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**Application No. B0104**

## **Staff Summary**

**California Bioenergy LLC**  
**ABEC #3 LLC dba Lakeview Farms Dairy Biogas, Bakersfield, CA**  
**Electricity from Dairy Manure Biogas**

**Intermediate Facility:**  
Lakeview Farms Dairy, Bakersfield, CA

Deemed Complete: 5/15/2020  
Posted for Comment: 11/9/2020  
Certified: TBD  
CI Effective: TBD

## **Pathway Summary**

California Bioenergy LLC seeks certification of a Tier 2 pathway for electricity from dairy manure biogas produced by a reciprocating internal combustion (IC) engine and generator at the ABEC #3 LLC dba Lakeview Farms Dairy Biogas (ABEC #3) and supplied to the California electricity grid for use in transportation using book-and-claim accounting for low-CI electricity.<sup>1</sup>

The covered lagoon digester captures methane that would otherwise be vented to the atmosphere. The ABEC #3 digester is registered with the Climate Action Reserve (CAR1316/CALS6316; listed date: 09/05/2018; crediting period expiration: 12/31/2027) and has previously generated ARB Offset Credits under California's Cap & Trade program.

The dairy has an average cattle population of about 9,000. In the baseline scenario, manure is either collected via a flush system or left in a dry lot. For the baseline, manure from open lot corrals and milking parlor was collected via flush and scraped for heifers in open lot corrals. Flushed manure was sent to anaerobic storage after solids separation using a stationary screen with a portion of the manure collected from milking cows in open lot corral sent directly to anaerobic storage. Separated solids and scrapped manure was piled in open lots and exported off farm on an annual basis. Prior to installation of the digester, incomplete removal of volatile solids (VS) occurred annually in the anaerobic storage and as a result, no lagoon cleanouts were modeled.

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<sup>1</sup> All citations to the LCFS Regulation are found in Title 17, California Code of Regulations (CCR), section 95480-95503. Book-and-claim accounting for low-CI electricity is primarily addressed in section 95488.8(i) of the [LCFS Regulation](#).

With the installation of the project, manure that was sent to anaerobic storage was diverted to the digester. Additionally, manure from heifers in open lot corrals was collected via vacuum and sent to the anaerobic digestion. The covered lagoon digester captures methane that would otherwise be vented to the atmosphere.

Biogas captured by the covered lagoon is either sent to a 1MW Caterpillar internal combustion engine for electricity generation or vented. The compressor draws the gas through the hydrogen sulfide (H<sub>2</sub>S) removal system, which consists of an iron sponge and an activated carbon tank that reduces the H<sub>2</sub>S concentration to below air permitted levels. The internal combustion engine converts roughly one third of energy in biogas to electricity. A portion of the biogas produced by the covered lagoon digester that is not destroyed by the engine generator is vented rather than flared. This vented methane is separately metered and included in the pathway emissions in the Simplified Calculator. Grid and on-site generated electricity is used to power the mixers in the digester, blowers to move gas through the system, electronic instrumentation, and internal combustion engine.

### **Carbon Intensity of Electricity Pathway**

The CI is determined from life cycle analysis conducted using a modified version of the Board-approved Tier 1 Simplified CI Calculator for Biomethane from Anaerobic Digestion of Dairy and Swine Manure.<sup>2</sup> The calculator was modified in accordance with regulatory requirements and LCFS Guidance Document 19-06,<sup>3</sup> and has been determined to be equivalent to CA-GREET3.0 pursuant to section 95488.7(a)(1) of the LCFS regulation. The applicant has provided operational data and supporting documentation for assessment of baseline emissions, biogas production, electricity generation from dairy biogas, and venting for a period of 24 months, from March 2018 to February 2020.

The following table lists the proposed CI for this pathway.

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<sup>2</sup> The Tier 1 Simplified CI Calculator for Biomethane from Anaerobic Digestion of Dairy and Swine Manure (August 13, 2018), incorporated by reference in the LCFS Regulation, section 95488.3(b).

<sup>3</sup> [LCFS Guidance 19-06](#) (Revised October 2019): Determining Carbon Intensity of Dairy and Swine Manure Biogas to Electricity Pathways

## Proposed Pathway CI

Fuel & Feedstock	Pathway FPC	Pathway Description	Carbon Intensity (gCO <sub>2</sub> e/MJ)
Low-CI Electricity from Dairy Manure Biogas	TBD	Low-CI Electricity from Dairy Manure Biogas using reciprocating engine at ABEC #2 LLC dba West Star North Dairy Biogas in Bakersfield, California for use as transportation fuel in California.	-382.98

### 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 Life Cycle Analysis (LCA) report, and dispensed for transportation use in California, subject to the following requirements and conditions:

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.
2. No later than October 1, 2020, equipment to continuously measure and record methane concentration in biogas at least every 15 minutes must be installed to report the monthly weighted average methane concentration in fields 2.5 and 2.7 in the Annual Fuel Pathway Report submitted to CARB for third-party verification of the operational CI.
3. To confirm compliance with LCFS Regulation section 95488.8(h) and demonstrate use of directly supplied low-CI process energy in annual Fuel Pathway Reports, the fuel pathway holder must demonstrate retirement of the corresponding quantity of Renewable Electricity Certificates (RECs) that were generated for the quantity of low-CI electricity consumed within the fuel pathway (use of onsite electricity from biogas in field 2.17). For each quarter of operation, the number of RECs that are associated with process energy must be retired in a WREGIS retirement sub-account named "Low-CI Process Energy at LCFS Facility [ID number]", where the LCFS Facility ID is the number assigned in the AFP at the time of facility registration. These RECs and the associated environmental attributes can no longer be sold, transferred, or claimed by any entity or for any other purpose. The WREGIS report demonstrating REC retirement must be downloaded from WREGIS and uploaded to the AFP as part

of each annual Fuel Pathway Report to demonstrate the quantity of electricity from biogas that is consumed within the fuel pathway and claimed to lower the CI of the produced fuel.

Note that this retirement account for process energy is distinct from and in addition to the requirement for any fuel reporting entity claiming electricity as supplied for use as transportation fuel in the LRT under this pathway to demonstrate quarterly REC retirement as part of each quarterly report.

4. The electricity, including the environmental attributes associated with the electricity, claimed under this pathway shall not be claimed under any other program notwithstanding the exceptions listed in LCFS Regulation section 95488.8(i)(1). The LCFS places no restrictions on the use of any voluntary emissions reductions credits generated by the project for emissions that are demonstrated to be additional to reductions claimed under the LCFS.
5. The fuel pathway holder must include the assumptions and calculations used to establish the fraction of solids input to each manure management system in its annual Fuel Pathway Report submitted to CARB for third-party verification of the operational CI.
6. Any quantity of biomethane metered as captured that cannot be demonstrated by meter records to have been destroyed, must be calculated by energy balance and accounted for in the CI as a fugitive methane emission if the calculated value exceeds the default 2% fugitive emission.

### **Staff Analysis and Recommendation**

Staff has reviewed the application and has replicated, using the Tier 2 modified version of the Simplified CI Calculator, the CI values calculated by the applicant. EcoEngineers (H3-20-008) submitted a positive validation statement. Staff recommends this application be certified after all the comments received during the 10-day comment period are addressed satisfactorily by the applicant. The certification is subject to the operating conditions set forth in this document.