

Don Gilstrap Manager, Fuels Regulations

July 12, 2023

Cheryl Laskowski Branch Chief Air Resources Board 1001 I Street Sacramento, CA 95814

Dear Dr. Laskowski:

Subject: Biomethane from Anaerobic Digestion of Dairy and Swine Manure (DSM) Tier 1 Calculator

Chevron appreciates the opportunity to review and comment on the Tier 1 Calculators for LCFS pathways.

## **Company Background:**

Chevron is a major refiner and marketer of petroleum products and renewable fuels in the state of California and a regulated party under the Low Carbon Fuel Standard (LCFS). With the acquisition of Renewable Energy Group, Inc., Chevron is also an international producer of lower carbon intensity fuels with a global integrated procurement, distribution, and logistics network, and 11 biorefineries in the U.S. and Europe. Additionally, Chevron has created partnerships with dairy biomethane producers to safely deliver lower carbon energy in the renewable natural gas and hydrogen markets.

## Comment Summary:

Below are our comments on the DSM Tier 1 Calculator. Some comments, particularly as they relate to feedstock production and transport, apply to all RNG calculators. Thus, we would encourage CARB staff responsible for the DSM Calculator to also review our comments on the various RNG calculators as consistency in inputs common to all RNG calculators is essential.

## **Timeline for Implementation:**

The LCFS Life Cycle Analysis Models website, as well as the LCFS Regulation, does not clearly explain the implementation process of the newest set of calculators. Due to delays in the current DSM Tier 2 pathway validation process, as well as LCFS rulemaking changes, our various stakeholders have not had sufficient notice in order to plan a timeline to begin operating under the new Tier 1 DSM calculator. We request CARB to schedule at least one workshop with regulated entities and renewable fuel producers to explain the timeline to upgrade to the new methodology, and explain whether any grandfathering periods will be established.



The following are our comments on the DSM Tier 1 calculator:

- We appreciate the multitude of enhancements made to the Tier 1 calculator. We believe that many of the corrective calculation measures will enable many Tier 2 DSM pathways to be simplified and conform to the Tier 1 application approach.
  - Specifically, we applaud the addition of the L1.1.2 Baseline Reporting Period and L4.6 Fraction of Volatile Solids Removed before Effluent is Sent to Effluent Ponds. The previous instruction manual, as well as CARB approved operating conditions, were previously not intuitive as to how to address the Livestock Offset Protocol (LOP) Inputs.
  - We additionally support the use of the COUNT function in the "Avoided Emissions" tab to count the actual months used in the LOP Inputs, rather than the previous assumption of 12 months.
  - Finally, we agree with the various formula corrections that were previously hard keyed or inconsistent. There have been multiple instances where the "EF Table" tab's calculation for the fugitive methane from upgrading percentage was less than the minimum 2% threshold. Additionally, in the "Reference" Tab, the total Tailpipe GHG Emissions from California CNG - LNG Fleet (in gCO2e/MMBtu) was previously hard keyed with incorrect values. In both instances, the draft Tier 1 DSM calculator corrects the formula.
- "Manure-to-Biogas (LOP Inputs)" Tab
  - L1.(1-6).14 Retention Time and Drainage Required Annual Lagoon/Digester Cleanout
    - After production, many facilities remove excess water but do not fully cleanout the lagoon/digester to keep the microbes active. The requirement to cleanout the system annually in September per the calculator is inconsistent with many baseline scenarios. We request that the lagoon/digester cleanout be optional, and if one occurs, it should be modeled in the month when the cleanout takes place.
- "Biogas-to-RNG" Tab
  - Similar to the other RNG calculators, we would appreciate the use of macros to retain only the applicable data columns and remove the columns that are not in use.
  - Flared Biogas Process columns The Central Valley of California does not allow biogas to be flared upstream of the RNG upgrading facility, and thus must be vented. These venting events are controlled emissions directly associated with the biomethane production in the Biogas Control System (BCS) project scenario, and have previously been adjusted on the "Biogas-to-RNG" tab. We appreciate the addition of the Flared Biogas Process to the calculator but would recommend that the column be rephrased as "2.6 Flared/Vented Biogas Flow, (metered)".
  - Digester Energy Use (Project) Often during digester startup, propane fuel is used for digester heating until a connection with the local natural gas utility is established. We



would recommend the addition of propane and other fuels to be added for digester heating.

- Upgrading and Compression Energy Use (Project) 2.25 Diesel (Biomethane Transport) – Currently the tube trailers transporting CNG to decant facilities are traditional diesel engines, and the CI is calculated using the miles traveled from the upgrading facility to the decanting station at the interconnection. The new column assumes that the RNG production facility is retaining fueling records for each delivery, which would be a change in emissions methodology. We request CARB to allow users to continue using a conservative approach using miles traveled given that transportation records, particularly when third parties are involved, are not always available. Additionally, we would like additional information on how to calculate carbon intensity of miles traveled in the instruction manual.
  - If CARB confirms the optional change in emissions methodology, there are plans to further reduce the CI of the biomethane transportation by using other renewable fuels and/or Zero Emission Heavy Duty Vehicles (ZEVs). We would request CARB to use macros to add additional fuel types used in biomethane transport, including CNG, biodiesel, renewable diesel, hydrogen, and electricity.
- As we have mentioned in other calculator comments, the eGRID factors listed in the new calculators do not appear to match the 2021 factors released on the EPA website. We would like to confirm the data source and any conversions and modifications carried out.
  - The difference ranges between -37% and 261% at the extremes. See **Appendix A** for a breakout by subregions and comparisons.
  - It appears that eGRID does not include upstream fuel production/transport emissions.
    We would like to understand how the numbers in the calculators were generated and what lifecycle stages are included, as well as their source.
- CARB's values in the "EF Table" tab should align with the latest values published in the scientific literature, which we believe are reflected in the latest GREET model. If CARB chooses to use different numbers, we would like to understand the reasoning for the modified values.

If you have any questions regarding our comments, please contact me at dgilstrap@chevron.com.

Sincerely,

Don Gilstrap



## Appendix A- Comparison of eGRID factors between CA-GREET 4.0 and EPA 2021

EGRID Subregion	2021 EPA eGRID	CA-GREET 4.0	Percent Difference
AKGD	487.0	307	-37%
AKMS	220.9	573	159%
AZNM	373.3	432	16%
CAMX	242.0	314	30%
ERCT	370.7	449	21%
FRCC	379.4	473	25%
HIMS	518.9	880	70%
HIOA	746.4	650	-13%
MROE	722.2	780	8%
MROW	455.0	517	14%
NEWE	246.7	167	-32%
NWPP	289.6	349	21%
NYCW	371.0	365	-2%
NYLI	552.9	460	-17%
NYUP	106.2	383	261%
PRMS	709.4	949	34%
RFCE	306.6	520	70%
RFCM	554.2	625	13%
RFCW	477.4	558	17%
RMPA	529.0	571	8%
SPNO	453.2	523	15%
SPSO	470.4	512	9%
SRMV	351.7	450	28%
SRMW	705.2	812	15%
SRSO	406.6	318	-22%
SRTV	425.2	500	18%
SRVC	291.6	512	75%
U.S.	388.7	459.6	18%

