



## Developing California's Emission Reduction Plan for Goods Movement

Public Meetings to Solicit Input

October 11, 2005      November 1, 2005  
Long Beach CA      Oakland CA

**Air Resources Board**  
California Environmental Protection Agency

# Health risks

## Health impacts of diesel pollution\*

- \* Exposure to diesel pollution + ozone in the LA region in year 2000 contributed to:
  - About 2,000 premature deaths
  - Health impacts valued at over \$16 billion
- \* Port-related sources emit ~20% of total, but impacts are not directly proportional
- \* Cancer risk near major diesel sources is roughly double the urban background

\* Goods Movement Action Plan: Phase I

## Ports – increased cancer risk



**Ports of Los Angeles & Long Beach\* (2002)**

Risk (chances/million)	People impacted
>500	50,000
>200	400,000
>100	1 million
>10	2 million

\*October 2005 Draft ARB Study

## Rail yards – increased cancer risk



**Roseville Rail Yard\* (2000)**

Risk (chances/million)	People impacted
100-500	20,000
10-100	150,000

\*October 2004 ARB Study

## Freeways – increased cancer risk



**Freeways and High Traffic Roads\***

Risk (chances/million)
300-1,700

\*April 2005 ARB Land Use and Air Quality Handbook

## Cumulative impacts

- \* Some communities are exposed to pollution from all sectors
- \* Response
  - Seek mitigation ideas
  - Prioritize control strategies that provide greatest risk reduction
  - Reduce near-source and cumulative impacts

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# Emissions

## Goods movement in California

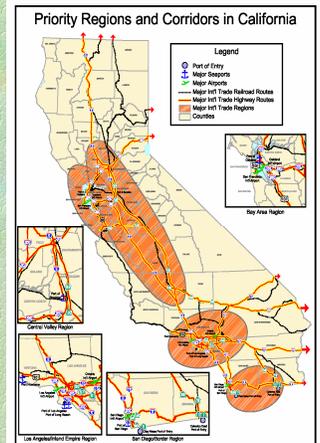
- \* California ports are international gateway for goods into U.S.
- \* Goods transported via rail and truck in neighborhoods and along heavily-traveled corridors



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## Key "port to border" regions

- \* Los Angeles-Long Beach
- \* Bay Area
- \* Central Valley
- \* San Diego



## Goods movement-related emission sources

- \* Cargo handling equipment
- \* Ships
- \* Harborcraft
- \* Locomotives
- \* Diesel trucks
- \* Airplanes



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## Future trends

- \* Dramatic increase in trade
- \* More emissions from entire goods movement system
- \* Emissions are concentrated near population centers
- \* Some sources still poorly controlled



# Call to action

## Public health imperative



- \* Air pollution from goods movement is substantial
- \* Existing emissions must be reduced to cut toxics risk and meet air quality standards by federal deadlines
- \* Growth will make the challenge greater

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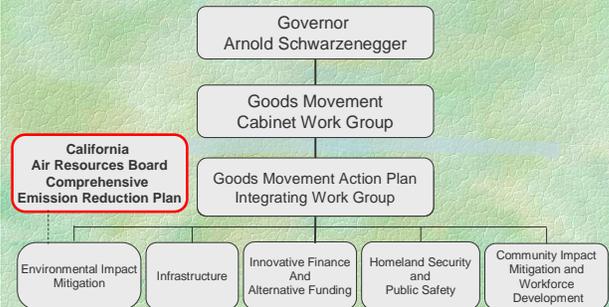
## Multiple drivers

- \* Diesel Risk Reduction Plan
- \* State Implementation Plan
- \* Governor's Environmental Action Plan
- \* Environmental Justice Programs
- \* BTH-Cal/EPA Goods Movement Action Plan



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## Goods Movement Action Plan Phase II Work Group Structure



## ARB's charge -- develop a comprehensive emission reduction plan

- \* Build upon current efforts
- \* Involve all stakeholders in public process
- \* Fully mitigate impacts
- \* Refine cost estimates
- \* Seek financial incentives
- \* Support national/international standards

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## Emission reduction plan



- \* By 2010, reduce emissions to 2001 levels
- \* Continue reducing emissions until air quality standards are met and community impacts are mitigated
- \* By 2020, cut diesel particles 85%

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# Strategy objectives

## Ships



- \* Cleaner new engines and fuels
- \* Add-on emission controls
- \* More efficient ships
- \* Operational changes
- \* Shore-based power in port

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## Commercial Harbor Craft



- \* Cleaner new engines and fuels
- \* Add-on emission controls
- \* Faster engine replacement
- \* Alternative fuels
- \* Operational changes
- \* Shore-based power in port

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## Cargo Handling Equipment



- \* Cleaner new engines
- \* Add-on emission controls
- \* Faster replacement with new models
- \* Alternative fuels

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## Trains



- \* Cleaner new engines
- \* Add-on emission controls
- \* Faster replacement with new models
- \* Cleaner diesel and alternative fuels
- \* Reduced idling

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## Trucks



- \* Faster replacement with new models
- \* Add-on emission controls
- \* Increased inspection and repair
- \* Alternative fuels
- \* Reduced idling

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# Implementation

## California regulations



- ✧ How new rulemaking by ARB and other agencies can compel clean technology

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## National actions



- ✧ How national regulations and funding can fulfill the federal government's responsibilities

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## Incentives



- ✧ How additional financial incentives can speed the introduction of cleaner technology

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## Fees



- ✧ How new fees on cargo coming in to CA ports could fund environmental mitigation
- ✧ How fees could encourage less polluting choices

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## Market participation concepts



- ✧ How ports can use their lease authority to leverage environmentally beneficial actions
- ✧ How state or local governments can affect private purchasing decisions

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## Enforceable agreements



- \* How agencies can effect change quickly without the clear authority to require it



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## Legal complexities



- \* State, national and international laws in play
- \* The more consensus we have for action, the less likely it is that litigation will delay benefits

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## Efforts underway

## ARB rulemaking already underway

### Board action expected

October 20-21: Limit sleeper cab truck idling

November 17: Ban cruise ship incineration near shore

December 8-9: Clean up cargo equipment  
Clean up ship auxiliary engines

2006: Require international trucks in CA to meet U.S. standards

Clean up harborcraft

Clean up private truck fleets

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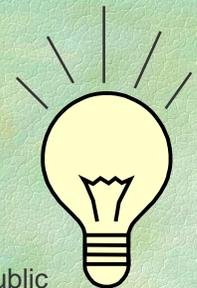
## Other current ARB efforts

- \* Push U.S. EPA for national action
  - “Tier 3” standards for trains and ships
  - Sulfur emission control area for ships
- \* Seek and focus incentive funding
  - Moyer goods movement emphasis
  - West Coast Diesel Collaborative
- \* Minimize future health impacts via Air Quality and Land Use Handbook

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## We want your ideas

- \* Kickoff meetings  
October 11/November 1
- \* Written suggestions  
by November 4
- \* Draft plan release, then public workshops in early December  
...and fold applicable strategies into ARB's State Implementation Plan



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## ARB contacts

- \* Please send written comments to:  
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- \* For questions, please contact:  
Sylvia Oey at (916) 322-8279, or  
Jeff Weir at (916) 445-0098, [jweir@arb.ca.gov](mailto:jweir@arb.ca.gov)
- \* ARB website for meetings and documents:  
<http://www.arb.ca.gov/planning/gmerp/gmerp.htm>

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## transition to risk assessment



### Air Resources Board Risk Assessment Study for the Ports of Los Angeles and Long Beach *October 2005 Draft*

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## Study objectives

- \* Investigate impacts of various emission sources on the nearby communities
- \* Prioritize possible mitigation measures to control diesel PM based on magnitude of health risks, and
- \* Assist in evaluating the impacts of measures to reduce emissions

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## What is a Health Risk Assessment?

- \* Evaluation of the potential for a chemical to cause cancer or other illness
  - uses mathematical models to estimate exposures (risk)
  - risk expressed as the chances of excess cancers in a population of a million over a 70-year lifetime



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## Study approach

- \* Estimated diesel PM emissions from all activities within the Ports boundaries and overwater: ocean-going vessels, hotelling, cargo handling, harbor craft, in-port trucks, in-port locomotives
- \* Allocated emissions to appropriate areas and time of operation
- \* Developed key activity assumptions and data inputs for model

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### Study approach (cont.)

- \* U.S. EPA ISCST3 model
- \* Wilmington meteorological dataset
- \* Urban dispersion for near source risks
- \* Modeling study area: 20 mi x 20 mi
- \* Followed OEHHA Guidelines for Health Risk Assessments (80th percentile breathing rate, 70-year exposure)
- \* Equipment-specific parameters

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### Ports of Los Angeles/Long Beach 2004 diesel PM inventory

Category	Emissions (tons/year)	Percent
Vessels	942	54%
Hotelling	343	19%
Harbor craft	244	14%
Cargo	172	10%
In-Port Truck	41	2%
In-Port Loco	18	1%
Total	1,760	100%

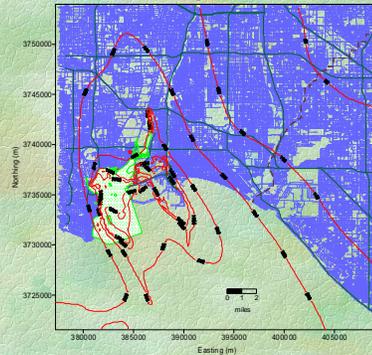
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### Health risk assessment results

- \* Risks are depicted as isopleths overlaid on a regional map
- \* Near source risks can be over 500 in a million
- \* Elevated concentrations and risks extend over a very large area
- \* Individual emission sources have different contributions to the nearby communities

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### Estimated cancer risk from the Ports (for all emissions)



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### Findings

- \* Combined diesel PM emissions: 1,760 TPY
- \* Large region impacted by the diesel PM emissions from the Ports
  - Risks >500 - 2,500 acres & 53,000 people
  - Risks >200 - 29,000 acres & 411,000 people
  - Risks >100 - 94,000 acres & 1.1 million people
  - Risks >50 - 160,000 acres & 2 million people

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### Findings (cont.)

- \* Noncancer health effects in study area
  - 29 premature deaths/year (directly emitted PM, ages >30)
  - 750 asthma attacks
  - 6,600 days of work loss (ages 18-65)
  - 35,000 minor restricted activity days (ages 18-65)

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## Findings (cont.)

- \* Reducing emissions from cargo handling equipment and marine auxiliary engines will provide the most immediate and significant reductions in public exposure to diesel PM in the neighboring communities

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## Next steps

- \* Technical meeting on draft report:  
October 26, Marina Hotel, San Pedro
- \* Regulatory activity for cargo handling equipment and marine auxiliary engines
  - Proposed regulations and staff reports publicly available October 21, 2005
  - Board hearing December 8, 2005
- \* Additional analyses for BTH-Cal/EPA Goods Movement Action Plan, Phase II

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**thank you for your attention**