BOARD MEETING DATE: March 4, 2016 AGENDA NO. 4

PROPOSAL: Establish Special Revenue Fund, Recognize and Transfer Funds, and Execute Contracts to Develop and Demonstrate Zero Emission Capable Drayage Trucks

SYNOPSIS: SCAQMD received a $23,658,500 award to develop and demonstrate zero emission drayage trucks under CARB's Low Carbon Transportation Greenhouse Gas Reduction Fund Investments, with a total project cost of $40,122,470. Based on total match requirements, SCAQMD is providing $6,001,531, partnering air districts are providing $4,400,000 in cash and other project partners are providing $6,062,439 in-kind. This action is to establish the GHG Reduction Projects Special Revenue Fund and recognize revenue upon receipt in the amount of $28,058,500 into this Special Revenue Fund. This action is to also transfer SCAQMD's cost-share of $6,001,531 from the Clean Fuels Fund (31) to the GHG Reduction Projects Special Revenue Fund and to execute contracts for the development and demonstration of zero emission drayage trucks.

COMMITTEE: Technology, February 19, 2016; Recommended for Approval

RECOMMENDED ACTIONS:

1. Establish the GHG Reduction Projects Special Revenue Fund for the purpose of implementing projects funded by CARB's Low Carbon Transportation Green House Gas Reduction Fund Investments.
2. Recognize upon receipt up to $23,658,500 from CARB into GHG Reduction Projects Special Revenue Fund.
3. Recognize upon receipt up to $4,400,000 from other project partners, comprised of $3,000,000 from Bay Area Air Quality Management District (BAAQMD), $1,000,000 from San Joaquin Valley Air Pollution Control District (SJVAPCD), $200,000 from San Diego Air Pollution Control District (SDAPCD), and $200,000 from San Diego Gas & Electric Company (SDG&E), into the GHG Reduction Projects Special Revenue Fund.
4. Transfer SCAQMD's cost-share of $6,001,531 from the Clean Fuels Fund (31) into the GHG Reduction Projects Special Revenue Fund.

5. If needed, transfer up to $4,400,000 as a temporary loan from the Clean Fuels Fund (31) to the GHG Reduction Projects Special Revenue Fund.
6. Authorize the Chairman to execute contracts with the following entities from the GHG Reduction Projects Special Revenue Fund:
   a) BYD Motors for the development and demonstration of up to 25 Class 8 battery electric drayage trucks in the amount not to exceed $7,952,000;
   b) Kenworth Truck Company for the development and demonstration of four Class 8 CNG hybrid electric drayage trucks in the amount not to exceed $9,137,739;
   c) Peterbilt Motors for the development and demonstration of up to 12 Class 8 battery electric drayage trucks in the amount not to exceed $8,000,000; and
   d) Volvo Technology of America for the development and demonstration of two Class 8 diesel hybrid electric drayage trucks in the amount not to exceed $7,998,748.
7. Authorize reimbursement to the SCAQMD General Fund of up to $971,544 from the GHG Reduction Projects Special Revenue Fund for administrative costs necessary to implement the Development and Demonstration of Zero Emission Capable Drayage Trucks Project.

Barry R. Wallerstein, D.Env.
Executive Officer

MMM:FM:NB:BC

Background

On September 23, 2015, SCAQMD submitted a proposal in response to CARB's solicitation under the Low Carbon Transportation Greenhouse Gas Reduction Fund (GGRF) Investments. The proposal is to develop a portfolio of most commercially promising zero and near-zero emission drayage truck technologies for statewide demonstrations, across a variety of drayage applications in and around the Ports of Long Beach, Los Angeles, Oakland, Stockton and San Diego, in collaboration with four other air districts: BAAQMD, Sacramento Metropolitan AQMD, SJVAPCD and SDAPCD. Each partnering air district is committing staffing and/or cost-share for this groundbreaking initiative to support rapid commercialization of zero emission cargo transport technologies. SCAQMD has also engaged three major U.S. original equipment manufacturers (OEMs) and an international OEM, with necessary resources and networks to support commercialization efforts, to develop and demonstrate four different types of battery and hybrid electric drayage truck technologies in this project, including: two battery electric trucks (BYD Motors and Peterbilt Motors); one natural gas plug-in hybrid electric truck (Kenworth Truck Company); and one plug-in diesel hybrid electric truck (Volvo Technology of America). Our partnership also includes the Los Angeles County Metropolitan Transportation Authority's (Metro's) participation with Intelligent Transportation System (ITS) efficiency integration, electric utility

participation on infrastructure support, and at least 13 end-user fleets to demonstrate electric drayage trucks throughout California ports. On January 12, 2016, CARB notified SCAQMD that the project proposal to develop and demonstrate zero emission Class 8 drayage trucks had been selected for an award.

Proposal
This action is to establish the GHG Reduction Projects Special Revenue Fund and recognize revenue, transfer funds, and execute contracts for the following projects. The projects described below are based on the applicants' proposals and specifications may change as the designs are finalized.

BYD Motors (BYD)
BYD, a global company with over $9 billion in revenue and 180,000 employees, including an assembly plant in Lancaster, CA, will develop 25 T9 battery electric drayage trucks for this project. The T9 truck is optimized to serve near-dock and short regional drayage routes with a range of 100 miles, supported by 300 kWh batteries on board. The truck is designed to provide similar operating experience compared to equivalent diesel and CNG trucks with matching or exceeding power and torque. The T9 is a Class 8 truck with 80,000 lbs. Gross Combined Weight Rating, powered by two 180 kW traction motors. BYD will utilize 200 kW AC on-board charger for these trucks.

Kenworth Truck Company (Kenworth)
Kenworth, part of the PACCAR Group, expands its partnership with the BAE Systems to develop four plug-in hybrid electric trucks with natural gas range extender, leveraging the prototype development under the DOE-funded Zero Emission Cargo Transport (ZECT) 2 program. These vehicles will target longer regional drayage routes, which Kenworth believes will include other regional heavy-haul markets. The team will continue refining the well-balanced blend of all electric and CNG-based operation to provide a system that can operate in a zero emissions (all-electric) mode and in a conventional hybrid electric mode using CNG to meet customer range needs and flexibility. The powertrain system includes a 200 kW genset using a pre-certified 8.9L CNG engine and two AC traction motors that produce 320kW (430 hp) continuous, with comparable power output to what is typically found in Class 8 truck engines. The hybrid system will be designed for an operating range of 250 miles with approximately 50 miles of all-electric range to operate in zero emissions mode in sensitive areas and disadvantaged communities.

Peterbilt Motors (Peterbilt)
Peterbilt, also part of the PACCAR Group, has partnered with TransPower to develop 12 battery electric drayage trucks, building on a platform developed under the DOE-funded ZECT project, incorporating lessons learned from ongoing demonstrations to further refine and optimize the electric drive system. Eight trucks will be designed to

provide 80 miles in range, powered by 215 kWh battery pack to support near-dock drayage routes, and four extended-range battery electric trucks will incorporate a new battery design allowing for over 120 miles of operation per charge with a 311 kWh battery pack at the same system weight as the 215 kWh battery pack. These extended-range trucks will be well suited for longer drayage routes such as Southern California's Inland Empire and routes from the Port of Oakland into Sacramento and the San Joaquin Valley.

Volvo Technology of America (Volvo)
Volvo will build on the success of a past SCAQMD/DOE-funded project by focusing on efficiency and emission optimization of a commercially attractive, highly-flexible product, while ensuring zero emission miles for operations in the most heavily emissions-impacted communities. Volvo offers a unique approach to system-focused hybrid powertrain improvements, utilizing a suite of innovative technologies such as energy and emission optimized driveline controls; aerodynamics and weight improvements; vehicle energy management and driver coaching systems optimized for port drayage operation; and a complete suite of NOx reduction technologies, including engine and exhaust after-treatment innovations. Furthermore, Volvo, in partnership with Metro, will also integrate ITS connectivity solutions, such as vehicle-to-infrastructure and vehicle-to-vehicle communications targeting dynamic speed harmonization and reduced idling, to reduce fuel use and emissions.

Sole Source Justification
Section VIII.B.2. of the Procurement Policy and Procedure identifies provisions under which a sole source award may be justified. The request for sole source awards for this project is made under the 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. The four truck OEMs involved in this project: BYD, Kenworth, Peterbilt and Volvo, each have extensive knowledge and experience in advanced electric and hybrid vehicle technologies that are needed to successfully complete this project. The manufacturers will utilize their proprietary technologies in the development of prototype drayage trucks to improve system reliability, efficiency and costs over previous generations. This demonstration project will be cost-shared by the four truck OEMs and other project partners as discussed in the Resource Impacts section.

Benefits to SCAQMD
Projects to support development and demonstration of various electric container transport technologies are included in the *Technology Advancement Office Clean Fuels Program 2015 Plan Update* under the categories of "Electric/Hybrid Technologies & Infrastructure". This project is to develop and demonstrate zero emission capable drayage truck technologies for goods movement operations. Successful demonstration of such projects will contribute to the attainment of clean air standards in the South

Coast Air Basin by eliminating PM and NO_x emissions from replaced diesel drayage trucks.

Resource Impacts

The estimated total project cost is $40,122,470, to be funded with $23,658,500 from CARB, $6,001,531 from SCAQMD and $4,400,000 from other project partners as well as $6,062,439 in OEM in-kind cost-share, as follows:

Project Partner	Funding Amount	Percent
CARB	$23,658,500	59%
OEMs	$6,062,439	15%
SCAQMD *(requested)*	$6,001,531	15%
BAAQMD	$3,000,000	7.5%
SJVAPCD	$1,000,000	2.5%
SDAPCD	$200,000	0.5%
SDG&E	$200,000	0.5%
Total	**$40,122,470**	**100%**

The $28,058,500 in revenue from CARB and other project partners will be recognized into the GHG Reduction Projects Special Revenue Fund. A transfer of SCAQMD's cost-share of $6,001,531 will be made from the Clean Fuels Fund (31) into the GHG Reduction Projects Special Revenue Fund. Any unspent funds will be returned to the Clean Fuels Fund (31) upon project completion. If needed, a temporary loan up to $4,400,000 will be made from the Clean Fuels Fund (31) to the GHG Reduction Projects Special Revenue Fund to provide cashflow due to the cost-reimbursement requirement of the funding agreement with CARB.

The sources of funds and proposed contractors are outlined in the table below.

Funding Source	BYD	Kenworth	Peterbilt	Volvo	Administration
CARB	$5,657,564	$5,714,264	$5,657,564	$5,657,564	$971,544
OEM	$990,400	$606,000	$3,006,340	$1,459,699	$0
SCAQMD & Partners	$2,294,436	$3,423,475	$2,342,436	$2,341,184	$0
Total	**$8,942,400**	**$9,743,739**	**$11,006,340**	**$9,458,447**	**$971,544**

Contracts with the proposed contractors will be contingent on execution of a funding agreement with CARB.

Sufficient funds are available from the Clean Fuels Fund (31), 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 revenues 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.