

Helping dairies fuel a renewable future 2134 E. Mineral King Ave Visalia, CA 93292 559-667-9560

July 12, 2023

Dr. Cheryl Laskowski Branch Chief, Low Carbon Fuel Standard Team California Air Resources Board

Submitted via LCFS Comments Upload Link

RE: CalBio Comments on CARB's Draft Tier 1 Simplified Calculator for Biomethane from Anaerobic Digestion of Dairy and Swine Manure released June 20th 2023

Dear Dr. Laskowski:

Thank you for the opportunity to provide comments to the California Air Resources Board (CARB) on the proposed new Tier 1 Simplified Calculator for Biomethane from Anaerobic Digestion of Dairy and Swine Manure released June 20th 2023.

California Bioenergy LLC (CalBio) is a leading developer of dairy digester projects. Founded in 2006, CalBio works closely with California dairy farm families, dairy co-ops and cheese producers, CARB, the California Department of Food and Agriculture (CDFA), the California Public Utility Commission (CPUC), the California Energy Commission (CEC), and the U.S. Environmental Protection Agency (EPA). It develops projects that reduce greenhouse gas (GHG) emissions, improve local air quality, protect water quality, and create local jobs. It produces renewable natural gas and generates electricity, both used as a vehicle fuel to power low emission trucks, buses, and cars.

CalBio has extensive experience working with the Simplified CI Calculator for Biomethane from Anaerobic Digestion of Dairy and Swine Manure (DSM CI Calculator). With over 30 certified Tier 2 pathways, we have developed expertise in both using and understanding the complexities of this tool. In addition, both our in-house staff and consultants are skilled greenhouse gas (GHG) accountants that value incorporating the latest climate science and emissions factors into the DSM CI Calculator analysis framework and our project pathways. CalBio is thankful for the opportunity to share our feedback on the proposed updates and commends CARB on implementing changes that will make the DSM CI calculator more streamlined, require less user modifications, and reflect the latest industry standards for GHG accounting. To that end, please see our recommendations for improving the DSM CI calculator below:

1. Include controlled/metered venting in the Biogas-to-RNG tab similar to flaring

CalBio agrees with the revision to include flared biogas to Section 2 of the 'Biogas-to-RNG' tab. However, the DSM CI Calculator is set up to exclude directly flared biogas from the LCFS pathway system boundary. From a GHG accounting perspective, CalBio believes flared emissions at the digester should be treated consistently with how flared biogas is accounted for at the upgrading facility. To solve this, CalBio proposes applying the same emissions factor used in Sections 2.26 and 2.27 to apply to Sections 2.6 and 2.7.

Likewise, we strongly recommend adding controlled/metered venting to Section 2 of the 'Biogas-to-RNG' tab. It is important to note that California air quality management districts typically do not permit flares as the primary mechanism of handling excess biogas and request that it be vented instead because of air quality issues in their jurisdictions. Controlled/metered venting is similar to flaring in that it is biogas produced by the digester and initially metered at the digester itself but not used to make biomethane fuel. It likewise becomes a source of emissions that should be included in the GHG project boundary as part of the lifecycle production of the fuel. This would be consistent with how the calculator handles digester leakage and fugitive methane from upgrading. It is also important to note that venting is an atypical requirement for out-ofstate projects. Therefore, by omitting the option to include controlled/metered venting as a standard feature in Section 2 of the DSM CI Calculator would unfairly disadvantage in-state projects by requiring them to modify the calculator and thus be ineligible for a Tier 1 pathway.

For the reasons stated above, CalBio believes both controlled/metered venting and flaring emissions should be included within the project boundary of the DSM CI Calculator's emissions analysis. For our certified pathways and applications in the queue, CalBio modifies the DSM CI Calculator to include controlled/metered venting that flows to Section L3 of the 'Manure-to-Biogas (LOP Inputs)' tab and is included in the calculation for project methane emissions from venting events. Including both flaring and venting emission sources is in alignment with best practices of lifecycle GHG analysis as they are project induced.

CalBio has provided CARB with a modified version of the proposed DSM CI Calculator to demonstrate how these changes could be implemented.

2. Applicability of New Tier 1 Calculator

CalBio recommends that pathways deemed complete prior to the effective date of the new LCFS regulation should not be required to use the new DSM CI Calculator for their first crediting period under LCFS. These Tier 2 pathway CI calculators have already been through the validation and projects have been developed, validated, and certified against a specific standard and public review process and projects should be given the option, but not the obligation, to upgrade to the latest version of the calculator. Allowing existing projects to continue to follow the CI framework in place as they committed capital and made contractual commitments is sound policy and consistent with the crediting period concept found in the current rule and other GHG programs such as Cap & Trade.

3. Account for other process fuels in the Biogas-to-RNG tab

CalBio agrees with the proposed changes to add more process fuel types in Section 2 of the 'Biogas-to-RNG' tab (e.g., utility sourced natural gas and diesel for digester energy use and diesel for biomethane transport). CalBio recommends adding additional fuel types for biomethane transport such as natural gas, electricity, and hydrogen. Currently, natural gas is a common fuel type utilized for biomethane transport in California, thanks to the LCFS, and its inclusion in the DSM CI Calculator will ensure producers who choose cleaner fuel types will not have to modify the calculator and require a Tier 2 submittal. Additionally, it is important to design the tool to have flexibility in the types of process fuels used in the DSM CI Calculator for circumstances where different types of fuel may be used in a single reporting period. For example, an applicant could start transporting biomethane using diesel fuel and then transition to natural gas. In this case, it would be practical to structure the DSM CI Calculator to have different columns representing each fuel type and its corresponding emission factor for developers to select from.

4. Develop a separate Tier 1 CI Calculator for DSM to electricity pathways

CalBio requests that CARB develop a separate Tier 1 CI Calculator for DSM to electricity pathways to streamline the review process. Without a stand-alone CI Calculator, all DSM-to-electricity projects will need to be developed as Tier 2 pathways due to the required calculator modifications, creating a longer review process for CARB. CalBio also believes this request is in alignment with CARB's goals for supporting the electrification of the transportation sector in California. Project developers want to be responsive to that goal and build more electric projects to serve the growing demand for electric vehicles. A separate DSM-to-electricity CI Calculator will help to ensure there is a streamlined process for getting electricity projects approved through the Tier 1 review process. Additional modifications to improve the DSM-to-electricity CI Calculator are described below.

5. Make explicit that projects can Book & Claim RNG to an offsite electric generator

CalBio provides the following comments requesting CARB recognize RNG utilized for offsite electricity generation be allowed as an eligible pathway type under the existing "Book & Claim" framework. Under the current regulation, entities can generate LCFS credits by producing a low-CI transportation fuel such as RNG and injecting it into a common carrier natural gas pipeline where it is matched to a CNG fueling station, refinery, or hydrogen facility without having to physically trace the molecules. Similarly, projects are allowed to generate electricity at an onsite generator co-located at the dairy and match electricity production to electric vehicle charging. CARB recognizes both these transaction types to generate LCFS results by lowering GHG emissions in each fuel's pathway. However, the same cannot be said for the use of RNG directed to an offsite generator to produce electricity. CalBio respectfully requests CARB update its Book & Claim policy and extend it to apply when directed biogas RNG is used to generate electricity for recharging battery-electric vehicles (BEVs) at a location physically separated from the biogas or hydrogen production. It is important that these changes be made in the LCFS regulation to allow maximum flexibility. This will allow biomethane to continue to expand its contribution to the electric transportation conversion in-state and to be delivered to high efficiency power plants that are not always available for small on-site generators. In this way, the policy change we recommend can help "accelerate ZEV refueling infrastructure" in California. More renewable electricity is needed to charge California's growing fleet of battery electric vehicles (BEVs) and support a more resilient and reliable grid and CARB's electrification goals.

6. Include other types of electric generator options for DSM-to-electricity pathways

CalBio requests that CARB include additional generator types and associated emissions factors within the separate DSM CI Calculator for electricity projects. CalBio has built the first dairy biogas-to-fuel cell project, however, the emission factors provided in the DSM CI Calculator are only those associated with electricity generation from a conventional stationary reciprocating engine. CalBio requests there be an option to choose between multiple types of electricity generating units (e.g., fuel cell, linear generator, etc.) and use those technology-specific emissions factors. This is in alignment with CARB's goals of ensuring producers choose more efficient, cleaner technologies without being pushed into a Tier 2 pathway.

7. Correction to Final Electricity CI for Dairy Biogas-to-Electricity Pathways

CalBio believes there is flaw in the CARB guidance document 19-06, Determining Carbon Intensity of Dairy and Swine Manure Biogas to Electricity Pathways (https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/guidance/lcfsguidance_19-06.pdf) where it directs the user to divide the "Final electricity CI" by 'EF Table'!E89. The value in this cell represents the efficiency of the electric generator used in the project. This has the seemingly inadvertent effect of penalizing the project for achieving an efficiency greater than the 50% benchmark established by CARB. For example, if a project has a very old, inefficient engine, the CI is divided by a small number (i.e. 25%) which effectively improves the CI by making it more negative. An identical project with a generator efficiency that exceeds the CARB benchmark (i.e. 55%) means the formula is divided by a higher number, effectively making the CI score worse by being less negative. The DSM CI calculator is already structured in a way which caps avoided methane crediting based on either the lesser of biogas produced and the modeled "baseline minus project" emission reductions. It does not seem reasonable to further cap based on efficiency, especially when CARB's motivation has been to push projects to using more efficient and cleaner fuel cell technology. This inconsistency should be corrected in the new calculator such that a project with a higher efficiency does not get penalized for being more efficient.

8. User Defined Electricity Emission Factors

Every year CARB publishes the prior year's grid electricity factors (<u>https://ww2.arb.ca.gov/resources/documents/lcfs-pathways-requiring-public-comments</u>). Applicants should be able to update their Annual Fuel Pathway Reports to align with these CARB-published values to better reflect the emissions from electricity utilized at their facilities. This would require no change to the calculator given it already accommodates a user-defined electricity mix option, however, CARB should make it explicit that this is an option developers can make when submitting or updating their pathways.

9. Incorporate the 5th Assessment Report Global Warming Potentials (GWP)

CalBio recommends CARB should consider adopting the 100-year GWP factors from the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5). These updated GWPs reflect the latest climate science on radiative properties and lifetimes of compounds. The AR5 GWP factors have been adopted by The Environmental Protection Agency for use in their Inventory of U.S. Greenhouse Gas Emissions and Sinks.¹ Numerous other GHG accounting standards bodies have also adopted the AR5 GWPs including the Verified Carbon Standard², the American Carbon Registry³, the Climate Action Reserve⁴, and the World Resources Institute⁵.

10. Other small clerical requests

Listed below are few small clerical requests CalBio believes will enhance the tool.

- <u>Tab: Manure-to-Biogas (LOP Inputs), Section L4.7: Volatile Solids to Effluent Ponds</u>
 - There is a 0.3 degradation factor included in this formula that is a hard entered value. CalBio recommends adding this value to the 'Reference' Tab with citation to add full transparency to the value being used in this calculation. This is similar to other values used throughout the calculator found in the 'Reference' Tab.

⁴ CAR 2022-GWP-Update-Memo

⁵ <u>Global-Warming-Potential-Values.docx (ghgprotocol.org)</u>

¹ Understanding Global Warming Potentials | US EPA

² VCS Standard v4.4

³ ACR Standard v8.0

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- Tab: Biogas-to-RNG, Section 1.10: Average Annual Temperature (°C)
 - Source the average annual temperature from the 'Manure-to-Biogas (LOP Inputs)' Tab Section L1.1.10 Average Temperature using the following formula: =AVERAGE('Manure-to-Biogas (LOP Inputs)'!G9:G32)
- Tab: Biogas-to-RNG, G87; EF Table, F50: CI for compression of CNG
 - With the lower electricity CI at 3-CAMX Mix (314.31 gCO2e/kWh vs. 370.22 gCO2e/kWh), should the CI of CNG compression in CA refueling stations be reduced to be below 3 gCO2e/MJ (3.5*314.31/370.22 = 2.97)?

We would like to thank CARB for the opportunity to comment and we look forward to engaging further on the topics above.

Sincerely,

Andrew Craig Vice President, Greenhouse Gas Programs California Bioenergy LLC

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