



**South Coast  
Air Quality Management District**  
21865 Copley Drive, Diamond Bar, CA 91765  
(909) 396-2000, [www.aqmd.gov](http://www.aqmd.gov)

### **TECHNOLOGY COMMITTEE MEETING**

#### **Committee Members**

Council Member Joe Buscaino, Chair  
Mayor Larry McCallon  
Mayor Pro Tem Judith Mitchell  
Council Member Dwight Robinson  
Supervisor Janice Rutherford  
Supervisor Hilda L. Solis

**September 21, 2018 ♦ 12:00 p.m. ♦ Conference Room CC8  
21865 Copley Drive, Diamond Bar, CA 91765**

### **TELECONFERENCE LOCATIONS**

**Los Angeles City Hall  
200 N. Spring Street, Room 410  
Los Angeles, CA 90012**

**Hall of Administration  
500 W. Temple Street  
Room 493A  
Los Angeles, CA 90012**

**(The public may participate at any location listed above.)**

*Call-in for listening purposes only is available by dialing:*

*Toll Free: 866-244-8528*

*Listen Only Passcode: 5821432*

*In addition, a webcast is available for viewing and listening at:*

*<http://www.aqmd.gov/home/library/webcasts>*

### **AGENDA**

*Members of the public may address this body concerning any agenda item before or during consideration of that item (Gov't. Code Section 54854.3(a)). Please provide a Request to Address the Committee card to the Committee Secretary if you wish to address the Committee on an agenda item. If no cards are available, please notify SCAQMD staff or a Board Member of your desire to speak. All agendas for regular meetings are posted at District Headquarters, 21865 Copley Drive, Diamond Bar, California, at least 72 hours in advance of the regular meeting. Speakers may be limited to three (3) minutes each.*

**CALL TO ORDER**

**ACTION ITEMS – Items 1 through 7**

**OCTOBER BOARD AGENDA ITEMS**

**1. Develop and Demonstrate Zero Emissions Battery-Operated Switcher Locomotive (*Motion Requested*)**

Joseph Lopat  
AQ Specialist

The City of Los Angeles Harbor Department was awarded \$2,768,830 by CARB for the Zero Emissions Track-Miles Demonstration Project and has subsequently contracted with Pacific Harbor Lines Inc. and VeRail Technologies, Inc., to develop and demonstrate a battery-operated switcher locomotive in the San Pedro Bay Ports. This action is to execute a contract with the City of Los Angeles Harbor Department to cost-share development and demonstration of a battery-operated switcher locomotive in an amount not to exceed \$300,000 from the Clean Fuels Program Fund (31).

**2. Recognize Revenue and Execute Contracts to Replace Heavy-Duty Diesel Trucks (*Motion Requested*)**

Vicki White  
Technology  
Implementation  
Manager

In May 2018, CEC awarded SCAQMD \$8 million in grant funds to replace 140 heavy-duty diesel trucks with near-zero emission natural gas trucks. The CEC grant will be leveraged with \$6 million in local match funds including \$2 million each from the Ports of Los Angeles and Long Beach and \$2 million from the Community Air Protection AB 134 Fund (77). Staff also proposes to replace 148 heavy-duty diesel trucks with zero and near-zero emission trucks under SCAQMD's Community Air Protection AB 134 Program. These actions are to recognize up to \$8 million from CEC and \$2 million from each of the Ports into the Community Air Protection AB 134 Fund (77) as well as execute an MOU with the Ports to implement this program. This action is to also execute contracts for replacement of 140 diesel trucks with near-zero emission natural gas trucks and replacement of 148 diesel trucks with zero and near-zero emission trucks in an amount not to exceed \$33,390,000 from the Community Air Protection AB 134 Fund (77).

**3. Approve Assignment of and Execute Contract for CNG Station at SCAQMD (*Motion Requested*)**

Phil Barroca  
Program  
Supervisor

In May 2015, the Board declared the existing CNG fueling station equipment at SCAQMD headquarters as surplus and authorized execution of a property usage agreement and contract with FirstCNG, LLC, (Titan Diamond Bar) to upgrade the fast-fill CNG fueling station at SCAQMD and operate and maintain the station for five years. Over the past three years there has been a series of company name changes to the CNG station and now American CNG Energy proposes to assume ownership of the station under an assignment provision in the contract. This action is to approve assignment to, and execute a contract with, American CNG Energy to upgrade the fast-fill CNG fueling station at

SCAQMD headquarters and operate and maintain the station for five years.

- 4. Amend Contract to Implement DC Fast Charging Network (*Motion Requested*)** Patricia Kwon  
AQ Specialist

In September 2013 and November 2014, the Board recognized CEC grant revenue for the South Coast Air Basin's DC fast charging network and awarded a contract to Clean Fuel Connection, Inc., (CFCI) to install the fast chargers. This project has experienced numerous delays due to changes in the partners and the number and locations of the chargers. While the installation of the ten chargers was scheduled to be completed by July 1, 2018, CEC issued a stop work order on June 19, 2018, and reversed a previous agreement to fund installation costs. This action is to amend the contract with CFCI to make up for the CEC shortfall in an amount up to \$350,000 from the Clean Fuels Program Fund (31).
- 5. Execute Agreements to Accept Donation and Disburse Electric Vehicle Chargers (*Motion Requested*)** Patricia Kwon

In August 2017, Mercedes-Benz USA LLC approached SCAQMD to accept a donation of 977 Level 2 electric vehicle chargers and work with partner organizations to identify residents and sites in disadvantaged and low-income communities to host the chargers. Staff worked with Los Angeles County and the Los Angeles Economic Development Corporation to identify partner organizations to assist in disbursing the electric vehicle chargers throughout the four counties. Partner organizations include the Southern California Public Power Authority, California Courts and other municipal, local and county agencies. These actions are to execute an agreement with Mercedes-Benz USA LLC to accept the donation as well as execute agreements with partner organizations to disburse the donated electric vehicle chargers.
- 6. Approve Endowment to University of California Irvine to Support Graduate Student Scholarship Fund and Execute Contract to Develop Fuel Cell-Gas Turbine Hybrid Technology (*Motion Requested*)** Seungbum Ha  
AQ Specialist

The University of California Irvine (UCI) is seeking endowment funding that will support the research and education of one graduate student to be designated a Samuelsen Energy Visionary Scholar. The graduate student will lead and promote important and impactful research for air quality and emissions reductions. Additionally, UCI through its Advanced Power and Energy Program is working on developing solid oxide fuel cell-gas turbine (SOFC-GT) hybrid technology. This project will focus on the modeling of a SOFC-GT integrated system using biogas, natural gas and renewable hydrogen fuels for applications in the 1-10 megawatt range. These actions are to approve a one-time \$1 million endowment to UCI from interest accrued in the BP ARCO Settlement Projects Fund (46) for the scholarship fund and to execute a contract with UCI in an

amount not to exceed \$200,000 from the Clean Fuels Fund Program (31) for the SOFC-GT hybrid technology.

**7. Amend Agreements and Transfer Funds to Develop and Demonstrate Zero Emission Capable Drayage Trucks (*Motion Requested*)**

In March 2016, the Board recognized CARB Greenhouse Gas (GHG) Reduction Fund revenue, including administrative and program funds to demonstrate zero emission capable drayage trucks. Contracts with our partners have been executed and projects commenced, but some costs have exceeded the original estimates because of fleet location changes and installation of data loggers. Additionally, payments to contractors have been delayed due to CARB's reimbursement process. This action is to amend agreements using up to \$234,000 of SCAQMD's recognized administrative funds from the GHG Reduction Projects Special Revenue Fund (67) to cover the higher project costs and transfer funds to another participating air district, contingent upon execution of an amended CARB revenue agreement. These actions are to also authorize redistribution of project funds amongst the participating original equipment manufacturers, on an as-needed basis and contingent upon CARB approval if necessary, and transfer up to \$5,000,000 as a temporary loan from the Clean Fuels Program Fund (31) to the GHG Reduction Projects Special Revenue Fund (67).

Joseph  
Impullitti  
Program  
Supervisor

**INFORMATION ONLY ITEM**

**8. Update on Preventing Labor Law Violations Involving District-funded Truck Replacement Projects (*no written material*)**

Staff will provide an update regarding the recommended approach to prevent labor law violations involving District-funded truck replacement projects. Staff is recommending that: (1) during the application stage, the applicant for a District-funded truck replacement project inform the District if, in the last 3 years from the date of its application, the applicant was found to be in violation of labor laws by a court or a state or federal agency; (2) language be inserted in the contract prohibiting lease-to-own agreements for District-funded trucks; and (3) language be inserted in the contract requiring a contractor to promptly notify the District if it is found in violation of labor laws during the term of the contract. This will supplement current contract language requiring contractors to comply with applicable local, state and federal laws and regulations in performing under the contract.

Bayron  
Gilchrist  
General  
Counsel

**OTHER MATTERS**

- 9. Other Business** – *Any member of the Committee, or its staff, on his or her own initiative or in response to questions posed by the public, may ask a question for clarification, may make a brief announcement or report on his or her own activities, provide a reference to staff regarding factual information, request staff to report back at a*

*subsequent meeting concerning any matter, or may take action to direct staff to place a matter of business on a future agenda. (Gov't. Code Section 54954.2)*

**10. Public Comment Period**

*At the end of the regular meeting agenda, an opportunity is provided for the public to speak on any subject within the Committee's authority that is not on the agenda. Speakers may be limited to three (3) minutes each.*

**11. Next Meeting Date – Friday, October 19, 2018 at 12:00 pm**

**ADJOURNMENT**

**Americans with Disabilities Act**

*The agenda and documents in the agenda packet will be made available, upon request, in appropriate alternative formats to assist persons with a disability (Gov't. Code Section 54954.2(a)). Disability-related accommodations will also be made available to allow participation in the Technology Committee meeting. Any accommodations must be requested as soon as practicable. Requests will be accommodated to the extent feasible. Please contact Pat Krayser at 909.396.3248 from 7 a.m. to 5:30 p.m., Tuesday through Friday, or send the request to [pkrayser@aqmd.gov](mailto:pkrayser@aqmd.gov).*

**Document Availability**

*All documents (i) constituting non-exempt public records, (ii) relating to an item on an agenda for a regular meeting, and (iii) having been distributed to at least a majority of the Committee after the agenda is posted, are available prior to the meeting for public review at the South Coast Air Quality Management District, Public Information Center, 21865 Copley Drive, Diamond Bar, CA 91765.*

**DRAFT**  
**Technology Committee Agenda #1**

BOARD MEETING DATE: October 5, 2018

AGENDA NO.

**PROPOSAL:** Develop and Demonstrate Zero Emissions Battery-Operated Switcher Locomotive

**SYNOPSIS:** The City of Los Angeles Harbor Department was awarded \$2,768,830 by CARB for the Zero Emissions Track-Miles Demonstration Project and has subsequently contracted with Pacific Harbor Lines Inc. and VeRail Technologies, Inc., to develop and demonstrate a battery-operated switcher locomotive in the San Pedro Bay Ports. This action is to execute a contract with the City of Los Angeles Harbor Department to cost-share development and demonstration of a battery-operated switcher locomotive in an amount not to exceed \$300,000 from the Clean Fuels Program Fund (31).

**COMMITTEE:** Technology, September 21, 2018; Recommended for Approval

**RECOMMENDED ACTION:**

Authorize the Chairman to execute a contract with the City of Los Angeles Harbor Department for the development of a battery-operated switcher locomotive in an amount not to exceed \$300,000 from the Clean Fuels Program Fund (31).

Wayne Nastri  
Executive Officer

MMM:FM:NB:JL

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**Background**

The South Coast Air Basin is an extreme nonattainment area for ozone under the federal Clean Air Act. SCAQMD supports wide-scale demonstration of on- and off-road zero and near-zero emission technologies to help our clean air goals. In an effort to address the significant emissions from goods-movement-related uses in the San Pedro Bay Ports (Ports), several projects such as zero-emissions cargo handling and near-zero emissions natural gas-powered drayage trucks have been implemented for on- and off-road vehicles. The Ports' Clean Air Action Plan supports projects for zero-emissions goods movement through the development and demonstration of battery-operated technology.

In September 2017, SCAQMD provided a letter supporting the Port of Los Angeles' Zero Emissions Track-Miles Locomotive Demonstration Project which was being submitted for a CARB grant to advance off-road technologies. The City of Los Angeles Harbor Department was subsequently awarded a grant to develop and demonstrate a battery-powered switcher locomotive.

### **Proposal**

SCAQMD will contract with the City of Los Angeles Harbor Department who will act as the project lead and administrator. In turn, the City of Los Angeles Harbor Department has entered into agreements with VeRail Technologies, Inc., and Pacific Harbor Line Inc. (PHL) to further develop an existing CNG-powered locomotive into a fully operational battery-operated switcher locomotive for demonstration in the San Pedro Bay Ports. The locomotive will be designed to operate for a full shift using battery power only. PHL will supply the necessary charging infrastructure, and VeRail Technologies will coordinate with Voltabox and American Traction Systems (ATS) on the completion and testing of a fully operational battery-powered switcher locomotive. This action is to execute a contract with the City of Los Angeles Harbor Department to provide additional funding to further develop and demonstrate a battery-operated switcher locomotive in an amount not to exceed \$300,000 from the Clean Fuels Program Fund (31).

### **Sole Source Justification**

Section VIII.B.2 of the Procurement Policy and Procedure identifies four major provisions by which sole source awards may be justified. This request for a sole source award is made under provision B.2.d(1): Other circumstances exist which in the determination of the Executive Officer require such waiver in the best interests of the SCAQMD. Such circumstances may include but are not limited to: Projects involving cost-sharing by multiple sponsors, as specified in Resource Impacts.

### **Benefits to SCAQMD**

SCAQMD is committed to supporting and advancing the Ports' Clean Air Action Plan. The project demonstrates a practical and economically viable solution to simultaneously reducing both criteria and greenhouse gas emissions from port-related rail transport activities. The deployment of zero-emission battery-electric technology will benefit public health in the region and, in particular, disadvantaged communities that are disproportionately exposed to harmful emissions. Deployment of technologies to significantly reduce greenhouse gas emissions and reduce dependence on petroleum fuels further supports the state's Sustainable Freight Action Plan. Projects to support development and demonstration of zero and near-zero emissions goods movement technologies including battery electric locomotives are included in the *Technology Advancement Office Clean Fuels Program 2018 Plan Update* under "Electric/Hybrid Technologies & Infrastructure".

**Resource Impacts**

The total cost of the project is \$3,833,150. The SCAQMD cost-share will not exceed \$300,000 from the Clean Fuels Program Fund (31). The proposed partners and cost-share are summarized below.

**Proposed Project Cost-Share**

<b>Funding Source</b>	<b>Funding Amount</b>	<b>% of Funding</b>
CARB Grant	\$2,768,830	72
City of Los Angeles Harbor Department	\$303,321	8
PHL	\$229,050	6
VeRail Technologies, Inc., ATS and Voltabox (in-kind)	\$231,949	6
SCAQMD ( <i>requested</i> )	\$300,000	8
<b>Total</b>	<b>\$3,833,150</b>	<b>100</b>

Sufficient funds are available from the Clean Fuels Program 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.



# Agenda Item #1

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Joseph Lopat

Develop and Demonstrate Zero Emissions  
Battery-Operated Switcher Locomotive

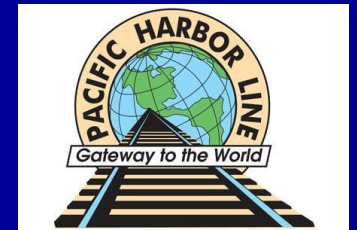
# Background

- Locomotives are a significant source of diesel emissions
- San Pedro Bay Ports' Clean Air Action Plan supports near-zero and zero emissions locomotives
- 2017 CARB solicitation for zero emissions track-miles demonstration program
- San Pedro Bay Ports submitted grant application (with letter of support from SCAQMD) for near-zero CNG switcher locomotive project



# Proposal

- 2018 City of Los Angeles Harbor Department received a grant from CARB
- The City is contracting with VeRail and Pacific Harbor Lines to develop a battery-operated switcher to run a full shift
- Existing electrification technology from ongoing CNG switcher project to be developed into full battery operation
- SCAQMD will contract with the City of Los Angeles Harbor Department to cost-share the project



# Proposed Project Budget

<b>Funding Source</b>	<b>Amount</b>	<b>% of Project</b>
CARB	\$2,768,830	72
City of Los Angeles Harbor Department	\$303,321	8
PHL	\$229,050	6
VeRail Technologies Inc., Advanced Traction Systems and Votabox (in-kind)	\$231,949	6
SCAQMD ( <i>requested</i> )	\$300,000	8
<b>Total</b>	<b>\$3,833,150</b>	<b>100</b>

# Recommended Action

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Execute a contract with the City of Los Angeles Harbor Department to develop and demonstrate a fully operational battery-operated switcher locomotive in an amount not to exceed \$300,000 from the Clean Fuels Program Fund (31)

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**DRAFT**  
**Technology Committee Agenda #2**

BOARD MEETING DATE: October 5, 2018

AGENDA NO.

**PROPOSAL:** Recognize Revenue and Execute Contracts to Replace Heavy-Duty Diesel Trucks

**SYNOPSIS:** In May 2018, CEC awarded SCAQMD \$8 million in grant funds to replace 140 heavy-duty diesel trucks with near-zero emission natural gas trucks. The CEC grant will be leveraged with \$6 million in local match funds including \$2 million each from the Ports of Los Angeles and Long Beach and \$2 million from the Community Air Protection AB 134 Fund (77). Staff also proposes to replace 148 heavy-duty diesel trucks with zero and near-zero emission trucks under SCAQMD's Community Air Protection AB 134 Program. These actions are to recognize up to \$8 million from CEC and \$2 million from each of the Ports into the Community Air Protection AB 134 Fund (77) as well as execute an MOU with the Ports to implement this program. This action is to also execute contracts for replacement of 140 diesel trucks with near-zero emission natural gas trucks and replacement of 148 diesel trucks with zero and near-zero emission trucks in an amount not to exceed \$33,390,000 from the Community Air Protection AB 134 Fund (77).

**COMMITTEE:** Technology, September 21, 2018; Recommended for Approval

**RECOMMENDED ACTIONS:**

1. Recognize, upon receipt, up to \$8 million from CEC and up to \$2 million each from the Ports of Los Angeles and Long Beach into the Community Air Protection AB 134 Fund (77) to replace up to 140 heavy-duty diesel goods movement trucks with near-zero emission natural gas trucks.
2. Authorize the Executive Officer to execute an MOU with the Ports of Los Angeles and Long Beach to contribute \$4 million to replace the above-referenced trucks.
3. Authorize the Chairman to execute contracts to replace up to 140 diesel trucks with near-zero emission natural gas trucks, as listed in Table 1, in an amount not to exceed \$14 million from the Community Air Protection AB 134 Fund (77).

4. Authorize the Chairman to execute contracts to replace 148 diesel trucks with zero and near-zero emission trucks, as listed in Table 2, in an amount not to exceed \$19,390,000 from the Community Air Protection AB 134 Fund (77).

Wayne Natri  
Executive Officer

MMM:FM:VW

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### **Background**

In May 2018, CEC awarded SCAQMD \$8 million in grant funds to replace 140 heavy-duty diesel trucks with near-zero emission natural gas trucks involved in drayage and goods movement activities in the South Coast Air Basin. The CEC grant will be leveraged with \$6 million in local match funds. Specifically, the SCAQMD received commitments from the Ports of Los Angeles and Long Beach to provide \$2 million each in match funds for this program and staff proposes to contribute a \$2 million match from the Community Air Protection AB 134 Program.

Pursuant to AB 134, the SCAQMD may use up to 40 percent of its AB 134 funds to incentivize clean truck projects in accordance with the criteria of the Proposition 1B-Goods Movement Program Guidelines. In January 2018, the SCAQMD closed a solicitation for eligible clean truck projects under the Proposition 1B-Goods Movement Program. This solicitation was heavily oversubscribed, and SCAQMD was unable to fund all eligible clean trucks. However, these projects are eligible for funding through SCAQMD's Community Air Protection AB 134 Program and have been evaluated pursuant to the eligibility criteria of the Proposition 1B Program.

### **Proposal**

These actions are to recognize up to \$8 million in grant revenue from CEC and \$2 million each from the Ports of Los Angeles and Long Beach into the Community Air Protection AB 134 Fund (77) as well as to authorize the Executive Officer to execute an MOU with the Ports to replace up to 140 heavy-duty diesel goods movement trucks with near-zero emission natural gas trucks. This action is to also execute contracts for the replacement of 140 diesel trucks with near-zero emission trucks, as listed in Table 1, in an amount not to exceed \$14 million from the Community Air Protection AB 134 Fund (77).

Staff proposes funding the remaining clean truck projects that could not be funded under the Proposition 1B-Goods Movement Program because the program was oversubscribed. This action is to execute contracts for the replacement of 148 diesel trucks with zero and near-zero emission trucks, as listed in Table 2, in an amount not to exceed \$19,390,000 from the Community Air Protection AB 134 Fund (77).

More than 70 percent of all the projects listed in Tables 1 and 2 will reduce emissions in disadvantaged and low-income communities.

### **Benefits to SCAQMD**

The successful implementation of the heavy-duty truck replacement projects will provide direct emissions reductions of criteria air pollutants, toxic air contaminants and greenhouse gases. The older, diesel trucks will be replaced with zero and near-zero emission vehicles, which are at least 90 percent cleaner than current standards. Most of the vehicles will be operated in disadvantaged and low-income communities and will result in direct air quality benefits to these communities, as intended by the Community Air Protection AB 134 Program. This program will accelerate the deployment of new commercially available near-zero emission heavy-duty natural gas trucks, which is a key strategy to reduce NOx emissions identified in the 2016 AQMP.

### **Resource Impacts**

Revenue to be received from CEC and the Ports of Los Angeles and Long Beach totaling up to \$12 million will be recognized into the Community Air Protection AB 134 Fund (77). Projects to be funded, as listed in Tables 1 and 2, will not exceed \$33,390,000 from the Community Air Protection AB 134 Fund (77).

### **Attachments**

Table 1: Near-Zero Emission Truck Projects under CEC Grant

Table 2: Zero and Near-Zero Emission Truck Projects under Community Air Protection AB 134 Program



**Table 1: Near-Zero Emission Truck Projects under CEC Grant**

<b>Applicant Name</b>	<b>Vocation</b>	<b>Number of Trucks</b>	<b>Total Award Amount</b>
Air Fayre CA Inc.	Non-Drayage	12	\$1,200,000
Alto Xpress, Inc.	Non-Drayage	3	300,000
CalPortland Company	Non-Drayage	25	2,500,000
Liberty Linehaul West Inc.	Non-Drayage	1	100,000
Lincoln Transportation Services, Inc.	Drayage	29	2,900,000
Long Beach Container Transport	Drayage	1	100,000
Magdaleno Cabanas Garcia	Drayage	1	100,000
Mountain Valley Express Co. Inc.	Non-Drayage	8	800,000
Nestle Waters North America, Inc.	Non-Drayage	1	100,000
Roadex Cy Inc.	Drayage	16	1,600,000
Spreadco Inc.	Non-Drayage	2	200,000
Su Kil Park	Drayage	1	100,000
T&M Construction	Drayage	1	100,000
Tradelink Transport, Inc.*	Drayage	39	3,900,000
<b>Total</b>		<b>140</b>	<b>\$14,000,000</b>

\*Pending qualification check

**Table 2: Zero and Near-Zero Emission Truck Projects  
under Community Air Protection AB 134 Program**

<b>Applicant Name</b>	<b>Number of Trucks</b>	<b>Replacement Vehicle Fuel Type</b>	<b>Total Award Amount</b>
Air Fayre CA, Inc.	6	Low NOx	\$280,000
Amrock Transportation, Inc.	1	Low NOx	100,000
City Business Shipping, Inc.	1	Low NOx	40,000
Danmar P&D Corp.	4	Low NOx	200,000
Dependable Highway Express, Inc.**	8	Zero Emissions	1,600,000
EDCO Transport Services LLC	1	Low NOx	100,000
Eight Star Commodities**	5	Low NOx	250,000
Elizabeth Litsas	4	Low NOx	200,000
G & M Leasing Company	1	Low NOx	50,000
Golden State Foods	9	Low NOx	900,000
Hudson Group (HG) Retail LLC	2	Low NOx	100,000
J&J Transportation Vinson, Inc.	2	Low NOx	200,000
Logistics Support Network	1	Zero Emissions	100,000
M/M Investment	2	Low NOx	100,000
Martin Produce Inc.	1	Zero Emissions	200,000
Mercado Latino**	4	Low NOx	350,000
Mountain Valley Express Co., Inc.	2	Low NOx	200,000
Nestle Waters North America, Inc.	18	Zero Emissions	3,600,000
Nestle Waters North America, Inc.	13	Low NOx	520,000
Packair Airfreight, Inc.	2	Low NOx	100,000
Petrochem Materials Innovation, LLC**	20	Low NOx	2,000,000
Picante Leasing LLC	1	Zero Emissions	200,000
Sandys Trucking	1	Zero Emissions	200,000
South Bay C.F.S. LLC	37	Zero Emissions	7,400,000
Xin Li	2	Zero Emissions	400,000
<b>Total</b>	<b>148</b>		<b>\$19,390,000</b>

\*\*Pending compliance check approval by CARB

# Agenda Item #2

**Vicki White**

Recognize Revenue and Execute  
Contracts to Replace Heavy-Duty  
Diesel Trucks

# Background

- In May 2018, CEC awarded SCAQMD a grant of \$8 million to replace heavy-duty diesel trucks with near-zero emission natural gas trucks involved in drayage and goods movement activities
- The CEC funds will be leveraged with \$6 million in local match:
  - \$2 million from Port of LA
  - \$2 million from Port of LB
  - \$2 million from SCAQMD (AB 134)
- Total project cost: \$14 million



# Background (cont'd)

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- In January 2018, SCAQMD closed a solicitation for clean truck projects under the Prop 1B Program
- SCAQMD was unable to fund all eligible clean truck projects since the solicitation was heavily oversubscribed
- The unfunded truck projects involving replacement of older diesel trucks with near-zero emission natural gas trucks were approved for funding by CEC under the \$8 million grant
- The remaining unfunded clean truck projects are eligible for funding through SCAQMD's Community Air Protection AB 134 Program

# Proposal - CEC

- Recognize \$8 million from CEC and \$2 million each from the Ports of Los Angeles and Long Beach (totaling \$12 million)
  - SCAQMD will provide \$2 million in match funds from the Community Air Protection AB 134 Program
- Execute an MOU with the Ports to receive the Port revenue
- Execute contracts to replace 140 diesel trucks with near-zero emission natural gas trucks
- These projects meet the criteria of the Prop 1B Program and will receive an incentive of \$100,000 per truck

# Proposal – AB 134

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- An additional 148 eligible clean truck projects are eligible for funding through SCAQMD's Community Air Protection AB 134 Program
- The 148 clean truck projects that meet the criteria of the Prop 1B Program and involve the replacement of older diesel trucks:
  - 69 zero emission trucks
  - 79 near-zero emission natural gas trucks

# Proposed Funding

Grant Program	Project Description	Vocation	Cost-Share (Match Funds)	Total Funding
CEC Grant Project	140 near-zero emission natural gas trucks	Drayage and goods movement	CEC \$8,000,000 POLA \$2,000,000 POLB \$2,000,000 SCAQMD \$2,000,000	\$14,000,000
AB 134 Community Air Protection Program	148 near-zero and zero emission trucks	Drayage and goods movement	N/A	\$19,390,000



# Recommended Actions

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- Recognize up to \$8 million from CEC and \$2 million each from the Ports of Los Angeles and Long Beach into the Community Air Protection AB 134 Fund (77) to replace up to 140 heavy-duty diesel trucks with near-zero emission natural gas trucks
- Execute an MOU with the Ports to receive the \$8 million to replace the 140 heavy-duty diesel trucks
- Execute contracts to replace 140 diesel trucks with near-zero emission natural gas trucks in an amount not to exceed \$14 million from the Community Air Protection AB 134 Fund (77)
- Execute contracts to replace 148 diesel trucks with zero and near-zero emission trucks in an amount not to exceed \$19,390,000 from the Community Air Protection AB 134 Fund (77)

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**DRAFT**  
**Technology Committee Agenda #3**

BOARD MEETING DATE: October 5, 2018 AGENDA NO.

PROPOSAL: Approve Assignment of and Execute Contract for CNG Station at SCAQMD

SYNOPSIS: In May 2015, the Board declared the existing CNG fueling station equipment at SCAQMD headquarters as surplus and authorized execution of a property usage agreement and contract with FirstCNG, LLC, (Titan Diamond Bar) to upgrade the fast-fill CNG fueling station at SCAQMD and operate and maintain the station for five years. Over the past three years, there has been a series of company name changes to the CNG station and now American CNG Energy proposes to assume ownership of the station under an assignment provision in the current contract. This action is to approve assignment to, and execute a contract with, American CNG Energy to upgrade the fast-fill CNG fueling station at SCAQMD headquarters and operate and maintain the station for five years.

COMMITTEE: Technology, September 21, 2018; Recommended for Approval

**RECOMMENDED ACTIONS:**

Authorize the Executive Officer to:

1. Approve assignment of the fast-fill CNG fueling station at SCAQMD to American CNG Energy, as allowed under the current contract with EVO CNG (which formerly subsumed Titan Diamond Bar); and
2. Execute a no-cost contract with American CNG Energy to upgrade, operate and maintain the fast-fill CNG fueling station for a five-year term.

Wayne Natri  
Executive Officer

## **Background**

In May 2015, the Board declared the existing CNG fueling station equipment at SCAQMD as surplus and authorized execution of a property usage agreement and contract with FirstCNG, LLC, (Titan Diamond Bar) to upgrade the fast-fill CNG fueling station at SCAQMD and operate and maintain the station for five years. Titan Diamond Bar was awarded the contract for the fast-fill station based on its no cost proposal submitted pursuant to RFP #P2015-18: Own, Operate and Maintain CNG Fueling Station Equipment at SCAQMD Headquarters. Trillium CNG, who had constructed and then maintained the station from 2003-2015, transitioned operation and maintenance of the station (rather than decommissioning it) to Titan Diamond Bar, who assumed ownership of the equipment in February 2016. The surplus equipment now owned by Titan Diamond Bar was not upgraded/replaced as included in the contract because it was deemed infeasible based on cost versus return on investment. In August 2017, Titan Diamond Bar was subsumed by EVO CNG, and in January 2018, EVO CNG contracted with American CNG Energy to manage and maintain the station and to restore the station's performance and reliability, which had deteriorated over a 12-month period due to lack of timely maintenance. Over the past six months, American CNG Energy has demonstrated its ability to manage and maintain the fast-fill station and has significantly improved the station's performance and reliability. EVO CNG and American CNG Energy have reached agreement for American CNG Energy to assume ownership of the station under an assignment provision in the contract.

## **Proposal**

This action is to authorize the Executive Officer to approve EVO CNG's request to assign American CNG Energy as the new owner of the fast-fill CNG fueling station at SCAQMD and to execute a new five-year contract with American CNG Energy. Specific provisions will be included to ensure reliable and responsive monitoring of the CNG station, ensure proper and timely maintenance and servicing of the CNG station equipment, improve fueling and energy efficiencies through station upgrades, maintain a specific fuel charge for refueling SCAQMD vehicles, incorporate up to 100 percent renewable natural gas (RNG) into the station supply, and establish a new property usage agreement at SCAQMD.

American CNG Energy is a company based in Costa Mesa that owns and operates CNG stations in Florida and Georgia. The CNG station in Diamond Bar will be American CNG Energy's first California CNG fueling station. Since assuming operation and maintenance responsibilities of the CNG station at SCAQMD, American CNG Energy has demonstrated capable expertise in managing and maintaining the station, has been responsive and diligent in addressing repairs, has worked to minimize station downtimes, and has improved the overall performance and reliability of the equipment and operations that comprise the fast-fill CNG fueling station. American CNG Energy has incorporated a smart meter technology to monitor electricity usage that is intended to result in improved station energy efficiency and cost management. American CNG

Energy is proposing to introduce up to 100 percent RNG to the station supply and to improve vehicle refueling efficiency, particularly for larger, heavy-duty vehicles by incorporating a high flow nozzle that will reduce the refueling time for larger CNG-powered vehicles such as refuse trucks and school buses.

### **Benefits to SCAQMD**

This project will ensure that CNG vehicle refueling capabilities will continue to be provided at SCAQMD in Diamond Bar and will encourage deployment of alternative fuel vehicles in the region. Since the Diamond Bar CNG station was first commissioned in 2003, the SCAQMD fleet has consumed an average of 4,000 GGE of CNG per month with the public consuming an equal or greater amount of CNG per month. The facility is publically accessible 24 hours per day and 7 days per week and can accommodate heavy-duty trucks and buses. This project will provide accessible, convenient and affordable CNG for CNG-powered vehicle operators working at or visiting SCAQMD. The introduction and employment of the electrical smart meter will help monitor and quantify specific electrical usage and commensurate cost recovery.

### **Resource Impacts**

While there is no cost-share required by the SCAQMD in the assignment of the fast-fill CNG station from EVO CNG to American CNG Energy, the electricity used to power the station continues to be supplied through the SCAQMD's electricity account with SCE. Since the CNG station is considered a separate business entity, SCE has determined that a separate billable meter and SCE account for the CNG station requires establishing a new electrical connection from the nearest SCE vault. Consequently, SCAQMD staff will require American CNG Energy to conduct a feasibility study and cost estimate from a qualified electrical engineer to introduce a separate electrical line and transformer onto SCAQMD property for the CNG station. Electricity costs to operate the station have been and will continue to be recovered through monthly reconciliation provisions stipulated in the contract (and in compliance with SCE Rule 18-Supply to Separate Premises and Use by Others) until such time that a separate meter may be installed. Electricity costs will continue to be borne by the owner/operator, which is proposed to be American CNG Energy, and not the SCAQMD.

# Agenda Item #3

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Phil Barroca

Approve Assignment and  
Execute Contract for CNG  
Fueling Station at SCAQMD

# Background

- From 2003-2015, station constructed & maintained by Trillium CNG
- Increased maintenance costs because of aging equipment and need to upgrade payment card systems to revised industry standards
- In December 2014, issued RFP and received two bids for new station/upgrades
- In May 2015, Board awarded a no-cost contract to FirstCNG, LLC
- NGV refueling uncertainties
- In February 2016, station ownership changed to Titan Diamond Bar



# Background (cont'd)

- Titan Diamond Bar

- Cancelled plans for new station (poor ROI)
- Submitted plans for upgrades; prolonged inaction resulted in equipment/station performance deterioration

- EVO CNG

- In August 2017, assumed control of Titan Diamond Bar; continued inaction on station improvements
- In January 2018, assigned maintenance operations to American CNG Energy
- Recently, requested assignment of station to American CNG Energy



# Proposal

- Assign CNG station to American CNG Energy (ACE)
  - Costa Mesa based company
  - Operates three CNG stations (Florida & Georgia)
  - Interest in making Diamond Bar its flagship station
- ACE work efforts since January 2018
  - Refurbished both compressors, computer and point-of-sale systems
  - Improved performance and re-established confidence and reliability of station with District personnel and public consumers
- ACE plans for station improvement
  - Additional storage, Smart Meter, energy management, high-flow nozzle, 100% RNG
  - Costs will be borne by ACE (no cost to SCAQMD)





# Recommended Actions

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- Authorize the Executive Officer to assign the fast-fill CNG fueling station at SCAQMD to American CNG Energy
- Authorize the Executive Officer to execute a contract with American CNG Energy to upgrade, operate and maintain the fast-fill CNG fueling station for a five-year term

**DRAFT**  
**Technology Committee Agenda #4**

BOARD MEETING DATE: October 5, 2018

AGENDA NO.

PROPOSAL: Amend Contract to Implement DC Fast Charging Network

SYNOPSIS: In September 2013 and November 2014, the Board recognized CEC grant revenue for the South Coast Air Basin’s DC fast charging network and awarded a contract to Clean Fuel Connection, Inc., (CFCI) to install the fast chargers. This project has experienced numerous delays due to changes in the partners and the number and locations of the chargers. While the installation of the ten chargers was scheduled to be completed by July 1, 2018, CEC issued a stop work order on June 19, 2018, and reversed a previous agreement to fund installation costs. This action is to amend the contract with CFCI to make up for the CEC shortfall in an amount up to \$350,000 from the Clean Fuels Program Fund (31).

COMMITTEE: Technology, September 21, 2018; Recommended for Approval

RECOMMENDED ACTION:  
Amend a contract with Clean Fuel Connection, Inc., substituting up to \$350,000 in CEC funds for Clean Fuels Program funds (Fund 31).

Wayne Natri  
Executive Officer

MMM:FM:NB:PSK

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**Background**

In September 2013, the Board recognized \$300,000 in CEC grant revenue into the Clean Fuels Program Fund (31) to establish the South Coast Air Basin’s DC fast charging network. The CEC revenue would be used to cover installation costs of chargers to be donated by Nissan. An RFP (#P2014-04) was released to retain a DC fast charging network provider. In December 2013, the Board awarded a contract to Clean Fuel Connection, Inc., (CFCI), a local, woman-owned small business, as the DC fast charging network provider. Unfortunately, due to the adoption of a new connector

standard for fast chargers, the project could no longer utilize the Nissan chargers. Consequently, CEC awarded an additional \$420,000 in grant revenue, which the Board recognized in November 2014, to pay for hardware in addition to the original installation funding.

Since the CEC award in 2013, there has been greater awareness of the costs and challenges required to deploy fast charging infrastructure and an increase in hardware and installation costs for DC fast chargers having both CHAdeMO and CCS (Combined Charging System) connectors. This project has experienced numerous delays due to changes in partners, as well as the number and locations of the chargers. While the installation of ten chargers was scheduled to be completed by July 1, 2018, CEC issued a stop work order on June 19, 2018, despite a previous agreement to fund the chargers and installation costs. CFCI, however, had already purchased the ten chargers as well as incurred significant expenses for installation of the chargers, which was performed by one of CFCI's subcontractors, another local small business. Since the stop work order was issued at such a late date and most of the chargers were already installed, staff attempted to persuade CEC to move forward with an amended agreement, which would have included the cost of the ten chargers and installation, but was unsuccessful.

### **Proposal**

Staff recommends completing the installation of the ten chargers since the infrastructure will be beneficial for the region. This action is to amend the contract with Clean Fuel Connection, Inc., substituting up to \$350,000 in CEC funds for Clean Fuels Program funds (Fund 31). The locations of the chargers will be in Los Angeles and San Bernardino counties, including one at SCAQMD headquarters.

### **Benefits to SCAQMD**

The DC fast charging network will advance the state of PEV readiness in California by creating a viable public fast charging network that will be accessible, convenient, and affordable for PEV drivers. It will support fast charging for all PEVs as it includes both major connector standards for light-duty vehicles. The scope of this project is identified as a technical priority in the *Technology Advancement Office Clean Fuels Program 2018 Plan* under "Electric/Hybrid Technologies & Infrastructure."

### **Resource Impacts**

The revised total cost for the DC fast charging network is estimated at \$1,310,000, broken down as follows:

**Proposed Partner Cost-Share**

<b>Project Partner</b>	<b>Original Funding</b>	<b>Percent</b>	<b>Revised Funding</b>	<b>Percent</b>
CFCI/eVgo	\$503,000	38	\$503,000	38
SCAQMD (match)*	97,000	7	97,000	7
SCAQMD ( <i>requested</i> )			350,000	27
CEC	720,000	55	360,000	28
<b>Total</b>	<b>\$1,320,000</b>	<b>100</b>	<b>\$1,310,000</b>	<b>100</b>

\*SCAQMD match share includes staff time and an education outreach consultant from the Clean Fuels Program Fund (31).

Sufficient funds are available from the Clean Fuels Program 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.

# Agenda Item #4

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**Patricia Kwon**

Amend Contract to Implement  
DC Fast Charging (DCFC) Network

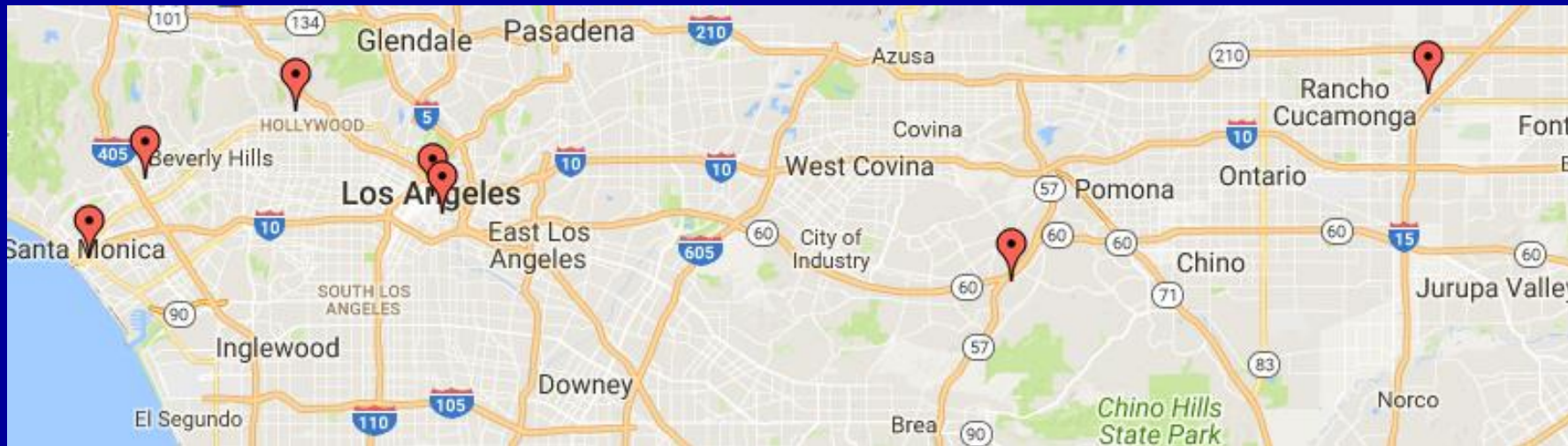
# Background

- In Sept. 2013 and Nov. 2014, the Board recognized \$720,000 in CEC revenue and awarded a contract to Clean Fuel Connection, Inc. (a local small business)
- CEC funding hardware and installation of 20 DCFCs
- Project originally to utilize donated Nissan chargers, but scope changed to deploy both SAE and CHAdeMO
- Project experienced numerous delays due to changes in partners and number/locations of chargers



# Background (cont'd)

- Subsequently, SCAQMD and CEC staff agreed on a plan to install 10 DCFCs by June 30, 2018
  - 10 chargers along major freeway corridors in LA and SB counties



- On June 19, 2018, CEC issued a stop work order

# Proposal

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- All but one charger installed when the stop work order was issued
- Staff attempted to persuade CEC to move forward with agreed upon plan but was unsuccessful
- Significant impact on local small businesses
- Recommend providing \$350,000 for installation costs



# Proposed Funding

<b>Project Partner</b>	<b>Original Funding</b>	<b>% of Project</b>	<b>Proposed Funding</b>	<b>% of Project</b>
CFCI/eVgo	\$503,000	38	\$503,000	38
SCAQMD (match)	\$97,000	7	\$97,000	7
SCAQMD <i>(requested)</i>			\$350,000	27
CEC	\$720,000	55	\$360,000	28
<b>TOTAL</b>	<b>\$1,320,000</b>	<b>100</b>	<b>\$1,310,000</b>	<b>100</b>

# Recommended Action

Amend contract with Clean Fuel Connection, Inc., substituting up to \$350,000 in CEC funds for Clean Fuels Program funds (Fund 31)



**DRAFT**  
**Technology Committee Agenda #5**

BOARD MEETING DATE: October 5, 2018

AGENDA NO.

PROPOSAL: Execute Agreements to Accept Donation and Disburse Electric Vehicle Chargers

SYNOPSIS: In August 2017, Mercedes-Benz USA LLC approached SCAQMD to accept a donation of 977 Level 2 electric vehicle chargers and work with partner organizations to identify residents and sites in disadvantaged and low-income communities to host the chargers. Staff worked with Los Angeles County and the Los Angeles Economic Development Corporation to identify partner organizations to assist in disbursing the electric vehicle chargers throughout the four counties. Partner organizations include the Southern California Public Power Authority, California Courts and other municipal, local and county agencies. These actions are to execute an agreement with Mercedes-Benz USA LLC to accept the donation as well as identify and execute agreements with partner organizations to disburse the donated electric vehicle chargers.

COMMITTEE: Technology, September 21, 2018; Recommended for Approval

**RECOMMENDED ACTIONS:**

Authorize the Executive Officer to:

1. Execute an agreement with Mercedes-Benz USA LLC to accept the donation of 977 Level 2 electric vehicle chargers; and
2. Identify and execute agreements with partner organizations to disburse the donated electric vehicle chargers.

Wayne Natri  
Executive Officer

## **Background**

In August 2017, Mercedes-Benz USA LLC approached SCAQMD to accept a donation of 977 Level 2 electric vehicle chargers and work with partner organizations to identify residents and sites in disadvantaged and low-income communities to host the chargers. Staff worked with Los Angeles County and the Los Angeles Economic Development Corporation to identify partner organizations to assist in disbursing the electric vehicle chargers throughout the four counties. Partner organizations that have currently been identified include but may not be limited to: SCAQMD's Enhanced Fleet Modernization Program, the Los Angeles County Sheriff's Department, California Courts, the Los Angeles County Metropolitan Transportation Authority, the Southern California Public Power Authority (SCPPA), and the cities of Compton and Signal Hill. SCPPA members consist of the municipal utilities of Anaheim, Azusa, Banning, Burbank, Cerritos, Colton, Glendale, Los Angeles, Pasadena, Riverside, Vernon and the Imperial Irrigation District.

## **Proposal**

This action is to execute an agreement with Mercedes-Benz USA LLC to accept the donation of 977 electric vehicle chargers. This action is to also identify, as appropriate, and execute agreements with partner organizations to disburse the donated electric vehicle chargers to residents and sites in disadvantaged and low-income communities. Locations for the chargers will be in all four counties within the SCAQMD jurisdiction.

## **Benefits to SCAQMD**

Providing additional Level 2 charging infrastructure to residents and sites in disadvantaged and low-income communities will advance the state of plug-in electric vehicle (PEV) readiness in California by enabling more residential and public charging that will be accessible, convenient and affordable for PEV drivers in these communities. It will ensure that residents in disadvantaged and low-income communities receive the localized benefits of zero emission vehicle miles travelled and provides essential criteria pollutant benefits, greenhouse gas, and petroleum usage reduction. The scope of this project is identified as a technical priority in the *Technology Advancement Office Clean Fuels Program 2018 Plan* under "Electric/Hybrid Technologies & Infrastructure."

## **Resource Impacts**

There is no cost associated with accepting the donation and executing agreements with the partner organizations that will disburse the Level 2 chargers. The partner organizations and recipients of the chargers will accept the chargers on an as-is basis and will be responsible for installation costs and ongoing maintenance of the chargers. SCPPA member utilities and cities may choose to provide rebates to their residents to host the chargers and offset the cost of installation, permit costs, electrical upgrades, meters and other ancillary costs.

# Agenda Item #5

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**Patricia Kwon**

**Execute Agreements to Accept  
Donation and Disburse  
Electric Vehicle Chargers**

# Background

- Mercedes-Benz USA LLC approached SCAQMD to accept donation of 977 EV charging stations
- SCAQMD worked with LA County and LAEDC to identify partner organizations to assist in disbursing the EV charging stations to sites in disadvantaged and low-income communities



# Background (cont'd)

Partner organizations include:

- Southern California Public Power Authority (SCPPA)
- California Courts
- Other municipal, local and county agencies
- SCAQMD's "Replace Your Ride" Program recipients



# Proposal

- Accept donation of 977 EV charging stations
- Execute agreements with partner organizations to disburse charging stations throughout four county region
- Partner organizations and recipients will accept charging stations on an as-is basis, responsible for installation and maintenance costs and providing proof of installation
- SCPPA utilities and cities may provide rebates to offset these costs





# Recommended Actions

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Authorize the Executive Officer to:

- Execute an agreement Mercedes-Benz USA LLC to accept donation of 977 Level 2 EV chargers
- Identify and execute agreements with partner organizations to disburse donated EV chargers

**DRAFT**  
**Technology Committee Agenda #6**

BOARD MEETING DATE: October 7, 2018

AGENDA NO.

**PROPOSAL:** Approve Endowment to University of California Irvine to Support Graduate Student Scholarship Fund and Execute Contract to Develop Fuel Cell-Gas Turbine Hybrid Technology

**SYNOPSIS:** The University of California Irvine (UCI) is seeking endowment funding that will support the research and education of one graduate student to be designated a Samuelsen Energy Visionary Scholar. The graduate student will lead and promote important and impactful research for air quality and emissions reductions. Additionally, UCI through its Advanced Power and Energy Program is working on developing solid oxide fuel cell-gas turbine (SOFC-GT) hybrid technology. This project will focus on the modeling of a SOFC-GT integrated system using biogas, natural gas and renewable hydrogen fuels for applications in the 1-10 megawatt range. These actions are to approve a one-time \$1 million endowment to UCI from interest accrued in the BP ARCO Settlement Projects Fund (46) for the scholarship fund and to execute a contract with UCI in an amount not to exceed \$200,000 from the Clean Fuels Fund Program (31) for the SOFC-GT hybrid technology.

**COMMITTEE:** Technology, September 21, 2018; Recommended for Approval

**RECOMMENDED ACTIONS:**

1. Authorize the Chairman to execute an agreement with the University of California Irvine to contribute \$1 million from interest accrued in the BP ARCO Settlement Projects Fund (46) for an endowment to support a graduate student scholarship fund for a Samuelsen Energy Visionary Scholar.
2. Authorize the Chairman to execute a contract with the University of California Irvine in an amount not to exceed \$200,000 from the Clean Fuels Fund Program (31) for development of SOFC-GT hybrid technology.

Wayne Nastri  
Executive Officer

## **Background**

### Endowment to Support Scholarship Fund

The University of California Irvine (UCI) has a long history of excellence in clean energy, emissions reductions and air quality research, beginning with the establishment of the UCI Combustion Laboratory by Dr. Scott Samuelson in 1970. Dr. Samuelson pioneered the development and implementation of low nitrogen oxide combustion technology for power plants with Southern California Edison. He also worked with CARB to investigate and recommend gasoline octane rating standards, researched pathways to reduce pollutant emissions from gas turbine combustion, envisioned a renewable solar and wind powered world that was complemented by a zero emissions dispatchable technology, and coordinated with DOE and CEC to establish the National Fuel Cell Research Center at UCI. Dr. Samuelson also established the Advanced Power and Energy Program (APEP) at UCI, with a mission to advance the development and deployment of efficient, environmentally sensitive and sustainable power generation and energy conversion worldwide.

Dr. Samuelson's vision of research and education in the fields of clean energy, emissions reductions and air quality research has significantly enhanced the field of energy generation and management. UCI is seeking endowment funding to establish a permanent Samuelson Energy Visionary Scholarship for graduate students dedicated specifically to important air and climate issues being addressed by the SCAQMD.

### Development of Fuel Cell-Gas Turbine Hybrid Technology

Additionally, UCI APEP is conducting a DOE-funded study for the development of solid oxide fuel cell-gas turbine (SOFC-GT) hybrid technology with the goal to dramatically reduce the water requirement for operating on natural gas distributed generation (~10 MW) and gasified coal and biomass central power generation (~100MW). A suitable fuel cell for these applications is the SOFC which may be fueled by natural gas, biogas and hydrogen. The SOFC-GT hybrid technology may achieve a high efficiency generation of electricity up to 75 percent. Due to the ultra-high efficiency of the SOFC-GT hybrid system, CO<sub>2</sub> emissions are reduced significantly. UCI is interested in leveraging the DOE-funded study to expand the scope to include natural gas, biogas, mixtures of natural gas and biogas, and eventually renewable hydrogen applications in the 1-10 MW range for potential uses for off-road vehicles.

## **Proposal**

### Endowment to Support Scholarship Fund

The proposed endowment, in conjunction with matching support by APEP, will provide a one-year graduate student scholarship that will be supported annually in perpetuity. This program will be overseen by an advisory board consisting of representatives from UCI, APEP, SCAQMD and CARB, providing guidance for the selection of the Samuelson Energy Visionary Fellow, relevant topics for research and coursework, and recommendations for program management and effectiveness. The attached summary

outlines the proposed endowment approach, with anticipated refinements to be further discussed with UCI, including specific use of SCAQMD funding and guidance by the advisory board. This action is to approve a one-time \$1 million endowment to UCI from interest accrued in the BP ARCO Settlement Projects Fund (46).

#### Development of Fuel Cell-Gas Turbine Hybrid Technology

The proposed project will develop an integration model to fully realize the potential of hybrid SOFC-GT systems in the 1-10 MW range fueled by natural gas, biogas and renewable hydrogen. The model will quantify thermal and environmental performances and economics of various alternate schemes. The 1-10 MW range is applicable for repowering locomotives with SOFC/GT power blocks, from switchers (~1MW) to long-haul locomotives (~5 MW). Similarly, ocean going vessel (OGV) power also falls into this power range. The potential for powering locomotives and OGVs powered by SOFC-GT technology will be addressed along with the applications to the distributed generation market. This action is to execute a contract with UCI in an amount not to exceed \$200,000 from the Clean Fuels Program Fund (31).

#### **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.d.(8): Research and development efforts with educational institutions or nonprofit organizations. UCI is an educational institution and the APEP is an umbrella organization that addresses the broad utilization of energy resources and the emerging nexus of electric power generation, infrastructure, transportation, water resources and the environment. Built on a foundation established in 1970 with the creation of the UCI Combustion Laboratory and the 1998 dedication of the National Fuel Cell Research Center, APEP focuses on education and research on clean and efficient distributed power generation and integration.

#### **Benefits to SCAQMD**

An opportunity has arisen to support the UCI proposal in a manner that could result in significant benefits for SCAQMD. Specifically, the endowment will enhance the SCAQMD's long-standing relationship with UCI in a manner that could provide additional training of SCAQMD staff and provide opportunities for enhanced candidate pools for mobile source related positions at SCAQMD as well as opportunities to partner on issues related to energy production and management, mobile source emissions characterization and control, related health impacts, and planning and control strategy implementation.

Additionally, the modeling study on the SOFC-GT power capability for locomotives and OGVs has the potential to significantly reduce criteria pollutant emissions from mobile sources, and the technology could be subsequently developed and implemented in some on-road vehicles.

**Resource Impacts**

Endowment to Support Scholarship Fund

Sufficient funds are available for a contribution of \$1 million from the interest accrued in the BP ARCO Settlement Projects Fund (46).

Development of Fuel Cell-Gas Turbine Technology

The total cost for the proposed project to develop SOFC-GT hybrid technology is \$900,000, of which SCAQMD’s proposed cost-share will not exceed \$200,000 from the Clean Fuels Program Fund (31), as summarized below.

<b>Proposed Project</b>	<b>Funding Amount</b>	<b>% of Project</b>
UCI/DOE (match funding)	\$700,000	78
SCAQMD ( <i>requested</i> )	\$200,000	22
<b>Total</b>	<b>\$900,000</b>	<b>100</b>

Sufficient funds are available from the Clean Fuels Program Fund, 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.

**Attachment**

“Endowing the Samuelson Energy Visionary Scholarship Program at the University of California Irvine”

## ATTACHMENT

### Endowing the **Samuelsen Energy Visionary Scholarship Program** at the University of California, Irvine

UC Irvine has a long history of excellence in clean energy, emissions reduction, and air quality research, beginning with the establishment of the UCI Combustion Laboratory by Professor Scott Samuelsen in 1970. Prof. Samuelsen pioneered the development and implementation of low nitrogen oxide combustion technology for power plants with Southern California Edison. He also worked with the California Air Resources Board to investigate and recommend gasoline octane rating standards that led to the widely adopted (R+M)/2 method. He tirelessly worked to reduce pollutant emissions from gas turbine combustion as applied to jet propulsion and power plant applications. In the early 1990s Prof. Samuelsen envisioned a renewable solar and wind powered world that was complemented by a zero-emissions dispatchable technology. He determined that fuel cell technology would best meet the need and worked with the U.S. Department of Energy and the California Energy Commission and more than 15 companies to establish the National Fuel Cell Research Center at UC Irvine in 1998. He has since established the Advanced Power and Energy Program (APEP) at UC Irvine, with a mission to advance the development and deployment of efficient, environmentally sensitive, and sustainable power generation and energy conversion worldwide.

Prof. Samuelsen is one of the most widely recognized scholars, researchers, mentors and policy leaders in the worldwide fuel cell community. He is the most recognized leader in the state of California and one of the most recognized in the world for developing the technology and policy framework for introducing stationary fuel cell systems, hydrogen infrastructure for fuel cell vehicles, and the initial market for fuel cell electric vehicles.

Prof. Samuelsen's work in power plant emissions reductions has been widely implemented in California and adopted world-wide to meet strict emissions standards leading to better air quality. His gas turbine combustion nitrogen oxide reduction research has influenced the design of all modern jet aircraft engines in use today. More than 500 MW of stationary fuel cell systems have been installed in markets in California, the northeastern U.S., Korea, and Japan, in large-part due to his research and policy work. He mentored students who have become entrepreneurs in zero emissions vehicles, zero-emissions stationary fuel cell power generation, hydrogen infrastructure development, and green buildings who all lead successful and profitable companies. The National Fuel Cell Research Center that he has led for the last 20 years has invented tri-generation technology that has become commercially developed by a partner company (FuelCell Energy) and implemented by Toyota and other partners to most efficiently produce electricity, heat and hydrogen in the LA/Long Beach Port.

To continue Prof. Samuelsen's vision of research and education in the fields of clean energy, emissions reduction, and air quality research that will change the world, APEP is seeking \$1 million in endowment funding to establish a permanent **Samuelsen Energy Visionary Scholarship** dedicated specifically to the important air and climate issues being addressed by the South Coast Air Quality Management District, the California Air Resources Board, the Bay Area Air Quality Management District, and others. APEP is committed to garner matching support for this new program, which will provide a 1-year graduate student scholarship that will be supported annually in perpetuity. Each year, the graduate student that is designated a "Samuelsen Energy Visionary Scholar" will be required to be an outstanding scholar (mainly determined by grades in classes, research accomplishments (e.g., publications), and letters of recommendation), AND, must be an "energy visionary" or potential

“energy visionary” that is leading and promoting important and impactful research in a sustainable energy and environment field. This is all in the mold of Professor Scott Samuelsen.

This proposed program will be overseen by an Advisory Board consisting of representatives from UC Irvine, APEP, the South Coast Air Quality Management District, and the California Air Resources Board. The Advisory Board will provide guidance for the selection of the Samuelsen Energy Visionary Fellow, relevant topics for research and coursework, and recommendations for program management and effectiveness. The program will be sustained with investment interest proceeds from the endowment, as well as from support from other individuals and organizations interested in supporting the endowment. Example initial topic areas and coursework areas that are suggested for the program are outlined below:

**Topic 1: Sustainable Energy Conversion Technology**

- *Fuel cell technology for stationary power*
- *Fuel cell technology for vehicles (especially heavy duty)*
- *Zero emissions and renewable hydrogen production technologies*
- *Zero emissions and renewable hydrogen end-use technologies*
- *Novel high efficiency electrolysis technology*
- *Hybrid fuel cell gas turbine and fuel cell battery systems*

**Topic 2: Criteria Pollutant Emissions & Air Quality**

- *Pollutant emissions impacts of alternative fuels and conversion technologies*
- *Measurement of pollutant emissions from multiple sources*
- *System dynamic impacts of alternative fuels and conversion technologies*
- *Spatial and temporal characterization of future emissions*
- *Developing future pollutant emissions scenarios*
- *Regional air quality modeling*

**Topic 3: Energy Sustainability & Climate Change**

- *Primary energy resource availability and dynamics*
- *Climate change and sustainability*
- *Integrated food, energy, and water sustainability*
- *Climate modeling*
- *Atmospheric chemistry of PM formation, toxics, and ozone*
- *Atmospheric chemistry of greenhouse gases*

**Topic 4: Sustainable Transportation Systems**

- *Shared-use vehicles and mass transit facilitation*
- *Autonomous vehicle emissions and sustainability dynamics*
- *Low carbon infrastructure and efficient transportation system operations*
- *Low impact and sustainable land use transportation systems*
- *Zero emission vehicles and fuels*
- *Intelligent transportation systems and automation*

**Topic 5: Sustainable Stationary Power and Energy Systems**

- *Renewable solar and wind power generation*
- *Renewable gas production and use*
- *Energy storage technologies*

- *Smart grid technologies*
- *Sustainable Micro- and Nano-grid technologies*

**Topic 6: Sustainable Energy and Transportation Policy**

- *Sustainable energy law and policy development and support*
- *California region, state, and international air quality policies and regulations*
- *California region, state, and international sustainable energy and climate change policies and regulations*
- *Integrated analysis and support of climate change, toxic and air quality policies and regulations*
- *Impacts in disadvantaged communities*



# Agenda Item #6

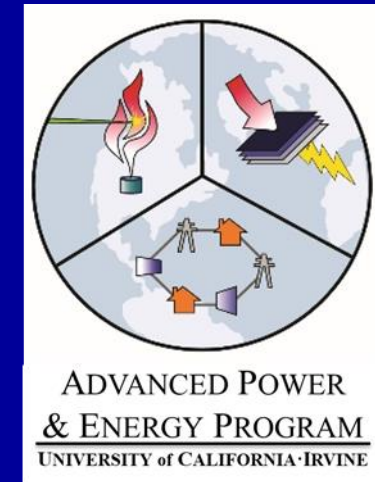
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Seungbum Ha

Approve Endowment for  
Graduate Student Scholarship Fund and  
Develop Fuel Cell-Gas Turbine  
Hybrid Technology

# Background

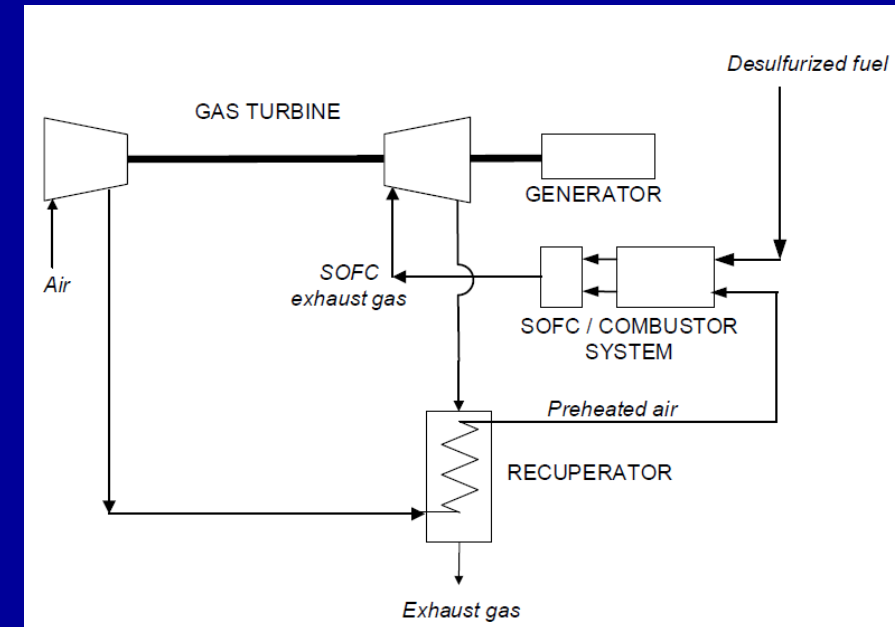
- The University of California Irvine (UCI) has a long history of excellence in clean energy, emissions reductions and air quality research
- Dr. Scott Samuelson established the National Fuel Cell Research Center and the Advanced Power and Energy Program (APEP) at UCI with a mission to reduce pollutant emissions
- UCI is seeking endowment funding to establish a permanent Samuelson Energy Visionary Scholarship dedicated to air and climate issues



NATIONAL FUEL CELL  
RESEARCH CENTER  
UNIVERSITY OF CALIFORNIA · IRVINE

# Background (cont'd)

- UCI is conducting a DOE-funded study for development of solid oxide fuel cell-gas turbine (SOFC-GT) hybrid technology
- Primary focus for stationary power generation
- Potential to expand scope to off-road mobile uses



# Proposal

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Approve a one-time \$1 million endowment to UCI

- Proposed endowment would establish a one-year graduate student scholarship to be supported annually in perpetuity
- Graduate student will lead and promote important and impactful research for air quality and emissions reductions
- To be overseen by an advisory board consisting of representatives from UCI, APEP, SCAQMD and CARB

# Proposal (cont'd)

Cost-share expanded scope to:

- Identify research and development needs by system simulation
- Include natural gas, biogas and renewable hydrogen applications in the 1-10 megawatt range
- Determine potential for repowering locomotives and ocean going vessel power



# Proposed Project Budget

<b>Funding Source</b>	<b>Amount</b>	<b>% of Project</b>
UCI/DOE	\$700,000	78
SCAQMD <i>(requested)</i>	\$200,000	22
<b>Total</b>	<b>\$900,000</b>	<b>100</b>

# Recommended Actions

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- Execute an agreement with UCI to contribute \$1 million from interest accrued in the BP ARCO Settlement Projects Fund (46) for an endowment to support a scholarship fund for a Samuelsen Energy Visionary Scholar
- Execute a contract with UCI in an amount not to exceed \$200,000 from the Clean Fuels Program Fund (31) for development of SOFC-GT hybrid technology

**Go to SLIDES**

**DRAFT**

**Technology Committee Agenda #7**

BOARD MEETING DATE: October 5, 2018

AGENDA NO.

**PROPOSAL:** Amend Agreements and Transfer Funds to Develop and Demonstrate Zero Emission Capable Drayage Trucks

**SYNOPSIS:** In March 2016, the Board recognized CARB Greenhouse Gas (GHG) Reduction Fund revenue, including administrative and program funds to demonstrate zero emission capable drayage trucks. Contracts with our partners have been executed and projects commenced, but some costs have exceeded the original estimates because of fleet location changes and installation of data loggers. Additionally, payments to contractors have been delayed due to CARB's reimbursement process. This action is to amend agreements using up to \$234,000 of SCAQMD's recognized administrative funds from the GHG Reduction Projects Special Revenue Fund (67) to cover the higher project costs and transfer funds to another participating air district, contingent upon execution of an amended CARB revenue agreement. These actions are to also authorize redistribution of project funds amongst the participating original equipment manufacturers, on an as-needed basis and contingent upon CARB approval if necessary, and transfer up to \$5,000,000 as a temporary loan from the Clean Fuels Program Fund (31) to the GHG Reduction Projects Special Revenue Fund (67).

**COMMITTEE:** Technology, September 21, 2018; Recommended for Approval

**RECOMMENDED ACTIONS:**

1. Amend the following contracts to develop and demonstrate zero emission capable drayage trucks using \$184,000 from SCAQMD's recognized administrative funds from CARB in the GHG Reduction Projects Special Revenue Fund (67), contingent upon execution of an amended revenue agreement with CARB, as follows:
  - a. Add up to \$108,000 to BYD Motors for the development and demonstration of up to 25 Class 8 battery electric drayage trucks;
  - b. Add up to \$76,000 to Peterbilt Motors for the development and demonstration of up to 12 Class 8 battery electric drayage trucks.



2. Amend an agreement with San Joaquin Valley Air Pollution Control District to reallocate up to \$50,000 from SCAQMD's recognized administrative funds from CARB in the GHG Reduction Projects Special Revenue Fund (67).
3. Authorize the Executive Officer to redistribute project funds amongst the four participating original equipment manufacturers--BYD Motors, Kenworth Truck Company, Peterbilt Motors and Volvo Technology of America, on an as-needed basis to meet project goals, contingent upon CARB approval if necessary.
4. Transfer up to \$5,000,000 as a temporary loan from the Clean Fuels Program Fund (31) to the GHG Reduction Projects Special Revenue Fund (67).

Wayne Nastri  
Executive Officer

MMM:FM:NB:JI

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### **Background**

In March 2016, the Board recognized CARB Greenhouse Gas (GHG) Reduction Fund revenue, including administrative and program funds to demonstrate zero emission capable drayage trucks. These funds were awarded based on a proposal submitted by staff in response to CARB's solicitation under the Low Carbon Transportation Greenhouse Gas Reduction Fund (GGRF) Investments. The project 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: Bay Area AQMD, Sacramento Metropolitan AQMD, San Joaquin Valley APCD and San Diego APCD. 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.

The project is being implemented in conjunction with four original equipment manufacturers (OEMs) – BYD Motors, Kenworth Truck Company, Peterbilt Motors and Volvo Technology of America. Agreements with our partner air districts and the four OEMs have been executed and the projects have commenced. Some fleet location changes have resulted in higher costs for EV infrastructure and data collection for baseline vehicles have required installation of data loggers. Additionally, San Joaquin Valley APCD has requested a small portion of the administrative funds awarded to SCAQMD from CARB be reallocated to them. Lastly, payments to the four OEMs under contract with SCAQMD have been delayed due to CARB's reimbursement process.

## **Proposal**

Staff proposes to use a portion of SCAQMD's recognized administrative funds from CARB to cover some of the higher project costs incurred by two of the four OEMs and has discussed this option with CARB. This action is to amend the following contracts to develop and demonstrate zero emission capable drayage trucks using up to \$184,000 from the GHG Reduction Projects Special Revenue Fund (67), contingent upon execution of an amended CARB revenue agreement, as follows:

1. BYD Motors: add up to \$108,000 for additional EV infrastructure costs and data loggers for baseline diesel trucks as well as to harmonize language in the BYD contract with CARB's revenue agreement with SCAQMD.
2. Peterbilt Motors: add up to \$76,000 for additional EV infrastructure costs and data loggers for baseline diesel trucks.

To provide flexibility for staff to implement this project, this action is to also authorize the Executive Officer to redistribute project funds amongst the four participating OEMs, on an as-needed basis to meet project goals.

Furthermore, this action is to amend the agreement with San Joaquin Valley APCD to reallocate up to \$50,000 from SCAQMD's recognized administrative funds from CARB to cover administrative costs being incurred by San Joaquin. By funding administrative costs for San Joaquin Valley APCD, it ensures project implementation and collaboration with project partners are carried out successfully. And finally, facilitating advanced payments to the four participating OEMs, while awaiting reimbursement from CARB, will enable SCAQMD to meet its contractual obligation of payment of invoices within 30 days. This action is to transfer up to \$5,000,000 as a temporary loan from Clean Fuels Program Fund (31) to GHG Reduction Projects Special Revenue Fund (67).

## **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 2018 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 NOx emissions from replaced diesel drayage trucks.

## **Resource Impacts**

The additional funds for the OEM contracts will not exceed \$184,000 and the funds for San Joaquin Valley APCD will not exceed \$50,000 from the GHG Reduction Projects Special Revenue Fund (67). The temporary loan from the Clean Fuels Program Fund (31) to the GHG Reduction Projects Special Revenue Fund (67) to provide cash flow

given CARB's reimbursement requirements will not exceed \$5,000,000. Any unspent funds will be returned to the Clean Fuels Program Fund (31) upon project completion.

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.

# Agenda Item #7

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Joseph Impullitti

Amend Agreements and Transfer Funds  
to Develop and Demonstrate Zero  
Emission Capable Drayage Trucks

# Background

- In March 2016, the Board recognized CARB Greenhouse Gas (GHG) Reduction Fund revenue, including administrative and program funds to demonstrate zero emission capable drayage trucks
- Contracts with our partners have been executed and projects commenced
- Some costs have exceeded the original estimates
- Additionally, payments to contractors have been delayed due to CARB's protracted reimbursement process



# Proposal

- BYD Motors - add \$108,000 for additional EV infrastructure and data loggers for baseline diesel trucks
- Peterbilt Motors – add \$76,000 for additional EV infrastructure and data loggers for baseline diesel trucks
- Amend agreement with SJVAPCD to allocate up to \$50,000 for administrative costs
- Transfer \$5M from Clean Fuels Fund (31) to GHG Reduction Projects Special Revenue Fund (67) as a temporary loan



# Recommended Actions

- Amend the following contracts to develop and demonstrate zero emission capable drayage trucks using \$184,000 from the GHG Reduction Projects Special Revenue Fund (67):
  - Add up to \$108,000 to BYD Motors to develop and demonstrate up to 25 Class 8 battery electric drayage trucks
  - Add up to \$76,000 to Peterbilt Motors for the development and demonstration of up to 12 Class 8 battery electric drayage trucks
- Amend an agreement with SJVAPCD to reallocate up to \$50,000 from SCAQMD's recognized administrative funds from the GHG Reduction Projects Special Revenue Fund (67)

# Recommended Actions (cont'd)

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- Authorize the Executive Officer to redistribute project funds amongst the four participating original equipment manufacturers--BYD Motors, Kenworth Truck Company, Peterbilt Motors and Volvo Technology of America, on an as-needed basis to meet project goals (contingent upon CARB approval if necessary)
- Transfer up to \$5,000,000 as a temporary loan from the Clean Fuels Program Fund (31) to the GHG Reduction Projects Special Revenue Fund (67)