

BOARD MEETING DATE: July 12, 2019

AGENDA NO. 3

PROPOSAL: Recognize Revenue, Execute and Amend Contracts for Near-Zero and Zero Emission Construction Equipment and Natural Gas and Electric Trucks and Infrastructure, and Reimburse General Fund for Administrative Costs

SYNOPSIS: In May and June 2019, U.S. EPA notified staff that South Coast AQMD had been approved for awards under the FY 2018 Targeted Air Shed Grant, the Clean Air Technology Initiative (CATI) and the Diesel Emissions Reduction Act (DERA). This action is to recognize revenue up to \$8,277,083 from U.S. EPA, \$7,777,083 into the Clean Fuels Program Fund (31) and \$500,000 into the Advanced Technology Goods Movement Fund (61), returning \$500,000 to Fund 31. These actions are to also execute contracts with: 1) Volvo Technology of America, LLC, to develop and demonstrate battery-electric construction equipment in an amount not to exceed \$2,000,000; and 2) Daimler Trucks North America (DTNA) to deploy zero emission electric delivery trucks in an amount not to exceed \$4,010,000. These actions are to also amend contracts with: 1) DTNA adding \$500,000 to utilize CATI funds to reduce cost-sharing from the Clean Fuels Program Fund (31) for their Zero Emission Trucks and EV Infrastructure Project; and 2) Clean Energy to add \$1,380,000 in DERA funds for their Market Acceleration Truck Program. Finally, this action is to reimburse the General Fund for administrative costs up to \$387,083 for project implementation.

COMMITTEE: Technology, June 21, 2019; Recommended for Approval

RECOMMENDED ACTIONS:

1. Recognize revenue, upon receipt, up to \$6,277,083 from U.S. EPA FY 2018 Targeted Air Shed Grant into the Clean Fuels Program Fund (31) to develop and demonstrate battery-electric excavator and wheel loader and deploy zero emission trucks.

2. Recognize revenue, upon receipt, up to \$500,000 from the U.S. EPA FY19 Section 105 Clean Air Technology Initiative (CATI) Program into the Advanced Technology Goods Movement Fund (61) for zero emission trucks and EV infrastructure and return \$500,000 from the Advanced Technology Goods Movement Fund (61) to the Clean Fuels Program Fund (31).
3. Recognize revenue, upon receipt, up to \$1,500,000 from the U.S. EPA Diesel Emissions Reduction Act (DERA) into the Clean Fuels Program Fund (31) for market acceleration of heavy-duty near-zero natural gas truck replacements.
4. Authorize the Chairman to execute contracts totaling \$6,010,000 from the Clean Fuels Program Fund (31) as follows:
 - a. Volvo Technology of America, LLC, to develop and demonstrate battery-electric excavator and wheel loader in an amount not to exceed \$2,000,000; and
 - b. Daimler Trucks North America to deploy zero emission electric delivery trucks in an amount not to exceed \$4,010,000.
5. Authorize the Executive Officer to amend contracts as follows:
 - a. Daimler Trucks North America adding \$500,000 from the Advanced Technology Goods Movement Fund (61) to utilize CATI funds, thereby reducing the Clean Fuels cost-share, for the Daimler Zero Emission Trucks and EV Infrastructure Project; and
 - b. Clean Energy adding \$1,380,000 from the Clean Fuels Program Fund (31) to utilize DERA funds for the Market Acceleration Program adding an additional 25 heavy-duty near-zero natural gas trucks to expand the project scope.
6. Reimburse General Fund for administrative costs up to \$387,083 to implement the U.S. EPA Air Shed Grant and DERA awards.

Wayne Nastri
Executive Officer

MMM:NB:JE:SC

Background

The 2016 AQMP identifies the need for NO_x emissions reductions as the most significant air quality challenge in meeting the upcoming ozone standard deadlines. On-road diesel trucks and off-road mobile equipment are major contributors to NO_x emissions in the South Coast Air Basin (Basin). Significant increases in NO_x, PM and GHG emissions from these sources are expected due to increased demand in goods movement and construction activities. A proven emissions control strategy to reduce NO_x and PM emissions and associated public health risks is to accelerate vehicle and equipment replacement with either battery-electric or near-zero emission vehicles and equipment.

In January 2019, staff submitted applications for funding under U.S. EPA's FY 2018 Targeted Air Shed Grant Program for deploying technologies to reduce or eliminate emissions from on- and off-road sources. In May 2019, U.S. EPA notified staff that two of South Coast AQMD's projects had been selected for funding totaling \$6,277,083.

In July 2018, the Board approved a contract with Daimler Trucks North America (DTNA) for their Zero Emission Trucks and EV Infrastructure Project. This \$31.3 million project included \$2 million cost-share from San Pedro Bay Ports and \$500,000 from the U.S. EPA FY18 Section 105 Clean Air Technology Initiative (CATI). At that time, staff noted that they were actively seeking additional cofunding for the project. This included applying for FY19 CATI funds, as discussed with U.S. EPA when the FY18 funds were applied for. The South Coast AQMD's \$8,730,072 cost-share from the Clean Fuels Program Fund (31), which was transferred to the Advanced Technology Goods Movement Fund (61) based on the July 2018 Board letter, was a maximum amount until additional funds could be secured to avoid project delays. Staff applied for FY19 CATI funding for this project, and in June 2019, U.S. EPA notified staff that South Coast AQMD had been awarded an additional \$500,000 under the FY19 Section 105 CATI.

In January 2019, the Board approved 26 proposals received in response to a competitive solicitation for stationary and mobile source projects. Clean Energy was one of the award recipients for their Market Acceleration Program (MAP). MAP enables early adopter fleets that are not eligible for Prop 1B or Carl Moyer funding to deploy lower emitting, newer trucks. The \$3 million Clean Energy award was toward the replacement of fifty-five 2014 or newer model year diesel-powered drayage trucks with 2018 or newer near-zero emissions NOx trucks powered by natural gas engines certified to meet CARB's optional low-NOx standard of 0.02 g/bhp-hr. In early 2019, staff applied for U.S. EPA Diesel Emissions Reduction Act (DERA) funding to expand the scope of this project. In May 2019, staff was notified that South Coast AQMD had been awarded \$1,500,000 in DERA funding.

Proposal

These actions are to recognize revenue up to \$8,277,083 from U.S. EPA, of which \$7,777,083 will be recognized into the Clean Fuels Program Fund (31) and \$500,000 into the Advanced Technology Goods Movement Fund (61) and return \$500,000 to the Clean Fuels Program Fund (31), execute contracts with two major original equipment manufacturers (OEMs) totaling \$6,010,000, amend two contracts adding \$1,880,000 of which \$500,000 will be used to reduce South Coast AQMD's cost-share, and reimburse the General Fund for administrative costs up to \$387,083 to implement the FY 2018 Targeted Air Shed Grant and DERA projects.

Volvo Technology of America, LLC (Volvo)

Volvo Construction Equipment (subsidiary of the Volvo Group), an international company that develops, manufactures and markets equipment for construction and related industries including zero emission off-road equipment, will develop and demonstrate two types of prototype Volvo battery-electric off-road equipment--a compact excavator and a wheel loader. The electric compact excavator and wheel loader will be marketed as replacements to Volvo's current 21-horsepower (HP) compact diesel excavator and 64-HP compact diesel wheel loader. Volvo has already developed a prototype electric compact mini-excavator and wheel loader and is currently in the process of conducting commercial pilots in Europe. These electric machines will be used in lieu of compact diesel excavators and wheel loaders for utility, light-duty construction, landscaping and inside building demolition and construction projects. The focus of this project would be to support a similar commercial pilot project in California in order to significantly expedite product availability into the North American marketplace.

The electric excavator is a 2.5-ton battery-powered, zero emission compact excavator with a 20 kilowatt-hours (kWh) battery system, allowing it to operate between 3-to-8 hours, depending on the application and the severity of the duty cycle. The off-board fast charger is capable of a one-hour quick charge up to 80% state-of-charge. The integrated on-board charger is designed to recharge the battery in six hours using a residential grade 110 volt outlet.

The electric wheel loader is a 5-ton battery-powered, zero emission compact wheel loader and machine that has 40 kWh of on-board battery storage, allowing it to operate between 3-to-8 hours, depending on the application and the severity of the duty cycle. The off-board fast charger is capable of a two-hour quick charge up to 80% state-of-charge. The integrated on-board charger would recharge the battery in approximately 12 hours using a residential grade 110 volt outlet.

The proposed project locations for the demonstrations are within, or in close proximity, to the cities of Riverside, San Bernardino, Long Beach and Los Angeles (possibly including the Boyle Heights neighborhood). The electric excavator and wheel loader will be demonstrated for up to six months or more with a local construction company that will deploy the equipment into typical service to fully validate performance, durability and reliability. D.W. Powell Construction, Inc., based in Fontana, is an established construction company in the Basin that was selected by Volvo for this effort. Commercialization of these two pieces of equipment is expected to follow Volvo's typical product development process. Depending on early successes in the program, the initial launch of the product could be as soon as the first quarter of CY 2022.

Daimler Trucks North America (DTNA)

As a follow-up to the development and demonstration project by DTNA awarded in July 2018, the Daimler E-Mobility Group, the electric vehicle manufacturing division of DTNA, developed a proposal to manufacture and deploy up to 35 Class 6 and Class 8 battery-electric trucks. The Class 6 trucks will be built on the M2 chassis (eM2) and Class 8 trucks will be built on the Cascadia chassis (eCascadia). DTNA, the world's largest truck OEM, and US Foods, Inc., a major food service distributor, will collaborate to introduce the eM2 and eCascadia platforms into commercial delivery services in the Basin. DTNA will supply US Foods with up to five Class 6 eM2 trucks and ten Class 8 eCascadia trucks, along with the necessary electric vehicle supply equipment and vehicle charging equipment. Under the proposal, Daimler and US Foods will work to secure CARB HVIP¹ funding for vehicles and SCE Charge Ready Transport funding for heavy-duty vehicle charging infrastructure. Daimler has committed to the full cofunding of \$8.3 million, which will be offset once the additional funding from these programs has been secured.

The eM2 will incorporate an electric drivetrain capable of delivering more than 220 HP and will be designed to accommodate a burdened load up to 26,000 pounds gross vehicle weight rating (GVWR). The 225-300 kWh battery system is expected to provide 150-200 miles of service per full SOC. The eM2 will be designed for high energy efficiency, easy maintenance and operation, and is expected to be utilized in food and beverage and pick-up and delivery applications.

The eCascadia drivetrain will be capable of delivering more than 455 HP and is designed to meet 80,000 pounds GVWR performance specifications. The truck will have a 6x4 axle configuration (dual rear axle drive traction) and will employ 400-600 kWh of usable battery power at full SOC.

Both the eCascadia and eM2 will be fitted with Combined Charging Standard Type 1 (CCS T1) connectors. The DC Fast Charging infrastructure, with up to 160 kW of vehicle recharging power, will fully recharge the eCascadia Class 8 truck from zero SOC in 4 hours or less.

DTNA believes this pilot is crucial to demonstrate the technology in what is a very common duty-cycle. All 15 vehicles will be operated within the Basin and are expected to perform in the same capacity and vehicle miles travelled as their diesel counterparts. DTNA is also vetting fleet requests for the early deployment of an additional 20 trucks-- 10 eCascadia and 10 eM2 trucks performing similar duty-cycles with facilities operating within the South Coast Air Basin, particularly in disadvantaged communities. Deployment of these additional 20 trucks will bring the total number of battery-electric heavy-duty vehicles deployed under this project to 35.

¹Hybrid and Zero Emission Truck and Bus Voucher Incentive Project

Daimler Trucks North America

U.S. EPA is currently contributing \$500,000 to the Daimler Zero Emission Trucks and EV Infrastructure Project and is proposing to augment their contribution to this project with an additional \$500,000 in match funds from CATI. The current contract with DTNA will be modified to add \$500,000 under U.S. EPA cost-share for Task 1 (Vehicle Development), reducing South Coast AQMD's cost-share by \$500,000.

Clean Energy

Clean Energy's current award is for the replacement of 55 diesel-powered drayage trucks, with 2014 or newer model year, with 2018 or newer near-zero NOx natural gas-powered trucks. The additional \$1,500,000 from DERA will allow Clean Energy to add 25 more trucks to their MAP objectives. The contract award will be modified to ensure the model year (MY) 2014 replaced trucks are sold to qualified owners of MY 2010 and older trucks operating in and around the ports and will implement a pilot "trade down" approach in the Basin. The older MY 2010 trucks will be scrapped. Clean Energy will secure the fleets for participation in MAP.

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. This request for sole source award is made under provision B.3.c, which states the awarding federal agency authorizes noncompetitive proposals.

Benefits to South Coast AQMD

Successful implementation of the on- and off-road projects will provide reductions of NOx, PM and GHG emissions. The off-road equipment and medium- and heavy-duty trucks funded under the Air Shed Grant and CATI are expected to help commercialize zero emission equipment that can provide long-term emissions reduction benefits. The accelerated replacement of diesel trucks with near-zero natural gas trucks will help realize immediate emissions reductions in the goods movement sector and within fleets operating in the Basin. The proposed projects are included in the *Technology Advancement Office Clean Fuels Program 2019 Plan Update* under the categories "Electric/Hybrid Technologies and Infrastructure" and "Fueling Infrastructure and Deployment (NG/Renewable Fuels)".

Resource Impacts

The U.S. EPA FY 2018 Targeted Air Shed Grant funds totaling \$6,277,083 will be recognized, upon receipt, into the Clean Fuels Program Fund (31). Of the \$6,277,083 award, \$6,010,000 is for project costs and \$267,083 is for administrative costs. The contract with Volvo will not exceed \$2,000,000 and the contract with DTNA will not exceed \$4,010,000.

The proposed cost for the Volvo project is \$3,255,000, as follows:

Funding Source	Amount	Percent
U.S. EPA Air Shed	\$2,100,000	65
Volvo	\$1,155,000	35
Total	\$3,255,000	100

For the second Targeted Air Shed project, the estimated cost-share from DTNA is comprised of \$3,260,000 in-kind contributions and \$5,040,000 in cash contributions anticipated to be offset from CARB's HVIP and SCE's Charge Ready Transport. The proposed project cost is \$12,477,083, as follows:

Funding Source	Funding Amount	Percent
U.S. EPA Air Shed	\$4,177,083	34
DTNA*	\$3,260,000	26
HVIP/Charge Ready*	\$5,040,000	40
Total	\$12,477,083	100

*Cofunding from CARB HVIP and SCE Charge Ready Transport cannot be secured until the trucks and infrastructure are ready for deployment; DTNA has committed to the full cofunding of \$8.3 million.

If CARB HVIP and/or SCE Charge Ready Transport funding are not realized for the DTNA and Clean Energy projects, staff will work with project partners to identify other funding sources, if needed.

With U.S. EPA's concurrence, the \$500,000 in U.S. FY19 Section 105 CATI funds will be recognized into the Advanced Technology Goods Movement Fund (61) to reduce the South Coast AQMD's cost-share for the Daimler Zero Emission Trucks and EV Infrastructure Project and enable those Clean Fuels funds to be reallocated to other projects, further reducing mobile source emissions and possibly leveraging other funds.

Of the \$1,500,000 from the U.S. EPA DERA award, which will be recognized into the Clean Fuels Program Fund (31), \$1,380,000 is for project costs and \$120,000 is for reimbursement of administrative costs to implement the project. The amendment to the Clean Energy contract for their Market Acceleration Program will not exceed

\$1,380,000 and will be used towards expanding the scope of the project. The proposed project costs and funding partners are listed in the table below:

Funding Source	Funding Amount	Percent
U.S. EPA DERA	\$1,500,000	33
Fleets*	\$2,000,000	43
HVIP*	\$1,125,000	24
Total	\$4,625,000	100

*Fleets for participation in MAP will be selected by Clean Energy, and the fleets will, in turn, apply for CARB HVIP funding (\$45,000 per vehicle)