

BOARD MEETING DATE: February 7, 2025

AGENDA NO. 3

**PROPOSAL:** Execute Contract to Develop and Demonstrate Zero-Emission Transport Refrigeration Unit with Electric-Powered Trailer for Heavy-Duty Vehicles

**SYNOPSIS:** Range Energy, Inc. and San Joaquin Valley Air Pollution Control District propose to partner with South Coast AQMD to demonstrate and validate an electric Transport Refrigeration Unit (TRU) system coupled with Range Energy, Inc.'s electric-powered trailer technology in real world commercial fleet operations. This action is to execute a contract with Range Energy in an amount not to exceed \$111,180 from Clean Fuels Program Fund (31) for the development and demonstration of an electric TRU coupled with an electrified-powered trailer in the South Coast Air Basin.

**COMMITTEE:** Technology, January 24, 2025; Recommended for Approval

**RECOMMENDED ACTION:**

Authorize the Executive Officer to execute a contract with Range Energy, Inc., for the development and demonstration of an electric Transport Refrigeration Unit coupled with an electric-powered trailer for heavy-duty vehicles in an amount not to exceed \$111,180 from Clean Fuels Program Fund (31).

Wayne Natri  
Executive Officer

## **Background**

Transport Refrigeration Units (TRUs) are used to maintain the appropriate temperature of goods during freight transportation activities, such as food transportation from cold storage warehouses to grocery stores. TRUs, most often powered by small diesel engines, are typically mounted to an insulated trailer to keep food items cold or frozen. TRUs are a significant contributor to community air pollution and local health impacts, especially in areas with major transportation corridors like the San Joaquin Valley and the South Coast Air Basin.

CARB is developing requirements to transition diesel-powered TRUs to zero-emission (ZE) technologies. However, no commercially available ZE trailer mounted TRUs currently exist. CARB's 2022 TRU Technology Assessment report described several potential technologies that may help reduce emissions from trailer-mounted TRUs such as battery-electric TRU models associated with electric-powered trailers. The report discussed that electric-powered trailer technology including regenerative braking and axle generation may ease some of the power requirement challenges associated with ZE battery-electric TRUs.

In October 2023, the Board approved a project to develop a regenerative battery assisted electric-powered trailer with Range Energy, Inc., (Range Energy). Range Energy has successfully shown their trailer technology works and now is proposing to develop a trailer coupled with a battery-electric TRU.

## **Proposal**

Range Energy, San Joaquin Valley Air Pollution Control District (SJVAPCD), Thermo King, LLC., and Nuvve Holding Co. will develop and conduct end-to-end demonstrations of a battery-powered TRU with electric-powered trailer technology. During the demonstration, a commercial fleet truck will tow a trailer equipped with a Thermo King, LLC electrical TRU and an on-board energy storage system in typical operating routes. Nuvve Holding Co. will install charging infrastructure at the fleet sites. The power capacity of the TRUs and electric-power trailer system will be analyzed. The charging infrastructure will be utilized to charge the trailer and trailer-installed equipment.

The project will be demonstrated with two fleets, one located in the South Coast Air Basin and the other in the San Joaquin Valley, covering grocery distribution and quick service restaurant operations. Overall, the project will hopefully develop and validate the use of ZE TRUs using regenerative trailer braking along with onsite charging.

**Sole Source Justification**

Section VIII.B.2 of the Procurement Policy and Procedure identifies four major provisions under which sole source award may be justified. The request for sole source awards for the Range Energy contract is made under provision B.2.d.(1) Projects involving cost sharing by multiple sponsors. The proposed project includes match share by SJVAPCD, Range Energy, Thermo King and Nuvve Holding Co.

**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 2024 Plan Update under the categories of “Electric/Hybrid Technologies” and “Zero Emission Infrastructure” and the South Coast AQMD 2022 AQMP. Successful demonstration of this technology will help support the commercial development and wide-scale deployment of ZE TRU technology in the heavy-duty truck sector and support CARB’s ZE TRU rulemaking.

**Resource Impacts**

The total estimated cost for the proposed project is up to \$741,200. South Coast AQMD proposes to contribute \$111,180 towards this project from the Clean Fuels Program Fund (31). The total project cost does not include the in-kind contribution of up to \$965,000 from Range Energy for parts and labor to build the TRU electric trailer for this demonstration.

<b>Funding Source</b>	<b>Funding Amount</b>	<b>Percent</b>
Range Energy, Inc.	\$334,840	45
Thermo King, LLC	\$62,000	8
Nuvve Holding Co.	\$122,000	17
SJVAPCD	\$111,180	15
South Coast AQMD (requested)	\$111,180	15
<b>Total</b>	<b>\$741,200</b>	<b>100</b>

Sufficient funds are available in the Clean Fuels Program Fund (31) for the 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.