

Application No. B0430

Updated: 06/27/2023 (See Underlined Text)

## Staff Summary

**FirstElement Fuel, Inc. (E426)**  
**Fuel Production Facility: Praxair SMR Facility (F00394)**  
**Hydrogen Produced from Renewable Natural Gas**

### Intermediate Facilities:

**Yellow Jacket Lamb RNG Project, Oakfield, New York (71101)**  
**Yellow Jacket Lakeshore RNG Project, Wilson, New York (71321)**  
**Yellow Jacket Boxler RNG Project, Varysburg, New York (71222)**

**Joint Applicant: U.S. Venture, Inc (5504)**

Deemed Complete Date: 3/30/2023

Posted for Comment Date: 5/19/2023

CI Certified Date: 6/27/2023

CI Start Date: 1/1/2023

## Pathway Summary

FirstElement Fuel (FEF) seeks certification of nine renewable hydrogen pathways; liquefied, gaseous, and liquefied and re-gasified (trans-fill) hydrogen, produced by steam methane reformation at the Praxair SMR facility located in Ontario, California facility using book-and-claim accounting for biomethane (RNG) refined from digester gas generated from dairy manure produced at three U.S. Venture operated dairy farms in the State of New York namely, the Yellow Jacket Lamb RNG Project (Lamb) located in Oakfield, New York; the Yellow Jacket Lakeshore RNG Project (Lakeshore) located in Wilson, New York; and the Yellow Jacket Boxler RNG Project (Boxler) located in Varysburg, New York.

The biomethane procured from these facilities by book-and-claim accounting were previously certified as CNG pathways – B0345 (2022) with a carbon intensity (CI) of -318.35 gCO<sub>2e</sub> per megajoule (Lakeshore); B0346 (2022) with a CI of -311.72 gCO<sub>2e</sub> per megajoule (Lamb); and B0347 (2022) with a CI of -206.88 gCO<sub>2e</sub> per megajoule (Boxler), respectively.

Gaseous and liquefied hydrogen is produced at the Praxair SMR facility in Ontario, California and transported by tube trailer and liquid tanker trucks, respectively, to hydrogen refueling stations, or liquefied hydrogen produced is also transported to a trans-fill station in California where it is re-gasified and compressed to gaseous

hydrogen for dispensing into fuel cell vehicles in both Northern and Southern California.

The pathways are consistent with the Lookup Table Gaseous and Liquefied Hydrogen pathways produced in California from central steam methane reformation of biomethane (HYB and HYBL) with two notable exceptions: the gaseous and liquid hydrogen transportation distance is different from the transportation distance modeled in the Lookup Table pathway CIs, and the feedstock for hydrogen production was matched to biomethane attributes derived from the dairy digester gas production facilities (Yellow Jacket Lakeshore, Lamb, and Boxler RNG Projects) with favorable carbon intensities. Therefore, these pathways require a Tier 2 application (95488.5(a)).

### Carbon Intensity of Fuel Type Pathways

The CI is determined from life cycle analysis conducted using a modified version of the Board-approved CA GREET3.0 model. Model inputs are identical to those documented in the Lookup Table Technical Support Documentation<sup>1</sup> with the exceptions of the site-specific gaseous and liquid hydrogen transport distances, and lower upstream emissions for sourced biomethane. The following table lists the proposed CI for these pathways.

#### Proposed Pathway CI

Pathway Number	Fuel & Feedstock	Pathway FPC	Pathway Description	Carbon Intensity (gCO <sub>2e</sub> /MJ)
B043001	Hydrogen from Dairy Manure-derived Digester Gas	<u>HYL026B</u> <u>04300100</u>	Liquefied Hydrogen produced at Praxair SMR facility in Ontario, CA using Biomethane procured from the Yellow Jacket Lamb RNG Project in Oakfield, NY; finished fuel transported in tanker trailers and dispensed at Hydrogen	-236.90

<sup>1</sup> CA-GREET3.0 Lookup Table Pathways Technical Support Documentation. Available at: <https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/ca-greet/lut-doc.pdf>

			refueling stations in California.	
B043002	Hydrogen from Dairy Manure-derived Digester Gas	<u>HYL026B</u> <u>04300200</u>	Liquefied Hydrogen produced at Praxair SMR facility in Ontario, CA using Biomethane procured from the Yellow Jacket Lakeshore RNG Project in Wilson, NY; finished fuel transported in tanker trailers and dispensed at Hydrogen refueling stations in California.	-243.54
B043003	Hydrogen from Dairy Manure-derived Digester Gas	<u>HYL026B</u> <u>04300300</u>	Liquefied Hydrogen produced at Praxair SMR facility in Ontario, CA using Biomethane procured from the Yellow Jacket Boxler RNG Project in Varysburg, NY; finished fuel transported in tanker trailers and dispensed at Hydrogen refueling stations in California.	-132.07

B043004	Hydrogen from Dairy Manure-derived Digester Gas	<u>HYG026B</u> <u>04300400</u>	Gaseous Hydrogen produced at Praxair SMR in Ontario, CA using biomethane procured from the Yellow Jacket Lamb RNG Project in Oakfield, NY; finished fuel transported in tube-trailers to refueling stations in California.	-275.67
B043005	Hydrogen from Dairy Manure-derived Digester Gas	<u>HYG026B</u> <u>04300500</u>	Gaseous Hydrogen produced at Praxair SMR using Biomethane procured from the Yellow Jacket Lakeshore RNG Project in Wilson, NY; finished fuel transported in tube-trailers to Hydrogen refueling stations in California.	-282.30
B043006	Hydrogen from Dairy Manure-derived Digester Gas	<u>HYG026B</u> <u>04300600</u>	Gaseous Hydrogen produced at Praxair SMR in Ontario, CA using biomethane procured from the Yellow Jacket Boxler RNG Project in	-170.83

			Varysburg, NY; finished fuel transported in tube-trailers to refueling stations in California.	
B043007	Hydrogen from Dairy Manure-derived Digester Gas	<u>HYG026B</u> <u>04300700</u>	Liquefied Hydrogen produced at Praxair SMR in Ontario, CA using biomethane procured from the Yellow Jacket Lamb RNG Project in Oakfield, NY; Re-gasified, Compressed at a trans-fill facility; distributed to refueling stations in California.	-221.27
B043008	Hydrogen from Dairy Manure-derived Digester Gas	<u>HYG026B</u> <u>04300800</u>	Liquefied Hydrogen produced at Praxair SMR in Ontario, CA using biomethane procured from the Yellow Jacket Lakeshore RNG Project in Wilson, NY; Re-gasified, Compressed at a trans-fill facility; distributed to refueling stations in California.	-227.91

B043009	Hydrogen from Dairy Manure-derived Digester Gas	<u>HYG026B</u> <u>04300900</u>	Liquefied Hydrogen produced at Praxair SMR in Ontario, CA using biomethane procured from the Yellow Jacket Boxler RNG Project in Varysburg, NY; Re-gasified, Compressed at a trans-fill facility; distributed to refueling stations in California.	-116.43
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### Operating Conditions

The certified CI value in the above table may be used to report and generate credits for fuel quantities that are produced at the facility in the manner described in the applicant’s LCA report, and dispensed for transportation use in California, subject to the following requirements and operating conditions specified below. All operating conditions will appear in the summary of the certified fuel pathway(s) and thus be incorporated by ongoing requirements to maintain fuel pathway(s).

1. Fuel pathway holders are subject to the requirements of the California Air Resources Board’s (CARB) Low Carbon Fuel Standard (LCFS) regulation, which appears at sections 95480 to 95503 of title 17, California Code of Regulations. Requirements include ongoing monitoring, reporting, recordkeeping, and third-party verification of operational CI and a controlled process for providing product transfer documents or other similar records to counterparties or CARB. All specified source feedstocks reported in the fuel production process must meet chain-of-custody requirements specified in section 95488.8(g)(1)(B).
2. Liquid fuel distribution route: Hydrogen produced at the Praxair SMR facility located in Ontario, California is liquefied and transported by liquid tanker truck to refueling stations in California. The conservative distance of liquid hydrogen delivered to all stations must not exceed 500 miles to maintain compliance with the certified fuel pathway.
3. Gaseous fuel distribution route: Hydrogen produced at the Praxair SMR facility located in Ontario, California is compressed and transported by gaseous tube

trailer truck to hydrogen refueling stations. The conservative distance of gaseous hydrogen delivered to all stations must not exceed 65 miles to maintain compliance with the certified fuel pathway.

4. Liquid fuel distribution routed to trans-fill center: Hydrogen produced at the Praxair SMR facility located in Ontario, California is liquefied and transported by liquid tanker truck approximately 390 miles to a trans-fill facility where it is re-gasified and compressed into gaseous hydrogen. The hydrogen is then distributed by tube trailer truck approximately 75 miles to refueling stations in California.
5. To confirm compliance with LCFS reporting requirements, the pathway holder will provide on an annual basis, the total monthly quantity (MMBtu) of biomethane produced and injected into the common carrier pipeline at the upgrading facility, and identify each LCFS fuel reporting entity or other final owner (including any business partners not participating in the LCFS) of environmental attributes, and the quantity of environmental attributes (MMBtu) transferred by the upgrading facility to each other entity.
6. FirstElement Fuel (FEF) shall provide in all subsequent AFPRs required for compliance the most recent verified Operating CI for biomethane feedstock sourced from the facility whose renewable attributes are matched to the feedstock used for FEF pathways being proposed for certification. FEF must additionally include and continually update in its Monitoring Plan a table listing each biomethane source along with its associated certification date, and the current or most recent AFPR filing with CARB. Uncertified biomethane fuel pathways are not within the scope of this application or eventual certified pathways.

### **Staff Analysis and Recommendation**

Staff has reviewed the FirstElement Fuel, Inc and joint applicant U.S. Venture's application for hydrogen fuel pathways, and has been replicated, using the CA-GREET3.0 model the carbon intensity calculations provided by the applicant. CARB has deemed that the initial validation of fuel pathway inputs by a Verification Body for fuel pathway certification is not required. Based on this finding, CARB staff recommends that the fuel pathway application for certification stated in the above table be certified after all the comments received during the 10-day public comment period are addressed satisfactorily by the applicants. The certification is subject to the operating conditions set forth in this document.

### **Comments and Certification**

CARB has reviewed the applicant's response to comments received during the 10-day comment period, determined that these adequately address factual and methodological errors, and certified the pathway.