide a means for expanded technology demonstrations and lower ethanol production costs.**

	<u>FY99</u>	<u>FY00 (proposed)</u>
Subtotal	\$11,500K	\$11,500K

5. **Feasibility Studies** - Technical and financial support for feasibility studies are being continued under Cellulose to Ethanol Production Facilities, in FY 1999 and FY 2000.

	<u>FY99</u>	<u>FY00 (proposed)</u>
	<u>\$00K</u>	<u>\$00K</u>
Subtotal		

7. **Cellulose-to-Ethanol Production Facilities** - Laying the groundwork for a broad-based cellulosic biomass-to-ethanol industry, cost-shared partnerships to design and construct ethanol production facilities are being developed. In FY 1998, an additional commitment to design and construct biomass waste-to-ethanol facilities was obtained. Funding was completed for the project with BC International (BCI) that was initiated in FY 1997. DOE's commitment for the BC International project (BCI) that was initiated in FY 1997 was \$4,000,000, with BCI cost-share of \$27,600,000, or 87%. An additional \$750,000 was included under Biomass Power for the Gridley Project. A minimum 50% cost share was required from any partner entering into an agreement.

In FY 1999, the commitment initiated in fiscal year 1998 will be supported and an additional commitment will be established with industry partners that will lead to the design and construction of commercial demonstration facilities in targeted areas: California, Alaska and Utah. DOE's commitment with BCI for the Jennings, Louisiana plant will be completed, in accordance with Congressional language. An additional commitment with an industrial partner was established that will lead to the design and construction of an ethanol facility in Rio Linda, California. DOE Share for the Rio Linda facility was \$4,000,000, in accordance with Congressional language. An additional commitment with industry partners will be established that will lead to the design and construction of commercial demonstration facilities in targeted areas: California and Alaska.

In FY 2000, support of commitments established in fiscal years 1998 and 1999 will continue. Softwoods pilot-scale testing will accelerate deployment through continued support of integrated bench-scale enzymatic hydrolysis testing. Partnerships will be developed to demonstrate enzymatic conversion of cellulosic biomass to ethanol in support of the corn ethanol industry. Partnerships will also be established to demonstrate coproduction of ethanol at coal-fired power stations.

	<u>FY99</u>	<u>FY00 (proposed)</u>
	<u>\$13,653K</u>	<u>\$11,933K</u>
Subtotal		

D. Biodiesels Projects in the Office of Transportation Technologies (DOE)

	<u>FY99</u>	<u>FY00 (proposed)</u>
	<u>\$750K</u>	<u>\$1,000K</u>
Total Biodiesel Funding		

1. **Biodiesel Production Technologies** - Based on a completed assessment, research and

development will improve biodiesel process technology, using waste grease streams to lower production costs. In addition, improved oilseed production has the potential of lowering biodiesel production costs. Working with industry, activities to facilitate market penetration will lead to increased biodiesel production and use.

	<u>FY99</u>	<u>FY00 (proposed)</u>
Subtotal	\$750K	\$1,000K

E. Feedstock Production Projects in the Office of Transportation Technologies (DOE)

	<u>FY99</u>	<u>FY 00 (proposed)</u>
Total Feedstock Production Funding	\$5,100K	\$5,500

1. **Biomass Feedstock Development Centers** - Research will be conducted to develop economically viable model energy crops at integrated biomass feedstock development centers in the Pacific Northwest (poplars), Southeast (switchgrass), and Midwest/Plains States (switchgrass and poplars), where breeding to select for higher yields and other desirable traits is linked closely with studies on management, physiology, growth-limiting factors, and advanced biotechnology. Field studies to evaluate nutrient effects on carbon sequestration and storage will provide additional vital information on energy crops.

	<u>FY99</u>	<u>FY00 (proposed)</u>
Subtotal	\$3,600K	\$4,000K

2. **Environmental Effects of Energy Crop Deployment** - Research to evaluate the effects of large scale deployment of energy crops on the environment, such as water and soil quality, chemical fates, and biodiversity will provide credible data that could be used to guide deployment in a manner that ensures energy and environmental benefits.

	<u>FY99</u>	<u>FY00 (proposed)</u>
Subtotal	\$400K	\$225K

3. **Energy Crop Seedling/Planting Stock Selection Research** - Advanced biotechnology and other methods will develop techniques that can be used to select energy crop seedlings or other planting stocks that are less susceptible to disease and/or pest, reducing the risk of mortality and increasing technical/economic viability. Desirable genotypes of switchgrass will be selected, propagated, and transferred to greenhouse/field tests to verify the selection process.

	<u>FY99</u>	<u>FY00 (proposed)</u>
Subtotal	\$100K	\$100K

4. **Large Scale Woody Crop Plantation Research** - Research will be conducted to develop and evaluate management techniques to overcome the water use efficiency constraints in the Southeast. Technical assistance and cost sharing will be provided for existing large scale plantings in the Midwest/North Central region to obtain performance and cost data.

	<u>FY99</u>	<u>FY00 (proposed)</u>
Subtotal	\$125K	\$125K

5. **Switchgrass Variety Testing and Scale-up Research** - Switchgrass variety field tests are being conducted in the five major growing regions of the U.S. Field trials established at five USDA National Plant Materials Testing Centers will evaluate newly developed switchgrass lines. Cost-shared 100-300 acre scale-up plantings of switchgrass will be evaluated to provide yield, operational issues, and cost data. In FY 2000, field tests and scale up data will be collected and evaluated and field trial near waste-to-ethanol facilities/sites will be established.

	<u>FY99</u>	<u>FY00 (proposed)</u>
Subtotal	\$625K	\$500K

6. **Feedstock Composition and Multiproduct use** - Altering plant composition to improve conversion efficiencies will provide potential benefits and costs reductions in the production of fuels, chemicals and electricity. The tailoring of plants so that all components of the plant can effectively be used to produce multiple products will provide potential cost reductions and broader opportunities for adaptation of feedstock production systems.

	<u>FY99</u>	<u>FY00 (proposed)</u>
Subtotal	\$100K	\$200K

7. **Mechanization Research** - Mechanization systems for energy crops to lower harvesting/handling cost, will address a major obstacle to the widespread use of energy crops. Cost-shared opportunities for switchgrass handling and storage specifically as a means of improving the ethanol production costs will be explored. Handling and storage systems for the use of agricultural residues to produce ethanol will improve costs and process efficiencies.

	<u>FY99</u>	<u>FY00 (proposed)</u>
Subtotal	\$150K	\$350K

F. Biomass Energy Projects in the Office of Transportation Technologies (DOE)

	<u>FY99</u>	<u>FY00 (proposed)</u>
Total Regional Biomass Energy Program	\$3,500K	\$3,500K
(Jointly funded with Biopower)		

1. **Regional Biomass Resource Activities** - Regionally-focused activities with State and local governments and industry will develop the capability to produce and use biomass resources for multiple products.

	<u>FY99</u>	<u>FY00 (proposed)</u>
Subtotal	\$2,000K	\$2,000K

2. **Biofuels Production Activities** - Using the regional program infrastructure, support will be provided for cost-shared site studies for biofuels production facilities, including resource assessments and analyses of local, State, and regional nontechnical issues.

The potential of biodiesel will be improved by testing new biodiesel fuel formulations to enhance fuel performance of high efficiency engines in collaboration with the Office of Heavy Vehicle Technologies, USDA, and the National Biodiesel Board.

	<u>FY99</u>	<u>FY00 (proposed)</u>
Subtotal	\$1,500K	\$1,500K

G. Current Major Fossil Energy Projects in Transportation Fuel R&D of Fossil Energy

	<u>FY99</u>	<u>FY00 (proposed)</u>
Total Fossil Energy Transportation Funding	\$12,000K	\$11,000K

1. **Syngas Generation** - FT and other zero-sulfur, petroleum-compatible fuels are made by gasifying natural gas, coal, other carbon sources to 'syngas,' a mix of CO and H₂, which is then converted to the liquid fuel. Development of special ceramics able to effect oxygen separation and partial oxidation of natural gas to syngas in a single step is underway in a 7-year overall effort with a target overall fuel cost reduction of 25%.
2. **Small-Scale LNG Manufacture** - Using innovative thermoacoustic refrigeration technology, enabling liquefaction of methane without electric power inputs, a LNG manufacturing process is under development for module operation at volumes of 500 to 40,000 gpd at efficiencies of 70 to 80+%.
3. **Syngas Conversion Reactor** - Historic F-T conversion has taken place in 'fixed-bed,' batch-type reactors. Much higher conversion productivity can be had using 'slurry' reactors allowing continuous chemical reactions linking CO and H₂ molecules to desired hydrocarbon chain. Efforts are focused on determining reactor design criteria through detailed hydrodynamic study and scalable, conversion test runs in a 35 bpd Fuels Development Unit.
4. **Syngas FT Conversion Catalysts** - Bench scale characterization of non-proprietary iron and cobalt-based catalysts, usable to convert syngas of variable composition to FT product mixes, is being conducted to expand the public data base needed for optimization of FT conversion economics and product dimensions (after refinery finishing).

5. **Syngas Oxygenate (DME) Conversion** - Pilot plant testing at 100 bpd scale of improved manufacture of dimethyl ether (DME), that can be used as fuel (under conditions similar to propane).
6. **Syngas Oxygenate (Liquid DME) Manufacture** - DME can be altered to raise its vaporization temperature, enabling it to remain liquid at atmospheric conditions and more flexible use as a powerful, clean-burning transportation fuel. Research to delineate optimum procedures to convert DME to this fuel form is underway.

H. Projects in the Office of Concentrating Solar Power, Biopower and Hydrogen Technologies in support of the Office of Transportation Technologies of Office of Power Technology

	<u>FY99</u>	<u>FY00 (proposed)</u>
Total Hydrogen Program Funding	\$12,340	\$19,800

The Hydrogen Program conducts research and engineering development in the areas of hydrogen production, storage, and utilization, for the purpose of making hydrogen a cost-effective energy carrier for utility, transportation, and buildings applications.

1. **Production** - One of the highest priorities is the development of small scale, cost-effective production technologies that can meet the \$6-8 per million Btu cost target. The program funds advanced reforming technologies that can convert natural gas, biodiesel, and liquid hydrocarbons to hydrogen in small distributed facilities that co-produce electricity.
2. **Storage** - These projects are developing high density hydrogen storage concepts for on-board vehicle use. They include the development of carbon adsorbents, aluminates, and high pressure composite tanks.
3. **Infrastructure** - Since 1993 the program has been working with industry to develop and demonstrate refueling systems for hydrogen fueled vehicles. This includes the development of codes and standards, sensors and safety studies for the safe implementation of the developing technologies. Several demonstration projects have been funded to collect data for the US activities under the International Standards Organization. The program has worked with several organizations to develop and promulgate standards for fuel specification and connectors.
4. **Major Fuels Projects in the Office of Policy (DOE)**

	<u>FY99</u>	<u>FY00 (proposed)</u>
Total Fuels Policy Funding	\$180K	\$200

1. Analysis of impact of proposed Tier II fuel (lower sulfur) standards on the energy and transportation sectors. Using a refinery model, estimate the costs and changes in product slate that would result from various sulfur requirements.
2. Modeling the Transition to Alternative Vehicles. The principal goals of the Transitional Alternative Fuel Vehicles Model are: To account for the effect of AFV incentives/programs on vehicle supply behavior (vehicle diversity and price). To account for the effect of early AFV incentives/programs on fuel demand patterns and fuel distributor behavior (fuel availability and retail price). To determine the combined effect of these changes on the time path of household alternative vehicle adoption.
3. Analysis of Energy Security Implications of Natural Gas to Liquids (GTL) as a replacement transportation fuel. Purpose of study: (a) help formulate alternative fuels policy; (b) know where we are headed, and (c) set framework for future studies.
4. Analysis of the prospect for the development of a cellulosic ethanol industry to produce ethanol as an alternative fuel or as a replacement fuel.
5. The Role of Ethanol and other Oxygenates. Analysis to establish the importance of oxygenates to the needed quality and volume of gasoline in the U.S. market. The issue of possible banning of MTBE and its impact on DOE/EPACT goals will be studied.
6. Fuel Economy Cost Study. Continuation of a multi-year analytical effort to establish the cost of making vehicle fuel economy improvements with conventional technologies and Energy Efficiency funded advanced technologies.

III. DEPARTMENT OF TRANSPORTATION FUELS ACTIVITIES INVENTORY:

The DOT programs primarily fund programs for increased testing and deployment of transportation vehicles using alternative fuels. In many cases, this funding may be used by the federal government or others to support development of alternative fuels (they have been included, as well).

1. Clean Buses: DOT (FTA) has been funding research in advanced technology buses in recent years. TEA-21 establishes a new clean fuel formula grant program which authorizes \$200 million each year, FY 1999-2003 to buy or lease buses using low-polluting fuels. Eligible projects include purchase of clean-fuel buses, constructing, modifying or leasing facilities, and repowering or retrofitting of existing buses. Eligible technologies include CNG, LNG, biodiesel, battery alcohol-based fuel, hybrid electric, fuel cell or other zero-emissions technology.
2. Fuel Cell Transit Buses-TEA-21 continues research in fuel cell transit buses, authorizing \$4.85 million each year for the Fuel Cell Bus and Bus Facility Program. DOT is evaluating PAFC and PEM at Georgetown University, and is also monitoring the

following: an on-board hydrogen FC bus at Chicago Transit Authority, direct-MeOH fuel cells, diesel and gasoline reformers, and solid-oxide and molten carbonate FCs.

3. Clean Ferries: TEA-21 requires that DOT study the potential for alternative-fueled ferry services. The testing involves the utilization of alternative (lower carbon) fuels and the potential development of low emission fuel cells to power these ferries.
4. Congestion Mitigation and Air Quality Improvement Program (CMAQ): TEA-21 continues this as an independent program that helps communities meet NAAQS, and increases funding by about 35 percent to \$8.1 billion. TEA-21 also provides greater access to CMAQ funds for the purchase of privately owned vehicles or fleets using alternative fuels. For the first time, funds may also be used to finance the cost of refueling infrastructure that will be used by privately owned alternatively fueled vehicles or fleets. Interim guidance for CMAQ was published in October, and final guidance is expected to be issued in early 1999.
5. DOT (NHTSA) administers the Corporate Average Fuel Economy (CAFE) program. Since 1995, Congress has restricted DOT from working to increase the stringency of the CAFE standards. The 1988 Alternative Motor Fuels Act (AMFA) modified CAFE calculations to encourage the production of alternative fuel automobiles. This includes “dual fueled” automobiles - vehicles that can operate on (1) gasoline or diesel fuel and (2) alcohol or compressed natural gas (or propane). Alternative fuels are defined in the statute as alcohol blends containing 85 percent or more of methanol, ethanol, or other alcohol; natural gas; liquified petroleum gas (propane); hydrogen; coal derived liquid fuels; other fuels derived from biological materials; electricity, including electricity derived from solar energy; and any other fuel prescribed by the Secretary of Transportation that is substantially not petroleum and that would yield substantial energy security and environmental benefits. Dual fuel *passenger cars* must meet a minimum driving range on the EPA combined driving cycle.
6. Gasohol Tax Exemption - DOT Administers the Highway Trust Fund. Ethanol and methanol derived from renewable sources are eligible for tax benefits when blended into gasoline (called gasohol). The Federal Tax Rate on these blends is reduced at the pump by 5.4 cents/gallon for ethanol (down from 18.4 cents/gallon for gasoline to 13 cents/gallon) and 6 cents/gallon for methanol. LNG, propane, CNG, and methanol derived from natural gas are also subject to varying rates of reduced taxes based on the energy equivalence of these fuels to gasoline. Gasohol, particularly at 10 percent ethanol levels, also receives partial exemption from some State highway fuel excise taxes. TEA 21 reduces the gasohol exemption (for 10percent blends) at the pump to 5.1 cents/gallon per gallon by 2005.
7. Other: DOT is responsible for any regulations that may be required to ensure the safety of vehicular fuel systems, pipelines, and the transportation of hazardous materials.
8. Advanced Vehicle Technology Program - TEA-21 encourages DOT, other government agencies

and private consortia to cooperate to promote research, development and deployment of technological advances in vehicles, components and related infrastructure. \$50 million per year is authorized in TEA-21 for FY 1999 to 2003. Before TEA-21, DOT and DOE had jointly proposed this continuation of DOD's Electric and Hybrid Vehicle Technologies program in their FY 99 budget requests; Congress funded DOT's program at \$5 million and DOD's at \$9 million, but DOE's share was not funded. This program will focus on medium and heavy vehicles.

IV. ENVIRONMENTAL PROTECTION AGENCY ACTIVITIES REGARDING MOTOR VEHICLES AND FUELS:

1. Tier 2 vehicle emission standards – EPA is currently drafting proposed regulations that would establish the next round of emission standards for passenger cars and light trucks. The Clean Air Act requires EPA to determine through these regulations whether more stringent standards are necessary, feasible and cost effective. Any new standards may not have an effective date prior to the 2004 model year.

	<u>FY99</u>	<u>FY00 (proposed)</u>
Subtotal	\$600K	\$800K

2. Sulfur in gasoline – The auto industry has petitioned EPA to reduce the levels of sulfur in gasoline. California already requires low sulfur gasoline and the auto companies, state air pollution control officials and environmental groups have supported a requirement that sulfur in all U.S. gasoline be reduced to similar levels. The oil industry has proposed a regional sulfur reduction program. Because of the linkage, EPA plans to propose regulations for future Tier 2 vehicle standards and gasoline sulfur levels concurrently early in 1999.

	<u>FY99</u>	<u>FY00 (proposed)</u>
Subtotal	\$1,030K	\$1030K

3. Sulfur in diesel fuel – In 1993 EPA issued regulations limiting the amount of sulfur in diesel fuel to 500 ppm. Recently, manufacturers of diesel engines have informed EPA that lower sulfur levels will be needed to achieve future advances in diesel engine technology. To build a technical record that may support regulatory action, EPA in early 1999 will issue an Advance Notice of Proposed Rulemaking to request public comments on the need for further diesel sulfur control.

	<u>FY99</u>	<u>FY00 (proposed)</u>
Subtotal	\$600K	\$600K

3. Phase 2 of reformulated gasoline – Regulations are in place that will require the second phase of reformulated gasoline (RFG) to be implemented in January 2000. Among other changes that will result in cleaner burning gasoline, Phase 2 RFG is expected to result in average

sulfur levels of 150 ppm. RFG currently accounts for about 30 percent of U.S. gasoline usage. EPA is working closely with fuel providers and the auto industry to assure a smooth transition to the second phase of the program.

	<u>FY99</u>	<u>FY00 (proposed)</u>
Subtotal	\$871K	\$871

4. Renewable fuels research – As part of the PNGV program, EPA is leading the government efforts to develop a small 4SDI engine capable of operating on renewable alcohol fuels. It is anticipated that such an engine would be part of a hybrid powertrain design to meet the PNGV goals.

	<u>FY99</u>	<u>FY00 (proposed)</u>
Subtotal	\$10,500K	\$10,500K

5. Miscellaneous fuels support \$1660K \$1660K
(primarily RFG implementation and enforcement)

NOTE: EPA's Fuels Program Budget

The FY99 budget numbers listed above are a rough estimate of the resources EPA plans to allocate to its fuels programs in FY1999, including salaries. The following information applies to FY99 and FY00.

Research *\$10.5 million*

- Alternative Fuels R&D \$10.5 million
(includes PNGV non-diesel and renewable alcohol fuels, and related engine technologies R&D)

Policy Initiatives, Incentives and Regulations *\$4.76 million*

- Alternative Fuels Support \$0.32 million
(includes greenhouse gas emissions modeling and alternative fuels policy development)
- Fuels Support \$1.63 million
(includes evaporative emissions, diesel sulfur, fuel additives and winter oxygenate programs)
- Ongoing RFG Implementation \$1.34 million
(includes compliance oversight, State Clean Fuel Options and MTBE issues assessment)
- Phase 2 RFG \$0.871 million
(includes RFG Phase 2 roll-out and quantification, monitoring of emission benefits)
- Tier 2 \$0.8 million
(fuels part, only: includes gasoline sulfur analyses, other technical support)

V. U.S. DEPARTMENT OF AGRICULTURE TRANSPORTATION FUELS ACTIVITIES

	FY99	FY00 (proposed)
Total USDA Program Funding	\$320K	\$320K

1. Analyze the effect of new gasoline regulations on the use of ethanol in gasoline -

A key element of national energy policy is the development of a large agricultural ethanol industry which will reduce foreign crude dependence, reduce global warming emissions, and stimulate economic growth. Increasing corn grind for ethanol and expanding farm residue collection will increase farm income. Increased use of ethanol as a transportation fuel will reduce greenhouse gas emissions, certain regulated air pollutants, air toxics, and will protect the water supply. The purpose of this multiyear investigation is to determine how to overcome technical and economic barriers to the use of renewable oxygenates as transportation fuels and evaluate the feasibility of expanding corn and corn residue based ethanol production to 3 billion gallons per year by 2010. EPA's proposed Tier II gasoline regulations, Reformulated Gasoline II, and other EPA programs will be examined to determine how these regulations will effect the future ethanol market. Output from this project will include a technical description and economic model of the U.S. motor fuels industry including renewable oxygenates. The deliverables for year one are a detailed plan of work and technical support documents required for the study.

	<u>FY99</u>	<u>FY00 (proposed)</u>
Subtotal	\$200K	\$200K

- 5. Develop a research proposal to monetize the external benefits of renewable transportation fuels -** The high cost of alternative fuels relative to petroleum fuels is a major barrier to alternative fuel market development. However, many alternative fuels possess nonmarket benefits, for example using ethanol and biodiesel as a replacement for conventional fuels can reduce CO2 and some engine exhaust emissions. The purpose of this study is to use air emissions data from previous studies conducted by OEPNU and estimate the costs and benefits of using biodiesel as a substitute for petrodiesel. The results will help quantify the economic benefits of cleaner air brought about by biodiesel. This project would provide information to interested parties (e.g., government and city motor fleet operators) to help them determine an appropriate "green" price for biodiesel. It also will provide new information to policy makers and air quality managers that are developing strategies to reduce harmful air emissions. Results from this study will be useful in conducting future staff analysis and provide data for a cooperative agreement between OEPNU and Michael Wetzstein at the University of Georgia, Agricultural and Applied Economics Department. Dr. Wetzstein and a Graduate Assistant will introduce risk to the benefits/cost analysis. This work will reported in a Ph.D. dissertation.

	<u>FY99</u>	<u>FY00 (proposed)</u>
Subtotal	\$60K	\$60K

- 6. Perform an analysis to evaluate the use farm residues as biofuels feedstocks -** Some of

the most promising new uses for agriculture is converting crop residues into biofuels, biochemicals, and industrial products. Advances in conversion technology discovered in the past 15 years has markedly increased the economic feasibility of replacing fossil fuels with biofuels made from biomass. The overall goal of this study is to conduct an in-depth technical and economic feasibility assessment of the potential role of crop residues as a feedstock for production of biofuels, electricity, biochemicals, and industrial products. The study will examine maximum crop residue removal for biomass production, while considering soil runoff, yield, and effects on other production variables.

	<u>FY99</u>	<u>FY00 (proposed)</u>
Subtotal	\$60K	\$60K

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May 28, 1999

EXTEND TAX CREDIT FOR ELECTRIC VEHICLES AND PROVIDE TAX CREDIT FOR CERTAIN HYBRID VEHICLES

Current Law

No generally available income tax credit for purchases of hybrid vehicles is available currently. A 10-percent tax credit is provided for the cost of a qualified electric vehicle, up to a maximum credit of \$4,000. A qualified electric vehicle is a motor vehicle that is powered primarily by an electric motor drawing current from rechargeable batteries, fuel cells, or other portable sources of electric current, the original use of which commences with the taxpayer, and that is acquired for use by the taxpayer and not for resale. The full amount of the credit is available for purchases prior to 2002. The credit begins to phase down in 2002 and does not apply to vehicles placed in service after 2004.

Certain costs of qualified clean-fuel property, including clean-fuel vehicles, may be deducted when such property is placed in service. Qualified electric vehicles do not qualify for the clean-fuel vehicle deduction. The deduction begins to phase down in 2002 and does not apply to property placed in service after 2004.

Reasons for Change

The transportation sector now accounts for one-third of greenhouse gas emissions in the United States. Cars, sport utility vehicles, light trucks and minivans alone account for 20 percent of our greenhouse gas emissions. These vehicles also account for about 20 to 40 percent of all urban smog-forming emissions and 40 percent of US oil consumption. Almost all of these vehicles use a single gasoline-fueled engine.

Hybrid vehicles, which have more than one source of power on-board the vehicle, and electric vehicles have the potential to reduce greenhouse gas emissions, air pollution, and petroleum consumption. The proposed credits will encourage the purchase of vehicles that incorporate advanced automotive technologies and will help to move hybrid vehicles from the laboratory to the highway. These vehicles can significantly reduce emissions of carbon dioxide, the most prevalent greenhouse gas.

Proposal

The proposal would extend the present credit for qualified electric vehicles and provide temporary tax credits for certain hybrid vehicles:

- (1) Credit for electric vehicles. The phase down of the credit for electric vehicles would

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be eliminated and the credit would be extended through 2006. Thus, the maximum \$4,000 credit would be available for purchases before 2007.

(2) Credit for qualified hybrid vehicles. A credit, of up to \$3,000, would be available for purchases of a qualified hybrid vehicle after December 31, 2002, and before January 1, 2007. The credit would be:

- (a) \$500 if the rechargeable energy storage system provides at least 5% but less than 10% of the maximum available power;
- (b) \$1,000 if the rechargeable energy storage system provides at least 10% and less than 20% of the maximum available power;
- (c) \$1,500 if the rechargeable energy storage system provides at least 20% and less than 30% of the maximum available power; and
- (d) \$2,000 if the rechargeable energy storage system provides 30% or more of the maximum available power.

If the vehicle actively employs a regenerative braking system, the amount of the credit shown in (a) through (d) above would be increased by the following amounts:

- (i) \$250 if the regenerative braking system supplies at least 20% but less than 40% of the energy available from braking in a typical 60 miles per hour (mph) to 0 mph braking event to the rechargeable energy storage system;
- (ii) \$500 if the regenerative braking system supplies at least 40% but less than 60% of such energy; and
- (iii) \$1,000 if the regenerative braking system supplies 60% or more of such energy.

A qualifying hybrid vehicle is a road vehicle that can draw propulsion energy from both of the following on-board sources of stored energy: (1) a consumable fuel, and (2) a rechargeable energy storage system. A qualifying vehicle would have to meet all applicable regulatory requirements.

Maximum available power means the maximum value of the sum of the heat engine and electric drive system power or other non-heat energy conversion devices available for a driver's command for maximum acceleration at vehicle speeds under 75 mph.

These credits would be available for all qualifying light vehicles including cars, minivans, sport utility vehicles, and light trucks. Taxpayers who claim one of the qualified hybrid vehicle credits would not be able to claim the qualified electric vehicle credit or the deduction for clean-fuel vehicle property for the same vehicle.

Partnership for a New Generation of Vehicles (PNGV)

Background

- PNGV's progress was very visible in the past year, while the pace of global competition intensified and the automotive companies have significantly increased their efforts to design concept (and possibly commercial) vehicles with PNGV technologies. At the January 1999 Detroit Auto Show and earlier shows, DaimlerChrysler, Ford and GM showed a wide range of experimental cars, light-trucks and sport utility vehicles with PNGV technologies. Similarly, Toyota, Honda, Nissan, Renault, and VW have shown experimental cars, and in some cases commercial cars with PNGV-type technologies.
- The automotive companies continue to demand cleaner new fuels in the market place and have serious concerns about the impact in the proposed Tier II emission standards on the commercial viability of some of PNGV's high fuel efficiency technologies.
- The Partnership has successfully worked through the issues arising from the DaimlerChrysler merger and agreed to have DaimlerChrysler continue as part of PNGV.
- The most recent National Research Council (NRC) Peer Review reported significant progress in the PNGV technical program, but raised issues about the Government's coordination of emission requirements and energy efficiency technologies.
- PNGV will reach a major milestone next year – the unveiling of the PNGV Concept Cars.
- The Administrations' FY00 PNGV budget called for a \$23 million increase largely targeted for the fuel cell, battery and diesel emission efforts. Congress' initial markings have eliminated the DoE increases.
- Technology milestones:
 - a) **PEM fuel cell engines.** This exciting new technology is the key to very clean and high efficiency engines, and some fuel cell vehicles may be produced in the 2004 timeframe. [NOTE: the technology is still NOT likely to be in volume production for a decade]. Rapid progress is being made towards reducing the cost, size and complexity of the engine, but today they are still 10-times more costly and 5-times larger than an internal combustion engine. There is also great uncertainty about which fuel will be the best mass-market fuel (hydrogen, methanol, gasoline or something else).
 - a) **Light-weight vehicle designs.** The PNGV goal is to reduce the total vehicle weight 40% while maintaining the size, comfort and utility of the conventional vehicles. Great progress has been made in the effort to design and build aluminum intensive vehicles. Similar progress is being made towards making key components and parts with aluminum, other lightweight metals and composites (plastics). Cost is the key barrier to mass-market application of these materials (their costs are 4 – 20 times higher than steel), so it is unclear how quickly the automotive manufacturers will adopt these designs. Most likely they will introduce

lightweight components as incremental changes over a number of years as opposed to a car made entirely with lightweight materials. This means the fuel economy improvements will be modest for several more years.

- a) **Electric Drive.** The electric motors, large **high-power battery** packs, and electrical controllers will be key components in both fuel cell vehicles and hybrid-electric vehicles powered by internal combustion engines. Some of these technologies will be introduced in limited markets in the next few years.

Q: Will the proposed tier 2 air quality standards make it impossible to reach the PNGV goals:

A: EPA has done a careful job in proposing a standard that will let the automobile industry experiment with advanced engine designs while still meeting needed improvements in air quality. As you know we have proposed a major step in making this easier by proposing low levels of sulfur in gasoline. The new emission standards will be difficult to meet with high efficiency diesel engines (aka "compression ignition direct injection or CIDI). One of the major thrusts of PNGV research is to develop combinations of engines, fuels, and catalytic converters which can reach both efficiency and emission goals. Fuel cells, of course, provide another promising opportunity.

Q: Will the Daimler Chrysler merger make it difficult to continue the Partnership?

A: We have worked through this with the industry and have been guided by the advice of our automotive partners and their research partnership USCAR. We plan to continue the current partnership and reach our ten-year goal.

Q: Why are the Japanese ahead of us in introducing hybrid vehicles in the US markets.

A: We're convinced that the technology available to our PNGV partners is as good, if not better than any technology in the world. PNGV is a research partnership and we are not in a position to second guess the marketing decisions of our private partners. As you are aware, the US enjoys some of the lowest gasoline prices in the world making it difficult to market fuel efficiency. In spite of this, I think you'll be seeing some attractive, affordable products from our PNGV partners in the next few years.

Q: Are you considering expanding PNGV to Sports Utility Vehicles

A: I spoke to the auto industry executives about this in May and they are clearly interested in exploring the possibility. We are working through the details of what such a project might involve. Fortunately, many of the technologies developed by PNGV will be directly applicable to minivans, SUVs and other vehicles.

Q: CAFÉ?

A: this one is all yours.

Background fun facts:

Toyota and Honda have both announced plans to sell commercial hybrid-electric vehicles in the US in the year 2000. Both are expected to have no better than 2-times better fuel economy compared to PNGV's goal of 3-times and both are expected to lose money on each vehicle sold. Both will limit the number of vehicles sold in the US to However, they are apparently interested in establishing their companies as leaders in the market place for "green" cars and gaining real world experience with the new technologies. Toyota has received considerable amount of very favorable press coverage of their Prius hybrid-electric vehicle, which entered the commercial market in Japan in December 1997. Toyota projects they will produce a total of 20,000 Prius vehicles by the end of 1999.

General Motors announced they will put a fleet of 24 full-size trucks with hybrid-electric drivetrains on the road next year in New York and California. GM said they expect to gain valuable real world experience with these new technologies. This beats Jack Smith's pledge at the 1998 Detroit Auto Show to have hybrid-electric vehicles by 2001. He also pledged to have a fuel cell vehicles ready for possible commercial production by 2004.

On April 20th, **Ford and DaimlerChrysler** announced they were forming the Fuel Cell Partnership with Ballard Power Systems, ARCO, Shell, Texaco and the State of California. DaimlerChrysler and Ford will each put 5 fuel cell vehicles on the road in California in 2000 and 2001 and a total of 45 fuel cell cars and busses by 2003. The program is to gain real world experience and to evaluate the various fuel options for fuel cell vehicles.

Although there are clear signs the automakers are seriously evaluating the prospects of commercial vehicles with PNGV technologies, there are many major barriers to a true mass market for the PNGV vehicles. The key barriers are:

1. The high cost of these new technologies
1. The uncertainty availability of new fuels
1. The uncertainty of meeting the proposed much stricter emission standards with advanced diesel DI engines, which the companies could bring into commercial production in the very near future.
1. The large capital and structural change requirements expected in the manufacturing and supplier industrial bases.

NRC's PNGV Peer Review Report: On April 29th, the National Research Council released their 5th annual report from their review of the PNGV program. We consider the report to be the most favorable of the five reports. The review found that PNGV is making significant progress towards meeting its goals despite the need for additional resources. The report also recognized both PNGV's significant achievements in the past year and the major challenges still ahead. Among the findings of this year's review:

- “In the past year, more progress was made towards meeting PNGV goals than in previous years of the program.”
- “Partners are making good progress toward meeting their targets” in advanced diesel direct injection engine development
- “Impressive progress has been made in the past year” towards developing a practical, automotive fuel-cell system
- “The development of (electrochemical battery) cells and modules continues apace, as does abuse and safety testing.”
- “The electrical and electronic systems technical team has made excellent progress in the last year.”
- “Significant progress was made in the manufacturing processes for vehicles and specific components...”

Underscoring the fact that PNGV is a complete, well-focused and well-managed program, the report stated, “The committee believes the near-term and long-term technologies the PNGV has focused on have the potential to meet the program’s objectives.”

Although there are emissions and fuel challenges, the peer review “believes the fuel economy and the high-degree of technical maturity of the CIDI (i.e. advanced diesel direct injection) engine warrant continued development, especially in light of the uncertainties facing fuel-cell technology.”

The report also raises concerns that the Government has inconsistent policies towards fuel economy improvements and emission standards. The also express concerns that various Federal agencies “pursue their specific agency objectives without taking into account the interdependency of these issues.” The report also calls for a coordinated effort to resolve the many technical and marketplace issues related to new fuels that would enable PNGV technologies in the commercial market. Finally, the report adds caution, that the high cost of many of the PNGV technologies and the major commercial production changes needed will be real barriers to the market success of these technologies.

Finally the report recommends that the government support should continue beyond PNGV’s 2004 time frame to support the development of long-term, high-risk advanced automotive technologies which have the potential to improve fuel economy, lower emissions and be commercially viable. We assume they mean continued support for fuel cells and high power batteries.

PNGV Concept Car Milestone in the Year 2000. All three companies have made good progress towards their milestone of preparing to demonstrate official PNGV Concept Cars in the year 2000. The Concept Car milestone was established in 1993, when PNGV was started. The concept cars will be hand-built, one of a kind, but driveable vehicles designed to demonstrate the status of reaching the PNGV technological goals.

The companies have not and probably will not tell each other about the details of each of their cars, as the companies view the vehicles as highly competitive. Therefore it will be

difficult to discuss the details in a group setting.

The three companies have started discussions, but have NOT reached agreement, as to how they want to handle the unveiling of the PNGV Concept Cars. The issues they are discussing are:

1. One event or three separate events.
1. In Detroit (possibly at the January 10-13, 2000 Detroit Auto Show) or in Washington.
1. Early in the year or mid-year (at least one of the companies may not have their vehicle ready by early January).

Two possible options:

1. In Washington or Detroit in the first quarter with the unveilings at a common ceremony attended by Vice-President Gore. The companies may object to a joint unveiling, but it would have the best impact for the Government's role.
1. At the Detroit Auto Show with participation by Vice President Gore at a common ceremony after the three companies have staged their vehicle unveilings. The disadvantage of this option is the strong competition for media attention at the show which may dilute the attention on PNGV.

FY00 PNGV Budget: The Administration proposed a \$23 million increase in the FY00 budget compared to the FY99 appropriated budget levels. This would bring the fuel cell research effort up to \$41 million, the fuels and emission control R&D to \$32 million and the advanced high power battery R&D to \$15 million. The core PNGV programs are supported in the DoE and EPA. The other Federal agencies support the longer-range research areas that are not directly controlled by the PNGV Technical Teams. The Federal support for PNGV includes the following:

Partnership for a New Generation of Vehicles-- Budget Authority (\$ in millions)

<i>Agency</i>	<i>FY 1998</i>	<i>FY 1999</i>	<i>FY 2000</i>
<i>Energy</i>	<i>123</i>	<i>134</i>	<i>150</i>
<i>Environmental Protection Agency</i>	<i>16</i>	<i>29</i>	<i>47</i>
<i>Transportation</i>	<i>5</i>	<i>3</i>	<i>4</i>
<i>Commerce</i>	<i>29</i>	<i>25</i>	<i>12</i>
<i>National Science Foundation</i>	<i>47</i>	<i>49</i>	<i>51</i>
<i>TOTAL*</i>	<i>219</i>	<i>240</i>	<i>263</i>

** Totals may not add due to rounding.*

The key budget problem for FY00 is the same as the past couple of years, the reluctance of the Congress to approve the proposed increases because of the tight budget caps, especially in the "Interior" budget.