

August 26, 2024

LCFS staff California Air Resources Board 1001 I Street Sacramento, CA 95814

Subject: Feedback on newly proposed LCFS calculators

Dear CARB staff:

First, I would like to thank you for your work in the new LCFS calculators. The new versions of the calculators will help the industry streamline the pathway applications process for low carbon energy projects. In particular, we appreciate the new hydrogen calculator, building separate calculators for biodiesel and HEFA, and increasing the number of feedstocks that can be specified in the biodiesel calculator. I would also like to thank you for incorporating some of our previous comments into the new versions of the calculators. Below are our comments on specific calculators:

Hydrogen calculator:

- It is unclear how the CI of RNG is entered in the calculator when there's a direct connection instead of B&C? Are we expected to use the B&C section with 0 as the distance from RNG injection to H2 facility (5.4). Please clarify.
- This statement is confusing:

4.7 Submetered Electricity for Liquefaction (kWh)	Enter the quantity of submetered electricity used by the hydrogen production facility for liquefaction, if available. Electrolysis submetering is used to evaluate the quantities of grid electricity attributed to GH2 and LH2 pathways.
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4.7 refers to kWh demand for liquefaction, yet the description specifies that the value will be used to evaluate electricity demand for both gaseous and liquid pathways.

- Please clarify whether we can use our own energy usage values, e.g. mmBTU of NG / kg of H2 or kWh/kg H2 in CA-GREET 4.0 tab without having to submit a Tier 2 application?
- Pathway Summary Tab: A T&D loss factor is applied to calculate the mass of H2 dispensed even if the H2 is produced and dispensed on-site. This factor should be proportional to the miles traveled and transloading OR use a conditional formula to apply it only when H2 is transported.





In the example below, all transportation distances are set to zero, yet the pathway gets penalized with a 0.5% T&D loss factor:

		Hyd	rogen Produc	tion Quantities		
		Unit	Total	Gaseous Hyd	lrogen (GH2)	Liquified Hydrogen (LH2)
т	otal Hydrogan Droducod	kg	400,000	400	,000	
1	otal Hydrogen Produced	MJ, LHV	48,000,000	48,00	0,000	
	Produced	kg	400,000	400	,000	
H2 for LCES Dathway(c)	T&D Loss Factor	%	0.5%	0.1	5%	
m2 for ECF3 Patriway(s)	Disponsed (Colculated)	kg	398,000	398	,000	
	Dispenseu (Calculateu)	MJ, LHV	47,760,000	47,76	0,000	
			Without B&C	With B&C RNG	Without B&C	
Ma	aximum Matchable B&C	MMBtu, HHV	100,000		100,000	
Hydrogen	Reportable by Pathway	kg	400,000	80,000	320,000	
Deliver	ed H2 for CI Calculations	MJ, LHV	47,760,000	9,552,000	38,208,000	

In the example above, 2,000 kg of H2 are subtracted from the dispensed H2 total due to T&D losses even though the H2 was produced on-site.

• CA-GREET 4.0 Tab: The following units are incorrect

Process Fuels	Natural Gas	Combusted in Boiler or CHP	75,496	MMBtu, LHV
1	1	1		

The correct units are gCO2e/mmBTU, LHV

• There isn't an option to input sub-metered compression or regasification or to change their emission factors, as they are lumped together. Please break out each component for transparency and to make it easier for the user to substitute default values with operational data, as needed.

Fueling Station	GH2	Compression, Precooling and Pumping	3.41	
r dennig station	LH2	Storage and Dispensing	4.22	0227 00 112, 2110

Biodiesel and HEFA Calculator:

- The flat tailpipe CI has changed from 0.76 to 3.497 gCO2e/MJ for BD/RD (a delta of 2.74 gCO2e/MJ) due to recent data from CARB's EMFAC2021 (v1.0.2), mainly N2O increases
 - We request that CARB staff provide a clear and detailed explanation for assigning the same tailpipe score determined for ULSD to biodiesel and renewable diesel.
 - We request that staff provide details on the assumptions driving the emission changes between the prior tailpipe emission factor of 0.76 gCO2e/MJ to the new tailpipe emission factor of 3.497. The explanation of the assumptions should be in plain language so that program participants who are not familiar with the EMFAC2021 model can understand the rationale. This explanation can be referenced in the GREET4.0 explanatory document since the relevant reference (7) is a placeholder and provides no information.





• The Simplified Calculators released for the 15 day comment period in August 2024 do not appear to have been updated with the feedstock emission factor information present in the updated CA-GREET4.0 model. The table below shows an example of the different values:

December 2	023 Release	August 20	24 Release
Soy-Oil Base	ed Biodiesel	Soy-Oil Base	ed Biodiesel
(per M	MBTU)	(per M	MBTU)
Feedstock (K451)	Fuel (L451)	Feedstock (K451)	Fuel (L451)
20,765	20,005	9,999	18,384

 We request that CARB update the simplified calculators so that participants can use simplified calculators that match the CA-GREET4.0 calculator from the start of implementation. We want to avoid any unnecessary delays from known inconsistencies.

HEFA Calculator:

• The wording in section 6 of the manual does not match the spreadsheet:

	occurrent and a second s					
t		Coproducts Exported Outside Fuel Pathway		Renewable Diesel (RD)		
5.5 Alternate Fuel (MMBtu,	6.6	6.7	6.8	6.9	6.10	
HHV) Hydrogen Produced On-Site	Light Hydrocarbons Used as H2 Feedstock	Light Hydrocarbons For Alternate Use	Beginning RD Inventory	Ending RD Inventory		
5.6 Imported Hydrogen (kg)	kg	MMBtu, HHV	MMBtu, HHV	gallons @ 60°F	gallons @ 60°F	
1,000	300					
5.7 Hydrogen Produced On- Site (kg)	We request t	that the man	ual reflects t	he exact sect	ion numbers	in
5.8 Light Hydrocarbons Used	to avoid cont	fusion.				



RNG – DSM Calculator:

- 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 clean out 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.

Thank you very much in advance for addressing our concerns.

Best regards,

Aura Ele

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