

**STATEMENT
OF THE
MANUFACTURERS OF EMISSION CONTROLS ASSOCIATION
ON THE CALIFORNIA AIR RESOURCES BOARD'S
PROPOSED AMENDMENTS TO THE COMMERCIAL HARBOR CRAFT
REGULATION**

November 12, 2021

The Manufacturers of Emission Controls Association (MECA) is pleased to provide comments in support of CARB's proposed Amendments to the Commercial Harbor Craft Regulation. We believe an important opportunity exists to significantly reduce emissions from these marine vessels. Staff has correctly emphasized the use of engine replacements, rebuilds and repowers as the primary compliance route for achieving the PM and NOx reductions proposed by this regulation. MECA agrees with CARB staff that the passage of this regulation serves as the best incentive to encourage marine engine manufacturers to certify new engines with diesel particulate filters (DPFs) as well as further the availability of retrofit DPF strategies for marine applications.

MECA is a non-profit industry trade association of the world's leading manufacturers of clean mobility technologies. Our members have nearly 50 years of experience and a proven track record in developing and commercializing emission controls, including advanced selective catalytic reduction (SCR) and DPF technologies for new engines and retrofit applications. MECA companies supply the full complement of electrified vehicle powertrain technologies and electric vehicle components. In addition, MECA companies supply technologies such as; catalytic and evaporative emissions controls, advanced fuel injection, turbochargers, cooled-EGR systems, cylinder deactivation, OBD systems, sensors and controls among others to make combustion engines as clean and efficient as possible.

Technologies such as SCRs, DPFs, diesel oxidation catalysts (DOCs), and ammonia slip catalysts (ASCs) are commercially available today and can be found on millions of highway and off-road engines since 2007. Retrofit DPFs have been installed on many thousands of in-use heavy-duty vehicles and off-road equipment in California and more broadly worldwide to provide significant reductions in diesel particulate matter (PM), as well as reductions in toxic hydrocarbon and carbon monoxide (CO) emissions from the in-use fleet.

Emission Control Technologies for Marine Diesel Engines

MECA agrees with the staff report's assessment that marine applications pose unique operating environments and challenging packaging envelopes for emission control technologies. However, proper application engineering over the past twenty years has resulted in the successful application of DOCs, DPFs, and SCR catalysts on a variety of marine engines today.

Since the mid-1990s, urea SCR technology has been successfully installed on a variety of marine

applications in Europe, including auto ferries, cargo vessels, military ships, and tugboats, with hundreds installed on engines ranging from approximately 450 to over 10,000 kW. In addition, the International Maritime Organization Tier 3 requirements which came into force in 2021 have required that new engines utilize marine specific SCR installations in NOx Emission Control Areas (N-ECAs) which include the coastal waters of Europe, the United States and Canada. CARB funded a demonstration of a DPF+SCR [retrofit](#) of a tug boat that achieved over a 95% reduction in PM emissions and more than a 90% reduction in NOx from two parallel Detroit Diesel 525 hp engines. The New York Port Authority retrofitted two Staten Island Ferries with SCR that remain in operation. Globally, there is growing experience with emission control technologies installed on marine diesel engines and in particular in Europe where Euro V engine standards require DPFs on inland waterway vessels to meet strict particulate regulations.

Although there are numerous examples where marine harbor vessels have been retrofitted with aftertreatment including DPFs and SCR, retrofitting existing marine vessels represents numerous challenges. Each ship has a different engine and space constraints that require customized aftertreatment solutions. The best analogy to marine retrofits is stationary retrofits. Therefore, the verification process for these vessels should mimic stationary sources rather than mobile retrofits. Because each retrofit is a unique installation, we urge CARB staff to consider what flexibilities can be allowed to marine retrofit manufacturers during verification leaving greater reliance on in-use testing to confirm that aftertreatment remains operational. This is especially true of DPFs that rely more on active regeneration and may not be catalyzed. Furthermore, the wall flow filters are very effective in removing over 95% of PM from the exhaust and can be periodically checked by a simple opacity stack test. This would be similar to stationary sources that require source testing for permitting and reporting.

Based upon these technology examples, MECA agrees that passage of the Amendments to the Commercial Harbor Craft rule results in the best commercial incentive to encourage companies to include DPFs in their Tier IV engine certifications and for companies to pursue retrofit DPF verification, as well as establish market presence in support of California commercial harbor craft.

In addition, as the marine market is relatively small and specialized compared to other retrofit markets, CARB should continue to consider appropriate flexibilities which will expand the coverage of engines and reduce the cost of verification. In particular, in-use methods employing PEMs equipment are considerably more cost effective than test cell-based procedures for these large engines, and better reflect real world system performance. MECA recommends that CARB consider holding a workshop specific to marine manufacturers and installers to provide further information on device verification and to raise further awareness of these opportunities in California.

The Use of R100 Fuel

The most effective emission controls utilize the three primary elements of the system including the engine, aftertreatment and fuels. MECA also supports the staff proposal that will require harbor craft diesel engines to be fueled with R100 renewable diesel that has been shown to reduce PM and NOx emissions as well as combat climate change.

Conclusion

In closing, we commend the Air Resources Board for its continuing efforts to provide the people of California with healthy air quality and for demonstrating true leadership in this regulatory program that will significantly reduce PM and NOx emissions from commercial harbor crafts. MECA believes that technologies to reduce diesel emissions, such as DPFs, DOCs, and SCR, are available today, for both new engines as well as retrofits, to reduce NOx and PM emissions from off-road vehicles and engines and these same technologies can have a role in reducing emissions from both new and in-use harbor craft. Retrofit technologies remain as a potential compliance option. Because of the unique challenges of retrofitting aftertreatment for existing harbor craft that we discussed above, we urge CARB staff to think creatively how these unique systems can be verified and their performance confirmed in-use. For retrofit manufacturers to take advantage of this clearly defined market opportunity for DPF filters, they would need some flexibility in the verification of these one of a kind retrofit installations. Our industry is committed to continue to invest in the development and verification of cost-effective, retrofit emission control technologies for all existing diesel engine applications, including marine harbor craft.

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