



Vessel Speed Reduction for Ocean-Going  
Vessels Workshop  
Sacramento  
July 12, 2007

Air Resources Board  
California Environmental Protection Agency



## Overview

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- Introduction
- Background
- Emission Inventory
- Current Efforts
- Regulatory/Voluntary Approaches
- Next Steps



# Introduction

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- Technical Assessment
  - Evaluation
  - Technical Report
- Potential Approach
  - Regulatory
  - Voluntary

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# Background

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## **Air Pollution from Marine Vessels is a Public Health Concern**

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- Diesel PM identified in 1998 as a toxic air contaminant
  - Potential to Cause Cancer
- Non-Cancer Health Impacts of Diesel PM, SO<sub>x</sub>, Ozone
  - Premature death
  - Respiratory disease
  - Cardiovascular disease
  - Activity restriction



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## **Strategies for Reducing Emissions from Ships**

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- Diesel Risk Reduction Plan
- State Implementation Plan
- Environmental Justice Programs
- Goods Movement Action Plan
- Port Actions
- AB 32 - Greenhouse Gas Initiative

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## Specific Marine Regulations and Programs

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- Auxiliary Engine Fuel Rule (2005)
- Onboard Incineration Prohibition (2005/2006)
- Proposed Shore-Power Rule (late 2007)
- Main Engine Fuel Rule (December 2007)
- Vessel Speed Reduction Measure (2008)
- Green Ships Programs (2008/2009)

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## VSR Agreement

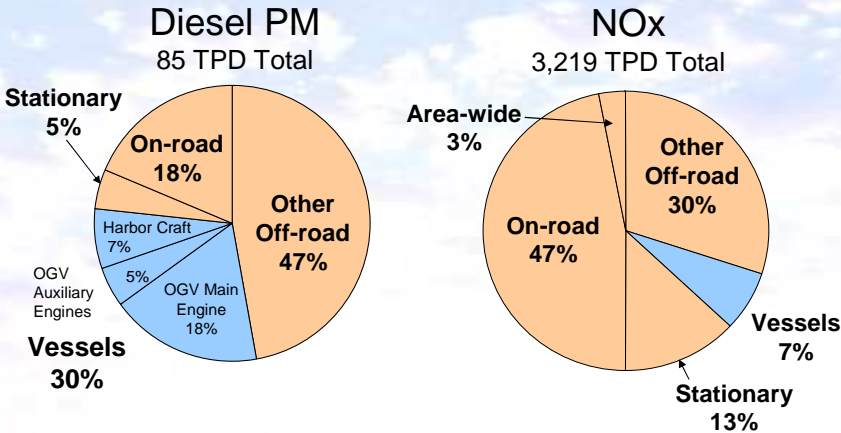
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- 2001-2004 VSR Agreement
  - Voluntarily reduce speed to 12 knots within 20 nautical miles (nm) of the POLA and POLB
  - Estimated reductions of 1 ton per day of NO<sub>x</sub>
  - Estimated compliance rate of about 45 to 65 percent
- POLB Green Flag Program (2004)
  - Reduced dockage fees for compliance with VSR program
  - Current estimated compliance rate at POLB is about 80%
  - Estimated reductions of approximately 4-5 tons per day of NO<sub>x</sub>

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# Emission Inventory

## Marine Vessels are a Large Source of California's NOx & Diesel PM Emissions\*



\* Source: 2005 ARB Emissions Inventory. Does not include benefit of ARB Ship Auxiliary Engine Regulation

## 2006 Port Calls

Port	# of Calls
LA/LB (LA approx. 40%)	5720
Oakland	1940
Carquinez	910
Richmond	760
San Diego	580
Hueneme	370
San Francisco	290
El Segundo	250
Stockton	170
Other	260

Source: CSLC, 2006. Numbers are rounded.

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## VSR Emissions Methodology

- Type and number of ships (container ship, passenger, etc.)
- Fuel used
- Difference in emissions at cruise speed and 12 knots
- Distance traveled within VSR zone

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## Preliminary VSR Emissions Reductions at 12 knots for POLA\*

Pollutants	% Reduction	Tons Per Day
NOx	37	3
SOx	49	2
Diesel PM	49	0.3
CO <sub>2</sub>	31	90
CO	37	0.2

\*2006, all ship types. Assumes speed of 12 knots at 24 nm with main engines using HFO & auxiliary engines using MDO/MGO.

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## Technical Assessment

- Evaluate emissions and reduction benefits of VSR at 12 knots from 24 nautical miles
- Look at impact at 40 and 100 nautical miles
- Look at impact along California coast
- Evaluate cost impacts

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## Current Efforts

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- Emissions
  - Updating emissions inventory at various distances (i.e., 24 nm, 40 nm, 100 nm) and at different speeds
  - Emission factor verification
- Exposure
  - Onshore transport
  - Health risk evaluation to near shore communities
- Effectiveness
  - Emission and risk reduction benefits
  - Cost
  - Continue evaluating VSR voluntary programs

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## Regulatory/Voluntary Approaches

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## Regulatory/Voluntary Approaches

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- Regulatory
  - Statewide VSR Airborne Toxic Control Measure (ATCM)
  - Port specific VSR ATCM
  - Consideration of speed reduction when transiting along the coast
- Voluntary
  - Statewide agreement
  - Port specific agreement
  - Lease specific agreement
  - Incentive programs

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## Key Elements

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- Emissions Inventory
- Cost Impacts
- Other Impacts

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## Next Steps

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## Next Steps

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- Work with stakeholders to address key elements
- Release draft Technical Assessment Report for comment (late 2007)
- 2<sup>nd</sup> workshop (TBD)

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## Contact Information

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