

**Staff Summary
Method 2B Application**

**Element Markets Renewable Energy
Johnstown Regional Energy Landfill Gas (Pennsylvania) to Liquefied
Natural Gas and Liquefied-to-Compressed Natural Gas Delivered in
California
(Pathway Codes: CNG053 and LNG034)**

Deemed Complete Date: February 17, 2015
Posted for Comments Date: November 20, 2015
Certified Date: December 1, 2015

Pathway Summary

Element Markets Renewable Energy LLC (EMRE) has applied for two landfill-gas-to-biomethane fuel pathways. The landfill gas (LFG) for both pathways is extracted from the three landfills in Pennsylvania: Raeger Mountain Landfill, Southern Alleghenies Landfill, and Shade Landfill. Johnstown Regional Energy LLC (JRE) is an operator of LFG processing facilities. Together, the three facilities produce up to 2,500 million Btu/day (912,500 million Btu/year) of LFG. LCFS-credits rights to all biomethane from the JRE are received by EMRE and gas delivery is tracked to Clean Energy Renewable Fuels, LLC (Clean Energy) liquefaction facility in Boron, California by EMRE. One pathway covers the liquefaction of the resulting biomethane at Boron liquefaction facility and the dispensing of the fuel as liquefied natural gas (LNG); the other pathway covers the liquefaction of the resulting biomethane at Clean Energy liquefaction facility and the subsequent vaporization and compression of the liquefied natural gas into compressed natural gas (L-CNG). All fueling stations covered by these pathways are located in California.

LFG from the three landfills is cleaned up using grid electricity and off gas and diverted cleaned biomethane. The diverted cleaned biomethane is used in the thermal oxidizer. The thermal oxidizer is used to destroy low-methane gas remaining after the LFG processing.

The pathway utilizes the CA-GREET1.8b default values for LFG recovery and L-CNG conversion. To determine combustion emissions from the consumed natural gas, the flare and the thermal oxidizer, the CA-GREET1.8b default values for natural gas combustion in a turbine were used. These emissions factors are more representative of operations at the JRE processing plant than are the emission factors for a compressor powered by a natural gas engine. ARB Method 1 for a pathway for North American landfill gas that used conservative inputs values¹. The JRE landfill gas pathway uses specific input values which results in improved CI.

¹ Pathway LNG026: <http://www.arb.ca.gov/fuels/lcfs/2a2b/internal/nalfg-cng-lng-lcng-052815.pdf>

The biomethane from the JRE LFG processing plant is injected into the interstate pipeline system and equivalent amounts removed at Clean Energy liquefaction plant in Boron, California. The pipeline transport distance is 3,000 miles. As such, EMRE will be obligated to retain records that unequivocally demonstrate that the credits earned under the pathways described in this Summary correspond directly with the volumes of biomethane produced at the JRE landfills in Pennsylvania.

Carbon Intensity of LNG and L-CNG Produced

As shown in table below, the applicant has calculated the CIs of its LNG and L-CNG pathways to be 22.65 and 24.74 gCO₂e/MJ, respectively.

Proposed Lookup Table Entries

Fuel	Pathway Identifier	Pathway Description	Carbon Intensity Values (gCO ₂ e/MJ)		
			Direct Emissions	Land Use or Other Indirect Effects	Total
LNG from LFG	LNG034	2B Application*: Pennsylvania landfill gas to pipeline-quality biomethane; delivered via pipeline; liquefied to LNG in California	22.65	0	22.65
L-CNG from LFG	CNG053	2B Application*: Pennsylvania landfill gas to pipeline-quality biomethane, delivered via pipeline, liquefied in California; re-gasified and compressed to L-CNG in California	24.74	0	24.74

* Specific Conditions Apply.

Operating Conditions

1. Actual pathway energy consumption values shall remain at or below the levels specified in EMRE's application. These pathways were calculated using LFG production data (gas sales) covering January 2011 through December 2012 and LNG liquefaction and CNG compression data covering calendar years January 2011 and 2012². The recovery and processing efficiency levels at the JRE landfills in Pennsylvania shall remain at or above the levels specified in the EMRE application. In

² Two different time periods of data reported were originated from the two different companies, where confidential business information from one could not be revealed to the other.

addition, the liquefaction efficiency at the Boron LNG plant shall remain at or above the levels specified in the application.

2. Because the biomethane supplied under this pathway is commingled with fossil natural gas both when it enters the interstate pipeline system and when it enters Clean Energy Boron liquefaction facility, EMRE must maintain an accounting system that will enable it to demonstrate unequivocally at any time that every unit of biomethane-based transportation fuel sold and reported under the LCFS can be associated with an equal unit of biomethane produced at the JRE processing plants.
3. EMRE must unequivocally demonstrate that it is the only entity with rights to reported quantities of renewable attributes associated with the biomethane that JRE landfills supply.
4. EMRE shall provide signed statements from any party to whom it conveys the biomethane from the three Landfills in Pennsylvania listed above attesting under penalty of perjury under California law that all environmental attributes, including the right to generate credits under the LCFS, are exclusively reserved to Integrys, and that no party will claim or has claimed credit for volumes reported in California's LCFS program under any other governmental program except the federal RFS.

Staff Analysis and Recommendations

Staff has reviewed EMRE's JRE/Clean Energy application for the production of L-CNG and LNG from LFG originating in Pennsylvania. Staff has replicated, using the CA-GREET1.8b spreadsheet, the CI values calculated by EMRE. EMRE and Clean Energy have provided documentation in support of the key components of its pathways: energy consumption at the Pennsylvania LFG processing plant (EMRE) and the Clean Energy liquefaction plant. Clean Energy has also provided the volumes of LNG and CNG produced. Staff is satisfied that the energy consumption levels reported in EMRE/Clean Energy application accurately represent actual usage for the time period for which records were submitted, and that EMRE/Clean Energy is capable of maintaining CIs that are at or below those shown in the table above. Therefore, staff recommends that EMRE Method 2B application for LFG-to-LNG and LFG-to-L-CNG pathways be certified, subject to the operating conditions set forth in this staff summary.