

**Staff Summary
Method 2B Application**

**GHI Energy LLC
Fort Bend Landfill Gas (Needville, Texas) to CNG
(Pathway Code: CNG043)**

Deemed Complete Date: June 24, 2015
Posted for Comments Date: September 18, 2015
Certified Date: September 28, 2015

Pathway Summary

GHI Energy LLC (GHI) has applied for a landfill-gas-to-biomethane fuel pathway. The landfill gas (LFG) is extracted from the Fort Bend Regional Landfill in Needville, Texas. The Fort Bend LFG Recovery Project is owned by Fort Bend Power Producers and operated by Morrow Renewables. The pathway covers the compression of the resulting biomethane to CNG for use in the vehicles in California. The capacity of the Fort Bend landfill is about 5 million cubic foot raw biogas inlet per day and 2,760 pounds processed renewable natural gas per day.

LFG from the Fort Bend Landfill is cleaned up mainly using grid electricity. Pre-scrubber LFG is re-routed to be used in the compressor, thermal oxidizer, and flare pilot. The thermal oxidizer and flare are used to destroy LFG when the processing plant is not fully operational. The cleanup plant provides following data from August 2013 to June 2015:

- inlet biogas at average 54% methane content,
- a cleaned biomethane at about 96.4% methane content
- grid electricity use
- diverted cleaned biomethane for thermal oxidizer pilot and compression stage use

The pathway utilizes the CA-GREET1.8b default values for LFG recovery efficiency. 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 Fort Bend Landfill plant than are the emission factors for a compressor powered by a natural gas engine. There is a pathway for North American landfill gas that used conservative inputs values¹. The Fort Bend landfill gas pathway uses specific input values which results in improved CI.

The biomethane GHI purchases from the Fort Bend LFG processing plant is injected into the interstate pipeline system for conveyance and compression to CNG stations in California. The pipeline transport distance is 1,864 miles from

¹ Pathway CNG006: <http://www.arb.ca.gov/fuels/lcfs/2a2b/internal/nalfg-cng-lng-lcng-052815.pdf>

Needville Texas to California. As such, GHI will be obligated to retain records that unequivocally demonstrate that the credits it earns under the pathways described in this Summary correspond directly with the volumes of biomethane it purchases from the Fort Bend Landfill in Needville, Texas.

Carbon Intensity of CNG Produced

As shown in table below, the applicant has calculated the CI of its CNG pathway to be 24.49 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
CNG from LFG	CNG043	2B Application*: Texas landfill gas to pipeline-quality biomethane, delivered via pipeline, compressed to CNG in California	24.49	0	24.49

* Specific Conditions Apply.

Operating Conditions

1. Actual pathway energy consumption values shall remain at or below the levels specified in GHI application. The pathway was calculated using LFG production data covering August 2013 through June 2015. The recovery and processing efficiency levels at the Fort Bend Landfill in Needville, Texas shall remain at or above the levels specified in the GHI application. In addition, the provided compression energy data at the CNG refueling stations are limited for few months (from May 2015 to August 2015). GHI must continue to provide data to Staff up to 2-year as required to warrant the compression efficiency at the CNG stations 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 pipeline system to CNG stations, GHI 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 purchased from the Fort Bend Landfill.

Staff Analysis and Recommendations

Staff has reviewed GHI application for the production of CNG from LFG originating in Fort Bend, Texas. Staff has replicated, using the CA-GREET1.8b spreadsheet, the CI value calculated by GHI. GHI has provided documentation in support of the key components of its pathways: energy consumption at the Texas LFG processing plant and the California CNG stations. It has also provided the volumes of biomethane production and CNG produced. Staff is satisfied that the energy consumption levels reported in GHI application accurately represent actual usage for the time period for which records were submitted, and that GHI is capable of maintaining CIs that are at or below those shown in the table above. Therefore, staff recommends that GHI Method 2B application for LFG-to-CNG pathways be certified, subject to the operating conditions set forth in this staff summary.