**MEASUREMENT OF PARTICULATE MATTER AND GASEOUS EMISSIONS FROM COMMERCIAL HARBOR CRAFT DURING REAL-WORLD OPERATION**

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In 2007, the California Air Resources Board (CARB) adopted an in-use regulation to reduce emissions from Commercial Harbor Craft (CHC), which includes ferries, tug boats, barges, and other vessel categories. After full implementation of the CHC regulation in 2022, many CHC vessels operating in California will be equipped with engines certified to the U.S. Environmental Protection Agency (EPA) Marine Tier 2 or Tier 3 standards. Although the CHC regulation will have achieved substantial emission reductions by accelerating turnover to cleaner engines, no marine engines are originally equipped with diesel particulate filters (DPF) to control particulate matter (PM). Consequently, CHC are expected to remain one of the top three seaport sources of cancer risk due to exposure to diesel PM.

This poster will present results of in-use emissions testing using Portable Emissions Measurement Systems (PEMS) from two (2) ferries operating in normal revenue service in the San Francisco Bay in January 2019. The first vessel was equipped with main propulsion engines certified to the U.S. EPA Marine Tier 2 standards, and the second vessel was equipped with engines certified to U.S. EPA Marine Tier 3 standards and an aftermarket selective catalytic reduction (SCR) and diesel oxidation catalyst (DOC) system. This real-world testing is an important evaluation of marine engine emissions because certification is performed in a laboratory under controlled conditions and quantified under steady-state loads. Transient loads during this test program will be presented in the context of certification standards and will be used to update the emission inventory to support CARB’s rulemaking to continue reducing emissions from the source category.