

# Draft

## Regulatory Concepts for Commercial Harbor Craft

### **Purpose:**

Reduce diesel particulate matter and oxides of nitrogen to the maximum extent feasible in consideration of cost and risk.

### **Applicability:**

The rule applies to owners and operators of in-use commercial harbor craft having engine model years 2003 and older.

### **Exemptions:**

Potential exemptions include:

- Historical vessels
- Auxiliary and propulsion engines that operate less than 100 hours per year.
- Vessels that use non-diesel fuel

### **Technology Review:**

By December 31, 2007, ARB will conduct a technology review to reassess the availability of technology to meet the performance standards.

### **Record Keeping:**

1. Initial notification with the ARB 6 months in advance of compliance date including but not limited to the following data: Owner name, vessel name, engine make, model, horsepower, displacement, age, compliance option, hours of operation, percent of time at varying distances off-shore.
2. Follow-up notification will be needed if vessel goes out of service, leaves California waters, change in compliance options from the initial notification.
3. Maintain records on hours of operation.

### **Test Methods:**

ISO 8178 (Part II & IV)

Test Cycles

- E3 - propulsion engines
- D2 - auxiliary engines

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## Performance Standards:

BACT for Propulsion and Auxiliary Engines

### Option 1

- Repower/Rebuild/Retrofit to meet U.S. EPA Tier II standards

U.S. EPA "Tier II" Marine Diesel Emission Standards					
Engine Category	Displacement (liter/cyl)	Approx. Horsepower	NOx+THC (g/kW-hr)	PM (g/kW-hr)	CO (g/kW-hr)
1	$D < 0.9$	50 - 100	7.5	0.40	5.0
	$0.9 \leq D < 1.2$	100 - 175	7.2	0.30	5.0
	$1.2 \leq D < 2.5$	175 - 750	7.2	0.20	5.0
	$2.5 \leq D < 5.0$	>750	7.2	0.20	5.0
2	$5 \leq D < 15$		7.8	0.27	5.0
	$15 \leq D < 20$ ( $P < 3300$ kW)	<4425	8.7	0.50	5.0
	$15 \leq D < 20$ ( $P \geq 3300$ kW)	>4425	9.8	0.50	5.0
	$20 \leq D < 25$		9.8	0.50	5.0
	$25 \leq D < 30$		11.0	0.50	5.0

### Option 2

- Install highest level verified diesel emission control system  
 Level 1 = = 25% reduction in particulate matter.  
 Level 2 = = 50% reduction in particulate matter.

*(If level 1 or 2 installed, then also must meet EPA Tier II or better by 2020 if no verified system available may apply for up to 2 1-year compliance extensions, after which you must meet U.S. EPA Tier II standards)*

Tier 0 or "Unregulated" Marine Diesel Emissions					
Year	Horsepower	NOx (g/kW-hr)	HC (g/kW-hr)	PM (g/kW-hr)	CO (g/kW-hr)
1987-2004	50	11	2.5	0.97	4.9
1987-2003	120	21 - 14	1.9 - 1.3	1.1 - 0.88	4.6 - 3.4
1969-2003	175	22 - 9.8	1.8 - 0.91	0.98 - 0.48	4.3 - 2.6
1969-2003	250	22 - 9.8	1.8 - 0.91	0.98 - 0.48	4.3 - 2.6
1969-2003	500	22 - 9.8	1.8 - 0.91	0.94 - 0.48	4.1 - 2.6
1969-2003	750	22 - 9.8	1.8 - 0.91	0.94 - 0.48	4.1 - 2.6

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## Compliance Schedule:

Annual Hours of Operation	Compliance Date*								
	Pre-1980 MY	% of engines	1980-1989 MY	% of engines	1990-1999 MY	% of engines	2000-2003 MY	% of engines	
< 500*	2011	9.3	2011	7.7	2012	7.6	2013	2.8	<b>27%</b>
501 – 1500	2009	11.1	2010	7.2	2011	7	2012	6.4	<b>32%</b>
>1,500	2008	10.5	2008	6.6	2008	12.7	2010	11	<b>41%</b>
		<b>31%</b>		<b>22%</b>		<b>27%</b>		<b>20%</b>	

% of engines is the percent of the total California harbor craft engines that fall within each compliance date category

*\*May consider additional 1 or 2 years provided for compliance for (1) operators that demonstrate the vessel spends 50% or more of operation time at distances greater than XX miles from shore and operates less than 500 hours per year or (2) fleets with 4 or more vessels of same model year.*

*(Owners may apply for Carl Moyer funding provided they comply early and meet the Carl Moyer cost effectiveness and project life criteria. The local districts will determine applicability on a case by case basis.)*

### Key Definitions:

1. "Baseline or Baseline Emissions" means the emissions level of a diesel-fueled compression ignition engine using CARB diesel fuel as configured upon initial marine installation.
2. "Harbor Craft" means any private, commercial, government, or military marine vessels except oceangoing ships and recreational marine watercraft. Harbor craft includes, but is not limited to, passenger ferries, tugboats, towboats, push-boats, commercial fishing boats, commercial passenger fishing vessels (sport fishing vessels), crew boats, work boats, pilot boats, supply boats, research vessels, and United States Coast Guard vessels that do not otherwise meet the definition of oceangoing ships or recreational marine vessels.
3. "Level" means one of three categories of Air Resources Board-verified diesel emission control strategies: Level 1 means the strategy reduces engine diesel particulate matter emissions by between 25 and 49 percent, Level 2 means the strategy reduces engine diesel particulate matter emissions by between 50 and 84 percent, and Level 3 means the strategy reduces engine diesel particulate matter emissions by 85 percent or greater, or reduces engine emissions to less than or equal to 0.01 grams diesel particulate matter per brake horsepower-hour.

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4. "Oceangoing Ship" for the purpose of this regulation, means any private, commercial, government, or military vessel meeting any one of the following criteria:
  - (A) a foreign trade vessel with an endorsement on its United States Coast Guard certificate of documentation, or registration under the flag of another country.
  - (B) a vessel greater than or equal to 400 feet in length overall as defined in 50 CFR § 679.2.
  - (C) a vessel of 10,000 gross tons or greater per the convention measurement as defined in 46 CFR 69 subpart B.
  - (D) a vessel propelled by a marine diesel engine with a per-cylinder displacement of 30 liters or more.
5. "Owner or Operator" means any person subject to the requirements of this section, including but not limited to:
  - (A) an individual, trust, firm, joint stock company, business concern, partnership, limited liability company, association, or corporation including but not limited to, a government corporation; and
  - (B) any city, county, district, commission, the estate of any department, agency, or political subdivision thereof, any interstate body, and the federal government or any department or agency thereof to the extent permitted by law.
6. "Verified Diesel Emission Control System" means "that a diesel emission control strategy or system has received approval from the Executive Officer according to the "Verification Procedure for In-Use Strategies to Control Emissions from Diesel Engines" in title 13, California Code of Regulations, commencing with section 2700.