Ports Presentation

Perry Pandya, U.S. EPA Region III
Air Toxics Summit
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Presentation Overview

• National Clean Diesel Campaign
  – Clean Ports USA

• Ports Primer
  – Who are the “Ports”?  
  – Key Issues  
  – Emissions Profiles

• Future Directions
• Reducing emissions from diesel engines is one of the most important air quality challenges facing the country.

• Even with more stringent standards set to take effect in the next decade, over the next 20 years - millions of in-use engines will continue to emit large amounts of pollution.
## Region III Ports

<table>
<thead>
<tr>
<th>Port</th>
<th>Rank</th>
<th>Tonnage (2001)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pittsburgh</td>
<td>12</td>
<td>53,008,632</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>17</td>
<td>46,372,067</td>
</tr>
<tr>
<td>Baltimore</td>
<td>19</td>
<td>42,072,123</td>
</tr>
<tr>
<td>Norfolk</td>
<td>21</td>
<td>37,310,351</td>
</tr>
<tr>
<td>Marcus Hook, PA</td>
<td>37</td>
<td>19,124,360</td>
</tr>
<tr>
<td>Newport News, VA</td>
<td>44</td>
<td>13,859,969</td>
</tr>
<tr>
<td>New Castle, DE</td>
<td>61</td>
<td>8,559,893</td>
</tr>
</tbody>
</table>
### Region III Ports (continued)

<table>
<thead>
<tr>
<th>Port</th>
<th>Rank</th>
<th>Tonnage (2001)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilmington, DE</td>
<td>70</td>
<td>6,419,677</td>
</tr>
<tr>
<td>Chester, PA</td>
<td>88</td>
<td>3,988,882</td>
</tr>
<tr>
<td>Penn Manor, PA</td>
<td>96</td>
<td>3,325,884</td>
</tr>
<tr>
<td>Richmond, VA</td>
<td>122</td>
<td>1,907,271</td>
</tr>
<tr>
<td>Erie, PA</td>
<td>145</td>
<td>1,158,849</td>
</tr>
</tbody>
</table>

*Information from U.S. Army Corps of Engineers (based on 2001 tonnage)*
Who are Ports?

Entities at Ports

- Port Authorities
- Terminal Operators/tenants
- Shipping Companies (Cargo and Cruise)
- Drayage Trucks and Rail
- Cargo Owners
- Coast Guard
- Army Corps of Engineers
- Private ports/docks

- Ports are “Mini-cities”
- Collections of independent entities involved in contractual arrangements to do their business
- Many ports actively engaged in reducing diesel emissions
Who are Port Authorities?

• Public sector port authorities established by states to develop, manage, and promote waterborne commerce
  – Large variety – Operating and landlord/tenant
  – Some port authorities own or operate airports, bridges and railroads

• Facts and Figures
  – More than 80 Port Authorities
  – Over 30 in Nonattainment areas
  – 95% of US oversees cargo goes through ports by weight
  – 58,000 employees plus contractors and leasees
  – More than 3,000 berths for deep draft ships
  – About 2,000 public and private marine terminals transfer cargo and passengers
Key Issues for Port Authorities

• US international waterborne freight is expected to double by 2020
  – Ports spent $2.8 billion on capital improvements in 2001-2
  – Cruise ships are increasingly using port facilities

• National security issues are paramount

• Ports face community pressures
  – Lawsuits from environmental organizations and neighborhood groups

• Nonattainment designations create opportunities
Vessel PM$_{2.5}$ Emissions in the U.S.

1996 Mobile Source PM2.5 Inventory  
(572,300 tons)

- Cl NR 33%
- Cl Marine 3%
- C3 Marine 3%
- Locomotive 4%
- Aircraft 5%
- Other Nonroad 12%
- Highway 40%

2030 Mobile Source PM2.5 Inventory  
(283,600 tons)

- Cl NR 8%
- Cl Marine 6%
- C3 Marine 19%
- Locomotive 4%
- Aircraft 11%
- Other Nonroad 26%
- Highway 26%

48-state inventories; includes Tier 4 Nonroad
Clean Ports USA

- As part of EPA's Voluntary Diesel Retrofit Program, the Clean Ports USA initiative is encouraging port authorities to:
  - Retrofit and replace older diesel engines with verified technologies
  - Use cleaner fuels
  - Increase operational efficiency, including environmental management systems, logistics, and appointment systems
  - Reduce engine idling
  - Promote intermodal shifts
## Typical Contributions by Category

<table>
<thead>
<tr>
<th>Category</th>
<th>Percent NOx</th>
<th>Percent PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marine Vessels</td>
<td>32</td>
<td>43</td>
</tr>
<tr>
<td>On-Highway Trucks</td>
<td>40</td>
<td>31</td>
</tr>
<tr>
<td>Cargo Handling Equipment</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>Locomotives</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

Represents current year inventories from Ports of Los Angeles, Long Beach, New York/New Jersey, Oakland, and Houston. Source: NRDC 2004
Reduction Strategies

• Technology Strategies
  – Refuel
  – Retrofit
  – Repair/Rebuild
  – Repower
  – Replace

• Operational Strategies
  – Idle Reduction
  – Improved Port Efficiency
  – Use of On-shore Power (Cold Ironing)
Possible Funding Sources for Clean Port USA Projects

• Federal
  – EPA: Proposed President’s 06 budget has $15 M for general retrofit
  – Dept of Energy Clean Cities
  – Dept of Transportation CMAQ funds – Nonattainment Areas
  – Homeland Security (?)

• State
  – California’s Carl Moyer program
  – Texas TERP
  – Port Authority budgets (some are state agencies)

• Supplemental Environmental Projects (SEPs)
  – Federal settlements
  – State settlements

• Corporate sponsorship
  – Terminal operators
What are other Ports doing?

- Georgia – Improved efficiency with a Gate Management System
- Port of LA – Cold Ironing – use of shore power while ship is docked
- Port of NY/NJ – SCR on Staten Island Ferry
- Port of Seattle – Shore Power for Cruise Ship Terminal
- Port of Long Beach – Diesel Oxidation Catalysts on Cargo Handling Equipment
Region III Port Activities

- Region 3 has held meetings with the Ports of Philadelphia and Baltimore to explore diesel retrofit projects.

- The Port of Baltimore has electrified 7 Gantry Cranes resulting in 155 TPY NOx reduction and significant diesel PM reductions and is also exploring retrofitting the engines of tug boats and converting to bio-diesel.

- The Clean Air Council/Port of Philadelphia has received a grant through the Community Action for a Renewed Environment or “CARE” Program for $78,000. EPA will offer technical assistance to help communities surrounding the Port to perform a risk assessment and reduce risks caused by toxics.

- Region 3 is planning future activities with the Ports of Wilmington, Norfolk and Pittsburgh.