


BOARD MEETING DATE: November 6, 2015

AGENDA NO. 4

PROPOSAL: Recognize Revenue and Execute Contract for Development, Integration and Demonstration of Ultra-Low-Emission Natural Gas Engine for On-Road Heavy-Duty Vehicles 

SYNOPSIS: The Board previously awarded contracts to Cummins Westport Inc. (CWI) and Cummins Inc. to develop next generation ultra-low-emission heavy-duty natural gas engines that are 90% cleaner than the current NOx emission standard. As a follow-on to this development project and given market demand for natural gas engines in the 11- to 13-liter range, the CEC, Southern California Gas Company and Clean Energy have expressed interest in cofunding the advancement of the current 11.9-liter natural gas engine to achieve ultra-low NOx emissions. These actions are to recognize revenues up to \$2.5 million and execute a contract with CWI for development, integration and demonstration of an 11.9-liter ultra-low-emission natural gas engine in an amount not to exceed \$4.25 million from the Clean Fuels Fund (31).

COMMITTEE: Technology, October 16, 2015; Recommended for Approval

RECOMMENDED ACTIONS:

1. Recognize, upon receipt, up to \$500,000 from Clean Energy and up to \$1 million each from the CEC and Southern California Gas Company into the Clean Fuels Fund (31) for the development, integration and demonstration of ultra-low-emission natural gas engines for on-road heavy-duty vehicles and appropriate these monies into the Clean Fuels Fund; and
2. Authorize the Chairman to execute a contract with CWI for the development, integration and demonstration of an 11.9-liter ultra-low-emission natural gas engine for on-road heavy-duty vehicles in an amount not to exceed \$4.25 million from the Clean Fuels Fund (31), of which SCAQMD's share is not to exceed \$1,750,000.

Barry R. Wallerstein, D.Env.
Executive Officer

Background

On-road heavy-duty diesel vehicles are currently one of the largest sources of NOx emissions, which are precursors to ozone formation, in the South Coast Air Basin. This source category is projected to be one of the largest contributors to NOx emissions even as the legacy fleet of older and higher polluting vehicles are retired and replaced with vehicles meeting the 2010 heavy-duty exhaust emissions standards. However, research is being conducted for the next generation natural gas engines to achieve a 90% cleaner NOx emissions level compared to the current emission standard. The SCAQMD is sponsoring projects with Cummins Westport Inc. (CWI) and Cummins Inc. to develop and demonstrate 8.9- and 15-liter natural gas engines. In fact, CWI recently received CARB certification for its 8.9-liter engine at 0.02 g/bhp-hr NOx.

As a follow-on to the engine development and demonstration projects and given market demand for natural gas engines in the 11- to 13-liter range, the CEC, Southern California Gas Company (SoCalGas) and Clean Energy have expressed interest in cofunding advancement of the current 11.9-liter natural gas engine to achieve ultra-low-NOx emissions.

Proposal

This action is to recognize, upon receipt, up to \$500,000 from Clean Energy and up to \$1 million each from the CEC and Southern California Gas Company for a total of up to \$2.5 million and appropriate these monies into the Clean Fuels Fund (31). This action is to also execute a contract with CWI for the development, integration and demonstration of an 11.9-liter ultra-low-emission natural gas engines for use in on-road heavy-duty vehicle applications in an amount not to exceed \$4,250,000, of which SCAQMD's share is not to exceed \$1,750,000.

The project is intended to advance engine and aftertreatment technologies in the current 11.9-liter natural gas engine to achieve NOx emission levels that are at least 90% lower than 2010 engine emission certification standards. CWI will be required to conduct engine and aftertreatment development activities to achieve the ultra-low-emissions target and perform substantial validation and durability testing to confirm the robustness of their design. Once developed, the engine will be tested using both the Federal Test Procedure for emissions certification and non-certification test cycles representative of the real-world use in different vocations that are prevalent in the air basin. The use of vocational specific test cycles will provide additional insight towards the engine's real-life emission reduction potential. The program will ultimately conclude with the engine being integrated into on-road heavy-duty chassis and placed in commercial service to fully validate its performance and viability.

Benefits to SCAQMD

The Board previously awarded a contract to CWI to develop, integrate and demonstrate 8.9-liter ultra-low-emission heavy-duty natural gas engines that are capable of achieving 0.02g/bhp-hr or lower NOx emissions. CWI recently received CARB certification for

the 8.9-liter natural gas engine at 0.02 g/bhp-hr NOx emissions. Because of market demand for natural gas engines in the 11- to 13-liter range, the proposed project is a follow-on phase of natural gas engine development project to transfer the technology and use lessons learned from the successful development of the 8.9-liter engine to advance the current 11.9-liter natural gas engine to achieve ultra-low NOx emissions. The development and use of ultra-low-emission engines in on-road heavy-duty truck applications will assist the SCAQMD in attaining federal ambient air quality standards. This proposed project is included in the *Technology Advancement Office Clean Fuels Program 2015 Plan Update* under “Engine Systems.”

Sole Source Justification

Section VII.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.d: Other circumstances exist which in the determination of the Executive Officer requires such waiver in the best interest of the SCAQMD. This request for sole source award is made under provision B.2.d(1): Projects involving cost sharing by multiple sponsors, and provision B.2.d(3): Projects involving commitment to multiple project phases. The proposed project will be cost-shared by CEC, SoCalGas, Clean Energy and CWI.

Resource Impacts

The proposed project budget is approximately \$5.25 million, with funding anticipated from the CEC, SoCalGas and Clean Energy to be recognized, upon receipt, into the Clean Fuels Fund (31). Of this \$5.25 million, SCAQMD’s cost-share shall not exceed \$1.75 million from the Clean Fuels Fund (31). The total cost-share for the proposed project is summarized below:

Proposed Project Cost-Share

Funding Source	Funding Amount	% of Project
Clean Energy	\$ 500,000	10%
CEC	\$1,000,000	19%
SoCalGas	\$1,000,000	19%
CWI (in-kind)	\$1,000,000	19%
SCAQMD (<i>requested</i>)	\$1,750,000	33%
Total	\$5,250,000	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.