Update on California’s Strategies to Reduce Emissions from Maritime Ports

February 24, 2005

California Environmental Protection Agency
Air Resources Board
Overview

♦ Need for Action
♦ Maritime Emissions
♦ California’s’s Strategy
Need for Action
California is Major Gateway to Global Trade
Future Trends

- Dramatic increase in trade
- More goods movement emissions overall
- Localized impact on nearby communities
Public Health Imperative

- Port emissions are substantial
- Will prevent attainment if not addressed
- Localized exposure & risk are a major concern
- Climate change impacts also need attention
Maritime Emissions
Emissions from Maritime Operations

- On-Road Heavy-Duty Diesel Trucks
- Land-based cargo handling and support equipment
- Ships and Harbor Craft
- Locomotives
Principle Emission Sources
Ports of Los Angeles and Long Beach

Percent Contribution to 2001 NOx Emissions

- Ships: 41%
- Heavy-duty Trucks: 23%
- Cargo Handling Equipment: 14%
- Locomotives: 13%
- Harbor Craft: 9%
2005 NOx Emissions In the South Coast Air Basin from a Variety of Sources

- Port-related
- On-road Trucks
- Gasoline Vehicles
- Off-road Equipment
- Industrial Sources

(tpd)
2020 NOx Emissions In the South Coast Air Basin from a Variety of Sources

<table>
<thead>
<tr>
<th>Source</th>
<th>Emissions (tpd)</th>
</tr>
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<tbody>
<tr>
<td>Port-related</td>
<td>200</td>
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<tr>
<td>On-road Trucks</td>
<td>100</td>
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<tr>
<td>Gasoline Vehicles</td>
<td>80</td>
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<tr>
<td>Off-road Equipment</td>
<td>60</td>
</tr>
<tr>
<td>Industrial Sources</td>
<td>40</td>
</tr>
</tbody>
</table>

- **Port-related**: 200 tpd
- **On-road Trucks**: 100 tpd
- **Gasoline Vehicles**: 80 tpd
- **Off-road Equipment**: 60 tpd
- **Industrial Sources**: 40 tpd
NOx Emission Trends for Various Port-related Sources In the South Coast Air Basin

(tpd)
PM Emission Trends for Various Port-related Sources In the South Coast Air Basin

![Bar chart showing PM emission trends for various port-related sources from 2000 to 2020. The sources include Ships, Railroads, Diesel Trucks, Off-Road Equipment. The y-axis represents emissions in tpd (tons per day).]
Effect of Adopted Rules in Reducing NOx Emissions From New Engines

(Percent Reduction Based on Adopted New Engine Standards)

- On-Road Trucks: 98%
- Off-Road Engines: 97%
- Locomotives: 58%
- Harbor Craft: 39%
- Ships: 6%
California’s Strategy
California’s Framework for Air Quality Improvement

♦ Governor’s Commitment to Reduce Port Related Emissions
♦ Diesel Risk Reduction Plan
  – 85% reduction in diesel PM by 2020
♦ State Implementation Plan
  – Blueprint for meeting federal air quality standards
♦ Governor’s Environmental Action Plan
  – 50% reduction in emissions by 2010
♦ Environmental Justice and Community Health
Reducing Port Related Air Quality Impacts Will Require:

- Effective new engine standards
- Clean fuels for all sectors
- Program to modernize in-use fleets
- Improving efficiencies
- Increased incentive funding
**Current Strategy for Ocean-Going Ships**

- **International & Federal New Engine Standards**
  - United States needs to ratify Annex VI
  - States, USEPA pushing IMO for more stringent standards
  - USEPA committed to more stringent standards for US flagged ships in 2007

- **Cleaner Fuels**
  - ARB rule for cleaner fuels in auxiliary engines (2005)
  - Additional requirements for frequent visitors (2006)
  - Sulfur Emission Control Area designation

- **In-Use Strategies**
  - Continue VSR MOU
  - Exploring MOU to achieve additional in-use reductions
  - Cold-ironing study
  - Ship water emulsion demonstration
  - Restrictions on cruise ship incineration
Current Strategy for Cargo Handling Equipment

- Port sponsored voluntary programs
- Cargo handling equipment rule for ports and intermodal rail facilities (2005)
  - Statewide rule
  - Address equipment used to load and unload containers, dry bulk, etc.
  - Preliminary regulatory concepts include using Best Available Control Technology
Current Strategy for Harbor Craft

♦ Federal New Engine Standards
  – ARB seeking aftertreatment based standards in pending federal rulemaking

♦ Cleaner Fuels
  – ARB adopted rule in 2004 requiring use of California on-road diesel fuel in captive harbor craft

♦ In-Use Strategies
  – Proposed ARB regulation requiring clean-up of in-use harbor craft (2005)
  – Continued Carl Moyer funding of vessel repowers
Current Strategy for On-Road Trucks

- Clean up new trucks
  - Truck Idling Restrictions
  - Mfr. In-use testing

- Existing on-road vehicles
  - Target Incentive Programs for Port Trucks
  - Diesel In-Use Fleet Rules (2006-2007)

- Community-based truck inspections
Current Strategy for Locomotives

♦ Federal New Engine Standards
  – EPA’s rulemaking underway, ARB commented Aug 04

♦ Cleaner Fuels
  – ARB adopted rule in 2004 requiring captive locomotives requiring use of California on-road diesel fuel

♦ In-Use Strategies
  – Reduced idling
  – Accelerate turn-over of older engines
  – MOU
  – ARB also encouraging U.S. EPA to pursue more stringent standards for in-use locomotives
Additional Efforts Regarding Ports

- Comprehensive Statewide Port and Rail Yard Emission Reduction Plan (2005)
- Inventory Development
- Health Risk Assessments for Nearby Communities
Current California Outreach/Collaboration Efforts

- Cal-EPA & BTH Goods Movement Effort
- POLA No Net Increase Taskforce
- Maritime Working Group
- West Coast Diesel Collaborative
- Multi-state staff coordination
- Technical Conferences
Conclusion

- Goods movement through California’s maritime ports impact air quality
- Port emissions are a multi-modal problem and require multi-faceted solutions
- Progress has been made and additional efforts underway to reduce emissions
- Further improvements imminent if we keep working together...