

December 9, 2022

Ms. Cheryl Laskowski,  
Branch Chief, Low Carbon Fuel Standard Team  
California Air Resources Board

*Submitted via LCFS Comments Upload Link*

**RE: Comments on November 9 Workshop to Discuss “Potential Changes to the Low Carbon Fuel Standard”**

Dear Ms. Laskowski:

Thank you for the opportunity to provide comments to the California Air Resources Board (CARB) on your “Potential Changes to the Low Carbon Fuel Standard,” as presented by Staff at the November 9, 2022, Public Workshop.

The Low Carbon Fuel Standard (LCFS) program is the nation’s leading and most successful example of a market-based carbon reduction regulation for the transportation sector. The program has been instrumental in supporting the growth of a broad portfolio of low carbon transportation fuels in California, their associated reductions in carbon and pollutant emissions, job growth in clean energy sectors, and other benefits. However, as has been noted by CARB staff and many stakeholders, the current carbon intensity reduction targets in the LCFS program are no longer in alignment with the State’s climate targets and timelines, nor with the capacity of the market to supply low carbon fuels.

Recent growth in the LCFS credit bank and forecasts of growth in renewable diesel (RD), renewable natural gas (RNG), low carbon electricity, and renewable hydrogen supplies demonstrate that the market is ready to support a realignment of the LCFS carbon intensity reduction targets to levels consistent with the Draft 2022 AB32 Scoping Plan<sup>1</sup> (Scoping Plan). Critically, this realignment must be dynamic to respond to the market changes that are occurring as California’s transportation market enters a high adoption rate phase of alternatives to petroleum fuels. This dynamic approach, sometimes referred to as an “acceleration approach” or “ratchet,” would pull forward the carbon intensity benchmark schedule based on demonstrated overperformance of the LCFS program on an annual basis. As outlined in the Scoping Plan and Governor Newsom’s letter recently submitted to CARB on July 22, 2022<sup>2</sup>, more action is needed to meet the State’s 2030 climate goal and 2045 statewide carbon neutrality target. The LCFS program can and must be strengthened to achieve these ends.

To that end, the below signed organizations encourage CARB to adopt a three-component approach to increasing LCFS program stringency. These components include a significant market adjustment to the 2024 benchmark CI to reflect market conditions, establishing a 2030 CI reduction target of at least 30 percent, and implementing a ratchet mechanism to ensure future alignment of the LCFS program benchmarks with market capabilities.

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<sup>1</sup> <https://ww2.arb.ca.gov/sites/default/files/2022-05/2022-draft-sp.pdf>

<sup>2</sup> <https://www.gov.ca.gov/wp-content/uploads/2022/07/07.22.2022-Governors-Letter-to-CARB.pdf?emrc=1054d6>

## **Ratchet Structure**

As noted by Staff during the November 11<sup>th</sup> workshop, and by multiple commentors to the workshop, the LCFS program is currently overperforming its carbon intensity (CI) reduction targets. This overperformance has also led to the single largest quarterly increase in the credit bank in the program's history, i.e., nearly 1 million MT of net (excess) credit production in Q4 2021, which was then surpassed in Q2 2022 with 1.35 million MT of excess credit production. Excess credit generation during 2021 and 2022 to date is largely attributed to year-over-year growth in RD, RNG, and low-CI electricity as transportation fuels. Excess credit production can now be easily and demonstrably absorbed by a more aggressive compliance schedule.

Looking forward, continuing growth in RD production and transportation electrification is expected to displace increasing volumes of deficit-generating fuels with credit-generating fuels. Staff's California Transportation Supply (CATS) model, described at the November 11<sup>th</sup> workshop will be a useful tool to examine the impact of the expected oversupply of low carbon fuels into California, relative to the current LCFS program benchmarks. However, significant uncertainty will remain in any supply forecast, creating a risk that future LCFS program benchmarks will again underestimate market capability.

To address this uncertainty, a three-component approach to setting new LCFS program benchmarks is proposed:

1. Adjust the 2024 carbon intensity benchmark to reflect current market overperformance through 2022. It is anticipated that this will equate to target CI reduction of 18 to 20 percent, effectively pulling up the current 2030 target to 2024.
2. Establish a target CI reduction of 30 to 35 percent in 2030 and a long-term CI reduction target in 2045 that is consistent with the State's overall carbon targets, more than 85% is required per scoping plan.
3. Implement a ratchet structure that, beginning in 2025, automatically pulls ahead CI reduction targets based on observed market overperformance.

The exact structure of the ratchet should be determined in discussions between Staff and stakeholders; however, we propose a structure developed by Carbon Acumen as a starting point. The key concept in the proposed structure, described below, is that the benchmark CI for a given year is set by the benchmark CI schedule minus the average overperformance in the prior four quarters. This approach ensures that acceleration of the benchmark CI is based on observed (rather than forecasted) market capability. Additionally, it avoids the need for lengthy new rulemaking processes to reset the benchmark CI to be consistent with market conditions. Finally, in years where the market does not overperform the target benchmark, the ratchet will not accelerate benchmark reductions, helping to ensure that a reasonable bank of credits is maintained. Combined with the numerous other protections in the LCFS program (credit price cap, Advance Crediting, carryover of deficits, etc.) the ratchet mechanism provides an important tool to ensure LCFS program targets do not lag behind market capabilities and seek the fastest feasible carbon reductions (consistent with California's overall carbon goals).

**Auto Ratchet: Rolling 4-Quarter Energy Weighted Compliance CI – Actual CI Delta**

It is appropriate to use the difference between actual CI and compliance CI delta as the metric for an auto ratchet mechanism given the correlation to the credit bank build. The 6 equations below outline a mathematical process to calculate this delta if the rolling 4-quarter energy weighted actual CI,  $CI_{WA,q}$ , is less than the rolling 4-quarter energy weighted CI compliance CI,  $CI_{WC,q}$ , as shown in equation 1 below.

$$CI_{WA,q} < CI_{WC,q} \quad \text{equation 1}$$

If triggered, the following year compliance CI,  $CI_{C+1}$ , adjusts by the difference by the delta,  $\Delta CI$

$$CI_{C+1} = CI_{C+1} - \Delta CI \quad \text{equation 2}$$

The delta is based on the difference between a rolling 4-quarter energy weighted compliance CI,  $CI_{WC,q}$ , and the rolling 4-quarter energy weighted actual CI,  $CI_{WA,q}$ , as shown in equation 3.

$$\Delta CI = CI_{WC,q} - CI_{WA,q} \quad \text{equation 3}$$

The rolling 4-quarter energy weighted actual CI,  $CI_{WA,q}$ , is calculated by summing the quarterly gasoline equivalent actual CI,  $CI_{A,q}$ , multiplied by the respective quarterly total energy,  $E_{T,q}$ , and dividing the sum by the total energy of the past 4 quarters as shown in equation 4.

$$CI_{WA,q} = \left( \sum_{q=n-3}^n CI_{A,q} \times E_{T,q} \right) / \sum_{q=n-3}^n E_{T,q} \quad \text{equation 4}$$

The rolling 4-quarter energy weighted compliance CI,  $CI_{WC,q}$ , is calculated by summing the quarterly gasoline compliance CI,  $CI_{C,q}$ , multiplied by the respective quarterly total energy,  $E_{T,q}$ , and dividing the sum by the total energy of the past 4 quarters as shown in equation 5.

$$CI_{WC,q} = \left( \sum_{q=n-3}^n CI_{C,q} \times E_{T,q} \right) / \sum_{q=n-3}^n E_{T,q} \quad \text{equation 5}$$

The quarterly gasoline equivalent actual CI,  $CI_{A,q}$ , is calculated by subtracting the net fuel credit generation,  $FC_{T,q} - FD_{T,q}$ , divided by the respective quarters total energy,  $E_{T,q}$ , from the respective quarter compliance CI,  $CI_{C,q}$ , as shown in equation 6.

$$CI_{A,q} = CI_{C,q} - (FC_{T,q} - FD_{T,q}) / E_{T,q} \quad \text{equation 6}$$

Variables & Subscripts

$CI_{WA,q}$  = Rolling 4 Quarter Gasoline Equivalent Actual CI (gCO<sub>2</sub>e/MJ)

$CI_{WC,q}$  = Rolling 4 Quarter Gasoline Compliance CI (gCO<sub>2</sub>e/MJ)

$CI_{A,q}$  = Quarterly Gasoline Equivalent Actual CI (gCO<sub>2</sub>e/MJ)

$CI_{C,q}$  = Quarterly Gasoline Compliance CI (gCO<sub>2</sub>e/MJ)

$FC_{T,q}$  = Quarterly Total Fuel Credits (MT)

$FDT_{,q}$  = Quarterly Total Fuel Deficits (MT)

$ET_{,q}$  = Quarterly Total Energy (MM MJ)

The rolling 4-quarter energy weighted rolling CI approach is taken to appropriately adjust to an economic downturn or pandemic such as the near 30% YoY demand destruction in Q2-2020. The rolling 4-quarter approach also adjusts for seasonality and is less noisy than a 2-quarter rolling average as seen in the line graph below. Assuming a ‘step down’ CI compliance in 2024 and the lag in LCFS quarterly data, the table below outlines the data used for an auto ratchet scenario for 2025 and 2026-2030.

Calendar Year	2024				n = 2025+			
Reporting Quarters		Q1 2024	Q2 2024	Q3 n-1	Q4 n-1	Q1 n	Q2 n	
Auto Ratchet Compliance Year	2025				n + 1			

**Conclusions**

Thank you for this opportunity to comment. We urge CARB to build on the success of the LCFS program to further accelerate the reduction of GHG emissions in the transportation sector. We look forward to continuing our dialog with CARB on these issues. Please feel free to contact Patrick Couch at 310-279-9150 or [patrick.couch@gladstein.org](mailto:patrick.couch@gladstein.org) with any questions related to this comment letter.

Sincerely,



Patrick Couch  
SVP – Gladstein, Neandross & Associates

**Cosigners:**

Carbon Acumen  
California Bioenergy  
WattEV  
Maas Energy

Will Faulkner, Founder  
N. Ross Buckingham, CEO  
Emil Youssefzadeh, Chairman and CTO  
Daryl Maas, CEO