

August 27, 2024

Liane Randolph, Chair
Members of the Board
California Air Resources Board
1001 I Street
Sacramento, CA 95814

Dear Chair Randolph and Members of the Board,

I helped develop and enthusiastically support the LCFS. A strong LCFS is critical to helping California achieve its zero emission transportation goals. In the 15-Day Notice, staff have proposed several improvements to the LCFS amendments proposal that I agree with. These improvements include:

- allowing pre-2011 transit to generate full credit,
- classifying forest waste biomass as a specified source feedstock,
- applying sustainability criteria to prohibit biofuel feedstock sourcing from land cultivated after 2008,
- allowing staff to apply more conservative LUC CI values based on source of feedstock,
- limiting avoided methane crediting to 20 years instead of 30 years,
- removing hydrogen produced using fossil gas with CCS as eligible credit generator in 2031,
- and a very weak, short-term signal discouraging soy and canola biomass-based diesel.

The short discussion below focuses on four issues related to the 15-Day Notice and Recirculated Draft Environmental Impact Analysis that I hope you will further consider for a second 15-Day Change Notice or direction to staff in the Board Resolution. This discussion is followed by an appendix which provides more detailed suggestions for changes to reduce pass-through costs and better align the LCFS with California's long-term transportation goals.

1. What do Donald Trump and CARB staff have in common? They both assume that you are foolish enough to believe that pass-through costs do not exist. While Trump continues to double-down on the [claim](#) that tariffs do not increase the cost of goods, CARB staff continue to double-down on the equally false [claim](#) that assessing LCFS deficits does not increase the cost of gasoline. **SAD!**

In the appendix to these comments, I have reiterated several suggestions from my [45-Day Comment Letter](#) that will reduce the LCFS pass-through cost to consumers of gasoline. These actions involve limiting credit generation that does not advance California's long-term zero-emission transportation goals, eliminating excessive credit generation that only results in excessive profits, eliminating LCFS subsidies that do not result in additional global GHG emission reductions beyond what would already occur through other State and Federal programs, eliminating double-

counting of LCFS credits and GHG reductions purchased through the voluntary carbon market for DAC and CCS projects, removing Enhanced Oil Recovery as an eligible sequestration method for out-of-state CCS and DAC projects, and minimizing the potential for credit price spikes. Cutting out unnecessary and ineffective credit generation will allow for less stringent targets and lower pass-through costs, without sacrificing real, additional GHG reductions achieved by the program.

In addition to adopting the suggestions in the appendix, I encourage you to direct staff to split the LCFS program into two separate markets with two different percentage CI reduction targets. Credits generated in one market would not be fungible in the other market. One market would be restricted only to gasoline and substitutes and would have a less aggressive CI benchmark schedule, which will reduce pass-through costs to low-income gasoline consumers. The other market would include diesel, jet fuel, and their substitutes and would have a much more aggressive CI benchmark schedule to accommodate the high market penetration of renewable diesel, biodiesel, and negative CI dairy gas. Because of the more aggressive CI benchmark schedule, the diesel market will have much higher pass-through costs. Having two separate markets will insulate the gasoline consumer from high pass-through costs necessary to decarbonize the diesel side. Moreover, gasoline consumers in California should not be paying most of the cost to decarbonize the heavy-duty transportation sector when the State can more effectively pass much of those costs on to out-of-state consumers of goods passing through California ports.¹ While this is a major change that is likely not appropriate for a second 15-Day Change Notice, I do hope you will direct staff in the Board Resolution to consider it for future amendments. I fear that if CARB is unwilling to acknowledge that pass-through costs exist and take reasonable steps to address them, especially on the gasoline side, the LCFS may become hard to defend politically by 2035.

2. While the staff proposal discouraging soy and canola biomass-based diesel in [section 95482\(i\) of the 15-day Change Notice²](#) is a step in the right direction, it is not a cap and likely will not effectively reduce long-term use of these feedstocks. The proposal should be further strengthened to address the issues discussed below.

¹ Because much of the diesel consumed in California is used for goods movement, pass-through costs on the diesel side will ultimately get passed on to consumers of goods that move through California ports. Since most goods moving through California ports have a destination outside of California, these costs will mostly be passed on to consumers outside of the state.

² The proposed 15-day Change reads: "Biomass-based diesel produced from soybean oil and canola oil is eligible for LCFS credits for up to twenty percent combined of total biomass-based diesel annual production reporting, by company. Any reported quantities of biomass-based diesel produced from soybean oil or canola oil in excess of twenty percent on a company-wide basis will be assigned a carbon intensity equivalent to the carbon intensity benchmark shown in Table 2 in Section 95484(e) for the applicable data reporting year, or the certified carbon intensity for the associated fuel pathway – whichever is greater. For companies with biomass-based diesel pathways certified prior to the effective date of the regulation and for which the percentage of biomass-based diesel produced from soybean oil or canola oil was greater than 20 percent of combined reported biodiesel and renewable diesel quantities for 2023 LCFS reporting, this provision takes effect beginning January 1, 2028."

- Credit generation and avoided deficit generation are two sides of the same coin.³ It is important to recognize that for volumes more than 20%, CARB is proposing to assign a CI value equal to the carbon intensity benchmark shown in Table 2 of the LCFS regulation or the certified pathway CI, whichever is greater. CARB is not proposing to assign the CI value for fossil diesel. As such, it may still make economic sense for a company that produces only soy or canola renewable diesel to sell it in California, even if volumes above 20% are assigned a CI that does not generate credits or deficits. The LCFS incentive comes from a combination of the credit value and the higher market price for fuel in California versus other markets. The higher market price for diesel in California is driven in part by the LCFS pass-through cost⁴ and the Cap-and-Trade pass-through cost. Because the market price for biomass-based diesel follows the market price for diesel, the market price for biomass-based diesel in California likewise exceeds that in other states. And as the LCFS benchmark CI value decreases over time, the LCFS pass-through cost will continue to increase, resulting in a widening price gap between selling (bio or fossil) diesel in California versus other markets. The higher selling price may be sufficient to justify participating in the California market even if the biofuel does not generate credit.⁵ **If CARB is truly interested in removing the LCFS incentive to sell more than 20% of soy and canola-based diesel, I recommend assigning the carbon intensity of fossil diesel to volumes in excess of 20%.**
- Staff's proposal effectively self-sunsets in less than ten years⁶ and sooner if the auto-acceleration mechanism is triggered. The diesel benchmark CI declines every year and once the pathway CI is higher than the benchmark, all fuel volumes will be assigned the actual pathway CI. There will no longer be less incentive for volumes above 20%. In the 15-Day Notice, CARB staff claim that the "proposed addition avoids sending a long-term signal for virgin soy or canola oil to serve California demand". No, it does not. It provides a short-term signal. In the long-term, this proposal really does nothing, as beyond the year 2035 the

³ Most soy and canola renewable diesel pathways have CI values between 50 and 65 g/MJ. In 2028, the diesel benchmark CI is proposed to be 77.10 g/MJ. So as an example, if a company produces soy (and/or canola) renewable diesel with a CI of 60 g/MJ, those volumes below 20% will be assigned the pathway CI of 60 g/MJ and those volumes above 20% will be assigned the diesel benchmark CI of 77.10 g/MJ. All of the volume, however, will be displacing diesel which has a CI of 105.76 g/MJ. So, while there will be less LCFS incentive for selling volumes above 20%, there will still be some incentive because displacing the fossil diesel avoids the deficits generated by fossil diesel (and also avoids the Cap-and-Trade compliance obligation). In other words, credit generation and avoided deficit generation are two sides of the same coin.

⁴ The LCFS pass-through cost is a function of the credit price, and the quantity of deficits generated by a gallon of fossil diesel, which increases as the diesel benchmark decreases.

⁵ By similar reasoning, even when soy and canola renewable diesel start generating LCFS deficits, there will still be an incentive to sell it in California, as it will displace fossil diesel which generates considerably more deficits (and also incurs a compliance obligation from the Cap-and-Trade program).

⁶ The proposed diesel benchmark is scheduled to drop below 65 g/MJ in 2032 and drop to 50 g/MJ by 2035. In other words, the difference in CI value assigned to volumes above and below 20% decreases each year after the amendments are adopted and the provision effectively self-sunsets between the years 2032 and 2035 for most producers of biomass-based diesel.

proposal doesn't affect the incentive to sell soy and canola-based diesel in California. **Assigning the fossil diesel CI to volumes above 20% would send the appropriate long-term signal.**

- Under the staff proposal, an unlimited quantity of fuel produced from other crop-based feedstocks can be sold in California. The provision does not apply to oilseed crops such as camelina, sunflower, or carinata, so biomass-based diesel produced from these crops will not be affected. **Only applying the provision to soy and canola may result in some perverse incentives in the oilseeds market that can be avoided by applying the provision to all oilseed crops.**
 - Under the staff proposal, an unlimited quantity of soy or canola-based jet fuel, gasoline, and propane can be sold in California. The provision only applies to biomass-based diesel and not to renewable jet fuel, renewable gasoline, or renewable propane produced from soy and canola. Many renewable diesel biorefineries produce more than one product and some produce all of these fuels, but only the renewable diesel will be affected by the 20% threshold. An important question to ask staff is how flexible they will be in allocating feedstocks to finished fuels. For example, if a biorefinery produces renewable diesel and renewable jet fuel from used cooking oil and soy oil, will CARB allow them to avoid exceeding the 20% threshold for renewable diesel by arbitrarily saying that the jet fuel is produced from soy oil and the diesel is produced from used cooking oil, when in fact the biorefinery is fed a mixture of these oils? **I recommend applying the 20% limit to the combined volume of biomass-based diesel, renewable jet fuel, renewable gasoline, and renewable propane sold in California and specifically prohibiting arbitrary preferential allocation of feedstock to product.**
3. **Staff should be directed to correct the air quality assessment in the Draft Environmental Impact Analysis.** It is disappointing to see staff rely on science and mathematics when it is convenient, but then ignore both when they don't support their point of view. For example, staff clearly believes in statistics when a study shows that a higher rate in growth of dairies with digesters is not statistically significant (see slide 47 of a recent CARB presentation on [dairies](#)), but they don't believe in statistics when a study shows that using renewable diesel in new technology diesel engines does not result in statistically significant reductions in tailpipe emissions (see page viii of the recent [Low Emission Diesel Study](#) prepared for CARB⁷). As a second example, staff continue to assume that a reduction in the consumption of fossil diesel in California will result in a proportional reduction in oil production in California and then attribute the reduced criteria pollutant and GHG emissions associated with the oil production decline to the LCFS (see page B-1 of the SRIA for equations). These calculations ignore the obvious fact that California oil production has been in terminal decline for decades ([see figure 1 on page 7 of](#)

⁷ Page viii reads "There were no statistical differences in PM emissions in the NTDEs observed in any test fuel or test cycle compared to the CARB reference fuel, indicating that PM emissions are effectively controlled by the exhaust aftertreatment systems, no matter the biofuel blend or test cycle."

[the California State Oil and Gas Supervisor Annual Report 2020](#)) and oil production will continue to decline rapidly without the LCFS. Furthermore, staff has demonstrated no link between a decline in California refinery output and a decline in oil production in the State. CARB staff should provide the Board with the best available information to make an informed decision, not skew the data and calculations to support a pre-determined policy outcome. It is unfortunate to see CARB selectively use science and mathematics.

- 4. Staff should address the potential for the Auto-Acceleration Mechanism (AAM) to overcorrect the market.** I suggest not allowing an acceleration to occur in either 2031 or 2032⁸ as the rate of CI decline for the benchmarks is already more than tripling starting in 2031 and an acceleration that occurs in either of these years would increase the rate of target CI decline more than sixfold. Such a rapid CI stepdown may result in an overcorrection of the market with the credit price going to the ceiling, at which it may be stuck for many years. Under the above scenarios, credit price at the ceiling may result in a pass-through cost of approximately \$1.30 per gallon of gasoline in the early 2030s. Such a pass-through cost would likely be politically untenable for the program.

As always, I am available to discuss these comments with you individually at a time of your convenience.

Best regards,

Jim Duffy

⁸ This caution assumes that the AAM has not already been triggered prior to 2030. If the AAM has previously been triggered, then the years of concern will advance by one year. In other words, I suggest not allowing an acceleration to occur in either of the two years following the transition from a 1.45% rate of benchmark decline to a 4.5% rate of decline.

Appendix: Actions that CARB can take to reduce the pass-through cost to consumers of gasoline.

These actions involve limiting credit generation that does not advance California's long-term zero-emission transportation goals, eliminating excessive credit generation, eliminating LCFS subsidies that do not result in additional global GHG emission reductions beyond what would already occur through other State and Federal programs, and minimizing the potential for credit price spikes. Cutting out unnecessary and ineffective credit generation will allow for less stringent targets and lower pass-through costs, without sacrificing real, additional GHG reductions achieved by the program.

Eliminate double counting of emission reductions from direct air capture (DAC):

In several provisions of the LCFS regulation amendments (e.g., book-and-claim electricity, book-and-claim RNG, book-and-claim hydrogen, renewable or low-CI process energy), the regulation text prohibits generating LCFS credits if the RECs or environmental attributes are "being claimed in any other voluntary or mandatory program with the exception of (insert list of programs where stacking is allowed)". However, such language is conspicuously absent from section 95490 for DAC or other CCS projects. It is public knowledge that Oxy 1PointFive is already preselling future emission reductions in the voluntary carbon market for its first DAC project and intends to bundle DAC emission reductions with crude oil being marketed as "carbon neutral crude" or "net zero oil". See:

- [1PointFive announces agreement with Airbus for purchase of 400,000 tonnes of carbon removal credits](#)
- [Amazon makes first investment in direct air capture climate technology | Reuters](#)
- [Oxy teams with Macquarie to deliver the world's first carbon-neutral oil from Permian basin to India](#)
- [1PointFive Announces Agreement to Sell 500,000 Metric Tons of Direct Air Capture Carbon Removal Credits to Microsoft](#)
- [1PointFive and AT&T Announce Direct Air Capture Carbon Removal Agreement](#)

While I agree that the LCFS value for CCS and DAC should stack with Federal 45Q tax credit, generating LCFS credit for emission reductions that are also sold to other entities in the voluntary carbon market and/or bundled with crude as "net zero oil" is a clear instance of double or maybe even triple counting of emission reductions. If your intention is to allow double or triple accounting, then that should be transparently stated and discussed in a public forum.

Remove Enhanced Oil Recovery (EOR) as an Eligible Sequestration Method: California SB 1314 prohibits the use of EOR as a sequestration method for CCS projects in California. Section 1 of SB 1314 reads "The Legislature finds and declares that the purpose of carbon capture technologies, and carbon capture and sequestration is to facilitate the transition to a carbon-neutral society and not to facilitate continued dependence upon fossil fuel production." CO₂ EOR is a tertiary oil production method that is only used when oil field production has declined to the point that it is no longer

profitable to continue producing using secondary production methods such as waterflood. As such, use of EOR results in the recovery of oil that otherwise would not be produced. The LCFS program should not be providing incentive to squeeze additional oil from these fields. Let's leave this oil in the ground! Out of consistency with California requirements, I strongly encourage the Board to remove EOR as an eligible sequestration method under the LCFS. This can be done by setting a grandfather date (e.g., 2028) after which projects using EOR cannot be certified.

Place a cap on out-of-state DAC projects: Based on press releases, DAC projects are expected to be massive, resulting in credit generation of up to one million MT annually for each project. At a credit value of \$200, a single out-of-state project may result in approximately \$200 million leaving the California economy annually, while providing no jobs for Californians, displacing no fossil fuels in California, resulting in no air pollution benefits to California communities, and not even counting toward California's AB32 emission reduction goals. Therefore, not only will Californians be paying for a large out-of-state project that provides no immediate benefit to the state, but they will also have to pay again for separate emission reductions that do count toward the State's goals. In effect, these DAC projects would act as "LCFS offsets", allowing oil companies to comply with the LCFS without affecting their fossil fuel sales. Credit generation for out-of-state DAC projects should either be quickly phased out through a grandfather date or tightly capped as is done in the Cap-and-Trade program for offsets. If left uncapped, a proliferation of DAC projects⁹ could result in repeated triggering of the Auto-Acceleration Mechanism leading quickly to excessive pass-through costs to California consumers.

Stop receiving new petroleum project applications in 2025 and phase out crediting by 2030: The innovative crude and refinery investment projects that have been approved to date are certainly not innovative and are excessively subsidized. These projects should not be credited through the LCFS. All projects certified under the innovative crude provision are for solar electricity, which is cost effective without LCFS credit value. Likewise, the refinery investment credit project certified for the Chevron refinery in Richmond is providing approximately 60,000 credits annually for a hydrogen plant upgrade that Chevron was planning to do before the LCFS was even adopted.¹⁰ These are certainly not additional emission reductions. In effect, the LCFS is subsidizing oil companies to meet their Cap-and-Trade obligation.

Stop overcompensating dairy digester projects: It is my understanding that capital financing for dairy digester projects is commonly paid off in ten years, after which only maintenance and operating costs remain. While dairy digester operators may reasonably argue that they need full avoided methane credit for the first ten years while paying of capital costs, having full avoided methane credit for the next twenty years is gross overcompensation. **Moreover, after paying off capital costs for the digester, it is no longer appropriate to assume a baseline of methane emissions to the**

⁹ Oxy 1PointFive has announced a [goal of completing 70 DAC projects by 2035](#).

¹⁰ See <https://ccpulse.org/2014/07/31/richmond-approves-stalled-modernization-plan-at-chevron-refinery-2/>

atmosphere. With avoided methane crediting, a dairy digester project generates approximately \$70 to \$125 per MMBtu in total value from the LCFS, RFS, and gas sales.¹¹ The operating and maintenance costs for a digester project are about \$25 per MMBtu (\$35 per MMBtu if trucking of the gas is required).¹² In other words, digester projects getting avoided methane credit are generating about 100 to 400 percent annual profit after paying off the digester. To avoid this needless overcompensation, I recommend assigning a fixed CI value of zero g/MJ for the remaining 20 years of LCFS crediting.¹³ At a CI value of 0 g/MJ, the dairy digester project would generate a combined value of approximately \$40 to \$60 per MMBtu, which is much more in line with the operating and maintenance costs.

Do not allow dairy projects to get more credit for increasing the herd size: Avoided methane credit should be capped based on the historic herd size before LCFS certification. This would prevent dairy projects from receiving additional credit for growing the herd size and exacerbating local air quality problems.

Apply biomethane deliverability requirements for all biomethane pathways: In a last-minute revision, staff decided to grandfather all RNG projects that break ground prior to 2030 from proposed deliverability requirements, and projects breaking ground in 2030 or later will only be affected by deliverability requirements starting in 2040. I recommend the Board direct staff to revert to the original concept discussed in workshops and apply deliverability requirements for all pathways starting in 2028. As an exception, I recommend that dairy digester projects that break ground prior to 2025 be allowed to complete their first 10-year crediting period under current deliverability requirements. These dates will provide sufficient time for out-of-state RNG projects that do not meet the deliverability requirements to contract with fleets outside of California and continue receiving value from the RFS. This timing will also allow these digester operators sufficient time to work with their own state legislatures to provide additional funding if necessary to avoid potential stranded assets. Gasoline consumers in California have jump started the dairy digester industry in these states, they shouldn't be asked to fund these projects in perpetuity.

Quickly phase-out book-and-claim accounting for landfill gas: Landfills do not need LCFS credit as the RFS incentive for these projects is already excessive. Moreover, over 98 percent of the landfill gas generating credit under the LCFS is from out-of-state sources. Producing landfill gas for transportation is estimated to cost approximately \$10

¹¹ At an LCFS credit price of \$100 to \$200, dairy digester gas generates approximately \$40 to \$80/MMBtu in value from the LCFS, \$26 to \$40/MMBtu in value from the federal Renewable Fuel Standard, and about \$5/MMBtu for the gas for a total value of approximately \$70 to \$125/MMBtu.

¹² See calculation details at <https://asmith.ucdavis.edu/news/digester-update>

¹³ This recommendation should be made together with a phase out of book-and-claim accounting for landfill gas.

per MMBtu¹⁴ but these projects currently receive about \$40 per MMBtu in incentive from the RFS. In other words, the LCFS providing incentive for these projects does not result in additional global GHG reductions, only more profits. I recommend eliminating book-and-claim accounting for landfills in 2028, which will provide sufficient time for out-of-state landfill gas operators to find a different purchaser for their gas.

Phase out crediting for light-duty and heavy-duty forklifts: Staff took a step in this direction by reducing the EER for light-duty forklifts but should go a step further and set phase out dates of 2030 for light-duty forklifts and 2040 for heavy-duty forklifts. With limited exceptions, all forklifts will be required by regulation to be zero-emission by 2040.¹⁵

Return to the Board if the Auto-Acceleration Mechanism (AAM) is triggered repeatedly: The AAM is designed to automatically increase the stringency of the program if there is a chronic excess of credit leading to a buildup of the credit bank and reduction of credit prices. In discussing the rationale for the AAM, CARB wrote “The existence of an AAM is expected to decrease market volatility and increase market confidence, which will promote low-carbon technology investments.” However, modeling released as part of the 15-Day Changes shows credit prices varying from a low of \$0 (approximately \$75 with one trigger of the AAM) to a high at the credit price ceiling. Will the AAM effectively set a credit price floor that is well above \$75? Will unexpected credit generation result in multiple triggers of the AAM and unexpectedly high pass-through costs, especially when credit prices subsequently increase to the price ceiling? Because of the uncertainty surrounding the impact of the AAM on credit price and pass-through cost, I recommend requiring that a rulemaking be initiated if the AAM is triggered twice in any six-year period. Moreover, this rulemaking should be completed before a third acceleration is allowed. Repeated triggering of the AAM indicates market conditions that staff and the Board did not anticipate when approving these amendments. Staff should be required to investigate and return to the Board with amendments to establish new compliance targets and address the cause(s) of the market imbalance, if necessary.

Address the potential for the AAM to overcorrect the market: I suggest not allowing an acceleration to occur in either 2031 or 2032 as the rate of CI decline for the benchmarks is already more than tripling and an acceleration that occurs in either of these years would increase the rate of target CI decline more than sixfold. Here are the scenarios of concern:¹⁶

¹⁴ See <https://www.erm.com/globalassets/documents/mjba-archive/issue-briefs/rngeconomics07152019.pdf>

¹⁵ See [workshop materials](#) for the forthcoming Zero-Emission Forklifts Regulation.

¹⁶ I wrote these scenarios assuming that the AAM has not already been triggered prior to 2030. If the AAM has previously been triggered, then the years of concern will advance by one year. In other words, I suggest not allowing an acceleration to occur in either of the two years following the transition from a 1.45% rate of decline to a 4.5% rate of decline.

- The AAM is triggered in May of 2030. This trigger has occurred because the market is generating too many credits based on an annual benchmark decline from 2026 through 2030 of 1.45 percent. In 2031, the rate of benchmark decline is already scheduled to more than triple to 4.5 percent. An acceleration in 2031 would more than sextuple the rate of benchmark decline to 9 percent.
- The AAM is triggered in May of 2031. Again, this trigger has occurred because the market is generating too many credits based on an annual benchmark decline from 2026 through 2030 of 1.45 percent. In 2031, the benchmark has already declined by 4.5 percent, which may itself correct the market. However, in 2032, an acceleration will occur increasing the target CI reduction another 9 percent.

Either of these scenarios may result in an overcorrection with the credit price going to the ceiling, at which it may be stuck for many years. Under the above scenarios, credit price at the ceiling will result in a pass-through cost of approximately \$1.30 per gallon of gasoline. Such a pass-through cost would be politically untenable for the program.