

BOARD MEETING DATE: January 8, 2021

AGENDA NO. 3

PROPOSAL: Recognize Revenue, Transfer Funds and Execute Contract and MOU to Develop and Demonstrate Capture and Control System for Oil Tankers Project

SYNOPSIS: South Coast AQMD received an award of \$10,000,000 to develop and demonstrate Capture and Control System for Oil Tankers Project under CARB's FY 2019-20 Low Carbon Transportation Program, with additional cost share from the San Pedro Bay Port. These actions are to: 1) recognize up to \$10,000,000 from CARB and up to \$666,667 from San Pedro Bay Ports into Clean Shipping Technology Demonstration Special Revenue Fund (83); 2) transfer up to \$1,000,000 of South Coast AQMD project cost-share to be reduced by an amount equivalent to any cost-share received from the San Pedro Bay Ports and up to \$9,500,000 as a temporary loan from the Air Quality Investment Fund (27) into Fund 83; 3) execute a contract with STAX Engineering, Inc. in an amount not to exceed \$10,500,021 to demonstrate Capture and Control System for Oil Tankers; 4) execute an MOU with San Pedro Bay Ports; and 5) reimburse the General Fund up to \$500,000 from Fund 83 for administrative costs.

COMMITTEE: Technology, December 18, 2020; Recommend for Approval

RECOMMENDED ACTIONS:

1. Recognize revenue, upon receipt, from CARB up to \$10,000,000 and up to \$666,667 from San Pedro Bay Ports into Clean Shipping Technology Demonstration Special Revenue Fund (83).
2. Transfer up to \$1,000,000 for South Coast AQMD's project cost-share to be reduced by an amount equivalent to any cost-share received from the San Pedro Bay Ports and up to \$9,500,000 as a temporary loan from the Air Quality Investment Fund (27) – Rule 1111 into Fund 83 to execute the contract until the CARB funding has been received

3. Authorize the Chairman to execute a contract with STAX Engineering, Inc. in an amount not to exceed \$10,500,021 to demonstrate Capture and Control System for Oil Tankers and
4. Authorize the Executive Officer to execute an MOU with San Pedro Bay Ports.
5. Reimburse the General Fund up to \$500,000 from Fund 83 for administrative costs necessary to implement the project.

Wayne Nastri
Executive Officer

MMM:NB:JI:MW

Background

On November 6, 2020, South Coast AQMD submitted a proposal in response to CARB's solicitation under the Fiscal Year (FY) 2019-2020 Funding Plan for Clean Transportation Incentives (FY 2019-20 Funding Plan) to develop and demonstrate a capture and control system (C&C) for oil tankers. On December 10, 2020, CARB advised that South Coast AQMD has been approved for a \$10,000,000 award.

The South Coast AQMD is partnering with STAX Engineering, Inc. (STAX) to design, develop, and demonstrate a barge-based C&C system. The demonstration is expected to be conducted at the Tesoro Logistics Operations LLC (TLO) terminal and others located within the Port of Long Beach. College of Engineering - Center for Environmental Research and Technology (CE-CERT) at the University of California, Riverside will collect, analyze, and produce data-driven reports required for the emission verification. The American Bureau of Shipping (ABS) will conduct a safety assessment. San Pedro Bay Ports are supporting the project by providing technical and financial support. Coalition for Clean Air will support the Project by conducting education and outreach. The project is expected to eliminate at least 90% of the emissions from the vessels at berth.

Proposal

The proposed project (Project) is expected to develop, demonstrate and certify a barge-based C&C system to reduce oil tanker vessel emissions when at berth. The C&C barge captures vessel exhaust at the vessel stack to remove oxides of nitrogen (NOx), fine particulate matter (PM 2.5), reactive organic gases (ROG), toxic air contaminants (TACs), and diesel particulate matter (DPM) emissions. The capture system comprises a hydraulic arm for placing an exhaust pipe connector on up to two operating exhaust pipes. The C&C captures tanker vessels' auxiliary and boiler exhaust and draws the gas through ducting, which directs the exhaust gas to two purification units (STAXbox "A") on the barge, which is expected to eliminate at least 90% of the emissions. The self-

propelled barge will be equipped with spuds for anchoring the barge into position, behind the tanker and away from the wharf and the mooring lines. The STAXbox “A” consists of a Selective Catalytic Reduction System (SCR), Diesel Particulate Filter (DPF), and a Reactive Organic Gas (ROG) elimination system. Two STAX purification units will be installed on the barge to accommodate both auxiliary and boiler exhaust concurrently.

The barge will be powered with a flexible low greenhouse gas (GHG), hybrid power system. Process operations of the C&C system will be powered by a hydrogen Proton Exchange Membrane (PEM) fuel cell system, with sufficient onboard fuel for powering onboard operations for up to four days. The power system will also include a 1 MW Tier 4 Final diesel genset using renewable diesel for the propulsion. The fuel cell technology is scalable for the ultimate replacement of the genset. A 250 kWh onboard battery will be charged primarily by the fuel cell system. The battery provides an additional 1 MW for a peak of 2.4 MW available for propulsion and always-on power to the instrumentation. The power system also includes about 4 kW of solar to keep the battery charged during non-operational periods.

A safety study will be conducted, and the results will be incorporated into the final design of the capture and control system. The Project will address the unique safety requirements of oil tanker vessels and obtain an Executive Order from CARB as an alternative control technology under the Control Measure for Ocean-Going Vessels (OGVs) At Berth.

Staff requests to recognize revenue from CARB up to \$10,000,000 (\$9,500,000 for project costs and \$500,000 for administrative costs) from the Low Carbon Transportation Program and comply with the requirements identified in the solicitation of Capture and Control System for Oil Tankers Project. Additionally, staff requests to recognize up to \$666,667 from San Pedro Bay Ports into Clean Shipping Technology Demonstration Special Revenue Fund (83). Also, staff requests to transfer up to \$1,000,000 from the Air Quality Investment Fund (27) into Fund 83 for South Coast AQMD’s project cost-share to be reduced by an amount equivalent to any cost-share received from the San Pedro Bay Ports and up to \$9,500,000 as a temporary loan, to allow the execution of the contract until CARB fund is received. In addition, staff requests to authorize the Chairman to execute a contract with STAX in an amount not to exceed \$10,500,021 to demonstrate Capture and Control System for Oil Tankers. These actions are also to authorize the Executive Officer to execute an MOU with San Pedro Bay Ports and reimburse the General Fund up to \$500,000 from Fund 83 for administrative costs necessary to implement the project.

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. The request for sole

source award for the STAX contract is made under provisions B.2.c.(1): The unique experience and capabilities of the proposed contractor or contractor team; B.2.c.(2): The project involves the use of proprietary technology; and B.2.d.(1): Projects involving cost-sharing by multiple sponsors. STAX has extensive knowledge and experience in developing the C&C technology that are needed to successfully complete this project. The manufacturers will utilize their proprietary technologies in the development of pre-commercial and commercial C&C that expended. This demonstration project will be cost-shared by STAX and other project partners, as discussed in the Resource Impacts section.

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 the development and demonstration of reducing ocean-going vessels (OGVs) emissions are included in the *Technology Advancement Office Clean Fuels Program 2020 Plan Update* under the categories of “Engine Systems/Technologies.” After the successful development, demonstration and certification of the C&C, this project is expected to result in at least 90% of NO_x, PM, and ROG emissions from OGVs at berth.

Resource Impacts

The total project cost will not exceed \$12,848,959, which includes \$9,500,000 from CARB, up to \$666,667 from San Pedro Bay Ports, \$2,348,959 from STAX and up to \$1,000,000 from South Coast AQMD to be reduced by an amount equivalent to any cost-share received from the San Pedro Bay Ports. Funding for this project is detailed in the table below:

Proposed Capture and Control System for Oil Tankers Project Costs

| Source | Amount | Percent |
|--|---------------------|----------------|
| CARB | \$9,500,000 | 74% |
| San Pedro Bay Ports* | \$666,667 | 5.2% |
| STAX Engineering | \$2,348,959 | 18.2% |
| South Coast AQMD (<i>requested</i>)* | \$1,000,000 | 7.8% |
| Total | \$12,848,959 | 100% |

*The Ports have proposed providing \$666,667 of cost-share and are in the process of obtaining formal approval. South Coast AQMD’s cost-share amount is to be reduced by an amount equivalent to any cost-share received from the San Pedro Bay Ports.