Welcome
Mid-Atlantic Diesel Collaborative
Members

The webinar
Predicting Air & Health Impacts of Construction
will start at 10:00 a.m.

Predicting Air and Health Impacts of Construction

Debbie Thomas
MARAMA
Q&A

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Air Quality Dispersion Modeling of NJ Construction Site

MidAtlantic Diesel Collaborative Webinar
Peg Hanna, NJDEP
October 30, 2014

Estimated Risk in 2005
- Under 10 times benchmark
- 10 - 50 times benchmark
- 50 - 100 times benchmark
- 100 - 1000 times benchmark
- 1000 - 2100 times benchmark

Maps are based on 2005 NATA concentrations and California risk factors. The 2020 estimates were developed by scaling the 2005 concentrations using state-level emission changes between 2005 and 2020.

NJDEP, November 2012
Executive Order Requirements

- Phase 1: 175 retrofits over 3 years 2011-2014
- Phase 2: 90 day evaluation July-Sept 2014
- Phase 3: Recommendation to Gov

Location of 175 retrofits
Modeling and Science Advisory Board

- Executive Order requires modeling of 1+ construction sites
- Science Advisory Board agreed that modeling is good approach for evaluating impacts/benefits

Route 3 Passaic River Crossing Project

- 5 work zones
- 64 pieces of equipment

<table>
<thead>
<tr>
<th>Route Zones</th>
<th>Work Zones</th>
<th>DURATION</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>WEST</td>
<td>WEST</td>
<td>4 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRANSIT</td>
<td>TRANSIT</td>
<td>6 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BRIDGE</td>
<td>BRIDGE</td>
<td>10 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PARKRIDGE</td>
<td>PARKRIDGE</td>
<td>10 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EAST</td>
<td>EAST</td>
<td>6 months</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Equipment inventory & emissions

- Obtain project specific information from contractor

- Equipment inventory information received:
  - Equipment make and model – *Some assumptions made*
  - Hours used on the project - *Some assumptions made*
  - Fuel consumption data

- Input equipment specific information into USEPA’s Diesel Emission Quantifier to calculate emissions
  - DEQ calculates baseline and retrofitted emissions
Using project maps, locations of construction equipment were decided.

Modeling Steps

- Equipment was modeled as stationary source to predict impact concentrations
- Meteorological data at Caldwell Airport (~9 miles from the project) used
- Receptors were placed 50 to 1500 meters out from the project to predict impact concentrations
Evaluating results

• Compare with 24 hour and annual NAAQS for PM2.5
• Evaluate cancer risk

West Work Zone: least impact
Predicted 24 hour PM 2.5 concentrations at sensitive receptors
Transit Work Zone: greatest impact
Predicted 24 hour PM 2.5 concentrations at sensitive receptors

Estimated max annual PM2.5 concentrations with and without retrofits at sensitive receptors

<table>
<thead>
<tr>
<th>Work Zone</th>
<th>USEPA Significant Impact Level (µg/m³)</th>
<th>Annual emissions from site before retrofits (µg/m³)</th>
<th>Annual emissions from site after retrofits (µg/m³)</th>
<th>Annual NAAQS (µg/m³)</th>
<th>Background Air Quality (µg/m³)</th>
<th>Background plus site emissions without retrofits (µg/m³)</th>
<th>Background plus site emissions with retrofits (µg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>West</td>
<td>0.3</td>
<td>0.10</td>
<td>0.02</td>
<td>12</td>
<td>10.9</td>
<td>11.0</td>
<td>10.92</td>
</tr>
<tr>
<td>Transit</td>
<td>0.3</td>
<td>1.04</td>
<td>0.13</td>
<td>12</td>
<td>10.9</td>
<td>11.94</td>
<td>11.03</td>
</tr>
<tr>
<td>Bridge 6</td>
<td>0.3</td>
<td>0.96</td>
<td>0.32</td>
<td>12</td>
<td>10.9</td>
<td>11.86</td>
<td>11.22</td>
</tr>
<tr>
<td>Park Ridge</td>
<td>0.3</td>
<td>0.55</td>
<td>0.34</td>
<td>12</td>
<td>10.9</td>
<td>11.45</td>
<td>11.24</td>
</tr>
<tr>
<td>East</td>
<td>0.3</td>
<td>1.31</td>
<td>0.21</td>
<td>12</td>
<td>10.9</td>
<td>12.21</td>
<td>11.11</td>
</tr>
</tbody>
</table>

Conclusion: potential exceedances of Significant Impact Level and NAAQS are avoided with retrofits in some cases.
Estimated Annual PM2.5 Concentrations for All Work Zones

<table>
<thead>
<tr>
<th>Without Retrofit</th>
<th>With Retrofit</th>
</tr>
</thead>
</table>

Yellow: $0.3 \mu g/m^3$ (Meets SIL)  
Green: $0.6 \mu g/m^3$ (Exceeds SIL)

Examples of equipment with the largest PM2.5 baseline impact

- **1996 Excavator**
  - 600 HP
  - 800 hrs of operation

- **1996 Drill Rig**
  - 300 HP
  - 300 hrs of operation
### NJDEP guidelines for stationary source permitting

<table>
<thead>
<tr>
<th>CANCER RISK</th>
<th>DEP CLASSIFICATION</th>
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</thead>
<tbody>
<tr>
<td>&gt;1000 in a million</td>
<td>Unacceptable risk</td>
</tr>
<tr>
<td>100-1000 in a million</td>
<td>Pursue short term (&lt;1 yr) risk minimization strategy</td>
</tr>
<tr>
<td>10-100 in a million</td>
<td>Pursue long term (&gt;1 yr) risk minimization strategy</td>
</tr>
<tr>
<td>&lt;10 in a million</td>
<td>Negligible risk</td>
</tr>
</tbody>
</table>

### Cancer risk of diesel particulates assuming 1 year of exposure

<table>
<thead>
<tr>
<th>Work Zone</th>
<th>Cancer risk without retrofits</th>
<th>Cancer risk with retrofits</th>
</tr>
</thead>
<tbody>
<tr>
<td>West</td>
<td>5 in a million</td>
<td>1 in a million</td>
</tr>
<tr>
<td>Transit</td>
<td>11 in a million</td>
<td>1 in a million</td>
</tr>
<tr>
<td>Bridge 6</td>
<td>8 in a million</td>
<td>3 in a million</td>
</tr>
<tr>
<td>Park Ridge</td>
<td>5 in a million</td>
<td>3 in a million</td>
</tr>
<tr>
<td>East</td>
<td>7 in a million</td>
<td>1 in a million</td>
</tr>
</tbody>
</table>
Discussion on cancer risk analysis

• Used California’s unit risk factor, which estimates the increased risk of developing cancer based on exposure to diesel particulates. USEPA does not have a similar cancer risk factor for diesel particulates.

• NJDEP published a technical manual containing guidance on risk assessment for stationary facilities (http://www.nj.gov/dep/aqpp/downloads/techman/1003.pdf). In several situations, NJDEP has applied the facility wide portion of the document to mobile source analyses and risk management. Under the guidance, risk below 10 in a million is considered negligible for an entire facility.

• For diesel engines, the maximum 70 year risk of cancer is estimated at > 2000 in a million at several locations in NJ and at > 100 in a million in a large area along the I-95 corridor.

Questions?

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Projects to Improve Air Quality at Ports
2014 DERA Funding Opportunity
Request for Proposals Information Session

For a copy of the RFP, FAQs, and this presentation please visit: www.epa.gov/otaq/ports/port-dera-rfp.htm
Disclaimer

• This is only an overview.

• Please carefully review the full RFP prior to preparing and submitting their application to EPA.

www.epa.gov/air/grants/rfp-epa-oar-otaq-14-07.pdf

EPA Office of Transportation & Air Quality’s Ports Initiative

• EPA is offering funding that helps to build a more sustainable goods movement system, to improve air quality for communities and reduce climate change risk.

  • www.epa.gov/otaq/ports/
Why Ports?

• Ports are a key component of the U.S. economy.

• Most of the country’s busiest water ports are located in or adjacent to large metropolitan areas, many with areas of poor air quality.

• Despite new engine and fuel standards, older in-use diesel engines continue to emit large amounts of nitrogen oxides, particulate matter, air toxics, and greenhouse gases.

• Health Impacts: Emissions are linked to premature deaths, asthma attacks, lost work days, and climate change.

Basic Information

• Estimated funding: $5 million
  ▫ Maximum award size of $2 million
  ▫ Anticipate 2-5 awards

• RFP closes Thursday, December 11, 2014
  ▫ All proposals must be received by 4pm EST

• Awards announced: February 2015
Eligible Entities  (Section III.A, pg 16)

• Public port authorities, state & local governments with jurisdiction over transportation and air quality.
  
  • Community groups, terminal operators, shipping carriers, and other entities involved in port operations are encouraged to participate through partnerships with eligible entities.
  • Award funds may be used to make subawards and subgrants to project partners, provided that the recipient complies with requirements of 40 CFR Part 31.

Eligible Project Locations  (Section III.B, pg 17)

• marine or inland water port located in an area of poor air quality.

• Counties/areas have been designated poor air quality areas because they are:
  • Designated as Particulate Matter (PM) 2.5 or 8-Hr Ozone Nonattainment or Maintenance Areas;
  • Areas where all or part of the population is exposed to more than 2.0 mg/m³ of diesel particulate matter; or
  • Participants in EPA's Ozone or PM Advance Program.
Eligible Vehicles, Engines & Equipment
(Section I.B.1, pg 5)

• Projects are limited to the following sources:
  • Drayage trucks;
  • Marine engines;
  • Locomotives; and
  • Non-road engines, equipment or vehicles used in in the handling of cargo at a marine or inland water port.

Eligible Projects (portion EPA will fund)
(Section I.B.2, pg 5)

• Verified Exhaust Control Technologies (100%)
• Verified/Certified Engine Upgrades (40%)
• Verified Idle Reduction Technologies
  ▫ Locomotives (40%)
  ▫ Marine Shorepower Connection Systems (25%)
• Certified Engine Repowers (40%)
• Vehicle and Equipment Replacements
  ▫ Nonroad (25%)
  ▫ Drayage Trucks (50%)
• Clean Alternative Fuel Conversions (40%)
Funding Restrictions (Section III.E, pg 20)

• There are lots of them, so please read the RFA.

Proposal Submission (Section IV, pg. 24)

• Submit proposals:
  ▫ Electronically via [www.grants.gov](http://www.grants.gov); or
  ▫ Hardcopy via express delivery service (FedEx, UPS, DHL)

• If you are not registered, **Start the process now!!**
  ▫ Designate an Authorized Organization Representative (AOR) and begin the registration process as soon as possible.
  ▫ The registration process requires that your organization have a DUNS number and a current registration with the System for Award Management (SAM) and the process of obtaining both could take a month or more.
Proposal Evaluation & Selection Process

- **Step 1: Threshold Criteria Review** (Section III.D, pg 19)
  - Must meet ALL seven threshold criteria

- **Step 2: Evaluation Criteria** (Section V.A, pg 29)
  - Eleven evaluation criteria
  - 100 points possible

- **Step 3: Funding Recommendation provided to EPA Approving Official**
  - Approving Official considers rank and may consider Other Factors (Section V.C, pg 32)

### Evaluation Criteria (Section V.A, pg 28)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Summary &amp; Overall Approach</td>
<td>9</td>
</tr>
<tr>
<td>Results - Outcomes and Outputs</td>
<td>10</td>
</tr>
<tr>
<td>Benefits to Communities and Public Health</td>
<td>15</td>
</tr>
<tr>
<td>Partnerships</td>
<td>10</td>
</tr>
<tr>
<td>Promote and Sustain Efforts to Reduce Emissions from Port Areas</td>
<td>10</td>
</tr>
<tr>
<td>Diesel Emissions Reduction Effectiveness</td>
<td>20</td>
</tr>
<tr>
<td>Past Performance</td>
<td>8</td>
</tr>
<tr>
<td>Staff Expertise/Qualifications</td>
<td>5</td>
</tr>
<tr>
<td>Budget Resources</td>
<td>5</td>
</tr>
<tr>
<td>Expenditure of Awarded Grant Funds</td>
<td>3</td>
</tr>
<tr>
<td>Applicant Fleet Description</td>
<td>5</td>
</tr>
</tbody>
</table>
Tools and Resources

- **Applicant Fleet Description**
  - Required part of the proposal – describes fleet in detail

- **Project Narrative Sample Format**

- **Eligible Project Locations - Priority County and Area List**

- **Model Years for Eligible Nonroad Engines and Equipment**

- **Diesel Emissions Quantifier (DEQ)**
  - Can be used to show expected project results, cost-effectiveness, and public health benefits
  - [www.epa.gov/cleandiesel/quantifier/](http://www.epa.gov/cleandiesel/quantifier/)

- **Technology Tips Guide**
  - Helpful info about each type of project, technical issues to look out for, etc.

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Additional Support

- **Frequently Asked Questions**
  - Posted weekly
  - Will include questions from today’s webinar
  - Deadline for submitting questions is Tuesday, December 2, 2014
  - Submit questions via email to cleandiesel@epa.gov
    - Subject Line: “Ports RFP Question”

[www.epa.gov/otaq/ports/ports-dera-rfp.htm#faq](http://www.epa.gov/otaq/ports/ports-dera-rfp.htm#faq)
Thank You!

Projects to Improve Air Quality at Ports - 2014 Funding Opportunity
Request for Proposals Information Session

A copy of this presentation, a link to the FAQ and RFA can be found at:
www.epa.gov/otaq/ports/ports-dera-rfp.htm

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