

BOARD MEETING DATE: October 4, 2019

AGENDA NO. 4

PROPOSAL: Recognize Revenue and Execute Contracts to Develop, Demonstrate and Commercialize Near-Zero Emissions Natural Gas and Propane Conversion Systems for On-Road Medium-Duty Vehicles

SYNOPSIS: South Coast AQMD has been supporting rapid deployment of near-zero NOx heavy-duty vehicles since natural gas engines became commercially available in 2015, but there is a need to develop and certify near-zero engines for medium-duty vehicles. Staff has received three proposals to develop natural gas and propane conversion systems for the new Ford 7.3-liter gasoline engine and certify the systems to CARB's optional low-NOx standard for use in Class 4-7 Ford medium-duty vehicle platforms. These actions are to recognize revenue up to \$900,000 from SoCalGas into the Clean Fuels Program Fund (31) and execute three contracts totaling \$2,099,175 to develop and commercialize the new 7.3-liter near-zero NOx emissions medium-duty natural gas and/or propane conversions systems for different market segments.

COMMITTEE: Technology, September 20, 2019; Recommended for Approval

RECOMMENDED ACTIONS:

1. Recognize revenue, upon receipt, up to \$900,000 from SoCalGas into the Clean Fuels Program Fund (31) to develop, demonstrate and commercialize near-zero emissions natural gas conversion systems for on-road medium-duty vehicles.
2. Authorize the Chairman to execute contracts from the Clean Fuels Program Fund (31) totaling \$2,099,175 with following:
 - a. A-1 Alternative Fuel Systems to develop and commercialize a near-zero emissions natural gas conversion system for on-road medium-duty vehicles in an amount not to exceed \$891,350.
 - b. Landi Renzo USA to develop and commercialize a near-zero natural gas conversion system for on-road medium-duty vehicles in an amount not to exceed \$600,000.

- c. Agility Fuel Solutions to develop, demonstrate and commercialize near-zero natural gas and propane conversion systems for on-road medium-duty vehicles in an amount not to exceed \$607,825.

Wayne Natri
Executive Officer

MMM:NB:JE:SC

Background

The U.S. Department of Transportation maintains that natural gas plays a key role as a versatile, low emission fuel and is an increasingly attractive alternative to conventional diesel fuel on a nationwide basis. Due to low carbon fuel and renewable fuel initiatives, renewable natural gas (RNG) further increases interest and motivation in expanding the use of natural gas in the transportation sector. In addition, renewable propane has recently become available from local producers.

South Coast AQMD has been supporting the rapid deployment of near-zero 0.02 g/bhp-hr NO_x vehicles through its incentive programs since the first near-zero heavy-duty natural gas engines became commercially available in 2015. However, the 2016 AQMP identified medium-duty trucks as contributing over 40% of the on-road mobile source NO_x inventory in 2012, and a 2018 fleet survey showed opportunities for additional medium-duty truck emission reductions.

Earlier this year, Ford announced a new 7.3-liter V8 gasoline engine option for the upcoming 2020 model year (MY) medium-duty vehicles as a replacement to the existing popular Ford 6.8-liter V10. The 6.8-liter engine has significant market share in multiple applications, including local and regional goods movement, municipal fleets, utilities, and a variety of transit, shuttle and school bus operations, and has been successfully converted to near-zero NO_x emission levels for natural gas and propane fuel options. Staff has received three proposals to develop the new 7.3-liter low NO_x engine conversion systems. Each proponent has a distinct commercialization strategy for their system that includes addressing different medium-duty vehicle market segments such as public fleets, goods movement, utility vehicles and potentially buses.

Proposal

A-1 Alternative Fuel Systems

A-1 Alternative Fuel Systems is partnering with SoCalGas and others to develop and commercialize a natural gas conversion system for the new Ford 7.3-liter gasoline engine including certification of the system to CARB's optional low NO_x standard for use in Class 4-7 Ford medium-duty vehicle platforms. A-1 has selected Westport Fuel Systems, a Ford Qualified Vehicle Modifier (QVM) Developer, and Badillo

Engineering, a Ford Qualified Calibration Modifier (QCM), to develop the alternative fuel system and the engine control calibrations to the 0.02 g/bhp-hr NOx emission levels per Ford guidelines. Upon successful demonstration of meeting the optional low-NOx standard, the project will proceed with U.S. EPA and CARB emission certification and Ford compliance testing. U.S. Gain, a market leader in natural gas and RNG refueling infrastructure development, and Worthington Industries, Inc., the largest alternative fuel cylinder and system supplier in the world, are cost-sharing partners this project.

Landi Renzo USA

Landi Renzo USA (LRUSA), along with SoCalGas, will also develop and commercialize a natural gas conversion system for the new Ford 7.3-liter gasoline engine including certification of the system to CARB's optional low NOx standard for use in Class 4-7 Ford medium-duty vehicle platforms. LRUSA will work closely with Badillo Engineering, a Ford QCM, and Ford Motor Company to perform the calibration and certify this engine to 0.02 g/bhp-hr NOx emission level.

Agility Fuel Solutions

Agility Fuel Solutions will develop, commercialize and certify the near-zero NOx propane and natural gas conversion systems for the new 7.3-liter Ford engine with support from SoCalGas for the natural gas conversion. Agility has selected MAHLE Powertrain, LLC, a Ford QCM, to codevelop the alternative fuel system and engine control calibrations to the 0.02 g/bhp-hr NOx emission levels in MAHLE's laboratory. Agility will also demonstrate the certified natural gas and propane engine in two separate chassis configurations for system integration and validation, as well as fleet customer drive events. Ford will provide two engines for the demonstration.

Benefits to South Coast AQMD

Availability of more near-zero NOx alternative fuel medium-duty engines, combined with renewable fuels, will lead to further near-term NOx reductions for ozone attainment, and greenhouse gas reductions. Furthermore, this will expand the number of engine offerings for South Coast AQMD incentive programs, which will contribute towards lower emissions, particularly in environmental justice communities. Projects to support development of near-zero emission engines are included in the *Technology Advancement Office Clean Fuels Program 2019 Plan Update* under the category "Engine Systems."

Sole Source Justification

Section VIII.B.2 of the Procurement Policy and Procedure identifies provisions by which sole source awards may be justified. 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: 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. The request for sole

source award is also made under provision B.2.d.(1): Project involving cost-sharing by multiple sponsors. For an alternate fuel conversion system to retain original manufacture warranty, Ford requires a certified Ford QVM Developer in alternative fuels with the proven capability to perform the development and certification. Westport Fuel Systems, A-1's contractor for this project, LRUSA and Agility are all companies approved by Ford to perform this work. The proposed projects include cash and in-kind cost-sharing from SoCalGas, Ford Motor Company, U.S. Gain, Worthington Industries and the project proponents.

Resource Impacts

South Coast AQMD's cost-share will not exceed \$1,199,175. Total contracts to be executed will not exceed \$2,099,175 from the Clean Fuels Program Fund (31), including SoCalGas's pass-through funding of \$900,000, which will be received into Fund 31. The estimated total costs for each project are summarized below:

Proposed Project	A-1	LRUSA	Agility	Total	Percent
Proponent & Partner Cost-Share*	\$382,000	\$855,072	\$1,226,175	\$2,463,247	54
SoGalGas	\$445,675	\$300,000	**\$154,325	\$900,000	20
South Coast AQMD (requested)	\$445,675	\$300,000	\$453,500	\$1,199,175	26
Total Project Cost	\$1,273,350	\$1,455,072	\$1,834,000	\$4,562,422	100

*Partner cost-share includes U.S. Gain and Worthington Industries cost-sharing and Ford's in-kind.

**Cost-share for CNG conversion only

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.