

BOARD MEETING DATE: November 1, 2019

AGENDA NO. 3

**PROPOSAL:** Establish Special Revenue Fund, Recognize Revenue and Transfer Funds, and Execute Agreements to Develop and Demonstrate Water-in-Fuel Retrofit Technology for Ocean-Going Vessels

**SYNOPSIS:** MAN Energy Solutions USA Inc. (MAN) proposes to develop, install and demonstrate a retrofit technology to reduce NOx emissions from ocean-going vessels (OGVs). For the proposed project, the retrofit technology will be installed, tested and demonstrated on one of MSC Ship management Limited Tier 2 vessels. These actions are to establish the Clean Shipping Technology Demonstration Special Revenue Fund (83), recognize up to \$1 million from San Pedro Bay Ports' Technology Advancement Program and transfer up to \$2 million from Air Quality Investment Fund (27) into Fund 83, execute an MOU with the Ports for this demonstration project, and execute a contract with MAN in an amount not to exceed \$3 million to install, test and demonstrate the water-in-fuel retrofit technology for OGVs.

**COMMITTEE:** Technology, October 18, 2019; Recommended for Approval

**RECOMMENDED ACTIONS:**

1. Establish the Clean Shipping Technology Demonstration Special Revenue Fund (83) for the purpose of implementing clean shipping projects;
2. Recognize, upon receipt, up to \$1 million from San Pedro Bay Ports' Technology Advancement Program into the Clean Shipping Technology Demonstration Special Revenue Fund (83);
3. Transfer up to \$2 million from Air Quality Investment Fund (27)-Rule 1111 into the Clean Shipping Technology Demonstration Special Revenue Fund (83);
4. Authorize the Executive Officer to execute an MOU with the Ports of Long Beach and Los Angeles to accept their \$1 million cost-share for the water-in-fuel retrofit technology project; and

5. Authorize the Chairman to execute a contract with MAN Energy Solutions USA Inc. to install, test and demonstrate the water-in-fuel retrofit technology for ocean-going vessels in an amount not to exceed \$3 million from the Clean Shipping Technology Demonstration Special Revenue Fund (83).

Wayne Nastri  
Executive Officer

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### **Background**

The 2016 AQMP identified the need to achieve significant NOx reductions to meet the federal 8-hour ozone standards. By 2023 ocean-going vessels (OGVs) are expected to be one of the largest sources of NOx emissions, and a recent forecast showed a very limited number of Tier 3 vessel calls at the San Pedro Bay Ports over the next seven to ten years.

Building an OGV requires significant capital investment, and OGVs are designed to remain in service for 25 years or more. Only vessels built after 2016 are required to meet the Tier 3 engine standard, so engine retrofit technologies are a promising strategy to achieve NOx reductions beyond existing regulations, especially for older vessels. Development and demonstration of retrofit technologies and associated incentive programs could encourage vessel operators to explore these emissions reduction options.

Water-in-fuel retrofit technology is a process where water is mixed with the fuel to reduce peak temperatures during the combustion process. This technology has been successfully demonstrated in a laboratory setting to reduce NOx emissions on two-stroke engines. The Ports of Los Angeles and Long Beach (San Pedro Bay Ports), through their Technology Advancement Program (TAP), are committed to cost-sharing this retrofit demonstration project.

### **Proposal**

MAN Energy Solutions USA Inc. (MAN) will develop, test and demonstrate the water-in-fuel retrofit technology on a two-stroke main OGV engine, with a goal of achieving up to 40% NOx reduction from a Tier 2 engine at a lower engine load. The majority of OGVs entering our ports at around 40 nautical miles participate in a voluntary vessel speed reduction (VSR) program. The demonstration will be focused on water-in-fuel ratio to ensure combustion stability and minimize fuel penalty and loss of power at a lower engine load within the VSR zone. MSC Ship management Limited has identified two OGVs for this project, both of which are equipped with main engines developed by MAN; one will be selected for the demonstration. After the completion of

demonstration, MAN plans to obtain CARB’s approval and apply for an Executive Order for this retrofit technology.

These actions are to establish the Clean Shipping Technology Demonstration Special Revenue Fund (83), recognize up to \$1 million from the San Pedro Bay Ports’ TAP and transfer up to \$2 million from Air Quality Investment Fund (27) into Fund 83, execute an MOU with the Ports’ TAP for this demonstration project, and execute a contract with MAN in an amount not to exceed \$3 million to install, test and demonstrate the water-in-fuel retrofit technology for OGVs.

**Sole Source Justification**

Section VIII.B.2 of the Procurement Policy and Procedure identifies four major provisions under which a sole source award may be justified. This request for sole source award is made under provision B.2.c(1): the unique experience and capabilities of the proposed contractor or contractor team; and B.2.c(2): project involves the use of proprietary technology. MAN is one of the largest marine engine developers in the world and the technology being developed by MAN is proprietary and applicable to their engines.

**Benefits to South Coast AQMD**

The South Coast Air Basin is classified as an “extreme” nonattainment area for ozone under the federal Clean Air Act. NOx emissions reduction retrofit technologies for older OGVs are essential for helping achieve air quality standards. The technology, upon successful demonstration and CARB approval, may be used as an option for new voluntary incentive programs.

**Resource Impacts**

The estimated cost for this project is \$3,200,000, with \$1,000,000 in revenue being recognized from the San Pedro Bay Ports’ TAP. The South Coast AQMD’s \$2,000,000 cost-share will be transferred from the Air Quality Investment Fund (27) into a new special revenue fund (Fund 83), where the TAP’s funding will also be recognized. The contract with MAN will not exceed \$3 million. Proposed project cost-share is shown in the table below:

**Proposed Project Funding Sources**

<b>Funding Source</b>	<b>Funding Amount</b>	<b>Percent</b>
MAN (in-kind)	\$200,000	6
Port of Los Angeles*	\$500,000	16
Port of Long Beach*	\$500,000	16
South Coast AQMD ( <i>requested</i> )	\$2,000,000	62
<b>Total</b>	<b>\$3,200,000</b>	<b>100</b>

\*The Ports have committed to provide the funds and are in process to obtain a formal approval