Submitted Via CARB Comment Submittal Form

August 8, 2022

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

Re: Valero Renewable Fuels Comments on Proposed Low Carbon Fuel Standard Amendments: July 7, 2022 Workshop

Dear Dr. Laskowski:

On behalf of Diamond Alternative Energy and Valero Renewable Fuels (hereafter collectively and respectively "Valero"[1]), I appreciate the opportunity to provide these comments regarding proposed amendments to the California Low Carbon Fuel Standard ("LCFS").

As one of the largest producers, importers, and sellers of transportation fuel in California, Valero is committed to lowering the carbon intensity of our renewable fuels. Through its Diamond Green Diesel joint venture, Valero operates the largest renewable diesel plant in the United States, with an annual capacity of 690 million gallons in 2021 that will expand to 1.2 billion gallons annually, making it the predominant renewable diesel producer in the United States and the second largest in the world. Valero is North America's largest renewable fuels producer and is the world's second largest corn ethanol producer, 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. In the past three and a half years, Diamond Green Diesel has provided approximately 25% of California's renewable diesel demand. This volume will continue to grow as part of Valero's strategy to be a provider of high-quality transportation fuels to all markets. 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

[1] Please note that comments regarding policy issues suggested by the July 7 workshop were submitted under separate cover by another entity in the Valero family of companies on August 7, 2022. The comments submitted herein are written from the perspective of Valero's renewable fuel production entities and are more specific in nature.

of the California Air Resources Board (CARB) in its Draft 2022 Scoping Plan, on a full life-cycle carbon intensity basis as well as on a cost basis.

Valero welcomes the opportunity to provide feedback at this stage on CARB's proposed changes to the LCFS program. Like CARB, Valero believes that the program should be robust and clear, as well as implementable for both reporting entities and CARB. To accomplish these goals, the program should be amended to better incentivize investments including expanding indirect accounting, to allow displacement credit for co-products that displace conventional fuels in non-transportation uses, and to enhance regulatory certainty, reflect technology and data updates, and improve administration and accountability.

Based on the varied roles Valero plays in manufacturing and supplying renewable fuels to the California market, Valero is uniquely situated to identify programmatic improvements aimed at ensuring LCFS carbon reduction targets are met. With the broad impact the California LCFS has on emerging programs in other states and internationally, it is important that the program is continually improved to better ensure carbon reductions are achieved and that the program functions efficiently and with transparency. With this in mind, Valero offers the following comments to improve the next iteration of the California LCFS program.

Comments on CARB's LCFS Considerations

Valero is providing feedback, as requested by CARB, to the questions and concepts below, as presented in the July 7, 2022 workshop.

I. What are the potential risks of increased use of crop-based biofuels?

There are no real meaningful risks with crop-based biofuels. Some have raised concerns with deforestation in certain biologically sensitive areas abroad. This potential risk should be mitigated by CARB via incorporating into the CA-GREET model *regional* Indirect Land Use Change (ILUC) factor, by crop. Such an action would ensure consistency with the draft 2022 Scoping Plan, which states "California must use the best available science to ensure that raw materials used to produce transportation fuels do not incentivize feedstocks with little to no GHG reductions from a life cycle perspective".[2]

In the current CA-GREET model, all feedstock-specific crops are treated with the same ILUC factor, regardless of geographic region and how long the land has been farmed. In the example of corn originating from the U.S. Midwestern region, land has typically been farmed for corn intended for ethanol production for generations. However, land used to farm sugarcane in some foreign jurisdictions may have been recently deforested[3]. From 2016 onward, California has seen a rapid increase in sugarcane ethanol in the market, while

[2] CARB Draft 2022 Scoping Plan Update, 5/10/2022. Page 180. https://ww2.arb.ca.gov/sites/default/files/2022-05/2022-draft-sp.pdf

[3] Lima, M., Silva Junior, C. A. da, Pelissari, T. D., Lourençoni, T., Luz, I. M. S., & Lopes, F. J. A. (2020). *Sugarcane: Brazilian public policies threaten the Amazon and Pantanal biomes. Perspectives in Ecology and Conservation*, 18(3), 210–212. https://www.sciencedirect.com/science/article/pii/S2530064420300262

the amount of corn-based ethanol has fallen[4]. Since CARB currently uses ILUC factors of 19.8 gCO_2e/MJ and 11.8 gCO_2e/MJ for corn-based ethanol and for sugarcane ethanol, respectively, foreign sugarcane-based ethanol can be unfairly incentivized. However, given the farming practices in the U.S. Midwest, corn grown in this region has a very low ILUC – which is in line with CARB's LCFS program goals.

CARB should update the ILUC factors for all feedstocks to be representative of farming practices by region, similar to how grid electricity is handled in the CA-GREET model.

II. What data sources or studies should staff review to evaluate potential impacts of future growth in crop-based biofuels?

Many of the current ILUC factors used by CARB, such as that for soybean oil used in renewable diesel production, are based on modeling that is several years old and out of date. Understanding that ILUC modeling is complex and the model inputs are not available in a world-wide, clear, standard, and concise format, Argonne National Laboratory has completed ILUC modeling for the feedstock/fuel combinations that CARB has regulated. CARB should adopt the ILUC factors in the Argonne GREET model and use updated Argonne ILUC factors as they are released.

III. Should staff consider a cap on crop-based biofuels?

No, CARB should not consider a cap on crop-based biofuels. A mechanism already exists within the LCFS to "penalize" crop-based fuels via the ILUC factor, and new crop-based technologies are in development which could significantly reduce total lifecycle emissions of these transportation fuels.

Additionally, CARB should consider that many crop-based fuel projects are currently being developed that involve sequestration of CO_2 emissions. Such projects will drastically lower CI of the resulting transportation fuels, which is in line with Governor Newsom's goal to incorporate industrial carbon capture into carbon neutrality efforts[5]. A cap on crop-based fuels would dramatically reduce the innovation of carbon capture and sequestration ("CCS").

Furthermore, current flexibility within the LCFS program (which does not cap crop-based biofuels) allows the market to adjust naturally in the case of unforeseen circumstances. For instance, during the COVID-19 pandemic in 2020, animal fat production and used cooking oil collection rates significantly fell as countries locked down and restaurants closed. The closing of restaurants not only impacted used cooking oil production (which is a renewable diesel feedstock), but also reduced both the demand for

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[4] LCFS Data Dashboard, Figure 11 (updated in November 2020) - Underlying Data Table. http://ww3.arb.ca.gov/fuels/lcfs/dashboard/gis_mapdata_103020.xlsx

[5] *Governor Newsom Calls for Bold Actions to Move Faster Toward Climate Goals.* (2022, July 23). California Governor. https://www.gov.ca.gov/2022/07/22/governor-newsom-calls-for-bold-actions-to-move-faster-toward-climate-goals/

finished animal proteins and the amount of animal fat supply. To exacerbate this, distillers corn oil overall production fell in line with ethanol and gasoline consumption. To fill in this supply gap, soybean oil increased as a renewable diesel feedstock, and its use declined again starting in 2021.

Finally, if a cap on crop-based biofuels was implemented, one of the most likely impacts would be on foreign imports of ethanol into California, which have high transportation emissions to deliver the fuel to California. All California gasoline is currently required to contain 10% ethanol, and California is considering allowing up to 15% ethanol. If California intends to be a global leader in setting low carbon fuel policy, then the state should strongly consider the global implications of a cap on crop-based biofuels.

- **Indirect Land Use Change (ILUC) Factors**

  The purpose of the Indirect Land Use Change (ILUC) factors used by CARB are to account for the additional carbon impacts that crop-based fuels have, when compared to fuels made from other feedstocks (such as yellow grease, which is otherwise a waste). Alternatively, CARB should give positive consideration for land that has been used to produce crops for transportation fuel for more than 15 years. Since ILUC is based on the idea that the biofuel crops are grown on acreage formerly devoted to food and livestock feed production, it should account for and give credit to the land that has for the past 15 plus years been used to produce crops for biofuels.

  An example of another low carbon fuels program that is using this concept is Canada's Clean Fuel Regulations[6]. Paragraph 54 requires approval to use a feedstock originating from a country that has increased its agricultural land since July 1, 2020. This concept could also be used by CARB to ensure that deforestation and the loss of sensitive biodiverse habitats are not incentivized.

  ILUC is not a simple scientific concept and therefore should not be addressed with a simple, and in this case "global", factor. In developing regional ILUC factors, CARB has an opportunity to truly incentivize novel and responsible farming technologies.

- **Cover Crops**

  Cover crops, which are a potential crop-based feedstock grown on land typically devoted to another crop and grown during the base crop's "off-season", would have no impact to either land-use or to food supply. Such cover crops could generate crop-based transportation fuels from a feedstock not currently available. Promoting innovation in farming and fuels manufacturing should be encouraged by CARB;

[6] Canada's Clean Fuel Regulations (SOR/2022-140). https://pollution-waste.canada.ca/environmental-protection-registry/regulations/view?Id=1170

limiting crop-based fuels in California would inherently limit technological advancement. This concept is directly in line with the Draft 2022 Scoping Plan Update, which states that "the state must continue to support low-carbon liquid fuels during this period of transition and for much harder sectors for ZEV technology such as aviation, locomotives, and marine applications".[7]

IV. If so, what mechanisms could staff consider or implement as part of the upcoming rulemaking?

CARB should not implement a mechanism for implementing a cap on crop-based fuels in the upcoming LCFS rulemaking, as such a cap would not be aligned with the following statement in the draft 2022 Scoping Plan:

> *"Private investment in alternative fuels will play a key role in diversifying the transportation fuel supply away from fossil fuels."*[8]

In order to encourage such private investment, CARB must consistently apply regulations over time. Adequate justification for capital expenditures typically consider a 30-year period; implementing a cap on crop-based fuels would eliminate benefit to existing projects, limit innovation in future long-term crop-based fuel investments, and create stranded capital.

Additional LCFS Considerations

Valero offers the following comments to improve the next iteration of the California LCFS program. These changes would better encourage the use and production of low carbon fuels by providing sufficient regulatory certainty for participants to increase their investments and send long-term market signals to investors.

I. Expand indirect accounting within the transportation sector

The LCFS currently allows reporting entities to use indirect accounting mechanisms for low-carbon intensity electricity supplied as either a transportation fuel or to produce hydrogen for transportation purposes. CARB should extend indirect accounting to feedstocks such as low carbon electricity, low carbon hydrogen, or renewable natural gas (regardless of where they were produced) utilized in the production of renewable transportation fuels, such as renewable diesel and low CI ethanol. These low-CI materials should impact the CI when used as *either* a feedstock or a fuel source in the production of the renewable transportation fuel. This program update would aid in further decarbonization of the grid and further encourage investment in low-CI fuels.

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[7] CARB Draft 2022 Scoping Plan Update, 5/10/2022. Page 179. https://ww2.arb.ca.gov/sites/default/files/2022-05/2022-draft-sp.pdf

[8] *Id.* at Page 180.

CARB should also make considerations that best fit its market and the goals of the LCFS and look for specific opportunities to drive technological advancement in the transportation fuels sector. Valero requests that CARB to expand the permissibility of book-and-claim accounting of new-or-expanded low-CI hydrogen injected into regional hydrogen pipelines for transportation fuel use. Valero supports this proposal but urges CARB to not limit indirect accounting mechanisms to end-use transportation fuels. Specifically, CCS utilized to lower carbon emissions during the production of hydrogen or electricity (including electricity used for the production of hydrogen, or hydrogen used for the production of electricity) that gets used as feedstock or utility input for the production of a renewable fuel such as renewable diesel or ethanol should be recognized as lowering the CI of the transportation fuel. While renewable natural gas is allowed today using book-and-claim to lower the CI of a transportation fuel, it is limited to the production of hydrogen that is then used as for the production of a renewable fuel. Book-and-claim type indirect accounting should be allowed whenever low carbon hydrogen, renewable natural gas, or "dispatchable" low carbon electricity is supplied to renewable diesel or ethanol plants via regional hydrogen networks, the national pipeline network, or within independently operated electricity grids, e.g. MISO or ERCOT.

II. Allow credit for displacement co-products not used for transportation fuel

Valero requests that CARB allow for credit for displacement co-products not used for transportation fuel. Co-products from the renewable transportation fuel process that are used outside of the transportation sector, such as renewable propane sold as heating fuel, displace fossil fuels in various uses and should receive credit for doing so by accounting for this displacement in the fuel producer's CI score. The inclusion of non-transportation uses for co-products would incentivize the use of these fuels, resulting in further carbon reductions, and would not take away from the goal to decarbonize the transportation sector. However, for co-products that are also a transportation fuel, whether sold in California or not, CARB should continue to use the volumes as part of the allocation factor.

III. Include mandatory and transparent reporting for project-based credit generators

CARB should require project-based credit generators (i.e. innovative crude oil project, refinery investment credit program) to submit disclosures or reports to purchasers that provide details on the low-CI and other environmental attributes of the feedstock and/or fuel that is purchased. This would result in greater transparency and would allow purchasers to properly account for reductions in their carbon footprint for purposes of ESG reporting to shareholders, which in turn may further encourage development of these projects.

IV. Increase flexibility for operational CI calculations

Valero recommends that CARB enhance regulatory certainty for complying with, and clarify the enforceability of, the LCFS program by adopting (1) a force majeure clause

for operational CI calculations and (2) a de minimis threshold for variations in operational CI score.

First, Valero requests that CARB include a force majeure clause to prevent penalization of reporting entities where operational CI scores are affected by emergency situations. For example, during a period where a production facility is forced to shut down due to extreme events such as earthquakes, fires, or hurricanes, the utility usage for subsequent start-up should be excluded from the annual pathway calculations. The start-up period should be measured as the time it takes to return daily production rates to the same rate immediately prior to the shutdown. CARB should add protection from penalties for force majeure events to Title 17 CCR § 95494.

Second, Valero proposes adding a de minimis threshold for operational CI score variations to encourage flexibility within the LCFS program. CARB should establish an acceptable threshold range for CI scores where an entity would not be considered out of compliance for very minor from the certified CI score (for example, the lower of 0.4 gCO2e/MJ or 1.0% - which is much lower than the Material Misstatement of Operational Carbon Intensity in the LCFS[9]). This would add helpful flexibility both in force majeure circumstances and in other circumstances that result in insignificant variations.

V. Establish a lookback period aligned with the statute of limitations

CARB should consider establishing a maximum lookback period for historical CIs, credits, and deficits. Nothing in the LCFS regulation prevents CARB from going back to previous versions of the regulation or models. Therefore, if an error is discovered, there is no limit to how far back CARB can go to revise this error, notwithstanding the fact that the California Code of Civil Procedure imposes a three-year statute of limitations for air issues.[10] Expressly limiting historical lookbacks to a period aligned with the statute of limitations would provide more stability and market certainty. It would also reduce the resource demand on auditors and CARB staff, which in turn would facilitate a more focused and in-depth review during the annual audits. Because audits are conducted annually, the risk that an issue would fail to be identified and addressed is minimal.

This type of lookback period is consistent with periods used by many agencies, including the Environmental Protection Agency ("EPA"), the Internal Revenue Service ("IRS"), and the Department of Health and Human Services ("HHS"). For example, EPA has multiple lookback periods aligned with the relevant enforcement limitations period, including ones for regional haze assessments and stationary source review.[11] Additionally, the IRS has a defined lookback period for assessing tax-exempt entities during excess benefit transactions,[12] and HHS has a five-year lookback period for Medicaid eligibility.

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[9] Title 17 CCR § 95481(a)(98)
[10] *See* Code Civ. Proc. § 338(k).
[11] 40 C.F.R. § 51.308(g)(3); 40 C.F.R. § 68.42(a).
[12] 26 U.S.C. § 4958.

VI. Update the program elements to reflect technology and data advancements

Valero supports updating program elements to reflect technological and other advancements, including:

a. Update the electricity pathways to include a full lifecycle analysis of carbon emissions related to electric vehicle (EV) battery production and disposal.

Valero acknowledges the limits of the LCFS program in capturing the life-cycle impacts of EV's.

Electricity used as transportation fuel generates LCFS credits based on either lookup table values or specific pathway approvals. However, neither the lookup table values nor the pathway review process properly accounts for the energy consumption and corresponding carbon emissions associated with mining the minerals used in electric vehicle battery production, mineral processing, battery assembly, or in disposal of spent batteries. This oversight is wholly at odds with the comprehensive lifecycle analysis conducted to determine the carbon intensity of other forms of transportation fuel, and it yields a distorted picture of the true carbon footprint of "fueling" electric vehicles (as does the use of the phrase "zero emission vehicles" to describe electric vehicles that rely on batteries containing minerals such as lithium, nickel, and cobalt that are produced and processed outside the United States in an energy-intensive manner). Data is available to support development of a fair and transparent assessment of these energy impacts, as described in detail in a 2016 "Cradle-to-Grave" report by the Argonne National Laboratory.[13] It is arbitrary to overlook these emissions for purposes of determining carbon intensity scores that result in credit generation, and such omissions may result in misleading the public about the impacts of their transportation choices.

Valero suggests that CARB should adopt an EV factor for batteries, similar to ILUC for crop-based fuels. This factor should capture the effect on the environment of the life-cycle of the batteries, yielding a more wholistic approach than the current regulation. As Valero suggested above for ILUC, this factor could also be a regional average (say, that represents all EV manufacturer's in a country).

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[13] Elgowainy, A., Han, J., Ward, J., Joseck, F., Gohlke, D., Lindauer, A., Ramsden, T., Biddy, M., Alexander, M., Barnhart, S., Sutherland, I., Verduzco, L., & Wallington, T. (2016, June 1). *Cradle-to-Grave Lifecycle Analysis of U.S. Light Duty Vehicle-Fuel Pathways: A Greenhouse Gas Emissions and Economic Assessment of Current (2015) and Future (2025-2030) Technologies.* Www.osti.gov. https://www.osti.gov/biblio/1254857-cradle-grave-lifecycle-analysis-light-duty-vehicle-fuel-pathways-greenhouse-gas-emissions-economic-assessment-current-future-technologies

b. Update emission factors on the same timeline as California CI for grid electricity.

Valero requests that CARB update the emission factors for grid electricity for all regions on the same schedule as CARB updates the California CI used for generating EV credits from grid electricity. After establishing a cohesive timeline, CARB should then update the associated GREET and Tier 1 models to account for the grid emission factor changes. This would ensure equity for renewable transportation fuels across geographic regions.

c. Update CARB's Data Management Systems

CARB's LCFS Data Management System needs improvements to allow for more flexibility and to reduce unintended consequences. Though it is clear care was taken in establishing the reporting system, many reporting entities still find the platform unwieldy, inflexible, and difficult. Valero has identified the following areas for improvement:

- ***Improve flexibility of the LRT-CBTS to recognize report corrections.*** The LRT-CBTS plays an important role in adjusting credits and deficits, facilitating credit transfers, and providing a credit account ledger. Because compliance obligations are directly tied to credit/deficit accounting calculated by the LRT-CBTS, this system must be efficient, flexible, and easy for reporting entities to use. However, the system does not accurately recognize situations in which reporting entities submit report corrections. For example, when Valero submitted report corrections within 24 hours of each other, the system incorrectly attempted to add an extra quarter's worth of deficits rather than accurately consolidating the true credit/deficit balance. Improving the flexibility of the system and ensuring that the LRT-CBTS can identify corrections like this would vastly improve the Data Management System.

- ***Correct parent-child relationship for CA-GREET 3.0 fuel pathway codes.*** Fuel Pathway Codes ("FPCs") that were applied for using the CA-GREET 3.0 model are no longer linking through a parent-child relationship. This is causing the need to report numerous gain/loss of inventory events to keep inventories current. Valero suggests that this error be addressed.

- ***Streamline Data Entry Options.*** It would be helpful if the LRT-CBTS had a quick option in the Fuel Transaction Reporting section to delete all the current entries in the open report. Uploading new data does not override existing data, so each entry must currently be manually deleted prior to uploading new data. Valero suggests that a quick option like a "delete all existing data" button be included in the LRT-CBTS.

- ***Provide written documentation for credit/deficit adjustments.*** Valero requests that CARB provide written documentation for all credit and deficit adjustments that occur within LRT-CBTS. This would assist data reporters with reconciling all credits and deficits with internal financial data.

VII. Amendments to Improve Timing and Effectiveness of Implementation

California was the first state to adopt a LCFS, and as a result, other jurisdictions are looking at CARB's LCFS program as an example. States like Oregon and Washington have already followed California's lead and other jurisdictions including Minnesota, New Mexico, and New York are working towards developing a LCFS program. This influence makes it imperative that CARB adopt the following amendments to maintain a robust, timely, and effective program.

a. Establish obligations to respond to pathway applications

CARB should establish responsiveness obligations for pathway application processing. Implementation of the LCFS program must be robust enough to ensure that CARB is able to process applications in a timely manner and that reporting entities are not left waiting for agency action to continue operation. Prompt action on pathway applications allows low-carbon fuels to quickly reach the market and begin reducing carbon emissions. Delays in pathway application processing, on the other hand, can lead to significant issues for producers, including uncertainty around plant operation and the risk of enforcement related to action that is outside of the entity's control, as well as postponing the carbon reductions that would otherwise be achieved. CARB should create responsiveness obligations and deadlines in the application and validation process that will ensure balanced treatment of all participating entities, regardless of whether they be longtime participants producing more traditional renewable fuels or first-time participants producing innovative products.

Valero recommends that CARB have the same obligation to be responsive to the pathway petitioner and verifiers that is required of the pathway petitioners[14]. To further improve the program's timeliness, CARB should be prohibited from holding onto or delaying applications without responding to requests for status updates. Additionally, Valero proposes that the 6-month timeframe to complete validation not begin to run until after CARB releases the pathway for validation. During that validation time period, reporting entities should be allowed to ask CARB for a decision, and if CARB does not provide an answer to complete the validation within one month, the validation time period should automatically be extended without the petitioner needing to resubmit the pathway.

[14] See Title 17 CCR § 95488.6(b)(1) and § 95488.7(d)(3)

With the number of reporting entities that have expressed timeliness concerns[15], the proposed responsiveness obligation would improve confidence in CARB's ability and commitment to timely program implementation.

b. Adopt administrative procedures to ensure transparency, fairness, and consistency

Valero recommends that CARB add administrative procedure language for staff practices that are not currently documented in the LCFS regulation or guidance and to ensure transparency, fairness, and consistency. Specifically, guidance regarding CARB's interpretation of regulatory provisions should be provided to the regulated community as well as to auditors. Officially outlining and cataloging the procedures behind implementation of the LCFS program will not only aid in CARB's ability to run the program smoothly, but will also assist other jurisdictions in using California's LCFS program as a model.

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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 210-345-2181 or via email at deepak.garg@valero.com.

Sincerely,

Deepak Garg
VP Fuels Regulatory Planning & Assurance

[15] Commenters Lyle Schlyer of Calgren Renewable Fuels and Brandon Price of Voss Energy Works both expressed concerns about application approval timelines.