

State Activities to Reduce Marine Vessel Emissions in California



Faster Freight: Cleaner Air
Conference

Long Beach
Convention Center

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California Environmental Protection Agency



Air Resources Board

Overview

- ◆ Background
- ◆ Programs for Ocean-Going Vessels
- ◆ Programs for Harbor Craft
- ◆ Future Activities



Need for Emission Reductions from Ocean-Going Vessels

- ◆ Engines and fuels much dirtier than land-based sources
- ◆ Emissions projected to grow with increases in trade with Asia
- ◆ Emissions concentrated near population centers
- ◆ Significant localized and regional impacts

Multiple Drivers for Action

- ◆ Diesel Risk Reduction Plan
- ◆ State Implementation Plan
- ◆ Governor's Environmental Action Plan
- ◆ Environmental Justice Program
- ◆ BTH/Cal-EPA Goods Movement Action Plan



Current Programs for Ocean-Going Vessels

- ◆ **Cleaner Fuels**
 - ARB approved rule for auxiliary engines (Dec 2005)
 - Investigating Sulfur Emission Control Area with U.S. EPA
- ◆ **Other In-Use Strategies**
 - Continue Vessel Speed Reduction MOU
 - Cold-ironing study
 - Ship fuel/water emulsion demonstration
 - Restrictions on onboard incineration
- ◆ **Encouraging More Stringent International and Federal New Engine Standards**
 - United States ratification of IMO Annex VI
 - States, USEPA pushing IMO for more stringent standards
 - USEPA committed to more stringent standards for US flagged ships

Auxiliary Engine Regulation

- ◆ Sets emission limit based on the use cleaner distillate fuels
- ◆ Applies to foreign and domestic vessels within 24 nm of the California coastline
- ◆ Significant reductions in emissions of diesel PM, NO_x, and SO_x starting in 2007



Regulation Covers Auxiliary Engines and Engines Used on Diesel-Electric Vessels

Motor-Ship



Main Engine
for Propulsion
(not covered)



Auxiliary
Engines for
Electricity
(covered)



Diesel-Electric



Engines Provide Electricity for both
Propulsion & Shipboard Uses (covered)

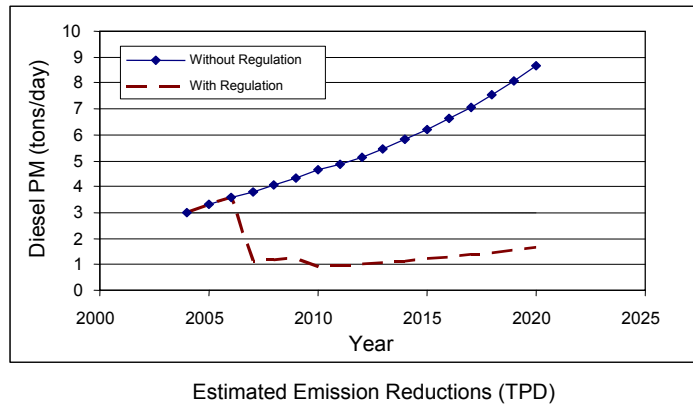


Emission Limit Based on the Use of Cleaner Distillate Marine Fuels

- ◆ January 1, 2007 Emission Limit
 - Use marine gas oil
 - Use marine diesel oil with a 0.5% sulfur limit
 - Use equally effective emission control strategies

- ◆ January 1, 2010 Emission Limit
 - Use marine gas oil with a 0.1% sulfur limit
 - Use equally effective emission control strategies
 - Fuel supply review in 2008

Estimated Emissions of Diesel PM with and without the Regulation in the 24 nm Zone



Sulfur Emission Control Area

- ◆ IMO Annex VI provides a process for the creation of a SECA
- ◆ ARB is working with U.S. EPA to investigate the feasibility of a SECA
- ◆ SECA would limit the sulfur content of marine fuels to 1.5% or lower, reducing diesel PM and SO_x emissions

Vessel Speed Reduction MOU

- ◆ Voluntary agreement between the Ports of LA and LB, ARB, U.S. EPA, SCAQMD, & PMSA
- ◆ Vessels limit speed to 12 knots within 20 nm of the ports
- ◆ Reduced speeds reduce engine power and NOx emissions
- ◆ New port incentives started to increase participation



Cold-Ironing Feasibility Study

- ◆ Investigate the cost-effectiveness and feasibility of implementing shore-side power (“cold-ironing”)
- ◆ Help guide ARB’s future emission reduction programs for marine vessels
- ◆ Report to be released soon



Ocean-Going Vessel Retrofit Program

- ◆ Voluntary program to identify ship operators willing to install emission control equipment
- ◆ Support from the Ports of LA and LB, MARAD, U.S. EPA, ARB, and local APCD's
- ◆ Working with APL to identify a vessel to retrofit
- ◆ Potential control technologies include onboard fuel oil/water emulsion system and slide valves

Restrictions on Ship Incineration

- ◆ AB 471 prohibited cruise ships from conducting onboard incineration within 3 nautical miles of the CA coastline
- ◆ ARB approved an ATCM to implement this legislation in November 2005
- ◆ SB 771 applies similar provisions for other oceangoing vessels
- ◆ ARB staff will propose amendments to the ATCM in 2006 to include other vessel types

Current Programs for Harbor Craft

- ◆ Cleaner Fuels
 - ARB adopted rule in 2004 requiring sale of California on-road diesel to harbor craft
- ◆ Other In-Use Strategies
 - Carl Moyer funding of vessel repowers
 - Encouraging more stringent federal new engine standards
 - ARB seeking aftertreatment based standards in next federal rule



Harbor Craft Fuel Regulation

- ◆ Requires the sale of CARB vehicular diesel fuel to harbor craft
 - January 1, 2006 in South Coast
 - January 1, 2007 statewide
 - 15 ppm sulfur limit in June 1, 2006
- ◆ Reduces emissions of diesel PM, NO_x, & SO_x



Carl Moyer Program for Harbor Craft

- ◆ Provides incentive funding to pay for the added incremental cost of cleaner diesel engines or emission controls
- ◆ Program has funded over 300 harbor craft engine replacements over first 4 years
- ◆ About 20% of the funding and emission reductions from the program are from marine vessels



Future Activities for Marine Vessels

- ◆ ARB planning to develop a regulation in 2006 to reduce emissions from in-use harbor craft
- ◆ ARB plans to investigate approaches to reduce emissions from ocean-going vessel main engines in 2006
- ◆ Continue participation in Goods Movement Plan, SECA evaluation, vessel demo projects, and other programs to reduce vessel emissions



ARB Marine Vessel Contacts

Program	Contact	Email & phone
Ocean-Going Vessels	Paul Milkey	pmilkey@arb.ca.gov (916) 327-2957
Harbor Craft	Todd Sterling	tsterlin@arb.ca.gov (916) 445-1034
SECA	Dongmin Luo	dluo@arb.ca.gov (916) 324-8496
Cold-Ironing	Mike Waugh	mwaugh@arb.ca.gov (916) 445-6018
Ship Incineration	Michelle Komlenic	mkomleni@arb.ca.gov (916) 322-3926
Carl Moyer	Joe Calavita	jcalavit@arb.ca.gov (916) 445-4586