

BOARD MEETING DATE: May 5, 2017

AGENDA NO. 5

PROPOSAL: Execute Contract to Develop High Efficiency Near-Zero Emission Natural Gas Engines for Heavy-Duty Vehicles

SYNOPSIS: In December 2016, the CEC released a competitive solicitation to fund development of advanced natural gas engine technology capable of reducing the efficiency gap between heavy-duty natural gas engines and equivalent diesel engines. The CEC received five responses to the solicitation and recommended three grant awards, one of which was to North American Repower, LLC (NAR). Staff proposes to cost-share this project, along with the Southern California Gas Company who will be contracting directly with NAR. This action is to execute a contract with NAR to develop a high efficiency near-zero emission heavy-duty natural gas engine in an amount not to exceed \$200,000 from the Clean Fuels Fund (31).

COMMITTEE: Technology, April 21, 2017; Recommended for Approval

RECOMMENDED ACTION:

Authorize the Chairman to execute a contract with North American Repower, LLC, for the development of high efficiency near-zero emission natural gas engines for on-road heavy-duty vehicles in an amount not to exceed \$200,000 from the Clean Fuels Fund (31).

Wayne Natri
Executive Officer

MMM:FM:NB:AAO:JL

Background

While natural gas engines are achieving near-zero emission levels, diesel engines are still more efficient. Recent studies and new generations of natural gas engines are showing that the efficiency gap between natural gas and diesel engines is shrinking as advanced technologies are employed in natural gas engines. Consequently, last year, the SCAQMD, CEC and Southern California Gas Company (SoCalGas) began discussing with engine manufacturers the need to develop near-zero natural gas engines

with efficiencies comparable to diesel engines. As a result of those discussions, in December 2016, the CEC released a competitive solicitation seeking proposals to develop advanced natural gas engine technology capable of reducing the efficiency gap between heavy-duty natural gas engines and equivalent diesel engines. The CEC received five proposals in response to the solicitation, and in March 2017, recommended three grant awards, one of which was to North American Repower, LLC (NAR). Given market demand for high efficiency near-zero emission heavy-duty natural gas engines, staff proposes to cost-share this project, along with the Southern California Gas Company (SoCalGas) who will be contracting directly with NAR.

Proposal

The objective of the proposed project is to advance natural gas engine and aftertreatment technologies to achieve engine efficiency comparable to diesel engines and NOx emission levels that are at least 90% lower than 2010 heavy-duty NOx emission standards. NAR will convert a 2016 CARB-certified diesel engine to lean-burn natural gas suitable for Class 8 heavy-duty vehicle applications. The optimization will include piston design, modification of controller software and the latest technology in advanced spark ignition together with new aftertreatment technology to reach near-zero NOx. Once developed, the engine will be tested using both the Federal Test Procedure for emissions certification and non-certification test cycles representative of real-world use in different vocations that are prevalent in the South Coast Air Basin (SCAB). The use of vocational-specific test cycles will provide additional insight towards the engine's real-life emission reduction potential at the desired increased efficiency.

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. This request for sole source award is made under provision B.2.d: Other circumstances exist which in the determination of the Executive Officer require such waiver in the best interest of the SCAQMD. Specifically, these circumstances are B.2.d(1): Projects involving cost sharing by multiple sponsors. The proposed project will be cost-shared by the CEC, SoCalGas and NAR, as outlined in Resources Impacts.

Benefits to SCAQMD

Projects to support implementation of various clean fuel vehicle programs are included in the *Technology Advancement Office Clean Fuels Program 2017 Plan Update* within the category "Engine Systems" under "Develop and Demonstrate Advanced Gaseous- and Liquid-Fueled Medium- and Heavy-Duty Engines and Vehicles Technologies to Achieve Ultra-Low Emissions". This project is to develop high efficiency near-zero emission natural gas engines for on-road heavy-duty vehicles. This engine can also be fueled with renewable natural gas. Successful development will help to accelerate wide-scale deployment of such engines in the region while reducing NOx and GHG emissions to help reach AQMP attainment and state climate change goals.

Resource Impacts

The proposed project budget is approximately \$1,958,096, with funding anticipated from the CEC, SoCalGas and NAR. SCAQMD's total cost-share shall not exceed \$200,000 from the Clean Fuels Fund (31). The CEC and SoCalGas will contract directly with NAR. Proposed project budget is broken down as follows:

Proposed Project Budget

Funding Source	Cost-Share Amount	Percent
CEC	\$900,000	46
SoCalGas	\$150,000	8
NAR (<i>in-kind</i>)	\$708,096	36
SCAQMD (<i>requested</i>)	\$200,000	10
Total	\$1,958,096	100

Sufficient funds are available from the Clean Fuels Fund (31), 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.