

BOARD MEETING DATE: June 2, 2023

AGENDA NO. 7

**PROPOSAL:** Recognize Revenue, Transfer Funds, Execute and Amend Agreements to Demonstrate Plug-In Hybrid Tugboat, Fuel Cell Trucks, Battery Electric Compactors, and Retrofit Ocean-Going Vessels and Reimburse General Fund

**SYNOPSIS:** South Coast AQMD has preliminary been awarded up to \$16,136,700 from U.S. EPA FY22 Targeted Airshed Grant (TAG) Program to demonstrate a plug-in hybrid tugboat, heavy-duty fuel cell trucks, and battery electric asphalt compactors. In September 2020, the Board recognized \$300,000 from the San Pedro Bay Ports for their cost-share of an ocean-going vessel (OGV) retrofit project awarded by FY20 EPA TAG. U.S. EPA subsequently approved a change in project scope and project partner, and San Pedro Bay Ports has committed to providing an additional \$300,000 to the project. These actions are to: 1) recognize revenue up to \$16,136,700 from U.S. EPA into the Clean Shipping Technology Demonstration Special Revenue Fund (83) and the Advanced Technology, Outreach and Education Fund (17); 2) transfer up to \$1.5 million from the Air Quality Investment Program Fund (27) - Rule 1111 into Fund (83) and \$800,000 from the Clean Fuels Program Fund (31) into Fund (17); 3) contingent upon U.S. EPA's final awards, execute contracts with Crowley Maritime Corporation for up to \$11 million from Fund (83), and with Daimler Truck North America, LLC for up to \$5.6 million and Volvo for up to \$1,086,700 from Fund (17); 4) recognize \$300,000 from San Pedro Bay Ports for the OGV retrofit project into the Clean Shipping Technology Demonstration Special Revenue Fund (83), and execute an agreement with San Pedro Bay Ports for \$600,000 including the \$300,000 previously recognized for the Ports' cost-share of the OGV retrofit project; 5) amend the Mediterranean Shipping Company contract to include the additional cost-share from San Pedro Bay Ports; and 6) reimburse the General Fund up to \$250,000 from Fund (17) and up to \$500,000 from Fund (83) to administer these projects.

**COMMITTEE:** Technology, May 19, 2023; Recommended for Approval

RECOMMENDED ACTIONS:

1. Recognize revenue, upon receipt, of up to a total of \$16,136,700 from U.S. EPA, of which \$10 million will go into the Clean Shipping Technology Demonstration Special Revenue Fund (83) and \$6,136,700 will go into Advanced Technology, Outreach and Education Fund (17);
2. Transfer up to \$1.5 million from the Air Quality Investment Program Fund (27)- Rule 1111 and up to \$800,000 from the Clean Fuels Program Fund (31) into Clean Shipping Technology Demonstration Special Revenue Fund (83) and Advanced Technology, Outreach and Education Fund (17), respectively, for use as cost-share for the plug-in hybrid tugboat demonstration project and the heavy-duty fuel cell truck demonstration project, respectively;
3. Authorize the Executive Officer to execute the following contracts, contingent upon U.S. EPA's final awards:
  - a. Crowley Maritime Corporation for up to \$11 million from Clean Shipping Technology Demonstration Special Revenue Fund (83) for the plug-in hybrid tugboat demonstration project;
  - b. Daimler Truck North America, LLC for up to \$5,600,000 from Fund (17) to demonstrate pre-commercial fuel cell electric trucks;
  - c. Volvo Technology of America, LLC for up to \$1,086,700 from Fund (17) to develop and demonstrate battery electric asphalt compactors.
4. Recognize \$300,000 from San Pedro Bay Ports for their cost-share to the Ocean Going Vessel (OGV) retrofit project into the Clean Shipping Technology Demonstration Special Revenue Fund (83) and execute an agreement with the Ports for \$600,000 including the \$300,000 previously recognized as the Ports' cost-share towards the OGV retrofit project;
5. Authorize the Executive Officer to amend contract with the Mediterranean Shipping Company (MSC USA) to add the \$600,000 San Pedro Bay Ports' cost-share from Clean Shipping Technology Demonstration Special Revenue Fund (83) for an OGV retrofit project; and
6. Reimburse the General Fund for up to \$750,000 comprising of up to \$250,000 from Advanced Technology, Outreach and Education Fund (17) and \$500,000 from Clean Shipping Technology Demonstration Special Revenue Fund (83), for administrative costs necessary to implement the above-mentioned projects.

Wayne Nastri  
Executive Officer

AK:MW:VP:MH

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## **Background**

The 2022 AQMP includes a variety of strategies to reduce NO<sub>x</sub> emissions, which is a precursor to ozone, to achieve the 2015 8-hour ozone standards. Offroad, freight, and marine sectors are significant sources of NO<sub>x</sub> emissions. Accelerated deployment of cleaner technologies, such as zero-emission technologies, regulatory approaches, incentives, and other control strategies are included in the 2022 AQMP. Developing lower emission technologies in the offroad, freight, and marine sectors are the initial steps needed to achieve NO<sub>x</sub> reductions from these sectors.

In 2022, staff submitted four grant applications, requesting up to \$10 million from U.S. EPA Targeted Airshed Grant (TAG) to develop and demonstrate on-road and off-road clean technology projects. Three projects have been preliminarily awarded which includes the development of a plug-in hybrid tugboat with innovative supporting charging infrastructure powered by hydrogen fuel cells, the development of fuel-cell electric trucks, and demonstration of battery electric asphalt compactors.

### *Plug-in Hybrid-Tugboat Project with Innovative Supporting Charging Infrastructure Powered by Hydrogen Fuel Cells*

Tugboats are one of the largest emitting categories of commercial harbor crafts. To achieve emission reductions and meet the basin attainment needs, emission reductions from the marine category require new technology development and support at the federal level to develop and transition to cleaner engine technologies. Tugboats operate on short routes but have significant idling times and high horsepower diesel engines. Utilizing electric battery powered propulsion systems will provide instantaneous and efficient power for a wide range of tugboat operations. With California's newly amended commercial harbor craft regulation, the marine industry seeks feasible emission reduction technologies and a path towards decarbonization. Developing a cleaner technology solution for tugboats will significantly reduce the emissions from this category.

### *Commercializing Heavy-Duty Fuel Cell Trucks*

Accelerating hydrogen fuel cell technology is critical to achieving state and federal air quality standards. Hydrogen fuel cell technologies can displace diesel trucks in traditional longer-range duty cycles that are still unfeasible for battery electric vehicles. This demonstration project will target high emission, long-range use trucks to provide an invaluable model for deploying advanced hydrogen vehicles that contribute to the vital mix of viable zero-emission technologies required for large-scale emission reductions. The deployment of hydrogen fuel cell trucks on revenue-generating, high-visibility routes will validate the reliability and effectiveness of this technology and its ability to reach commercialization.

Battery Electric Asphalt Compactor Development and Demonstration

This project is to develop and support a customer pilot project in California to test the battery electric compactor in real-world applications and expedite product availability into the North American marketplace.

Ocean-going Vessels Retrofit

In September 2020, South Coast AQMD Board approved a project to retrofit OGV funded by the 2020 U.S. EPA TAG program, San Pedro Bay Ports, South Coast AQMD (\$300,000 cost-share), and MAN Energy Solutions USA Inc. (MAN). In early 2021, MAN's management team informed South Coast AQMD that the original award requirements could not be fulfilled. South Coast AQMD obtained EPA's approval to change the project scope for retrofitting two OGVs and having MSC USA complete the project. In September 2021, the Board approved MSC USA to complete this project. Subsequently, San Pedro Bay Ports committed to adding \$300,000 to their initial cost-share of \$300,000 to retrofit two OGVs, instead of one, bringing their total cost-share to \$600,000.

**Proposal**

Plug-in Hybrid-Tugboat Project with Innovative Supporting Charging Infrastructure Powered by Hydrogen Fuel Cells

Crowley will design and build a 90-ton bollard pull plug-in hybrid tugboat for ship assist and harbor work. The proposed vessel will replace a Crowley high-horsepower Harbor Class tugboat with two Tier 2, 2,365 horsepower engines. The replacement tugboat will be a majority zero-emission operation with adequate infrastructure installed. Along with the tugboat, an innovative standalone vessel charging system with batteries and hydrogen fuel cell power generation will be developed to supply zero-emission power without needing electrical grid infrastructure.

Commercializing Heavy-Duty Fuel Cell Trucks Project

Six Daimler (Freightliner) Class 8 hydrogen fuel cell trucks will be developed to be leased through Penske to various Southern California fleet operators. Trucks will be domiciled in the Inland Empire and operate on regular longer-range routes transporting goods throughout the South Coast Air Basin. The deployment of hydrogen fuel cell trucks on revenue-generating, high-visibility routes will validate the reliability and effectiveness of this technology and its ability to reach commercialization. South Coast AQMD is partnering with Daimler Trucks North America (DTNA), Cummins Inc. (Cummins), and Penske Truck Leasing Co, L.P. (Penske) on an innovative demonstration project to reduce diesel emissions and accelerate the market for heavy-duty hydrogen fuel cell electric vehicles. The deployment of hydrogen fuel cell trucks on revenue-generating, high-visibility routes will validate the reliability and effectiveness of this technology and its ability to reach commercialization.

### Battery Electric Compactor Development and Demonstration

South Coast AQMD is partnering with Volvo Technology of America, LLC (Volvo) to develop and demonstrate three prototype zero-emission battery electric asphalt compactors with fleets in the Coachella Valley and South Coast. This project will develop and support a customer pilot project in California to test the battery electric compactor in real-world applications and expedite product availability into the North American marketplace by 2024.

### Ocean-Going Vessels Retrofit

An agreement with San Pedro Bay Ports will be executed for \$600,000 for the Ports' cost-share for the OGV retrofit projects and the MSC USA contract will be modified to add the \$600,000 from the Ports.

### **Sole Source Justification**

Section VIII.B.3 of the Procurement Policy and Procedure identifies four major provisions under which contracts funded in whole or in part with federal funds may be made as a sole source award. The request for sole source awards for the Crowley, DTNA, and Volvo contracts are made under provision B.3.c, which states that awarding a contract is infeasible under small purchase procedures, sealed bids or competitive proposals and that the awarding federal agency or pass-through entity expressly authorizes non-competitive proposals in response to a written request from the non-Federal entity. The nature of these projects makes them infeasible under small purchase procedures, sealed bids or competitive proposals, and the EPA has expressly authorized sole-source awards to these entities.

### **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. Projects to support plug-in hybrid tugboat, long-range Class 8 fuel cell truck demonstration, and battery electric compactors are included in *Technology Advancement Office Clean Fuel Program 2022 Plan Update* under the categories of "Develop and Demonstrate Medium-Duty and Heavy-Duty Fuel Cell Vehicles" and "Develop and Demonstrate Medium-Duty and Heavy-Duty On-Road and Off-Road Battery Electric and Hybrid Vehicles and Equipment." Successful demonstration of these projects helps reduce ozone and PM2.5 air pollution. The plug-in tugboat, fuel cell trucks, and asphalt compactor projects will reduce 62, 1.3, and 5 tons of NOx per year and 1.1, 0.01, and 0.47 tons of PM2.5 per year, respectively.

### **Resource Impacts**

#### Plug-in Hybrid-Tugboat Project with Innovative Supporting Charging Infrastructure Powered by Hydrogen Fuel Cells

The contract with Crowley will not exceed \$11 million from the Clean Shipping Technology Demonstration Special Revenue Fund 83. The total project cost is \$43.5 million, with funding sources as shown below:

<b>Funding Source</b>	<b>Funding Amount</b>	<b>Percent</b>
U.S. EPA FY 2022-23 Targeted Airshed Grant	\$10,000,000	23%
San Pedro Bay Ports ( <i>cost-share</i> )	\$4,440,000	10%
Crowley ( <i>cost-share</i> )	\$27,518,000	64%
South Coast AQMD ( <i>requested</i> )	\$1,500,000	3%
<b>Total</b>	<b>\$43,458,000</b>	<b>100%</b>

Commercializing Heavy-Duty Fuel Cell Trucks Project

The contract with DTNA will not exceed \$5,600,000 from the Advanced Technology, Outreach and Education Fund (17). The total project cost is \$6,850,000, with funding sources as shown below. Any unspent Clean Fuels funds will be transferred back to the Clean Fuels Program Fund (31) after project completion:

<b>Funding Source</b>	<b>Funding Amount</b>	<b>Percent</b>
U.S. EPA FY 22 Targeted Airshed Grant	\$5,000,000	73%
DTNA ( <i>cost-share</i> )	\$1,050,000	15%
South Coast AQMD ( <i>requested</i> )	\$800,000	12%
<b>Total</b>	<b>\$6,850,000</b>	<b>100%</b>

Battery Electric Compactor Development and Demonstration

The contract with Volvo will not exceed \$1,086,700 from the Advanced Technology, Outreach and Education Fund (17). The total project cost is \$1.9 million as shown below:

<b>Funding Source</b>	<b>Funding Amount</b>	<b>Percent</b>
U.S. EPA FY 22 Targeted Airshed	\$1,136,700	59%
Volvo ( <i>cost-share</i> )	\$757,800	41%
<b>Total</b>	<b>\$1,894,500</b>	<b>100%</b>

Ocean-going Vessel Retrofit

An agreement with San Pedro Bay Ports will be executed for \$600,000 for the Ports' cost-share for the OGV retrofit project. The contract amendment with MSC USA will increase the contract award by \$600,000 to add the Ports' cost-share, for a total contract award of \$11,774,000 as indicated below. MSC USA and Wartsila are contributing up to \$8,000,000 of cost-share to the project.

<b>Funding Source</b>	<b>Funding Amount</b>	<b>Percent</b>
U.S. EPA FY20 Targeted Airshed	\$10,874,000	92.5%
San Pedro Bay Ports ( <i>original cost-share</i> )	\$300,000	2.5%
San Pedro Bay Ports ( <i>additional cost-share</i> )	<b>\$300,000</b>	<b>2.5%</b>
South Coast AQMD ( <i>cost-share previously approved</i> )	\$300,000	2.5%
<b>Total</b>	<b>\$11,774,000</b>	100%

Sufficient funds will be available to execute the Crowley, DTNA, Volvo and MSC USA contracts in the Clean Shipping Technology Demonstration Special Revenue Fund (83) and Advanced Technology, Outreach and Education Fund (17) once the San Pedro Bay Ports and U.S. EPA Targeted Airshed grant funds are recognized.

Sufficient funds are also available in the Clean Fuels Program Fund (31). The Clean Fuels Program Fund was established as a special revenue fund resulting from the state-mandated Clean Fuels Program. The Clean Fuels Program, under Health and Safety Code Sections 40448.5 and 40512 and Vehicle Code Section 9250.11, establishes mechanisms to collect revenue from mobile sources to support projects to increase the utilization of clean fuels, including the development of the necessary advanced enabling technologies. Funds collected from motor vehicles are restricted, by statute, to be used for projects and program activities related to mobile sources that support the objectives of the Clean Fuels Program. Sufficient funds are available to transfer \$1.5 million from Air Quality Investment Program Fund (27) Rule 1111 into the Clean Shipping Technology Demonstration Special Revenue Fund (83) to support the plug-in hybrid tugboat project and the heavy-duty fuel cell truck demonstration project.