BOARD MEETING DATE: April 7, 2023 AGENDA NO. 5

PROPOSAL: Execute Contract to Develop and Demonstrate Hydrogen Fuel Cell Mobile Power Generation System

SYNOPSIS: Zero-emission alternatives to diesel-fired stationary power generation systems are beginning to be addressed through fuel cell microgrids and energy storage. However, there has been little research into zero-emission energy alternatives for mobile power generation systems. This action is to execute a contract with RockeTruck, Inc. in an amount not to exceed $200,000 to develop and demonstrate a mobile fuel cell power generation system from the Clean Fuels Program Fund (31).

COMMITTEE: Technology, March 17, 2023; Recommended for Approval

RECOMMENDED ACTION:
Authorize the Executive Officer to execute a contract with RockeTruck, Inc. in an amount not to exceed $200,000 to develop and demonstration a mobile fuel cell power generator system from the Clean Fuels Program Fund (31).

Wayne Nastri
Executive Officer

AK:MW:SC

Background

California's wildfire and severe weather events has caused grid outages which has increased demand for stationary and mobile backup generation. Most facilities today use diesel fired backup generators during outages. Diesel particulate is a carcinogen and widespread use of diesel backup generators can adversely impact residents and other sensitive receptors. A clean energy alternative is needed to minimize impacts to affected communities during these events or other emergency outages. Another benefit of zero-emission mobile systems is that they can be used by a community or customer to fill power voids during normal grid operations, such as providing power for battery electric vehicle charging. With the increased adoption of battery electric vehicles, mobile based

power generation systems can help provide grid resiliency and power for charging vehicles without the emissions from fossil-fueled combustion generation.

In late 2021, RockeTruck, Inc. (RockeTruck) was awarded a $3 million grant from CEC under GFO-20-310 to develop and demonstrate independent mobile backup generation systems. As a proof of concept, the first system will utilize an existing 80kW fuel cell and battery system from a Honda Clarity Fuel Cell vehicle donated by American Honda Motor Company. With the proposed 150 kg onboard hydrogen storage, the trailer mounted mobile fuel cell generator can enable 35 kW of continuous power generation for up to 48 hours or 50 kW for 16 hours while having the ability to ramp up to an 80 kW peak. In mid-2022, RockeTruck was awarded another grant from DOE's Small Business Technology Transfer (SBTT) Program to increase the peak power capability. The goal of this project is to produce a commercially viable mobile based fuel cell generator by the end of 2024.

Proposal

RockeTruck will develop and demonstrate the second phase mobile based fuel cell generator. The proposed project leverages an existing mobile fuel cell generator project funded by CEC and DOE to develop a second higher powered system. Power output will be increased by using two Honda fuel cells and a 70 kWh commercial battery system provided by Coulomb Solutions, Inc. (CSI). The power system upgrade will enable the second mobile fuel cell generator to maintain 35kW of continuous power generation for 48 hours with increased capabilities of 100 kW for up to 16 hours and 120kW peak output. The project will also include electrical upgrades that enable 480 volts three-phase power to provide high power charging of electric vehicles. The capability to charge vehicles will be demonstrated at the Hydrogen Research and Fueling Facility located at California State University, Los Angeles. Both Southern California Edison (SCE) and San Diego Gas & Electric Company (SDG&E) have agreed to participate in the testing of the mobile generator and support field demonstration within their service territories.

Benefits to South Coast AQMD

The proposed project is relevant to South Coast AQMD's priorities to reduce NOx and PM emissions from transportation sources required to achieve federal ambient air quality standards and protect public health. Projects to support the clean generation efforts are included in the Technology Advancement Office Clean Fuels Program 2022 Plan Update under the category of "Stationary Clean Fuel Technologies." Successful demonstration of this clean mobile generation concept will help develop zero-emission mobile power generating platforms that will reduce the emissions associated with mobile power generation. Depending on application, the estimated NOx reduction will be up to 0.2 tons per year.

Sole Source Justification
Section VIII.B.2 of the Procurement Policy and Procedure identifies provisions by which sole source awards may be justified. The request for sole source awards is made under provision B.2.d.(1): Project involving cost-sharing by multiple sponsors. The proposed projects include cash and in-kind cost-sharing from CEC, DOE, RockeTruck, SCE, SDG&E, CSI and South Coast AQMD.

Resource Impacts
The estimated cost for this project is $4,617,067. South Coast AQMD's cost-share will not exceed $200,000 from the Clean Fuels Program Fund (31). The estimated partners cost-share and total project cost is summarized below:

Proposed Partners	Amount	Percent (%)
CEC	$3,000,000	65%
RockeTruck	$1,005,567	22%
DOE	$206,500	4%
South Coast AQMD *(requested)*	$200,000	4%
SDG&E	$100,000	2%
SCE	$90,000	2%
CSI	$15,000	1%
Total Project Cost	**$4,617,067**	**100%**

Sufficient funds are available in the Clean Fuels Program Fund (31) for this proposed project. The Clean Fuels Program Fund (31) is established as a special revenue fund resulting from the state mandated Cleans 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.