

BOARD MEETING DATE: October 6, 2023

AGENDA NO. 6

PROPOSAL: Execute Contract for Development and Demonstration of Electric-Powered Trailer for Heavy-Duty Vehicles

SYNOPSIS: Range Energy is proposing to develop and demonstrate battery electric-powered trailers that can integrate with existing diesel and zero-emission trucks to provide propulsion assistance and regenerative braking. This project will demonstrate emission benefits of electric-powered trailers. The University of California, Riverside College of Engineering - Center for Environmental Research & Technology (UCR/CE-CERT) will assist Range Energy with data collection and quantifying emission benefits. This action is to execute contracts with 1) Range Energy in an amount not to exceed \$500,000 and 2) UCR/CE-CERT in an amount not to exceed \$50,000 from the Clean Fuels Program Fund (31).

COMMITTEE: Technology, September 15, 2023; Recommended for Approval

RECOMMENDED ACTIONS:

1. Authorize the Executive Officer to execute a contract with Range Energy, for development and demonstration of electric-powered trailer for heavy-duty vehicles in an amount not to exceed \$500,000 from Clean Fuels Program Fund (31); and
2. Authorize the Executive Officer to execute a contract with the University of California, Riverside College of Engineering - Center for Environmental Research & Technology (UCR/CE-CERT) for data collection and emission benefit analysis in an amount not to exceed \$50,000 from Clean Fuels Program Fund (31).

Wayne Nastri
Executive Officer

Background

Hybridization of heavy-duty class 8 trucks with electric-powered trailers is an innovative technology that provides an immediate opportunity to reduce emissions from goods movement activities throughout the South Coast Air Basin. Range Energy has developed battery electric-powered trailers that use standard interfaces to connect with diesel or electric tractors without retrofitting. The electric trailers provide propulsion assistance and regenerative braking that is expected to result in fuel savings and the reduction of criteria and GHG pollutants. The technology is also expected to extend the range of new zero-emission trucks through the trailer's propulsion assistance. Overall, this demonstration project will quantify emission benefits and effectiveness of an electric-powered trailer to reduce emissions from diesel trucks. Additionally, this technology is expected to be further developed to help replace the need for diesel engines powering transport refrigeration units upon trailers in the near future.

Proposal

Range Energy will develop and provide an electric-powered hybrid trailer to a local fleet that will place the trailer into operation using a diesel truck. The demonstration will be conducted for the period of one month and will include the in-use emissions measurements to evaluate the impact of emissions reduction from the utilization of electric-powered hybrid trailer. The electric-powered trailers can be installed into any tractor (i.e., diesel, battery electric and hydrogen/fuel cell) without retrofitting. The trailer will use an embedded sensor to detect the tractor's motion and performance (accelerating, braking, etc.) and augment the behavior with propulsion assistance and/or regenerative braking.

UCR/CE-CERT will assist Range Energy with emission measurements and analyzing fuel-savings that will help quantify emission benefits along with understanding operational cost benefits or disbenefits to using an electric trailer in a routine truck delivery route.

Sole Source Justification

Section VIII.B.2. of the Procurement Policy and Procedure identifies provisions under which a sole source award may be justified. This request for a sole source award to Range Energy is made under provision B.2.c. Specifically, B.2.c.(1): The unique experience and capabilities of the proposed contractor or contractor team; and B.2.c.(2): The project involves the use of proprietary technology. Range Energy was founded in 2021 and is composed of industry experts in transportation technology development and the deployment of scaled-up decarbonizing technologies. The request for sole source award to UCR/CE-CERT is made under provision B.2.d.(8): Research and development efforts with educational institutions or nonprofit organizations. UCR is an educational institution, and the CE-CERT program addresses the broad utilization of energy resources and the emerging nexus of electric power generation, infrastructure, transportation, and the environment.

Benefits to South Coast AQMD

Supporting the expanded application of electrification technology in the commercial sector is consistent with the Technology Advancement Office Clean Fuels Program 2023 Plan Update under the category of “Develop and Demonstrate MD and HD On-Road Battery Electric Vehicles and Equipment” and the 2022 AQMP.

Successful demonstration of this technology will help to support the commercial viability and wide-scale deployment of zero emissions technology in the heavy-duty truck sector by improving market competition in providing more options to meet a variety of fleet needs.

Resource Impacts

The total estimated cost for the proposed projects is up to \$4,292,000. South Coast AQMD’s total proposed cost-share will not exceed \$550,000 from the Clean Fuels Program Fund (31).

Project Partners	South Coast AQMD (requested)	Cost-Share	Project Cost
Range Energy	\$500,000	\$ 3,742,000	\$4,242,000
UCR/CE-CERT	\$50,000		\$50,000
Total (not to exceed)	\$550,000	\$3,742,000	\$4,292,000

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 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.