Regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards

Board Hearing
December 8, 2005
Overview

♦ Background
♦ Proposed Regulation
♦ Impacts
♦ Future Activities
♦ Summary and Recommendation
Background
What is Cargo Handling Equipment?

- Motor vehicles used at ports and intermodal rail yards to move cargo to/from ships, trains, and trucks
- Currently about 4,000 pieces of equipment
- Mainly diesel-fueled
- Significant source of exposures to diesel particulate matter (PM)
Yard Trucks

- Used in loading, unloading, and yard storage operations for cargo containers
- Account for about 61% of cargo handling equipment, about 66% of diesel PM emissions, and about 67% of NOx emissions
Yard Truck
Non-Yard Truck Equipment: Container Handling

- Used to load, unload, stack, and store cargo containers
- Category accounts for about 34% of population, about 32% of diesel PM emissions, and about 30% of NOx emissions
Top Handler
Rubber-tired Gantry Crane
Bulk Cargo Handling Equipment: Dozers, Loaders, Excavators

- Used to handle bulk and dry cargo
- Category accounts for about 5% of population, about 3% of diesel PM emissions, and about 3% of NOx emissions
Significant Contribution to Community Health Risks

- Ports of Los Angeles and Long Beach Exposure Assessment Study

<table>
<thead>
<tr>
<th>Risk Level (per million)</th>
<th>Square Miles Impacted</th>
<th>Population Affected</th>
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</thead>
<tbody>
<tr>
<td>Risk &gt; 200</td>
<td>0.6</td>
<td>11,000</td>
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<tr>
<td>Risk &gt; 100</td>
<td>6</td>
<td>82,000</td>
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<tr>
<td>Risk &gt; 10</td>
<td>190</td>
<td>1,400,000</td>
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</table>
Intermodal Rail Yards

14 Intermodal Rail Yards

Richmond (2)
Oakland (2)

Stockton
Lathrop

Fresno

Los Angeles (2)

Commerce
Long Beach

Barstow
San Bernardino

City of Industry
Regulatory Development Process

- 6 Public Workshops
- 4 Public Working Group Meetings
- Outreach Meetings
- Cargo Handling Equipment Survey
- Site Visits
Proposed Regulation
Regulatory Goals

♦ Identify performance standards that represent best available control technology (BACT)
♦ Achieve significant near-term reductions
♦ Include flexibility for equipment categories with limited options
Current Off-road and On-road New Engine Standards

### Diesel PM

- **Tier 1 Off-road**: 0.4
- **Tier 2 & 3 Off-road**: 0.1
- **2007+ On-road or Tier 4 Off-road**: 0

### NOx

- **Tier 1 Off-road**: 7
- **Tier 2 Off-road**: 5
- **2007 Off-road**: 2
- **2010+ On-road**: 0.5
- **Final Tier 4 Off-road**: 0.2
Applicability

♦ Proposed regulation applies to
  – owners, operators, sellers, lessors, and renters of compression-ignition mobile cargo handling equipment for use at ports and intermodal rail yards

♦ Proposed regulation does not apply to
  – portable compression-ignition engines or equipment
  – equipment used for fuel delivery or to transport personnel
Yard Trucks: Newly Purchased, Leased, or Rented

- **Performance Standards**
  - 2007 or later on-road or final Tier 4 off-road engine

- **Compliance Date**
  - effective January 1, 2007
Yard Trucks: In-Use

- **Performance Standards**
  - repower/replace with:
    - 2007 or later certified on-road engine (includes alternative fuels); or
    - final Tier 4 off-road engine standard when available
  - retrofit with verified controls that result in emissions equivalent to final Tier 4 off-road standards
Yard Trucks: In-Use

- **Compliance Schedule**
  - pre-2003 engines are required to comply first, beginning December 31, 2007
  - more time is given for
    - fleets of 4 or more
    - certified on-road engines already being used
    - verified controls installed prior to December 31, 2006
  - most pre-2003 yard trucks will be replaced by the end of 2010
Non-Yard Truck Equipment

♦ Need for flexibility
  – extremely diverse
    • engine design
    • long useful life
  – high capital costs
  – few verified controls
  – new Tier 4 engines available beginning 2011-2015
    • offer significant PM and NOx benefits compared to older engines
Non-Yard Truck Equipment: Newly Purchased, Leased, or Rented

♦ **Performance Standards**
  – 2007 or later on-road
  – If on-road is not available, then Tier 4 off-road or highest level off-road engine with verified controls added within first year

♦ **Compliance Date**
  – effective January 1, 2007
Non-Yard Truck Equipment: In-Use

- Performance Standards
  - retrofit with highest level verified controls (for some equipment, will require 2nd step to replace to Tier 4 off-road in 2015)
  - repower or replace with certified on-road engines (includes alternative fuels) or Tier 4 off-road engines
Non-Yard Truck Equipment: In-Use

- Compliance Schedule
  - oldest engines (pre-1988) must comply first (beginning December 31, 2007)
  - 3-year phase-in schedule for non-yard truck fleets of 4 or more
  - replacement to Tier 4 off-road engines in 2015 for some equipment
Compliance Extensions for Non-Yard Truck Equipment

- No verified emission controls available
- Use of non-verified diesel PM emission control strategies
- Alternative Compliance Plan
Recordkeeping and Reporting Requirements

- Compliance Plan
- Records kept at the terminal/equipment
- Demonstration of Compliance
- Annual Reporting
Enforcement

- ARB enforcement
- Equipment inspections at port and intermodal rail yard facilities
- Review of recordkeeping and reporting data
Potential for Incentive Funding

♦ Carl Moyer Program
  – early compliance or do more than is required

♦ Federal Energy Act
  – not yet appropriated
  – guidance will be developed by U.S. EPA
Impacts
Benefits of the Proposed Regulation

♦ Reduced exposure to diesel PM emissions for nearby communities
  – 870 tons of diesel PM reduced by 2020
  – reductions in premature deaths and other non-cancer health effects

♦ Improved air quality
  – 19,000 tons of NOx reduced by 2020

♦ Statewide consistency
Expected Diesel PM and NOx Emission Reductions

Estimated Reductions by 2020:
- Diesel PM = 81%
- NOx = 77%
Economic Impacts

♦ Total capital and recurring costs: $71 million
♦ Annual costs (2007-2020): $5.1 million (average)
♦ Costs to typical business: $343,000 to $1.4 million (2007-2020 total)
♦ Cost-effectiveness
  – diesel PM + NOx: $21/lb diesel PM and $1/lb NOx reduced
Issues

♦ Low-use Equipment
  – near-source risk
  – older equipment have higher emissions

♦ Natural Gas Vehicles
  – CNG/LNG can be used to meet the requirements of the regulation
  – limited availability of equipment and infrastructure
  – high incremental costs
  – NOx benefits are minimal and only for 2007 through 2009 model years
Future Activities
Future Activities

- Technology Working Group
- Seek Section 209(e) waiver from U.S. EPA
Summary and Recommendation

♦ Proposed regulation would reduce emissions and the resulting risks from cargo handling equipment at ports and intermodal rail yards

♦ Staff recommends the Board adopt the proposed regulation