BOARD MEETING DATE: February 6, 2015 AGENDA NO. 4

PROPOSAL: Recognize Funds and Execute Contract for Heavy-Duty Advanced Technology Assessment

SYNOPSIS: NO_x emissions from on-road heavy-duty diesel trucks are the largest contributor to ozone and fine particulate air quality in the South Coast Air Basin. As such, there is a need to better understand and plan for the deployment of zero and near-zero emission advanced technologies in this sector. The Southern California Gas Company (SoCalGas) has expressed interest in cofunding a study that would help achieve this objective. This action is to recognize $250,000 from SoCalGas into the Clean Fuels Fund (31). This action is to also execute a contract with U.S. DOE's National Renewable Energy Laboratory to develop a detailed technology and economics-based assessment for the deployment of advanced heavy-duty vehicle technologies suitable in commercial fleet applications in an amount not to exceed $500,000 from the Clean Fuels Fund (31).

COMMITTEE: Technology, January 23, 2015; Recommended for Approval

RECOMMENDED ACTIONS:

1. Recognize, upon receipt, up to $250,000 into the Clean Fuels Fund (31) from the Southern California Gas Company (SoCalGas) to cosponsor the development of a detailed technology and economics-based assessment for the deployment of advanced heavy-duty vehicle technologies; and
2. Authorize the Chairman to execute a contract with the U.S. DOE's National Renewable Energy Laboratory (NREL) to develop a detailed technology and economics-based assessment for the deployment of advanced heavy-duty vehicle technologies in an amount not to exceed $500,000 from the Clean Fuels Fund (31).

Barry R. Wallerstein, D.Env.
Executive Officer

MMM:HH:DKS:DRC

Background

NO_x emissions from on-road heavy-duty diesel trucks are the largest contributor to ozone and fine particulate air quality in the South Coast Air Basin. To meet ozone ambient air quality standards by 2022, 2023 and 2032, there is a critical need to reduce NO_x emissions as early as possible. The Draft 2015 Clean Fuels Plan Update emphasizes the need for zero and near-zero emission technologies for the on-road heavy-duty vehicle sector. These areas include the development and demonstration of advanced alternative fuel and fuel cell-powered medium- and heavy-duty engines and vehicles. Recognizing that advanced technology vehicles have significant cost impacts and different performance characteristics compared to conventional vehicles, there is a need to better understand and plan for their deployment, taking into account vehicle operation and duty cycle, the overall economics of ownership of advanced technology vehicles, and the level of incentives and mandates necessary so that businesses can financially afford to use these vehicles. SoCalGas has expressed an interest in cofunding a study that would help achieve this objective.

Proposal

The proposed project will develop a Commercial Zero Emission Vehicle Assessment specific to this region. A detailed technology and economic-based assessment will be developed focusing on identifying barriers and opportunities to match advanced technology options to key commercial medium- and heavy-duty vehicle vocations in Southern California. The technology options to be evaluated include: battery-electric vehicles, fuel cell vehicles, catenary/induction electric propulsion systems, and CNG and LNG internal combustion engines and gas turbines. The project will evaluate the resulting impact on fleet emissions, vehicles acquisition and operation costs for different scenarios, including market impacts resulting from different types of incentives and mandates.

Phase I will result in a baseline "technology adoption" scenario for zero and near-zero emission vehicles, specific to this region's medium- and heavy-duty commercial vehicle fleets. This phase will also include the development of "total cost of ownership" and "adoption-rate" models that are populated with data from NREL's fleet DNA vocational vehicle duty-cycle database with an analysis of the compatibilities of candidate commercial vehicle technologies to meet the region's air quality goals and commercial vehicle requirements.

Phase II will focus on utilizing the modeling framework developed under Phase I to determine the impact on fleet emissions based on technology adoption rates. In addition, various deployment scenarios will be analyzed to understand the effects of policy and market drivers, and input parameter uncertainties/sensitivity analysis on achieving NO_x and greenhouse gas (GHG) goals through 2050. Under Phase II, the

"technology adoption" scenario will be enhanced through feedback from private and public stakeholders and the incorporation of non-economic and other market drivers and barriers.

This action is to recognize revenue from SoCalGas into the Clean Fuels Fund (31) and to execute a contract with NREL to develop an advanced technology assessment for on-road heavy-duty trucks from the Clean Fuels Fund (31).

Sole Source Justification
Section VIII.B.2 of the Procurement Policy and Procedure identifies provisions under which a sole source award 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 require 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(8): research and development efforts with educational institutions or nonprofit organizations.

NREL, the only federal laboratory dedicated to the research, development, commercialization and deployment of renewable energy and energy efficiency technologies, will be the prime contractor for this project. NREL has managed several projects involving testing and development of engines and vehicles with an emphasis on emissions, alternative fuels and related technologies. NREL, a nonprofit organization, has supported SCAQMD, U.S. EPA, CARB and others on a variety of projects related to technology analysis, engine and vehicle testing, engine and combustion data acquisition and analysis and alternative fuels technologies.

Benefits to SCAQMD
The proposed project is listed in the *Draft 2015 Clean Fuels Plan Update* under several technology categories including "Electric and Hybrid Vehicle Technologies and Infrastructure," "Hydrogen and Fuel Cell Technologies and Infrastructure" and "Engine Systems." Results from such an evaluation would provide valuable information to local, state and federal policy makers to identify the optimum mix of mandates and incentives to achieve maximum deployment of these advanced technology vehicles. The proposed project will help expedite commercialization and increase the availability of zero and near-zero emission heavy-duty vehicles.

Resource Impacts
The total cost for the proposed project with NREL is $500,000 from the Clean Fuels Fund (31). The $500,000 includes $250,000 in anticipated revenue from SoCalGas, which will be recognized into the Clean Fuels Fund (31).

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.