



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 – Hydrogen

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 hydrogen.

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 Hydrogen

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 hydrogen. Valero also suggests the following enhancements to a Tier 1 calculator for hydrogen.

I. Emission Factors

CARB has selected to use an emission factor for electrolysis of 50 kWh/kg H₂, which is different from the GREET-2022 factor of 55.502 kWh/kg H₂. CARB should publish background documentation regarding its development of this agency-specific factor.

Additionally, Valero tested the model by inputting all default values and 1 MMBTU of H₂ production (8.793kg). The table below compares the result, before the inclusion of any emissions from transportation of H₂, from the proposed Tier 1 Simplified Calculator to that of the current CA-GREET3.0 and the GREET-2022 models.

Model	Result (gCO_{2e}/MMBTU)
Proposed Tier 1 Simplified Calculator	94,136.8
CA-GREET3.0	106,907.1
GREET-2022	83,512.7

Although CARB has stated that the proposed Tier 1 Simplified Calculator was designed using the GREET-2022 model as a basis, CARB's proposed model appears to have a higher natural gas consumption per kg H₂, which is inflating emissions when compared to the base model. Valero was not able to replicate this adjustment; CARB should publish background documentation regarding this calculation.

II. Additional Renewable Fuel Production

The calculator should allow not only book-and-claim for renewable natural gas, but also expand to include renewable propane and other renewable fuels.

III. 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.

IV. Use of the Low-CI Hydrogen as a Feedstock

In order to encourage additional diversification in of low-CI transportation fuels, the calculator should also include outputs that would allow a pathway holder to use the low-CI hydrogen as a feedstock for other low-CI fuels and not just as a finished transportation fuel.

V. Additional Renewable Feedstocks

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

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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

