OVERVIEW OF

Commercial Harbor Craft Regulation

On November 15, 2007, the California Air Resources Board (ARB) approved a regulation to reduce emissions from diesel engines on commercial harbor craft vessels. Amendments were approved in June 2010. Regulation compliance is significantly reducing diesel particulate matter (PM) and oxides of nitrogen (NOx) emissions from harbor craft engines.

What types of vessels are subject to this regulation?

The regulation applies to all commercial harbor craft vessels including, but not limited to, ferries, excursion vessels, tugboats (including ocean-going tugs), towboats, push boats, crew and supply vessels, barge and dredge vessels, work boats, pilot vessels, and commercial and charter fishing boats. There are about 4,200 harbor craft vessels, and 8,300 diesel engines on these vessels, currently in use in California. Of these, nearly 800 are ferries, excursion vessels, tugboats, towboats, push boats, crew and supply vessels, barge and dredge vessels equipped with about 2,500 propulsion and auxiliary engines that are subject to in-use engine emission limits.

What does the commercial harbor craft regulation require?

Regulated California Waters means:
All internal waters, estuarine waters, ports, and coastal waters within 24 nautical miles of the California coast.

The regulation includes requirements for both new and in-use diesel engines used on commercial harbor craft operating in Regulated California Waters. Below is a brief discussion of these requirements; specific details can be found in the regulation, which is available online: www.arb.ca.gov/ports/marinevess/harborcraft/hcregulatory.htm

Operational Requirements for All Commercial Harbor Craft

Commercial harbor craft owners/operators are required to fuel their diesel engines with California ultra low sulfur diesel and install (if not already installed) a non-resettable hour meter on each engine. All owners/operators are required to submit an initial report to ARB within 30 days of first operating in Regulated California Waters. Vessel owners/operators must keep a copy of their initial report and annually up-dated records on the vessel or in a central dockside location to be made available upon request by ARB staff.

Newly-Acquired Engines for New Harbor Craft

The engines on all new commercial harbor craft vessels are required to meet the United States Environmental Protection Agency (U.S. EPA) marine or off-road engine emission standards in effect at the time the vessel is acquired.

Replacement Engines on In-Use Harbor Craft

Newly-acquired engines for all in-use harbor craft are required to meet the Tier 2 or Tier 3 marine or off-road standards (or Tier 4 in certain cases) in effect at the time the vessel owner/operator acquires the engine. This provision ensures that as older engines on in-use vessels are retired, they will be replaced with the cleanest available engines. Newly-acquired engines are not required to meet the Tier 4 marine or off-road standards unless replacing a Tier 4 engine on the in-use vessel.

Propulsion Engines for New Ferries

Propulsion engines on new ferries acquired after January 1, 2009, with capacity for 75 or more passengers, are required to be even cleaner than the Tier 2 and Tier 3 standards. These new ferries are required to install best available control technology (BACT) on the propulsion engines in addition to having engines that meet the current marine engine emission standards in effect at the time of acquisition. Alternatively, ferry vessels may comply with the regulation by installing propulsion engines that meet the Tier 4 marine engine emission standards.

In-Use Requirements Specific to Ferries, Excursion Vessels, Tugboats, Towboats, Push Boats, Crew and Supply Vessels, Barge and Dredge Vessels

The regulation requires existing Tier 1 and earlier propulsion and auxiliary engines on in-use ferries, excursion vessels, tugboats, towboats, push boats, crew and supply vessels, and barge and dredge vessels, to meet U.S. EPA Tier 2 or Tier 3 standards in effect at the time of regulation compliance.

Low use compliance is available for engines that operate 300 hours annually or less in the regulated categories, or 80 hours if in barge and dredge.

There are four regulation compliance schedules. Two are for the categories of ferry, excursion vessel, tugboat, towboat, and push boat: one for vessels with home ports outside of the South Coast Air Quality Management District (SCAQMD), and an accelerated schedule for vessels with home ports in the SCAQMD. Additionally, there is a statewide regulation compliance schedule for crew and supply vessels and one for barge and dredge vessels. All compliance schedules are based on the engine model year and hours of operation and are designed to replace the oldest, highest use engines first.

Vessel owners/operators are required to submit a report about how they plan to comply with these requirements and then an additional report when they have completed compliance. Once engines are upgraded to Tier 2 or Tier 3 marine or off-road engines, the CHC regulation does not require any further upgrades. However, if the vessel owners/operators choose to replace these compliant engines, the replacement engines are required to meet the current U.S. EPA marine or off-road engine standard. (See "Replacement Engines on In-Use Harbor Craft")

Why did ARB develop a regulation for commercial harbor craft?

Regulations are necessary to reduce emissions of diesel PM and NOx that cause adverse health effects for Californians. Diesel engines on California commercial harbor craft were estimated to emit 3.3 tons per day (tpd) of diesel PM and 73 tpd of NOx in 2004. An ARB exposure study at the ports of Los Angeles and Long Beach found harbor craft to be the third highest source of diesel PM emissions contributing to the cancer risk from port activity.

What are the health impacts associated with commercial harbor craft emissions?

The health impacts associated with commercial harbor craft emissions include both cancer and non-cancer health risks. Non-cancer health impacts are due to both directly emitted PM and secondary diesel PM, to which NOx is a precursor. Non-cancer health effects may include eye and lung irritation, allergic reactions in the lungs, asthma exacerbation, blood toxicity, immune system dysfunction, and developmental disorders. NOx has been shown to have the following adverse health effects in humans: respiratory irritation, immune system suppression, and asthma exacerbation. Staff estimates that the non-cancer health impacts from harbor craft emissions prior the implementation of the CHC regulation included approximately 90 premature deaths and 2,400 asthma-related cases per year, as well as numerous other impacts.

What are the environmental and health impacts of the regulation?

By 2025, commercial harbor craft diesel PM emissions will be reduced about 75 percent and NOx emissions about 60 percent compared to the 2004 baseline. These reductions will result in a decrease of over 60 percent in the population impacted by a cancer risk of 10 in a million and avoid approximately 310 premature non-cancer deaths statewide by 2025, as well as prevent numerous other non-cancer health effects.

How much will the regulation cost?

The total cost of regulatory compliance for affected businesses was estimated to be approximately $140 million over the life of the regulation. The cost-effectiveness was estimated to be about $29 per pound of diesel PM reduced, if all costs are attributed to reducing diesel PM. If the costs are split evenly between reducing PM and NOx, the cost effectiveness is estimated at $14 per pound of PM and $1,800 per ton of NOx. Health cost savings due to reduced mortality and reduced incidences of non-cancer illnesses are estimated at a total valuation of $1.3 billion to $2 billion, calculated using U.S. EPA methodology.

Where can I find more information about the regulation?

If you have specific questions or comments about the regulation or supporting documents, please contact Zhenlei Wang at (916) 322-1049 (e-mail: zhenlei.wang@arb.ca.gov) or Cherie Rainforth at (916) 327-7213 (e-mail: cherie.rainforth@arb.ca.gov).

You may also visit our web site at www.arb.ca.gov/ports/marinevess/harborcraft.htm, or contact ARB's toll-free harbor craft helpline at (888) 44CRAFT (442-7238) or email at harborcraft@arb.ca.gov.

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