

BOARD MEETING DATE: November 7, 2025

AGENDA NO. 3

PROPOSAL: Execute Contract to Develop and Demonstrate Zero-Emission Fuel Cell Electric Heavy-Duty Refuse Truck

SYNOPSIS: CARB's California Advanced Clean Fleet regulation requires State and Local Government Agency Fleets to transition to zero-emission technologies for medium- and heavy-duty trucks, including refuse trucks. Although there are some options for battery-electric refuse trucks, development and demonstration are needed for fuel cell electric refuse trucks to accommodate longer range operation and faster refueling. This action is to authorize the Executive Officer to execute a contract with Symbio North America Corporation in an amount not to exceed \$800,000 to develop and demonstrate a Class 8 heavy-duty fuel cell electric refuse truck.

COMMITTEE: Technology, October 17, 2025; Recommend for Approval

RECOMMENDED ACTION:

Authorize the Executive Officer to execute a contract with Symbio North America Corporation to develop and demonstrate a Class 8 heavy-duty fuel cell electric refuse truck in an amount not to exceed \$800,000 from the Clean Fuels Program Fund (31).

Wayne Natri
Executive Officer

AK:MW:VP:SC

Background

As medium- and heavy-duty truck fleets transition to zero-emission (ZE) technologies, there is a growing demand for longer range and fast fueling options to meet more vigorous duty-cycles, such as residential refuse collection vehicles. Although ZE battery electric refuse trucks are commercially available, hydrogen fuel cell electric refuse trucks are very limited. The development and deployment of hydrogen fuel cell electric vehicles are needed to accelerate the commercialization of zero-emission technologies

for the refuse sector. The State and Local Government Agency Fleets are subject to the Advanced Clean Fleet regulation and operate some vocational vehicles that have more demanding duty cycles and need a faster refueling capability, which can benefit from hydrogen fuel cell technology.

Symbio North America Corporation (Symbio) is a leading global fuel cell manufacturer that has developed a scalable fuel cell powertrain system demonstrated for truck and bus applications. Symbio proposes to procure a Mack LR refuse chassis and integrate a fuel cell powertrain and install an all-electric residential refuse collection automatic side loader body. The proposed Symbio Class 8 fuel cell electric refuse truck is expected to feature a 150 kW fuel cell system, 200 kWh of battery storage, and a range of over 100 miles of continuous operation.

Proposal

Under this project, Symbio will produce a hydrogen fuel cell refuse truck at its pilot-plant in Temecula, California, and demonstrate it for one year in partnership with CR&R, Waste Management and local municipalities in the South Coast Air Basin. Hydrogen fueling to support the demonstration will be procured and managed by Utility Global, a company specializing in hydrogen production from biogases. The Symbio truck will be refueled by a high-pressure hydrogen trailer at the fleet locations. Hydrogen will be sourced locally from existing hydrogen stations, and/or at an existing hydrogen production facility in South Coast Air Basin. University of California, Irvine will conduct the data collection, analysis, and provide third-party validation of the performance of the hydrogen fuel cell refuse truck.

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. The request for sole source awards for the Symbio contract is made under provision B.2.d.(1) Projects involving cost sharing by multiple sponsors. The proposed project includes match share by Symbio, Utility Global, and fleet partners. This request for a sole source award is made under provision B.2.c.: The desired services are available from only the sole source based upon one or more of the following reasons: B.2.c.(1): The unique experience and capabilities of the proposed contractor or contractor team; B.2.c.(2): The project involves the use of proprietary technology; and B.2.c.(3): The contractor has ownership of key assets required for project performance. Symbio has significant investment as a fuel cell manufacturer. As a global fuel cell powertrain with proven capability to develop fuel cell vehicles, Symbio provides a product with emission reductions and fueling options for refuse vehicles.

Benefits to South Coast AQMD

The South Coast Air Basin is classified as an “extreme” nonattainment area for ozone under the federal Clean Air Act. Successful development and pilot demonstration of fuel cell electric refuse trucks will increase zero emission transport and help reduce Ozone and PM2.5 air pollution. The project supports the Technology Advancement Office Clean Fuels Program 2024 Plan Update under the categories of *“Hydrogen/Mobile Fuel Cell Technologies”* and *“Zero Emission Infrastructure.”*

Resource Impacts

The contract with Symbio to develop and demonstrate a fuel cell electric refuse truck will not exceed \$800,000. Symbio’s cost-share is estimated to be \$709,500 through hardware as well as engineering. Utility Global will contribute up to \$50,000 in cost-share through fuel management, and the fleets will contribute an estimated \$127,500 in costs related to operating costs and hydrogen fuel. The total project cost is estimated to be \$1,687,000.

Proposed Project Costs

Funding Source	Funding Amount	Percent (%)
Symbio	\$709,500	42.0
Utility Global	\$50,000	3.0
Fleet Partners (in-kind)	\$127,500	7.6
South Coast AQMD (<i>requested</i>)	\$800,000	47.4
Total	\$1,687,000	100

Sufficient funds are available from the Clean Fuels Fund (31) to execute contracts for the Symbio 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.