

BOARD MEETING DATE: October 2, 2015

AGENDA NO. 6

**PROPOSAL:** Execute Contract for Renewable Natural Gas Production and Vehicle Demonstration Project 

**SYNOPSIS:** In order to fuel their fleet of natural gas solid waste collection vehicles, CR&R Environmental Services (CR&R) is producing biomethane, a renewable natural gas (RNG), at its material recovery facility in Perris, CA. CR&R proposes to expand their current RNG production with the addition of a second anaerobic digester. This expansion would displace 890,000 gallons of fossil-based fuel annually used in their vehicles and additional RNG produced would be injected into the Southern California Gas Company pipeline. CR&R is also interested in demonstrating the use of RNG with the next generation natural gas engine that achieves 90 percent lower NOx emissions than the existing 2010 heavy-duty engine exhaust emissions standard. This action is to execute a contract with CR&R in an amount not to exceed \$900,000 from the Clean Fuels Fund (31) to cost-share construction of a second anaerobic digester and demonstrate the use of RNG with the next generation natural gas engine.

**COMMITTEE:** Technology, September 18, 2015; Recommended for Approval

**RECOMMENDED ACTION:**

Authorize the Chairman to execute a contract with CR&R to cost-share construction of a second anaerobic digester to expand RNG production at their material recovery facility in Perris and demonstrate the use of RNG with next generation natural gas engines in an amount not to exceed \$900,000 from the Clean Fuels Fund (31).

Barry R. Wallerstein, D.Env.  
Executive Officer

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## **Background**

Renewable natural gas (RNG), also known as biomethane, biogas, digester gas or landfill gas, refers to natural gas from unconventional sources where biological processes like anaerobic digestion produce methane from organic matter. Natural gas derived in this fashion is considered “renewable” because the feedstock is part of a continuous organic cycle, namely the decomposition of biological waste products. The feedstock used in the anaerobic digestion system is solid and liquid organic materials derived from green waste, food waste and organic liquid waste products. Anaerobic digestion is part of the waste industry’s concept of “zero waste” as the separated digested solids can be composted, utilized for dairy bedding, directly applied to cropland or converted into other products. Nutrients in the liquid stream are used in agriculture as fertilizer.

One such RNG system is a commercially proven technology manufactured by Eisenmann AG in Germany. The system uses a series of biological processes in which microorganisms break down biodegradable material in the absence of oxygen. RNG produced through anaerobic digestion is cleaned to pipeline quality standards and blended with fossil natural gas. This project includes a gas conditioning system to produce pipeline and fuel grade methane. RNG is fully interchangeable with conventional natural gas and can be injected into existing natural gas pipelines and used in natural gas vehicles in the form of CNG or LNG.

CR&R Environmental Services (CR&R), which serves approximately 2.5 million customers within the SCAQMD, has been constructing an anaerobic digestion system at its material recovery facility (MRF) located in Perris, CA. Phase I of CR&R’s anaerobic digestion and biomethane facility (ADBF) is nearing completion and is expected to commence operations in the fall of 2015. Phase I will divert 83,000 tons annually of organic solid waste from Southern California landfills while producing 890,000 diesel gallon equivalents (DGEs) of RNG annually. This fuel will be wholly utilized by CR&R’s heavy-duty natural gas-powered waste collection vehicles deployed in Riverside and North Orange County. The ADBF project has been designed to support up to three additional expansion phases to increase production of RNG, and staff recommends cost-sharing Phase II.

Currently, the SCAQMD, in collaboration with Cummins Westport Inc. and other partners, is cosponsoring the development of the next generation, on-road heavy-duty natural gas engines in both the 8.9L ISL G and the 11.9L ISX G platforms. It is expected they will achieve a 0.02 g/bhp-hr NO<sub>x</sub> emissions level, which is 90% less NO<sub>x</sub> when compared to the current on-road heavy-duty engine standard of 0.2 NO<sub>x</sub> g/bhp-hr. CR&R is interested in demonstrating the RNG produced at its facility in their

solid waste collection and transfer vehicle fleet using the next generation natural gas-powered engines, and staff recommends cost-sharing this additional project element.

### **Proposal**

CR&R seeks a seamless transition to Phase II of the ADBF expansion to utilize project and construction efficiencies from Phase I and reduce costs associated with construction delays. Phase II will divert an additional 83,000 tons annually from landfills and produce another 890,000 DGEs of RNG annually. The RNG produced from Phase II will exceed CR&R's own vehicle fuel demands, and this RNG supply has received interconnect approval from Southern California Gas Company for introduction into the existing natural gas pipeline system.

CR&R is also proposing to demonstrate RNG produced from this facility into the next generation of heavy-duty natural gas-powered vehicles. The combination of using advanced natural gas engines that achieve 0.02 g NOx/bhp-hr, with the significant GHG and lifecycle emission benefits of RNG, will help demonstrate near-zero on-road heavy-duty engine technology in this region.

This action is to execute a contract with CR&R to cost-share construction of a second anaerobic digester to expand RNG production at CR&R's MRF in Perris and demonstrate next generation natural gas engines in CR&R's solid waste collection and transfer vehicle fleet operating on RNG produced from their ADBF.

### **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): Project involving cost-sharing by multiple sponsors. CR&R has secured cost-sharing from CEC and the California Department of Resources Recycling and Recovery (CalRecycle) and is contributing its own significant financial and in-kind resources for the Phase II expansion project at their ADBF in Perris.

### **Benefits to SCAQMD**

Further expansion of CR&R's ADBF in Perris and the demonstration of next generation natural gas-powered on-road heavy duty vehicles using locally produced RNG addresses local, state and federal environmental regulations and goals. Locally, this project will result in lower NOx emissions, lower diesel PM emissions and demonstration of viable near-zero emission on-road transportation technology. Statewide, the project addresses the AB 32 Scoping Plan which calls for the reduction of GHG emissions resulting from decomposition of organic wastes in landfills as well as legislation adopted last year (AB 1826) requiring businesses to recycle organic waste

depending upon the amount of waste produced. Nationally, RNG production and the use of RNG for transportation fuels would help displace petroleum-based fuels used in the transportation sector. In addition, the injection of RNG into existing pipeline infrastructure would also displace fossil-based natural gas and the transmission-related impacts from out-of-state produced natural gas and its transportation and pipeline distribution. This expansion project is estimated to displace 15,000 metric tons of GHGs annually. This proposed project is included in the *Technology Advancement Office Clean Fuels Program 2015 Plan Update* under the category of “Infrastructure and Deployment” as “Demonstrate Natural Gas Manufacturing and Distribution Technologies including Renewables.”

**Resource Impacts**

SCAQMD’s total cost-share for the project shall not exceed \$900,000 from the Clean Fuels Fund (31). Project development costs for both Phases I and II are as follows:

Project Development Costs (Phases I and II)

<b>Funding Sources</b>	<b>Funding Amount</b>	<b>Percent</b>
CalRecycle	\$3,000,000	5.4%
CEC	\$4,520,000	8.2%
CR&R	\$47,000,000	84.8%
SCAQMD ( <i>requested</i> )	\$900,000	1.6%
<b>Total</b>	<b>\$55,420,000</b>	<b>100%</b>

Sufficient funds are available from the Clean Fuels Fund, 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.