

Method 2B Fuel Pathway
Trillium CNG
Washington Landfill Gas to CNG (CNG012)

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Pathway Summary

Integrus Transportation Fuels, LLC (doing business as Trillium CNG) has applied for a landfill-gas-to-biomethane pathway. The feedstock landfill gas (LFG) for this pathway is extracted from the Cedar Hills (CH) landfill in Maple Valley, Washington, processed to pipeline quality biomethane, and injected into the interstate pipeline system. Trillium CNG extracts the biomethane from the pipeline and dispenses it in the form of Compressed Natural Gas (CNG) in its 11 stations throughout California.¹

Bio Energy Washington (BEW) owns and operates the CH landfill, the equipment used to extract the LFG from the landfill, and the plant that processes the extracted LFG into pipeline-quality biomethane. Puget Sound Energy (PSE) purchases the resulting biomethane and stores it in tanks adjacent to the CH landfill for resale to BP Energy Company (BPEC). BPEC subsequently resells the biomethane to Trillium. BPEC supplies biomethane to Trillium via the interstate pipeline system. The biomethane Trillium CNG purchases from BPEC is commingled with fossil natural gas in two phases: 1) when it enters BPEC's storage tanks, and 2) when it enters the interstate pipeline system. As such, Trillium CNG will be obligated to retain records that unequivocally demonstrate that the credits it earns under the pathway described in this summary correspond directly to the volumes of biomethane BPEC purchased from PSE and subsequently sold to Trillium CNG.

Carbon Intensity of CNG Produced

As shown in Table 1, the applicant has calculated the CI of its LFG-to-CNG pathway to be 13.86 gCO₂e/MJ. For comparison, the CI of the existing LCFS pathway for the production of CNG from California LFG (CNG003) is 11.26gCO₂e/MJ. The CI of Trillium's CH pathway is higher than the CI of the corresponding California pathway for the following reasons:

- The CH plant consumes electricity generated from a Northwest energy mix (as defined in the U. S. Environmental Protection Agency's eGRID

¹ The Trillium CNG website (<http://www.trilliumcng.com/fuel/default.aspx>) reports that there are 31 CNG stations, but 20 of them are privately owned but operating under the company entity. The certified CI will be applied to 11 CNG stations listed in the Trillium's Method 2B application.

system).² LFG processing plants operating under CNG003 consume California marginal electricity.

- Pipeline Transportation Distance: Biomethane from the CH plant is transported 1,160 miles by pipeline to a CNG station in Anaheim, California. Under pathway CNG003, biomethane moves only 50 miles by pipeline.
- Compression efficiency: The efficiency of the compressors Trillium uses to produce CNG is lower than the default efficiency used in the CNG003 pathway.

These three factors are slightly offset by the efficiency of the LFG processing equipment at CH. A lower processing efficiency was assumed in the CNG003 pathway.

Operating Conditions

1. In support of Trillium's pathway application, BEW provided electricity consumption and LFG production records covering three months of operation at the CH processing plant (January 2013 to March 2013). Although the CIs of LCFS fuel pathways are required to be based on energy consumption data covering the most recent representative 2-year period (California Code of Regulations, Title 17, section 95486, subd. (f)(3)(c)3., staff may provide prospective certifications when a full energy consumption data set is not yet available. Applicants receiving prospective approvals come in to full compliance with the 2-year data set requirement by submitting energy consumption records following certification. BEW will therefore submit electricity consumption and LFG production records no less frequently than quarterly, until staff is in receipt of records covering a full two years of operations at the CH LFG processing plant. If these records indicate that the certified pathway CI is lower than the actual CI, staff may adjust the certified CI to reflect actual electricity consumption and LFG production at the CH plant.
2. Actual pathway energy consumption (both thermal and electrical) shall remain at or below the levels specified in Trillium's application. In addition, the recovery and processing efficiency levels at the landfill and the compression efficiency level at the CNG stations shall remain at or above the levels specified in the application. This condition applies to the Cedar Hills landfill gas processing and compression plant in Washington and the Trillium-owned CNG dispensing stations in California. Energy consumption values for these facilities are classified by the applicant as confidential business information.
3. Because the biomethane supplied under this pathway is commingled with

² The U.S. Environmental Protection Agency's Emissions and Generation Resource Integrated Database (eGRID) can be found at http://www.epa.gov/cleanenergy/documents/eGRID2012V1_0_year09_SummaryTables.pdf. The CH plant falls within the eGRID WECC region.

fossil NG both when it enters storage at PSE’s facility, and when it enters the interstate pipeline system, Trillium 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 and injected into the interstate pipeline system.

4. The approved CI is available exclusively to the compressed biomethane sold in the 11 CNG stations identified in the application. Compressed biomethane sold through any other fuelling stations shall not be reportable under this pathway.

Table 1: Proposed Lookup Table Entries

Fuel	Pathway Identifier	Pathway Description	Carbon Intensity in gCO ₂ e/MJ (Including Indirect Effects)		
			Direct Emission	Land Use or Other Indirect Effect	Total
CNG from LFG	CNG012	2B Application: (Specific Conditions Apply) Washington Landfill gas to pipeline-quality biomethane; delivered via pipeline ; compressed in CA	13.86	0	13.86

Staff Analysis and Recommendation

Staff has reviewed Trillium’s application for the production of CNG from LFG originating in Washington State. Staff has replicated, using the CA-GREET spreadsheet, the CI values calculated by Trillium. Trillium has provided documentation of the energy use at both the Washington and California facilities, as well as the volume of CNG produced under this pathway. Staff is satisfied that the energy consumption levels reported in the application accurately represent the plant’s actual usage for the time period for which records were submitted, and that Trillium is capable of maintaining CIs that are at or below 13.86 gCO₂e/MJ for its Cedar Hills LFG-to-CNG pathway. Therefore, staff recommends that Trillium’s application for Method 2B LFG-to-CNG pathway be approved.