



Submitted Via CARB Comment Submittal Form

May 31, 2023

Dr. Cheryl Laskowski
California Air Resources Board
1001 I Street
Sacramento, CA 95812

Re: Valero Renewable Fuels Comments on Proposed Changes for Tier 1 Simplified Calculators – Hydroprocessed Ester and Fatty Acid Fuels

Dear Dr. Laskowski:

On behalf of the Valero family of companies (representing operating subsidiaries of Valero Energy Corporation—collectively “Valero”), I appreciate the opportunity to provide these comments regarding proposed changes for the Tier 1 Simplified Calculators. This letter addresses the proposed Tier 1 Simplified Calculator for hydroprocessed ester and fatty acid (“HEFA”) fuels.

In addition to being the nation’s largest independent refiner of petroleum fuels, Valero is one of the top producers of domestic biofuels. Valero was the first traditional petroleum refiner to enter large-scale ethanol production and is now the second largest ethanol producer in the U.S., with 12 ethanol plants in the U.S. and a total annual production capacity of 1.6 billion gallons per year. Valero is among the leading producers of ultra-low-carbon cellulosic ethanol and we are aggressively pursuing measures to reduce the carbon intensity of our ethanol production through carbon sequestration. Meanwhile, Valero continues to supply the California market with both traditional refined fuels and renewable fuels. With innovation in feedstocks and production processes and carbon capture opportunities, Valero’s low-carbon liquid fuels have outperformed, and have the continuing potential to outperform, the mandated technology choices of the California Air Resources Board (“CARB”) in its 2022 Scoping Plan, on a full life-cycle carbon intensity basis as well as on a cost basis.

Comments on CARB’s Proposed New Tier 1 Simplified Calculator for HEFA Fuels

CARB’s publication of additional Tier 1 calculators encourages participation in the Low Carbon Fuel Standard (“LCFS”) program by lowering the barrier to entry for potential fuel

pathway holders. As such, Valero supports CARB's development of a Tier 1 calculator for HEFA fuels. Valero also suggests the following enhancements to a Tier 1 calculator for HEFA fuels.

I. Feedstock Inputs Sheet

a. Number of Feedstocks

CARB has limited the number of feedstocks in the calculator to ten (10). However, there are facilities that expect to hold LCFS pathways for more than ten (10) feedstocks, when origin points and transportation emissions are considered for each feedstock type. CARB should include more than ten (10) feedstock inputs in the calculator.

b. Feedstock Origin

The draft calculator specifies predefined regions as "US", "Canada", and "Other". Many renewable diesel producers do not currently distinguish their feedstocks between US and Canada; railcars from northern US and southern Canada are often covered by the same contract. CARB had previously issued guidance that renewable diesel producers may consider feedstocks from the US and Canada to both be "domestic". If this policy is changing, then CARB should issue clear, written guidance to outline requirements.

Additionally, when selecting the US or Canada as the feedstock origin, no emission factor populates in the dropdown, indicating a programming error in the calculator.

c. Feedstock Emission Factor for Ocean Tanker Transportation

CARB should correct the error in the calculator that occurs when the user selects "Ocean Tanker" in cell D17 and then the tanker size in cell D18.

d. Feedstock Emission Factor for Used Cooking Oil (UCO) Rendering

The draft HEFA Tier 1 calculator uses a total emission factor of approximately 112 gCO₂e/lb oil for UCO. Of that factor, approximately 4 gCO₂e/lb oil is due to transportation of raw UCO. This would indicate that CARB is assuming a UCO rendering emission factor of approximately 108 gCO₂e/lb oil.

However, in the GREET 2022 model, the UCO rendering emission factor is approximately 106 gCO₂e/lb oil, due to the incorporation of raw UCO rehandling at transfer stations. Argonne's UCO rendering emission factor is 81.2 gCO₂e/lb oil.

CARB should align its UCO rendering emission factor to be equal to that which Argonne is using.

e. Feedstock Emission Factor for Tallow Rendering

The emission factor for tallow rendering that is being used in the draft HEFA Tier 1 calculator is approximately 155% higher than that being used in the GREET 2022 model that was published by Argonne (304 gCO₂e/MJ vs 119 gCO₂e/MJ). It seems that this may be primarily due to CARB using values that had been published and then later revised. Results from López et al. (2010)¹ had been previously misunderstood, which resulted in an overestimation of energy consumption attributable to tallow products in the rendering process. This correction has been noted by Argonne in a memo regarding tallow rendering².

The draft HEFA Tier 1 calculator appears to use the same tallow rendering factor as CA-GREET3.0, which is based on Argonne's 2013 tallow rendering factor publication³ that was later corrected. CARB should update the draft HEFA Tier 1 tallow rendering factor, which is known to be erroneous.

f. Additional Renewable Feedstocks and Inputs

Additional options for renewable feedstocks and inputs (in the form of electricity, natural gas, hydrogen, etc.) should also be included in the Tier 1 calculator via a joint application with another entity.

II. HEFA Production Inputs Sheet

a. Emission Factor for Ocean Tanker Transportation

CARB should correct the emission factor for finished HEFA transportation via the standard ocean tanker in cell C38 to reference the "CA-GREET4.0" tab, cell E32. The HEFA Production Inputs sheet currently references the emission factor for compressed natural gas compression at fueling stations, which is incorrect.

b. Emission Factor and Distance for Imported Hydrogen

Valero supports the change that CARB has made to allow all producers to enter their imported hydrogen emission factor and transportation distance in the Tier 1 calculator.

III. Additional Optionality for Non-Integrated Production Facilities

For non-integrated production facilities, CARB should provide an option to allocate energy to finished products based on how much energy was used to make each product.

¹ López, D.E., Mullins, J.C., Bruce, D.A., 2010. Energy Life Cycle Assessment for the Production of Biodiesel from Rendered Lipids in the United States. Ind. Eng. Chem. Res. 49, 2419–2432.

² https://greet.es.anl.gov/publication-beef_tallow_update_2017

³ <https://greet.es.anl.gov/publication-tallow-13>

The even energy allocation method that CARB is using in the HEFA Tier 1 calculator is appropriate for integrated production plants, but is not appropriate for non-integrated plants.

IV. Backup Documentation

CARB should release backup documentation for all emission factors, etc. While the draft model cites "GREET 2022" for many factors, there are instances where the draft calculator does not align with GREET 2022 or where it is unclear which factor from GREET 2022 is being utilized. Some of these items may be clear once CARB releases a CA-GREET 4.0 model; in the meantime, Valero requests that detailed technical documentation be released.

V. Carbon Capture and Sequestration

An option to include carbon intensity reductions via carbon capture and sequestration ("CCS") should be included directly within the calculator rather than requiring an applicant to develop the calculations outside of CARB's standard file.

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Valero appreciates the opportunity to provide feedback at this critical stage of the LCFS amendments development. Should you have any questions, please contact me at 210-345-4239 or via email at Jennifer.Bond@Valero.com.

Sincerely,



Jennifer Bond

Director Fuel Regulatory Planning & Assurance