



August 3, 2022

**Via E-mail/Facsimile**

Cheryl Laskowski  
Branch Chief  
Air Resources Board  
1001 I Street  
Sacramento, CA 95814

Dear Dr. Laskowski:

**Re: July 7 LCFS Workshop**

Chevron appreciates the opportunity to review and comment on the referenced Low Carbon Fuel Standard workshop.

Chevron is a major refiner and marketer of petroleum products and renewable fuels in the state of California and a regulated party under the Low Carbon Fuel Standard (LCFS). With the recent acquisition of Renewable Energy Group, Inc., Chevron is also an international producer of lower carbon intensity fuels with a global integrated procurement, distribution, and logistics network and 11 biorefineries in the U.S. and Europe. In 2021, Chevron Renewable Energy Group produced 480 million gallons of renewable fuels, resulting in 4.1 million metric tons of CO<sub>2</sub> reduction, and is helping lead the energy transition to a lower carbon future.

Following are our comments on the topics discussed during the July 7 workshop and additional subjects for consideration. We look forward to future workshops that dive deeper into these potential changes.

Considerations for 2030 CI Adjustments

CARB discussed three potential targets for compliance year 2030: the current 20% target, 25% or 30%. Absent analysis of supply and demand and subsequent illustrative compliance scenarios, it is difficult to comment on which of these targets is appropriate. We look forward to consulting with CARB on this analysis. Whatever target is implemented, Chevron can help contribute to the success of carbon reduction efforts through growing renewable fuel production, renewable natural gas partnerships, and investments in fueling infrastructure.



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Regarding the potential for post-2030 targets, Chevron supports the goals of the LCFS. In advancing those goals, we believe it is important that such targets reflect analysis of realistic growth in low-carbon fuels. The Scoping Plan provides indicative targets for carbon reduction and the LCFS is an important tool in achieving those goals. However, as a regulatory compliance program with binding obligations, its targets must be based on both sound science and achievable compliance scenarios.

#### Crop-Based Feedstocks for Biofuel Production

CARB staff indicated that, in response to questions raised by Board members about the impact of lipid-based feedstocks on food, that staff would be discussing the concept of caps to lipid feedstocks. In the LCFS workshop, staff also obliquely referenced potential for additional impacts from indirect land use change.

We welcome the discussion in this area. Consistent with other aspects of AB32-driven rulemakings, any changes to feedstock availability should follow CARB's well-established data driven approach to rulemaking. As staff begin to move forward on this issue, it will be critical to define the scope and parameters of any review with clear delineation between food related concerns and environment related concerns.

In that vein, we believe the data will clearly show that lipid feedstock production (primarily soy and canola) does not have a negative impact to the food supply or food pricing. We look forward to working with our industry partners in providing information on the US food production system and the positive impact on protein availability that lipid production has as well as data on food pricing and availability in the weeks ahead.

With respect to the potential for possible impacts that lipid production may have on indirect land use change, we believe CARB already has a clearly defined regulatory program to deal with that issue. Any updates to these factors should be incorporated into potential changes to the GREET model.

#### Expanding Infrastructure Credits

Chevron supports CARB's proposal to expand infrastructure crediting to include medium- and heavy-duty vehicles. We encourage CARB to work closely with the hydrogen fueling industry to develop a modeling approach that will enable accurate and flexible assessment of stations designed to serve all types of hydrogen vehicles, dispensing modes, and storage technologies. To maximize investment in infrastructure, it is critical to avoid any crediting model that requires the separation of fueling storage and dispensers by vehicle type. Otherwise, there will be significantly higher capital expenditure to grow infrastructure and longer lead-times for necessary equipment, thus reducing the potential for and speed of growth.





We are concerned that the proposed maximum capacity of 3000 kg/day is far too low to encourage investment in MHD vehicle infrastructure. Chevron encourages CARB to work with medium- and heavy-duty vehicle Original Equipment Manufacturers (OEMs) to determine appropriate daily capacity maximums. These vehicles require significantly more fuel than light-duty vehicles to fill up their tanks. Further, we encourage CARB to utilize historical diesel usage data and/or work with fleets to understand the number of miles driven each day and the corresponding amount of fuel used to operate these vehicles. The daily capacity maximums need to reflect the way in which these medium- and heavy-duty trucks are designed and operated.

The proposed limitation of credit generation to recovery of total capital investment is problematic. This disincentivizes innovation and cost reduction efforts, which will impede the growth and maturation of the hydrogen fueling network. It will also be difficult to define a boundary for capital expenditure that treats different project types equitably.

This is certainly a topic that warrants a dedicated workshop. We encourage CARB to work with industry groups on a practical approach and have those stakeholders participate in the presentations.

#### Fuel Pathway Approvals

As discussed during the workshop, the process for approving fuel pathway applications has seen significant delays over the past few years. With a program as complex as the LCFS with so many regulated parties, it is understandable that the workload involved in approving pathways would be challenging, both for CARB staff and regulated parties. However, the financial and operational impacts of these delays are untenable and will have a negative impact on growth under the LCFS.

Current delays include staff reviews that take multiple quarters to deem an application complete. Following that is an extended process for validation of the application by a third-party auditor. This validation must then be accepted by CARB, which can take several weeks. The result is several quarters operating under a temporary CI that is, by design, conservatively high. With rising feedstock prices and costly capital investments, this can cause facilities to produce renewable fuels at a loss during those quarters. This obviously has a negative impact on the growth of the project pipeline as there may be projects that cannot start up when facing those impacts.

There are fundamental changes that can be made to the regulation to alleviate the impact of these delays.

1. The simplest and most effective change would be to implement credit true ups for provisional pathways, providing credits to a producer



based on the difference between a temporary CI and the approved provisional CI, back to the start of production. The regulation already contains a provision for taking back credits when a pathway CI is adjusted upward. Making this change extends that mechanism to more equitably recognize the carbon reduction from new low-carbon fuel production and it would not only dramatically reduce the financial impact of any delays in application reviews, but provide an additional incentive for new parties to introduce projects for pathway approval.

2. Given the existing provision for adjusting credit balances as operational data affects a calculated CI score, CARB should also remove the requirement that facilities operate for three months before applying for an LCFS pathway. Approving a provisional CI prior to startup would align with the process followed by the EPA for approving pathways under the Renewable Fuel Standard, reducing the burden on applicants. It would also allow CARB staff to work on pathway reviews on a more flexible schedule, rather than one driven by when the applicant achieves the start of production.
3. Given the significant workload involved for staff, we believe CARB should also consider ways to outsource a significant portion of the application review process. Creating a set of qualifying parameters for empowering outside engineering firms to review pathway applications would save considerable time for staff. It could also combine the application review and validation processes, saving considerable time in the approval schedule.

Each of these changes would significantly reduce both the time and impact of the current delays, while still ensuring the technical merits of the program. Given CARB's focus on improving the exportability of the LCFS, we believe these changes are necessary. The burden on CARB staff is significant. States with smaller program staff will feel it considerably more.

#### Deficits for Intrastate Jet Fuel

CARB staff proposes to incorporate deficits for intrastate fossil jet use into the LCFS to encourage growth in alternative jet fuel. We do not believe this is a practical or effective approach. The International Council on Clean Transportation (ICCT) points out that intrastate flights represent only 3% of Aviation CO<sub>2</sub> emissions in the United States<sup>1</sup>. While this percentage is likely higher for California alone, it still represents a small portion of state aviation emissions. The ICCT recognizes opt-in credits as an effective incentive for growing alternative jet fuel and a policy that is readily exportable to other

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<sup>1</sup> 'Reducing aircraft CO<sub>2</sub> emissions: The role of U.S. federal, state, and local policies', ICCT Briefing, <https://theicct.org/sites/default/files/publications/Aviation-CO2-US-feb2021.pdf> (accessed July 24, 2022)





states. Beyond that, the ICCT asserts that an effective federal policy on aviation emissions is the best approach to achieving reductions.

Adding LCFS deficits for intrastate jet would be a disruptive element in the state's jet fuel supply chain. Only the airlines will have insight into volumes used for intrastate flights and they may be reluctant to share such competitively sensitive information with suppliers. To implement this change, the airlines would have to be the first fuel reporting entities, adding dozens of new regulated parties to the LCFS. We believe that alternative jet fuel credits would provide sufficient incentive to encourage growth under the LCFS. Any additional policy support should come from programs outside the LCFS.

#### Phase Out of Credits for Electric Forklifts

CARB requested feedback on the possible phase out of credits for electric forklifts. The implication appears to be that, with conversions at 50% and electric forklifts generating 27% of electricity-based credits in 2021, the incentive of LCFS credits is no longer needed. This is the wrong approach to take when the program achieves success in a sector like this. Investments in lower-carbon technologies are made, at least in part, based on the expectation that they will be rewarded with credits under the LCFS. If CARB sends the message that such credits will go away once investments have been made, it will discourage early technology adoption and investment in other sectors.

Removing specific technologies or fuels from the LCFS program simply because they have succeeded runs counter to the principle of a technology-neutral program. LCFS reductions are based on changes in the transportation sector when compared to a 2010 baseline. Conversion to electric forklifts represents a measurable change from that baseline that deserves to continue to earn credits. Taking those credits away without also changing the baseline itself brings inaccuracy to the program.

At a higher level, the reasons given for removing electric forklifts appear to be arbitrary and not tied to a specific regulatory provision. A clear process with benchmarks for being removed from the program should be in place to ensure that technologies and fuels are not removed without cause in the future. Any such changes should be science-based and not driven by an opinion that the fuel or technology in question no longer "needs" support from the LCFS. Any such removal of otherwise eligible fuels would degrade trust in the LCFS program and slow down the continued use of GHG-reducing fuels.

#### Refreshing Underlying Data

One area that should be addressed during this rulemaking is an update to data in the regulation to reflect the most recent studies. We understand that CARB has been at work on assessing the latest versions of OPGEE and



GREET but would like to see a particular focus on data related to electric vehicle use and charging, especially the amount vehicles are charged at home vs. public charging. Following are a few such sources for consideration:

- “Low Energy: Estimating Electric Vehicle Electricity Use” by Fiona Burlig, James Bushnell, David Rapson, and Catherine Wolfram, published in March 2021.<sup>2</sup>

“We estimate that the average PG&E EV-owning household uses 2.9 kWh per day charging their vehicle at home. By contrast, California regulators rely on residential charging data reported by the utilities for households with dedicated EV meters. These meters report daily average usage between 6 and 9.8 kWh per day (Pacific Gas and Electric, Southern California Edison, and San Diego Gas and Electric (2019)), more than twice our estimate.”

- “Zero-Emission Bus Evaluation Results: County Connection Battery Electric Buses” by Leslie Eudy and Matthew Jeffers from NREL.<sup>3</sup>

“The battery [electric] buses had an overall average efficiency of 2.84 kWh per mile, which equates to a fuel economy of 13.3 miles per diesel gallon equivalent (mpdge). The fuel economy for the diesel buses averaged 5.1 mpdge and for the diesel trolley buses it averaged 3.5 mpdge. The battery fleet’s fuel economy was 3.8 times higher than that of the diesel trolley buses operated on the same service route and 2.6 times higher than that of the diesel buses operated on all the County Connection routes.”<sup>4</sup>

#### Additional Topics for Future Consideration

- We support updating the Tier 1 Simplified CI Calculators. We hope staff can make more improvements to the process for a more efficient

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<sup>2</sup> Burlig, et al. “Low Energy: Estimating Electric Vehicle Electricity Use.” Energy Institute at Haas, March 2021, <https://haas.berkeley.edu/wp-content/uploads/WP313.pdf>

<sup>3</sup> Leslie Eudy and Matthew Jeffers. “Zero-Emission bus Evaluation Results: County Connection battery Electric Buses,” National Renewable Energy Laboratory, December 2018, <https://www.nrel.gov/docs/fy19osti/72864.pdf>

<sup>4</sup> For reference, the Electric Bus EER is 5.0.



pathway approval process for well-established pathways while allowing more time for novel & innovative Tier 2 pathways.

- In addition to the proposals on pathway applications above, we support adopting a provision for awarding additional credits to a producer whose verified annual carbon intensity is at least 1 gCO<sub>2</sub>e/MJ lower than certified. A similar provision has been proposed by Oregon DEQ in their current rulemaking under 340-253-1020(5).<sup>5</sup>
- We oppose removing the default EER of 1 if not represented on Table 5. This is an important regulatory flexibility needed to ensure no alternative fuel is accidentally left out of the program.
- We support continued review of low-carbon farming and transportation practices and seeking a means of reflecting these practices in fuel pathways.

Thank you for the opportunity to comment on these matters. If you have any questions regarding our comments, please contact Don Gilstrap at (925) 842-8903 or [DGilstrap@chevron.com](mailto:DGilstrap@chevron.com).

Sincerely,



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<sup>5</sup> <https://www.oregon.gov/deq/rulemaking/Documents/cfp2022pnp.pdf>

