

California Low Carbon Fuel Standard Carbon Intensity Applied to New York State Dairies

Part 2: Guidance on Tier 1 CI score computation May 2022

Using the Tier 1 Simplified CI Calculator

The Tier 1 Simplified CI Calculator for Biomethane from Anaerobic Digestion of Dairy and Swine Manure¹ may be useful in computing the approximate CI score for a potential project for initial planning purposes. Many projects apply as Tier 2 pathways because they vary in one or more aspects of the Tier 1 pathway approach. A Tier 2 application requires a CARB-approved engineering review.

The project application under the CA LCFS program requires actual project operating data for a minimum of 3 months to meet the “Provisional Pathway” approach. This also means that at least 3 months of data needs to be entered under the project-related sections of the Tier 1 calculator for it to compute a CI. More months may be entered as appropriate.

The table on the opposite page of this fact sheet provides several situations that may apply to a project and suggested guidance for data entry into the Tier 1 calculator. These situations address areas that are not straightforward or that have uniqueness to New York State dairies. The sections below describe some of these areas in more detail.

Solid-liquid separation (SLS) present in baseline manure management

If solids are separated out of the manure before long-term storage (LTS) of separated liquid (SL), site-specific data on the fraction of volatile solids (VS) that remain in the SL should be entered in Section L1 (L1.1.11). In lieu of site-specific data, the reference table values within the calculator may be used that align with the separation technology (e.g., screw press, vibrating screen, etc.).

Manure separated solids (SS) may be treated in different ways on a farm. Often, they are piled briefly (a few days) and then used as livestock bedding. In some cases they may be composted. The non-anaerobic storage/treatment system options under Section L2 do not well-characterize the case of brief piled storage and use as bedding. The selection “solid storage” may be considered because it is defined as piled storage of manure for several months. This selection will have higher methane emissions than the composting options, so it is considered conservative.

Digester effluent methane emissions

The reason for entering exactly 12 months of data in L1 is because the emissions associated with the project biogas control system (BCS) effluent storage pond(s) are computed using the sum of the reporting days from L1 and divided by a hard-keyed 12 to arrive at an average monthly emission rate. Be sure to select the “Average Annual Temperature (°C)” under Section 1 (1.10) on the “Biogas-to-RNG” tab for the appropriate methane conversion factor (MCF) to be applied in Section L4 where the project methane emissions from the BCS (digester) effluent pond(s) are computed.

Baseline energy and project energy data

Section 2 of the “Biogas-to-RNG” tab requires a significant amount of project operating data. Under the digester energy use is listed “grid electricity (for digester heating)”. This is misleading because it is the only entry location for any grid electricity usage associated with the anaerobic digester operation, which may include influent pumps, mixers/agitators, effluent pumps, and digestate SLS equipment. **Note: The Tier 1 calculator does not provide for digestate SLS and if used, a Tier 2 pathway application is necessary.**

Baseline manure management grid electricity use is also entered, and then subtracted from the project digester grid electricity use because the assumption is that it is replaced. Actual

situations may include use of existing manure pumps for the digester influent, canceling out that portion of electricity usage from the project CI.

Situation	Data entry guidance
Baseline includes manure long-term storage (raw manure or separated liquid)	Enter exactly 12 months (not more or less) of data in Section L1 for accurate CI quantification
Baseline long-term storage emptying schedule	<ul style="list-style-type: none"> Start the 12 months of data in a month when the LTS is substantially empty (such that VS carryover is zero) Select “System Emptied in Previous Month” in the month(s) when LTS is substantially empty
Baseline solid-liquid separation of manure with LTS of separated liquid and use of separated solids	<ul style="list-style-type: none"> Enter site specific data on VS fraction that remains in separated liquid in L1 (if unavailable, use calculator reference table values) Separated manure solids (and associated VS fraction) are accounted for in L2 Separated solids (SS) treatment may not have a straightforward selection (see SS detail above)
No methane venting events (from project) occurred	At least 3 project operating months need to be entered in L3 for accurate CI quantification, even if there were no venting events that occurred
Where is the anaerobic digester electricity usage entered?	<ul style="list-style-type: none"> Under Section 2 of the “Biogas-to-RNG” tab, within column titled “Grid electricity (for digester heating)” All digester-related electricity (not biogas conditioning and upgrading) is entered here (e.g., influent pump, mixers, agitators, effluent pump, solid-liquid separation equipment) <u>Note</u>: baseline manure management grid electricity is entered separately and subtracted from digester-related electricity
Project has solid-liquid separation of digestate	<ul style="list-style-type: none"> This cannot be entered directly into the Tier 1 Simplified CI Calculator Tier 2 pathways that include this may be available for reference on CARB’s website
Pipeline transport of RNG from injection point	Pipeline transport mileage (entered in 2.27a) may be entered as the driving mileage (using any accepted driving direction internet-based tool) from project injection point to CNG station (centroid of CA CNG stations is near Bakersfield, CA)

FACT SHEET SERIES: California Low Carbon Fuel Standard Carbon Intensity Applied to NYS Dairies

Part 1: What is the carbon intensity (CI) score and how is it used?

Part 2: Guidance on Tier 1 CI score computation

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¹ <https://ww2.arb.ca.gov/resources/documents/lcfs-life-cycle-analysis-models-and-documentation>.

