

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

Board Hearing

December 8, 2005



California Environmental Protection Agency



Air Resources Board

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



Top Handler



Side Handler



Rubber-tired Gantry Crane

- ◆ 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

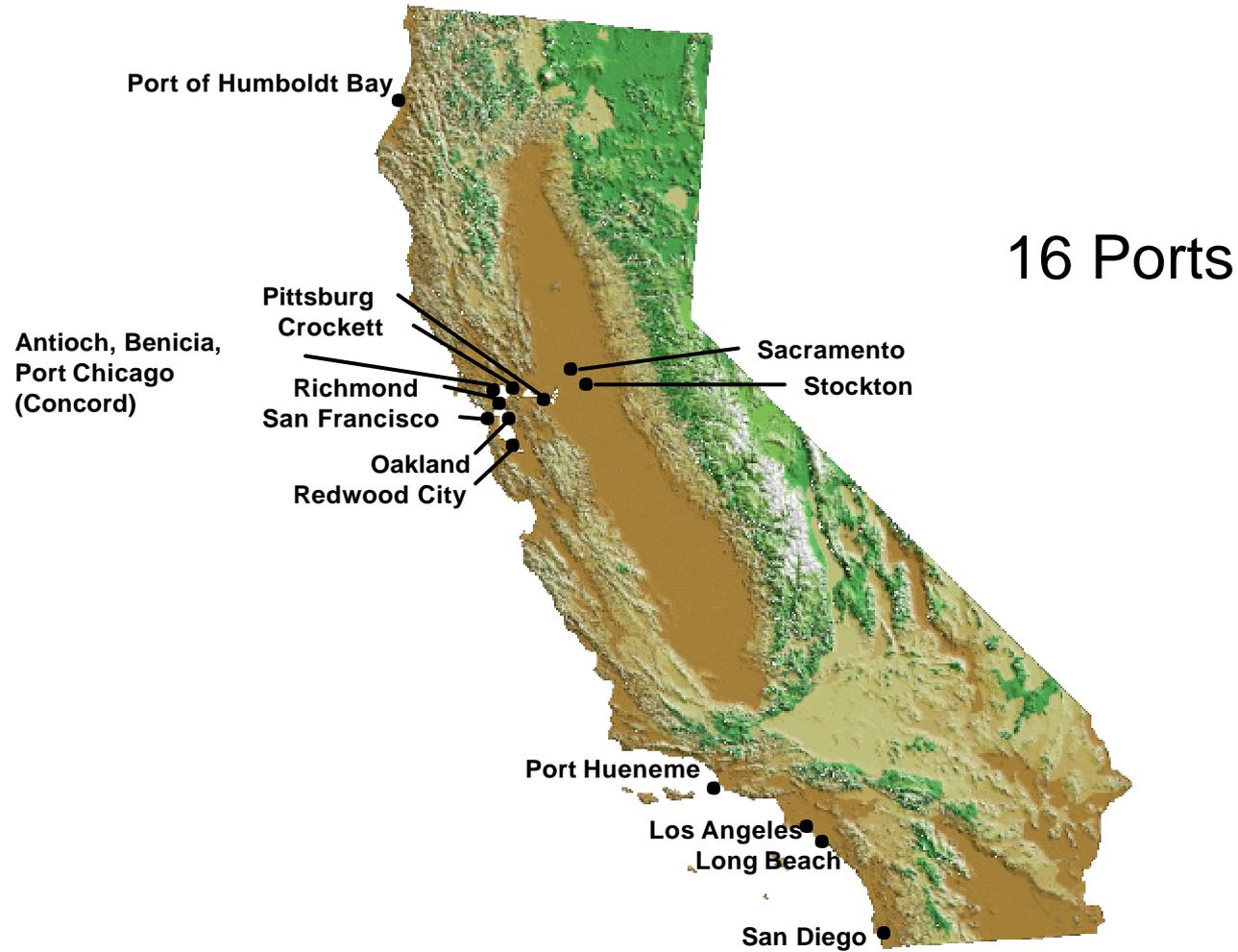
Significant Contribution to Community Health Risks

- ◆ Ports of Los Angeles and Long Beach Exposure Assessment Study

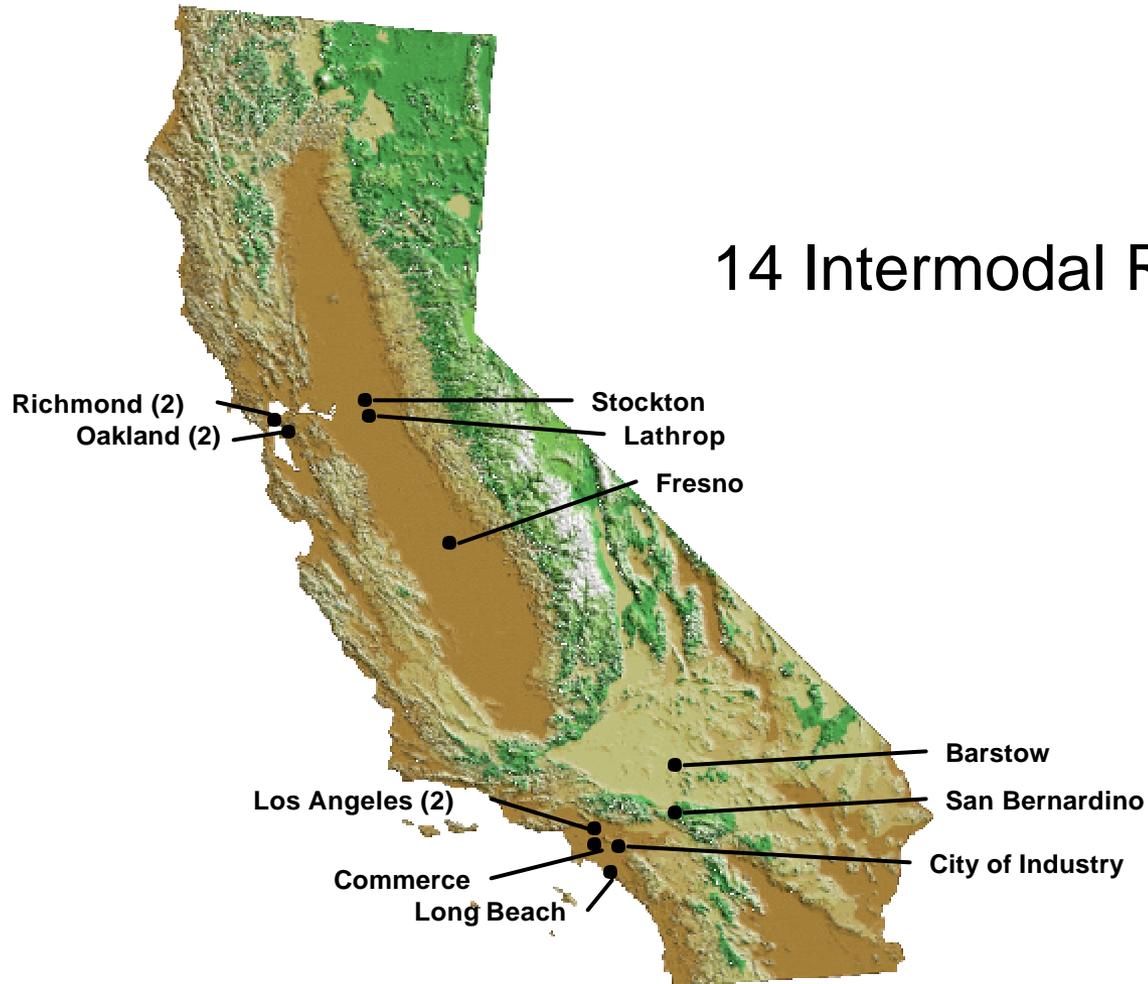
Potential Cancer Risk

Risk Level (per million)	Square Miles Impacted	Population Affected
Risk > 200	0.6	11,000
Risk > 100	6	82,000
Risk > 10	190	1,400,000

Ports



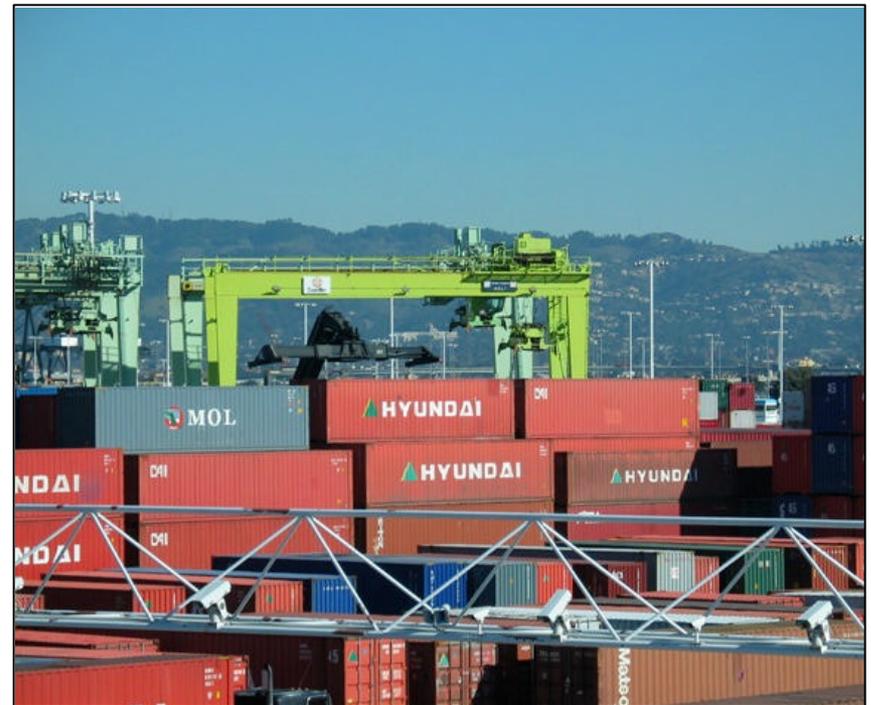
Intermodal Rail Yards



14 Intermodal Rail Yards

Regulatory Development Process

- ◆ 6 Public Workshops
- ◆ 4 Public Working Group Meetings
- ◆ Outreach Meetings
- ◆ Cargo Handling Equipment Survey
- ◆ Site Visits



Proposed Regulation

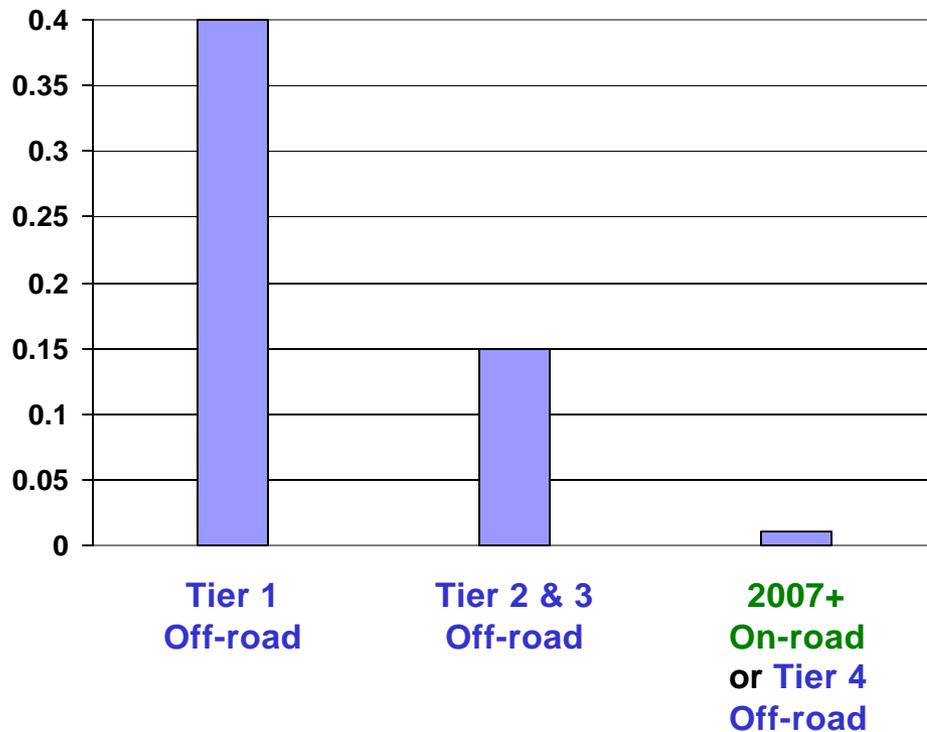


Regulatory Goals

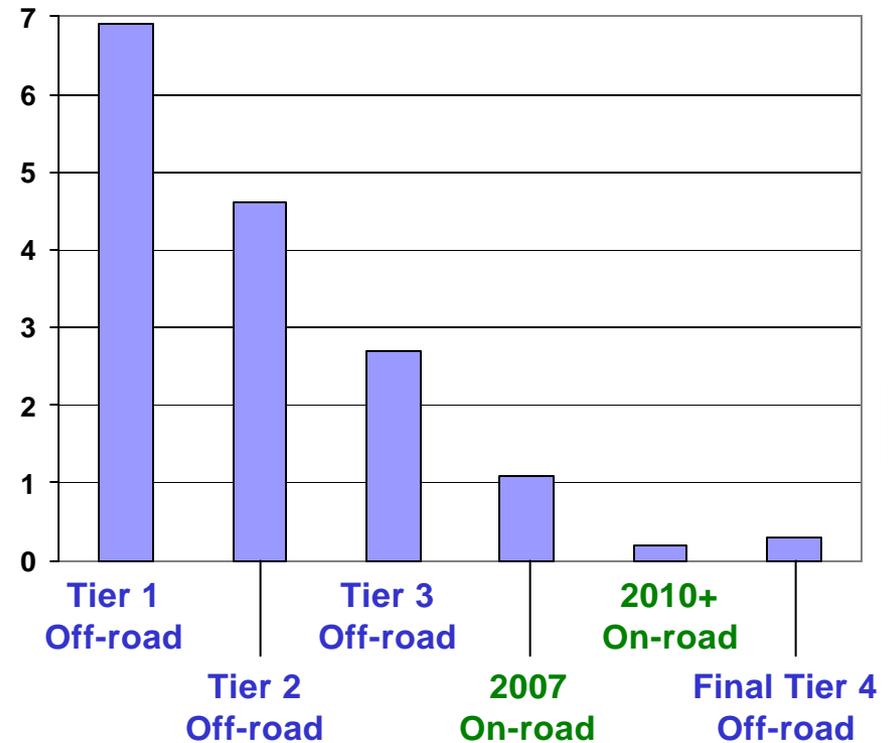
- ◆ Identify performance standards that represent best available control technology (BACT)
- ◆ Achieve significant near-term reductions
- ◆ Include flexibility for equipment categories with limited options

Current Off-road and On-road New Engine Standards

Diesel PM



NOx



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

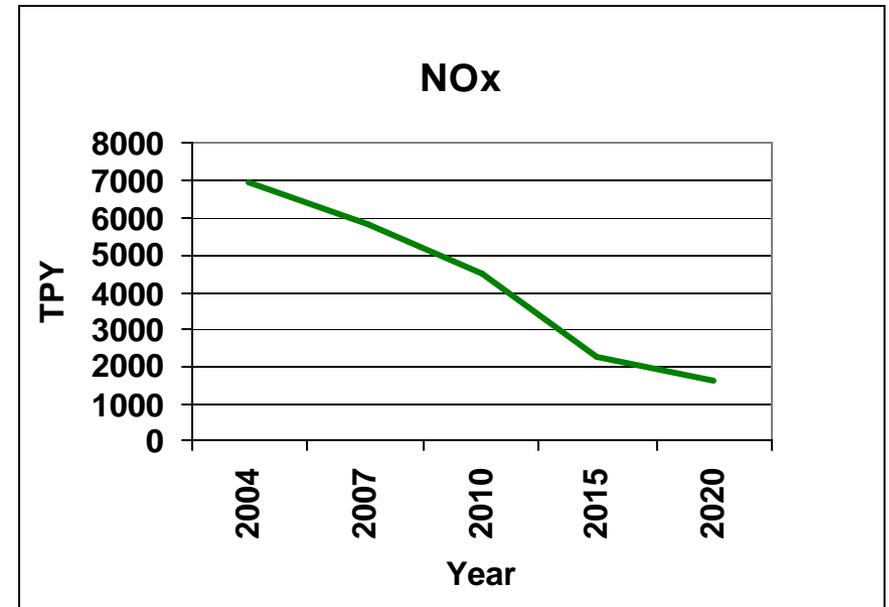
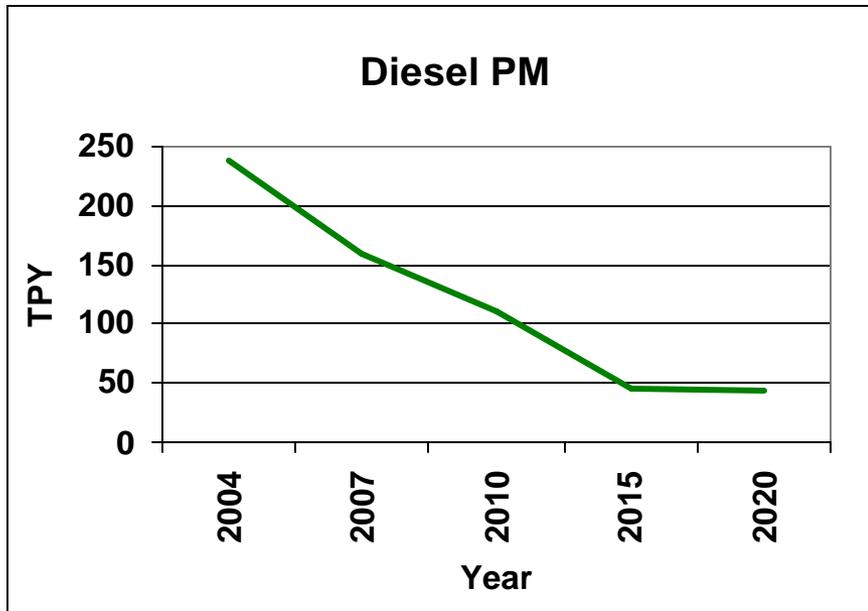
Impacts



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 NO_x 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
 - NO_x 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

