

# Faster Freight, Cleaner Air 2007

February 26, 2007 Long Beach



## ***Emission Reduction Program for Ports and Goods Movement in California***

Cynthia Marvin

Air Resources Board



California Environmental Protection Agency

1



### ***Elements of ARB's Program***

- ✚ Emissions and growth projections
- ✚ Special air monitoring studies
- ✚ Health risk assessments
- Technology evaluations
- **Planning, rulemaking and enforcement**
- Incentives and agreements
- Advocacy for national/international action
- Support for local initiatives

2

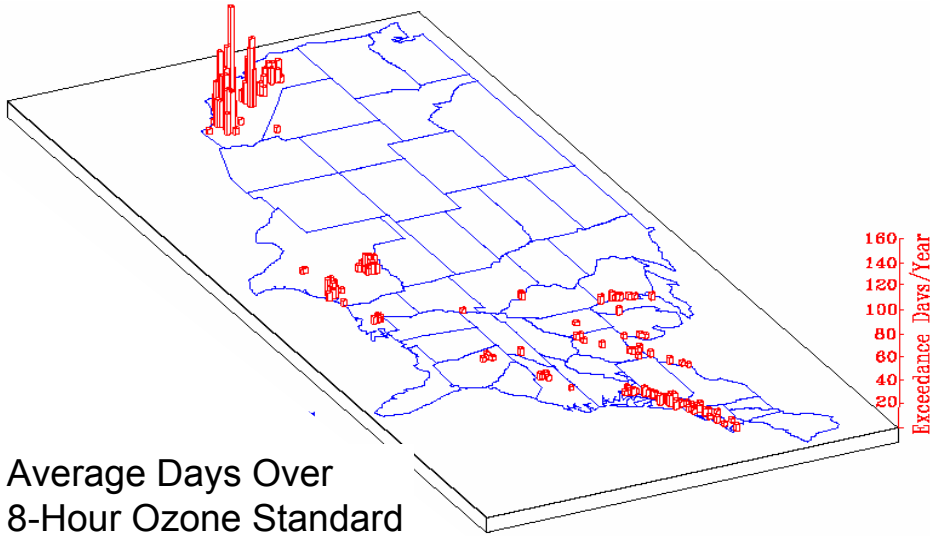
## *Scope of the Problem*



## *Pollutants from Goods Movement*

- Particulate matter (PM)
  - Diesel PM
  - Nitrates (NO<sub>x</sub>) and sulfates (SO<sub>x</sub>) that form fine particles (PM<sub>2.5</sub>)
- Ozone
  - From NO<sub>x</sub> and reactive organics

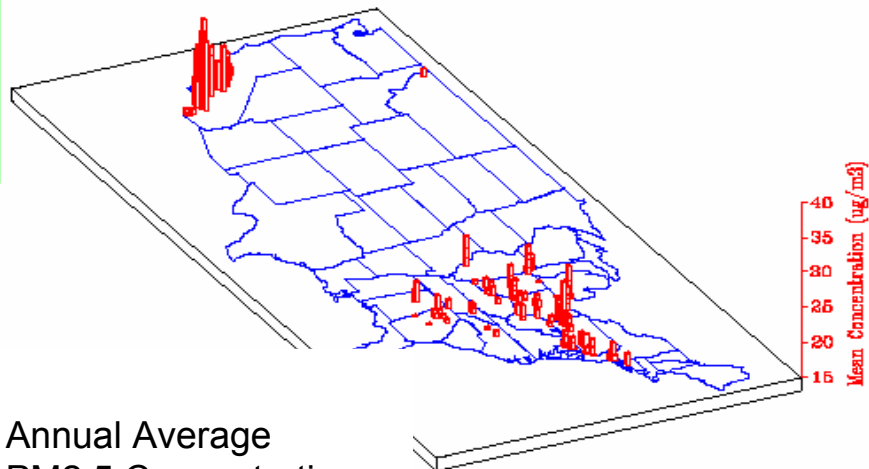
***California Experiences the Most Frequent and Severe Ozone Pollution in the U.S.***



Average Days Over 8-Hour Ozone Standard (2003-2005)

Source: U.S. EPA

***California Also Records the Highest PM2.5 Levels in the U.S.***

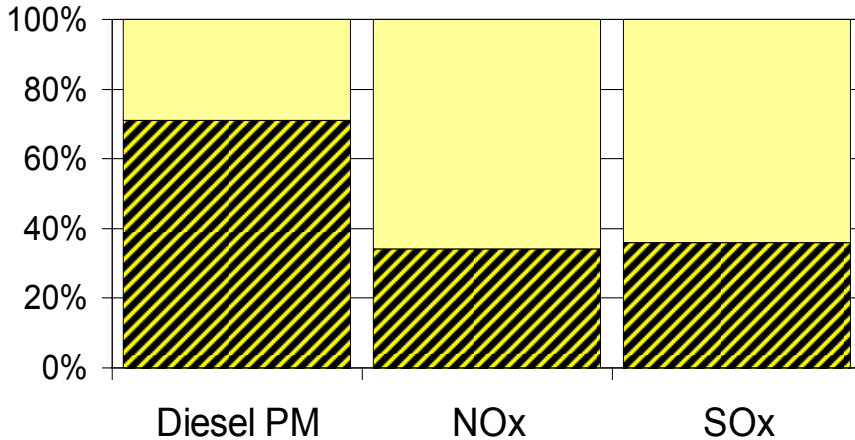


Annual Average PM2.5 Concentration (2001-2003)

Source: U.S. EPA



## Goods Movement Contribution to Statewide Emissions in 2005



7



## Across California

On a typical day:

- 30,000 containers on ships
- 400,000+ big diesel trucks on roads
- 1,200 locomotives operating



Supported by:

- 3,700 diesel cargo equipment
- 4,100 commercial harbor craft

8



## *2005 Health Impacts from Goods Movement in California*

	<u>Cases/Year</u>
Premature death*	2,400
Hospital admissions (heart)	830
Hospital admissions (lung)	2,000
Acute bronchitis	5,100
Asthma/other respiratory	62,000
Absences/restricted days	4.4 million

*\*Uncertainty range is 720 to 4,100 deaths/year*

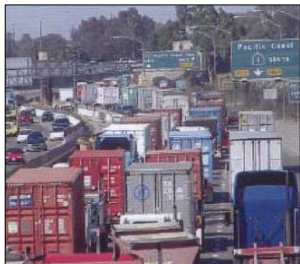
9



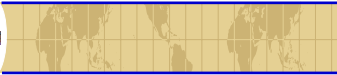
## *Key Source of Community Health Risk*

### Near-source cancer risk (2000-2002)

- ⦿ High traffic freeways: 300-1,700/million
- ⦿ Port of LA/Long Beach: 10-500+/million
- ⦿ Roseville Railyard: 10-500/million



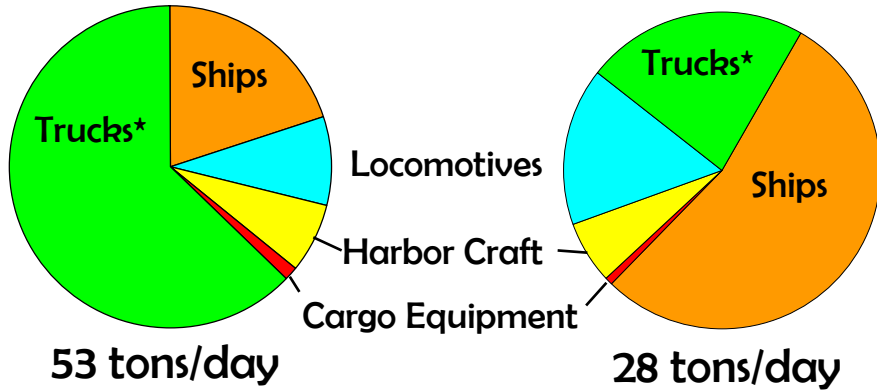
10



## *Diesel PM from Goods Movement (w/recent ARB rules for ship fuel & cargo equipment)*

2005

2020



\* Includes TRUs

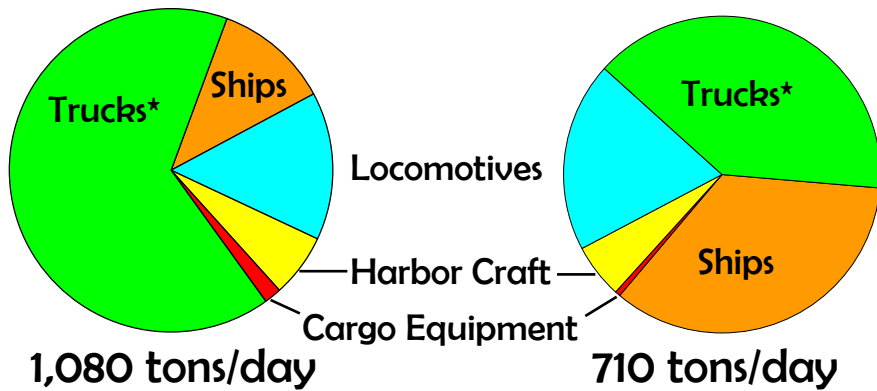
11



## *NOx from Goods Movement (w/recent ARB rules for ship fuel & cargo equipment)*

2005

2020



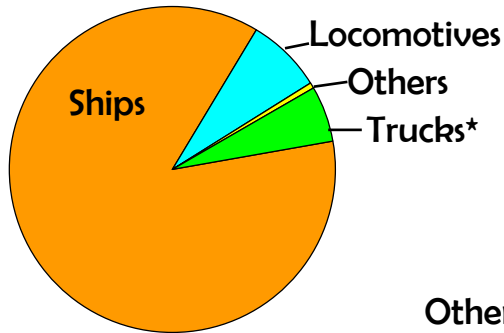
\* Includes TRUs

12



## *SO<sub>x</sub> from Goods Movement (w/recent ARB rule for ship fuel)*

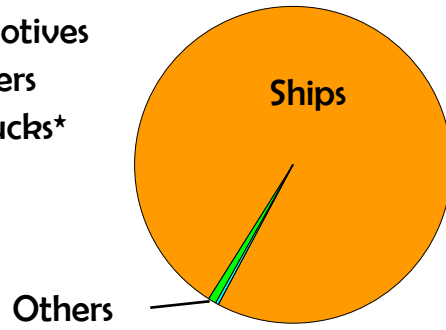
2005



90 tons/day

\* Includes TRUs

2020



105 tons/day

13

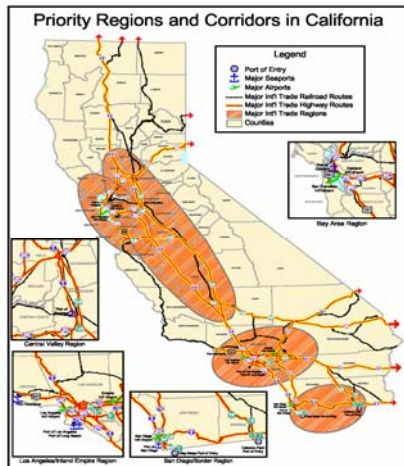
## *Plans to Reduce Impacts*



14



## *State Goods Movement Action Plan* (January 2007)



- ➊ Infrastructure
- ➋ Health/environment
- ➌ Community impacts
- ➍ Workforce development
- ➎ Finance/funding
- ➏ Security/safety

15



## *ARB Emission Reduction Plan for Ports and Goods Movement in CA* (March 2006)

### Reverse growth in emissions

- ➊ By 2010, reduce emissions as much as possible, at least to 2001 levels

### Reduce diesel PM risk

- ➋ Rapid reduction in community risk
- ➌ By 2020, reduce statewide risk 85%

### Attain federal PM2.5, ozone standards

16



## *Emission Reduction Strategies*

- Cleaner engines and fuels
- Fleet modernization (retrofit or replace)
- Speed reduction and idling limits
- Shore-based power for ships and tugs
- Operational efficiencies
- Land use decisions
- Project and community specific mitigation
- Port programs

17



## *Plan Benefits*

- Emissions reduced 20-40% below 2001 levels by 2010
- Diesel PM risk cut 85% statewide by 2020
- Substantial reductions in South Coast, SJ Valley, Bay Area, San Diego & Sacramento
- Localized health risk cut significantly

18



## *Plan Costs*

- ⊕ Cumulative cost to implement strategies (2006-2020): \$6 to \$10 billion
- ⊕ Goods movement contributes more than \$200 billion/year to California's economy
- ⊕ \$3-8 in benefits for each \$1 spent on controls

19



## *Role of Incentives*

- ⊕ Regulations remain the framework
- ⊕ Incentives (grants, low-interest loans) are key to accelerate benefits
  - \$1 billion trade corridor mitigation grants
  - Moyer program, port \$, federal funds



20



## *State Implementation Plans (SIPs)*

- Federal 8-hour ozone & PM2.5 attainment
- South Coast/SJ Valley drive controls
- Draft State strategy (January 2007) relies heavily on reductions from goods movement

21



## *Partners for Success*

- U.S. EPA and international bodies
- Local air districts & transportation agencies
- Ports and goods movement industries
- Environmental and community groups
- California residents

22



## *Sector Strategies*

23

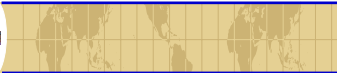


### *Trucks – ARB Actions (1)*

- ✓ Low sulfur (15 ppm) diesel fuel required
- ✓ 5 minute idling limit
- ✓ Border trucks rule (adopted)
- ✓ More inspections in impacted communities



24



## *ARB Truck Inspections*



25

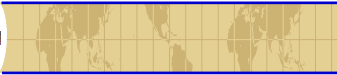


## *Trucks – ARB Actions (2)*

- Port trucks rule (2007)
- Private truck fleets rule (2007-2008)
- Program to reduce deterioration of emission controls (2007-2008)



26



## ***Ships – ARB Actions***

- ✓ Auxiliary engine fuel rule (adopted)
- ✓ Cruise ship incineration rules (adopted)
- Shore power/at dock rule (2007)
- Main engine fuel rule (2007)
- Speed limits (2007)
- Cleaner engines (2009)



27



## ***Ship Auxiliary Engine Fuel Rule***

(December 2005)

**Auxiliary Engines  
Motor-Ship**



**Diesel-Electric  
Engines**



- Ships within 24 nautical mi of California coast
- 1/1/07: 0.5% sulfur limit (5,000 ppm)
- 1/1/10: 0.1% sulfur limit (1,000 ppm)

28



## *Locomotives – ARB Actions (1)*

- ✓ Low sulfur diesel fuel (15 ppm) required
- ✓ Fleet average NOx limits for South Coast
- ✓ Diesel PM risk reduction at rail yards
- ✓ Joint technology projects



29

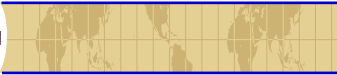


## *ARB Locomotive Inspections*



- Major rail yards

30



## *Locomotives – ARB Actions (2)*

- ⊕ Health risk assessments w/railroads (2007)
- ⊕ Use of cleaner engines (2008)
  - Ultra-low emission switchers
  - New line-hauls in CA service



31

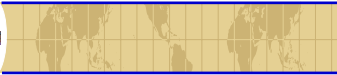


## *Harbor Craft - ARB Actions*

- ✓ Low sulfur (15 ppm) diesel fuel required
- ⊕ Harbor craft rule (2007)



32



## *Cargo Equipment – ARB Actions*

- ✓ Low sulfur diesel fuel (15 ppm) required
- ✓ Diesel equipment rule (adopted)
- ✓ Gas forklift rule (adopted)



33



## *More on ARB Programs at FFCA...*

- Mon, 12:45 pm, Host Panel
- Mon, 2:00 pm, Breakout Session 1
  - Trucks
  - Locomotives/rail yards
  - Ships/shore power
  - Cargo equipment
- Wed 9:00 am, Funding
- Booth in exhibition hall

34



**ARB Contacts**

**Links to plans, rulemakings, studies:**

**[www.arb.ca.gov/planning/gmerp/gmerp.htm](http://www.arb.ca.gov/planning/gmerp/gmerp.htm)**

**Goods movement general inquiries:**

**(916) 44-GOODS**