

Proposed Amendments to the Commercial Harbor Craft Regulation Workshop



Sacramento

February 16, 2010



California Environmental Protection Agency

Air Resources Board

Overview

- ◆ Status of Regulation
- ◆ Proposed Amendments
- ◆ Emissions Inventory and Benefits
- ◆ Costs
- ◆ Questions



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Status of Regulation



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Commercial Harbor Craft Regulation

- ◆ Board approved in November 2007
- ◆ Became effective November 2008
- ◆ Requirements include:
 - Operational and new engine requirements for all diesel engines on commercial harbor craft
 - In-use engine requirements for ferries, excursions vessels, tugboats, and towboats
 - Recordkeeping and initial reporting

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Implementation Status

- ◆ Deadline for initial reports – March 31, 2009
- ◆ Report must be updated annually and maintained on vessel or central dockside location
- ◆ Requirements currently being enforced:
 - fuel use
 - reporting and recordkeeping

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Proposed Amendments



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Overview of Proposed Amendments

- ◆ Add in-use engine requirements for:
 - Crew and supply vessels
 - Barges and dredges
- ◆ Address implementation issues
- ◆ Clarify language

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Updated Crew and Supply Vessel Survey Conducted

- ◆ Higher response rate
- ◆ More complete data
- ◆ Updated inventory with new crew and supply vessel population and activity level
- ◆ Supported by reporting data



	+2.688
0	+5.000
1	+1.500
0	+1.125
0	+1.062

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Crew and Supply Vessels are Significant Part of Santa Barbara and Ventura's Harbor Craft Emissions

District	All CHC (tons/year)		C&S (tons/year)		C&S % of All CHC	
	PM	NOx	PM	NOx	PM	NOx
Santa Barbara	49	1,168	20	478	40%	41%
Ventura	51	1,206	20	478	39%	40%
South Coast	271	6,396	10.7	248	4%	4%
Bay Area	392	9,269	7.0	187	2%	2%

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Barge and Dredge Engines

- ◆ Very large auxiliary engines that operate close to shore
- ◆ Recent change in PERP regulation allows marine engines (primarily on barges and dredges) to be registered in PERP
 - Previously subject to Portable Engine ATCM
 - Now subject to Harbor Craft Regulation
- ◆ Current regulation has no in-use requirements for barges and dredges
- ◆ Some barge and dredge engines are currently uncontrolled if outside PERP or local permits
- ◆ In-use requirements needed for Statewide consistency

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In-Use Engine Requirements

- ◆ Phased compliance schedules for crew and supply vessels and barges and dredges
 - Brings oldest, highest use engines into compliance first
- ◆ Removes unregulated and Tier 1 engines
- ◆ Compliance methods, engine model year determination, extensions, and alternative compliance plan all consistent with original regulation

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Single Statewide Compliance Schedule for All Crew and Supply Vessel Engines

Engine Model Year	Total Annual Hours of Operation	Compliance Date
1985 and earlier	>1500 hours	12/31/2011
1985 and earlier	>300 - <1500 hours	12/31/2012
1986 - 1995	>1500 hours	12/31/2013
1986 - 1995	>300 - <1500 hours	12/31/2014
1996 - 2000	>1500 hours	12/31/2015
1996 - 2000	>300 - <1500 hours	12/31/2016
2001 - 2002	>300 hrs	12/31/2017
2003	>300 hrs	12/31/2018
2004	>300 hrs	12/31/2019
2005	>300 hrs	12/31/2020
2006	>300 hrs	12/31/2021
2007	>300 hrs	12/31/2022

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Compliance Schedule for Barge and Dredge Vessel Engines

Engine Model Year	Total Annual Hours of Operation	Compliance Date
1975 and earlier	>80	12/31/2011
1976 -1980	>80	12/31/2012
1981 - 1985	>80	12/31/2013
1986-1990	>80	12/31/2014
1991-1995	>80	12/31/2015
1996-1999	>80	12/31/2016
2000 -2001	>80	12/31/2017
2002	>80	12/31/2018
2003	>80	12/31/2019
2004	>80	12/31/2020
2005	>80	12/31/2021
2006	>80	12/31/2022

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Additional Amendments Affecting Barge and Dredges

- ◆ Remove exemption for engines in PERP or subject to local air district permit prior to January 1, 2009
 - Can still be registered in PERP
- ◆ Low use exemption set to 80 hours annually
 - Consistent with PERP

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Additional Amendments



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Availability of CARB Diesel Fuel Outside California

- ◆ Vessels traveling to California from outside the State
 - If CARB diesel not available for fueling prior to entering Regulated California Waters, amendment would allow:
 - U.S. EPA on-road diesel
 - U.S. EPA nonroad diesel (after June 1, 2010)
 - Both 15 ppm sulfur fuels
- ◆ Vessel operator must retain records documenting fuel purchase

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Disposition of Engines Brought into Compliance

- ◆ Allow use of an engine removed prior to compliance date to replace an older, dirtier engine
- ◆ Engines replaced must:
 - Be within the same fleet
 - Original compliance date of older engine remains in effect
- ◆ Moyer program engines not eligible

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Replacement Engine Exemption

- ◆ Applies to engine replacement due to engine failure on in-use vessel
- ◆ Allows replacement with engine not meeting current standards if:
 - Demonstrate that a compliant engine meeting required physical or performance characteristics unavailable
 - Requires evaluation of current tier and each previous engine tier
 - Must obtain ARB approval

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Allow Use of Off-Road Engines

- ◆ Applies to auxiliary engines only
- ◆ Certified to current off-road engine standards
- ◆ Must meet federal requirements for use of an off-road engine in marine applications



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Modification of Low-Use Hours

- ◆ In-use requirements apply when a total of 300 or more hours of operation occur annually in any of the regulated vessel categories
- ◆ Apply 80 hour low-use for barge and dredge engines to be consistent with PERP
- ◆ Remove term “multipurpose vessel”

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Other Proposed Amendments to the CHC Regulation

- ◆ Section (b)(2) - Clarify section addressing applicability to engines subject to multiple regulations
 - Add definition for engine permanently affixed to a vessel
- ◆ Add required date to submit an Alternative Compliance of Emissions (ACE)
 - Feb. 28 of year the first ACE impacted engine is required to comply
- ◆ Clarify reporting requirement for vessel brought into California
- ◆ Clarify definition of temporary emergency/rescue vessel

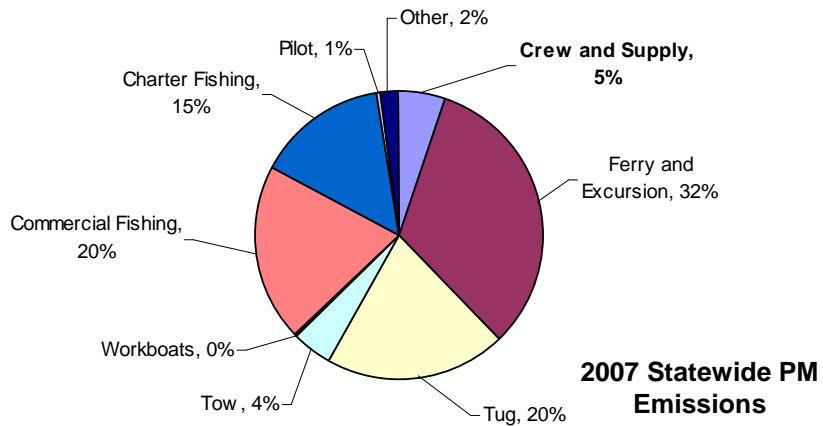
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Inventory, Emissions, and Benefits of Current Proposal



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Crew and Supply Emissions are Small Portion of Statewide Harbor Craft Inventory



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Estimated Emissions Benefits from Crew and Supply

- ◆ Total emissions reductions from crew and supply vessel engines over life of the regulation
 - 220 tons PM
 - 3,900 tons NOx



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Santa Barbara and Ventura Gain Greater Share of Emission Benefits

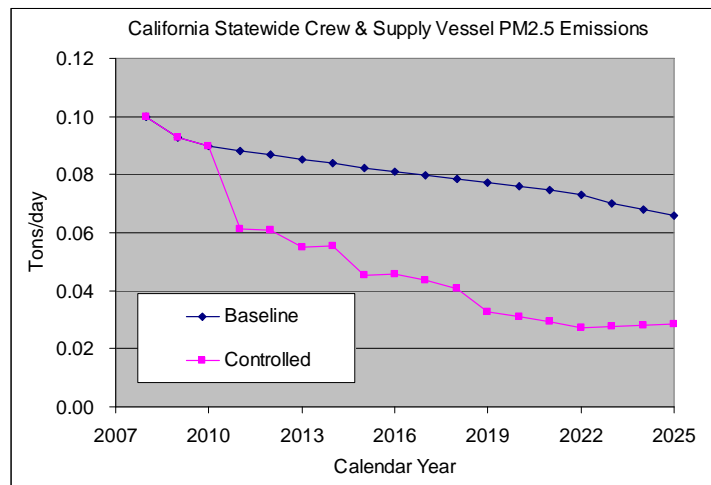
- ◆ Total emissions reductions from crew and supply vessel engines over life of the regulation in:

- Santa Barbara/Ventura
 - PM 116 tons
 - NOx 2300 tons
- South Coast
 - PM 96 tons
 - NOx 1500 tons
- Bay Area
 - PM 8 tons
 - NOx 130 tons



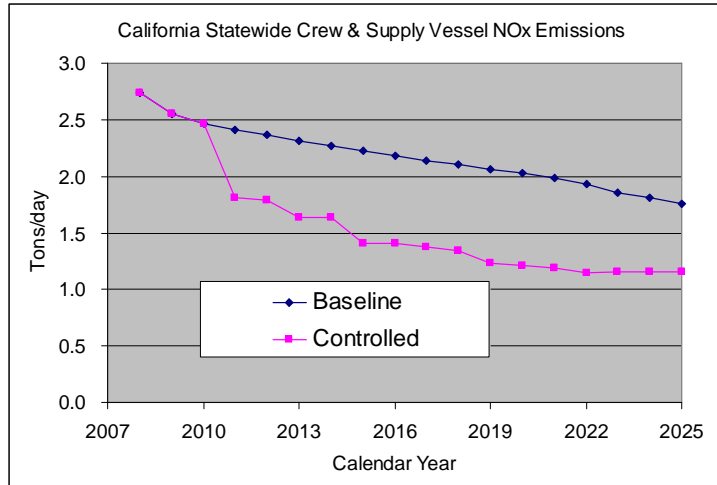
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Statewide Crew & Supply Vessel PM2.5 Emissions: Baseline vs. Controlled



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Statewide Crew & Supply Vessel NOx Emissions: Baseline vs. Controlled



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Barge and Dredge Vessel Engine Overview

	Barge	Dredge
# Vessels	88	18
# Auxiliary Engines	314	81
Average Horsepower	350	800
Average Annual Hours	500	1000
# Propulsion Engines	*	4
Average Horsepower	*	3500
Average Annual Hours	*	N/A

* Not Reported

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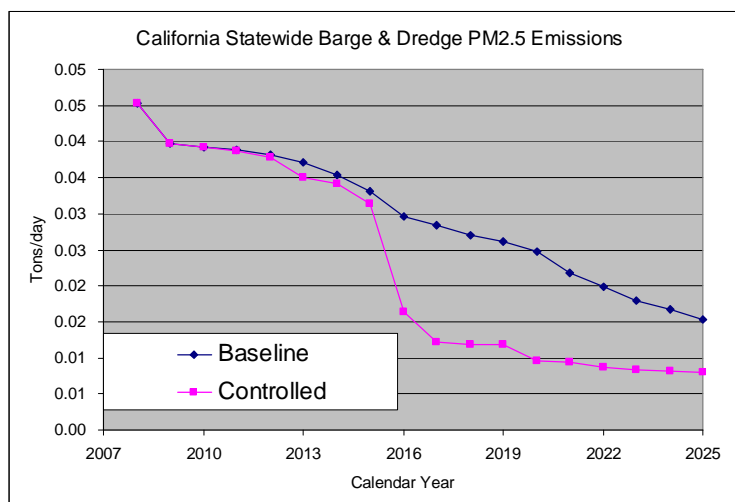
Anticipated Barge and Dredge Emissions Benefits

- ◆ Total emissions reductions from barge and dredge engines over life of the regulation
 - 90 tons PM
 - 1400 tons NOx



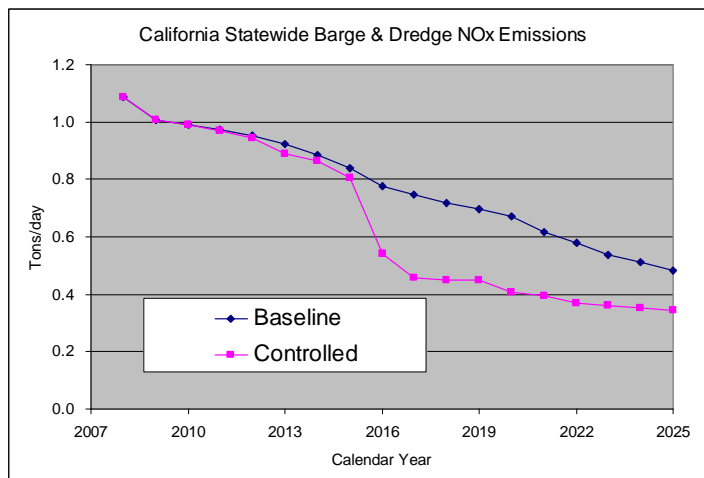
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Statewide Barge & Dredge PM2.5 Emissions: Baseline vs. Controlled



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Statewide Barge & Dredge NOx Emissions: Baseline vs. Controlled



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Contributes to Important Health Risk Reductions

- ◆ Cancer risk levels
- ◆ Non-cancer risk levels
 - Premature deaths, asthma, work loss days

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Costs



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Total Costs for Added In-Use Engines

- ◆ Crew and supply vessels:
 - \$9.5 million total regulatory compliance cost
 - \$19.8 million total industry cost

- ◆ Barge and dredge vessels:
 - \$5.6 million total regulatory compliance cost
 - \$26.5 million total industry cost

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Costs for Proposed Vessel Engines

- ◆ Costs from:
 - POLA PCAC China Shipping Settlement Funding
 - Industry
 - Vessel owners

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Engine Replacement Costs

Engine Category	Cost (\$/hp)	
	Crew and Supply	Barge and Dredge
Propulsion Engine	214	270
Auxiliary Engine	508	285

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Crew and Supply Cost Effective Due to Large Percentage of Older Engines

Summary of Average of Cost Effectiveness			
All Costs Attributed to PM (\$/lb)			
	Auxiliary Engine	Propulsion Engine	Overall
Ferry, Excursion, Tug, Tow	\$77	\$27	\$28
Crew and Supply	\$58	\$25	\$27
Barge and Dredge	\$40		\$40
All Costs Attributed to Nox (\$/ton)			
	Auxiliary Engine	Propulsion Engine	Overall
Ferry, Excursion, Tug, Tow	\$11,818	\$3,370	\$3,560
Crew and Supply	\$6,911	\$2,668	\$2,937
Barge and Dredge	\$4,790		\$4,790

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Questions



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