Amp Americas

August 27, 2024

Rajinder Sahota
California Air Resources Board
1001 I Street
Sacramento, CA 95814

**RE: AMP AMERICAS COMMENTS ON THE PROPOSED 15-DAY CHANGES TO THE PROPOSED AMENDMENTS TO THE LOW CARBON FUEL STANDARD REGULATION**

Dear Ms. Sahota:

Thank you for the opportunity to comment on the Proposed 15-Day Changes to the Proposed Amendments to the Low Carbon Fuel Standard ("LCFS"). Amp Americas ("Amp") appreciates the California Air Resource Board's ("CARB's") leadership on addressing climate change, and especially appreciates CARB staff's thorough and ongoing stakeholder engagement throughout the LCFS amendment process. We strongly support the LCFS program, which has been critical in advancing a wide array of climate and environmental priorities in California, as CARB has documented in various workshops throughout the amendment process and most recently with the August 22, 2024, Dairy Sector Workshop.

Amp strongly supports amending the LCFS quickly and in a manner that will ensure its ongoing success as a driver of investment in a broad array of low carbon fuels for California, including dairy methane capture projects. We appreciate many of the proposed amendments to the LCFS, but encourage additional, minor amendments through another 15-Day change package to ensure the program can continue to support investment in clean fuels and methane reductions, including at dairies. Specifically, we offer the following comments on the 15-Day Changes, which are elaborated upon below:

- We appreciate and strongly support a step down of at least 9% in 2025.
- We strongly support inclusion of an auto acceleration mechanism ("AAM") in the program, however we continue to believe minor changes are important to maximize its role in stabilizing the market, specifically:
    - Allow the first test to occur in 2026 to evaluate 2025 performance.
    - Set the credit bank trigger at 1x quarterly deficits, rather than 3x.
    - Allow the AAM to apply in consecutive years, should market conditions warrant.
- We appreciate and strongly support the proposed the true up provisions, including the proposed 15-Day Changes to expand the true-up to include periods using temporary pathways.
- We strongly oppose any arbitrary sunset provisions for avoided methane crediting, including limiting projects to two credit periods instead of three, and especially any that would apply retroactively to existing projects.
- We strongly oppose an arbitrary sunset for book and claim provisions and the proposed deliverability requirements, which introduce significant uncertainty into the market that will disrupt current and future investments in clean fuels.

- We encourage CARB to enable book-and-claim accounting for biogas-to-electricity pathways, to support the transition to ZEVs and provide equal treatment between hydrogen and electricity pathways.

**ABOUT AMP**

Founded in 2011, Amp develops, owns, and operates renewable natural gas ("RNG") facilities that convert dairy waste into carbon-negative renewable energy. Over our history, Amp's projects have prevented 2 million metric tons of carbon equivalent emissions, and we plan to rapidly expand our impact over the next several years.

As a pioneer in the dairy RNG industry, Amp registered the first 5 dairy RNG-to-CNG pathways in California's LCFS program, and we were the RNG supplier for the first 11 dairy RNG-to-hydrogen pathways. Our experience developing, operating, and reporting on these and other assets gives us a unique perspective on the impact CARB policy has on investment and project development activity related to low carbon fuels. Our projects and resulting methane and carbon dioxide reductions have been made possible by CARB's leadership in decarbonizing transportation, and we encourage CARB to continue to support the policy decisions that have made it so successful.

**A NEAR-TERM STEP-DOWN OF AT LEAST 9% IS NEEDED TO STRENGTHEN THE MARKET AND MAINTAIN THE PROGRAM AS A DRIVER OF INVESTMENT IN CLEAN FUELS PROJECTS**

To meet California's Short-Lived Climate Pollutant ("SLCP") reduction and carbon neutrality goals, it is imperative to maintain a robust LCFS that is technology-neutral and performance-based. Investments supported by the LCFS are vital for developing dairy digesters and other projects that mitigate methane emissions. As highlighted at the Dairy Sector Workshop and in other CARB processes, California's strategy of leveraging the LCFS to support methane mitigation projects, including at dairies, has proved tremendously successful, with hundreds of digesters now online and under development throughout the state and nationally.

The ongoing development and operation of low carbon fuel projects, including dairy RNG projects, requires programs like the LCFS to provide and maintain a strong and clear market signal sufficient to attract capital for new projects and to maintain operations at existing RNG facilities. In previous comments,[1] we have described how the bank of excess credits could reach about 38 million by the end of 2024, almost 6 times quarterly deficit generation. According to our analysis, a step-down to 25% in 2025, coupled with a stronger target of at least 35% in 2030, is necessary to correct for this projected level of surplus credits. Note that this would translate to a ~11% step down in 2025 and aligns with similar analysis and findings from ICF.[2]

Still, the increase in the step-down to 9%, as proposed in the 15-Day Changes, represents significant progress towards addressing the excess credit bank. We appreciate CARB proposing to increase the

[1] https://www.arb.ca.gov/lists/com-attach/7007-lcfs2024-UjNdNlEgUl4CdAFz.pdf

[2] Based on its analysis, "ICF recommends a step down of 10.5% to 11.5% in 2025 to achieve a target credit bank equivalent of 2-3 quarters worth of deficits." See pg. 1 of ICF comments at: https://www.arb.ca.gov/lists/com-attach/7078-lcfs2024-VDVcNFIyVGsLdFQu.pdf

step-down and have it take effect in Q1 2025, provided the regulation is finalized before April 2025. We strongly support this proposal and encourage CARB to work to finalize the regulation before April 1, 2025 – so that the step down may take effect in Q1 and to avoid an ongoing buildup of the credit bank.

**THE AUTO ACCELERATION MECHANISM IS A CRITICAL NEW COMPONENT OF THE PROGRAM, BUT CAN BE MADE MORE EFFECTIVE**

Amp appreciates CARB's proposed amendment to incorporate an AAM into the program. We strongly support this element of the proposed amendments and encourage CARB to maintain the AAM as an element of the regulatory package the Board considers in November.

This mechanism will help to strengthen the program and avoid cyclical "boom-bust" investment cycles common to commodity markets. An AAM provides a clear, ongoing signal that there will be a market for low carbon fuels, providing greater certainty to investors and incentivizing continuous investments in clean fuels and ongoing greater emissions reductions. It will help avoid future market weakness driven by as-yet unforeseen trends in low carbon fuels supplies, which could include accelerated transportation electrification, widespread use of E15 or deployment of carbon capture, removal, utilization, and storage ("CCRUS"), or any number of other factors.

While the market is currently overachieving its targets, ironically, overachieving targets in the near term may lead to sustained price weakness, which would inevitably lead subsequently to low levels of investment and sustained periods of underachievement and high prices. If the market swings from undersupply to oversupply, prices will be volatile, undermining public confidence in the program and jeopardizing long term goals. An AAM can help provide a clear, ongoing signal that there will be a market for low carbon fuels, providing greater certainty to investors and incentivizing continuous investments in clean fuels and ongoing greater emissions reductions, provided that it is designed appropriately.

Still, we believe the AAM can be made more effective with minor adjustments, which specifically would:

- Allow the AAM to take effect as soon as the regulation does, with the first test occurring in 2026 to evaluate 2025 performance.
- Set the AAM trigger at 1x quarterly deficits, rather than 3x, in recognition that 1) the LCFS is now a liquid and mature market, and 2) that liquid and mature markets are in surplus conditions when inventory is greater than 0.6x quarterly demand.
- Remove the limit on applying the AAM in consecutive years. The market should dictate when the AAM applies.

**WE STRONGLY SUPPORT THE TRUE-UP PROVISIONS AND EXPANSION TO INCLUDE PERIODS USING TEMPORARY PATHWAY CARBON INTENSITIES**

Amp strongly supports the proposed amendments regarding "credit true up after annual verification" and the proposed 15-Day Changes to expand the credit true up to include periods using temporary pathway CIs after annual verification. For RNG pathways specifically, which encompass living, biological

systems, several parameters beyond the control of a pathway holder[3] can impact a number of variables that affect the CI of a pathway. Due to these unpredictable and uncontrollable factors, verified pathways may deviate from provisional pathways through no fault of the project developer. The true up provisions will protect the environmental integrity of the program and maintain rigorous accounting and verification, while allowing flexibility to accommodate reasonable uncertainties.

Expanding the true up provisions to include periods using temporary CIs is especially important, and we appreciate CARB proposing this change in the 15-Day Change package. Essentially all dairy RNG pathways utilize a Tier 2 process today, which currently takes about 18-24 months for approval. During this process, dairy RNG projects use a temporary CI score (-150 $gCO_2e/MJ$), which is often much higher than the actual verified CI (often -300 $gCO_2e/MJ$ or below). Under this framework, projects fail to receive credit for a large portion of their emissions reductions for about two years, which also reduces credit availability in the program overall. By allowing a true up between temporary CI and certified CI values, the proposed amendments will help alleviate concerns related to pathway process delays, assist in avoiding complicated storage agreements, provide reliable deliveries to fleets by avoiding buildup of stored gas inventory, allow more direct sales of RNG to smaller local fleets, and motivate additional project development.

Due to aforementioned dynamic factors that impact biological systems, CARB should implement the following changes as they impact the true-up and associated deficit obligations provisions:

- CARB should allow adjustments to the margin of safety ("MOS") a pathway may apply as needed throughout the year, as operational data becomes available, and at a minimum quarterly. This will allow a pathway to adjust the CI of the pathway to ensure a pathway holder can correct CI exceedance proactively.
- A MOS should be allowed to be added to a temporary CI. As Section 95488.10(a)(7) includes the verified CI to be compared to a temporary pathway CI, a margin of safety should be allowed to be added at the time of requesting a temporary CI and at a minimum quarterly. As a pathway is waiting in the Tier 1/Tier 2 process, a developer's forecasted CI will change as operational data comes in and have no recourse to correct a CI exceedance once validation is completed.

**CARB SHOULD AVOID ARBITRARY SUNSETS TO AVOIDED METHANE CREDITING, INCLUDING RETROACTIVE REDUCTIONS TO AVOIDED METHANE CREDITING PERIODS**

Avoided methane crediting is critical for both financing digester project development and long-term operating viability. Dairy digester projects cost tens to hundreds of millions of dollars and take 2-3 years to develop and construct. Avoided methane crediting provides the source of revenue for these projects that pays for their beneficial impact and allow developers to invest. (If in the future, farm methane emissions are regulated directly, milk buyers will foot the bill for reducing emissions through milk prices or government will directly subsidize digesters. But until then, avoided methane crediting is the only

[3] Parameters beyond the control of a pathway holder include temperature, herd count, changes to the manure volatile solid content, unplanned equipment downtime, evolving energy efficiency due to equipment age, force majeure events, and changes in dairy operations beyond the operator's control.

proven way to support the development, ongoing operations, and associated emissions reductions that digesters provide.[4])

As noted above and in CARB documents and presentations, the LCFS has proven a successful model – likely the most successful in the world – in achieving methane reductions from the agricultural sector. This success stems directly from avoided methane crediting as part of lifecycle greenhouse gas ("GHG") emissions accounting for biomethane pathways. Methane crediting is both scientifically accurate and proven effective in supporting project development and driving significant methane reductions. Given this demonstrated success and scientific accuracy, a number of new programs are taking a similar approach to California's, including the Inflation Reduction Act and other programs based on the Argonne National Laboratory ("ANL") Greenhouse gases, Regulated Emissions, and Energy use in Technologies ("GREET") model.

Still, project infrastructure and equipment have a finite life. If avoided methane crediting goes away, not only will new projects not be built, but existing projects will shut down because they cannot pay operating costs and costs to maintain and extend the life of equipment. In both cases, we will backslide to pre-LCFS methane emissions at dairies. Backsliding has happened before. Many of Amp's projects were originally biogas-to-electricity projects that were shut down by prior owners due to failed economics. CARB should not assume that once a digester project is developed, methane emissions are permanently abated, and it should not change accounting for avoided methane emissions until clear mechanisms are in place to ensure avoided methane emissions remain avoided.

We are concerned with the proposal to limit avoided methane crediting to two crediting periods, rather than three, and especially concerned with the impact it will have on existing projects. Existing projects were financed and developed based on the expectation of receiving three crediting periods, and if they are limited to two, we anticipate many early projects will shut down in the early 2030s, and those dairies will revert to emitting methane. The December 2023 proposed amendments to the LCFS already reduce avoided methane crediting for new projects starting in 2030. This new provision in the 15-Day Changes goes further by penalizing existing projects, projects currently under development and construction, and projects that would be developed between 2025 and 2030. In multiple forums, including the 2022 Scoping Plan and the August 2024 Dairy Sector Workshop, CARB has stated that additional mitigation measures are still needed in the dairy and livestock sector. Avoided methane crediting under the LCFS is currently the most successful strategy for achieving dairy sector reductions, and CARB should avoid arbitrary changes to avoided methane crediting that would serve to disrupt existing and planned investments in the sector.

We hope CARB is not proposing to retroactively regulate existing projects, but if that's the case, we believe additional clarification is warranted in subsection 95488.9(f)(3)(A), to clarify that the change in avoided methane crediting periods only applies to *new* projects, for which developers have not already invested capital. An RNG project takes two to three years to develop. Consequently, we propose that pathways that are completed prior to three years after the finalization of this regulation be entitled to three crediting periods as follows:

[4] https://onlinelibrary.wiley.com/doi/10.1111/gcbb.13101

*Crediting Periods.* Avoided methane crediting for existing dairy and swine manure pathways that register for a pathway on or before December 31, 2027 as described in (f)(1) above, and for existing landfill-diversion pathways that register for a pathway on or before December 31, 2027 as described in (f)(2) above, is limited to three consecutive 10 years~~s~~ crediting periods, counting from the quarter following Executive Officer approval of the application. Avoided methane crediting for new dairy and swine manure pathways that register for a pathway on or after January 1, 2028 and on or before December 31, 2029 as described in (f)(1) above, and for existing landfill-diversion pathways that register for a pathway on or after January 1, 2028 and on or before December 31, 2029 as described in (f)(2) above, is limited to two consecutive 10 years~~s~~ crediting periods, counting from the quarter following Executive Officer approval of the application. The pathway holder must formally request each subsequent crediting period for the project through the AFP. For pathways for bio-CNG, bio-LNG, and bio-L-CNG used in CNG vehicles associated with projects that break ground after December 31, 2029, the Executive Officer may only approve avoided methane crediting through December 31, 2040. For pathways for biomethane used to produce hydrogen or electricity that break ground after December 31, 2029, the Executive Officer may only approve avoided methane crediting through December 31, 2045.

As other states and jurisdictions consider developing their own LCFS, CARB's leadership and continuing to maintain a technology-neutral, performance- and science-based approach is critical. If California moves to restrict avoided methane crediting, or to limit access to its fuel market for out-of-state renewable supplies, it not only threatens to limit options and increase costs associated with meeting the state's goals, but it also sets a bad precedent that may lead others to do the same, with the impact being less investment in methane abatement and low carbon fuels projects.

**CARB SHOULD AVOID ARBITRARY SUNSETS FOR BOOK-AND-CLAIM ACCOUNTING AND AVOID IMPOSING ADDITIONAL DELIVERABILITY REQUIREMENTS**

We strongly urge CARB to maintain book-and-claim eligibility for all RNG pathways, including RNG used for hydrogen production or electricity generation. The North American natural gas system does not mirror the fractured and isolated electricity markets in the western U.S. Instead, the gas system is deeply interconnected, and long ago moved away from point-to-point service, instead creating trading hubs and flexible receipt and delivery points to give customers a variety of options in the market. California imports nearly all of its natural gas,[5] and any biomethane injected into the pipeline system under the LCFS serves to displace fossil natural gas that otherwise would be imported into the State.

For its part, fossil natural gas operates on a system very similar to book-and-claim, in which buyers of fossil gas do not buy the molecules injected by their supplier, but rather instantaneously take receipt of a pre-agreed amount of gas, based on a mass-balance corresponding to the amount their supplier

[5] According to the California Energy Commission, "California continues to depend upon out-of-state imports for nearly 90 percent of its natural gas supply…" https://www.energy.ca.gov/data-reports/energy-almanac/californias-natural-gas-market/supply-and-demand-natural-gas-california

injected elsewhere in the system. These systems already work well for natural gas supplies across the continent and in the LCFS, and they should continue to be leveraged to cost effectively and efficiently support decarbonizing California gas end uses. RNG under the LCFS should be treated no less preferentially than compared to fossil natural gas, and book-and-claim eligibility should be maintained for all RNG pathways.

We are especially concerned by the proposal in the 15-Day Changes to add additional deliverability requirements for RNG pathways in the future – both in the LCFS and other programs, which will create roadblocks for RNG to transition to hard to electrify sectors. Amp and other investors are eager to continue investing and developing projects to reduce methane and provide low carbon fuels for California, however this provision would add a tremendous amount of uncertainty that may prohibit those investments in the future. It is unclear whether CARB can develop a gas system map identifying interstate pipelines and their majority directional flow and there is no way to understand what that would look like ahead of time. In addition, the natural gas market is fluid, and proposed directional flow data from 2020 to 2023 is arbitrary and does not represent how the natural gas system may operate in the future. At best, this provision may serve to delay investment decisions until July 1, 2026, and at worst, it could stifle investment in out-of-state projects altogether. We strongly urge CARB to remove this proposal in subsequent 15-Day Changes.

**CARB SHOULD ENABLE BOOK-AND-CLAIM ACCOUNTING FOR BIOGAS-TO-ELECTRICITY PATHWAYS**

Amp supports California's overall decarbonization goals and its efforts to develop RNG supplies to decarbonize stationary sources in all sectors of the economy. Provisions in the proposed amendments help support transitioning RNG to ZEV fuels and stationary sources, but we encourage additional steps to further assist the transition. Specifically, we encourage CARB to allow RNG book-and-claim eligibility for RNG used to produce offsite electricity to charge electric vehicles.

Enabling book-and-claim delivery for RNG sourced from projects in North America to be eligible for both hydrogen production *and* electricity generation would align with state goals around ZEVs and maintain equal treatment among ZEV options – including both hydrogen and electricity. Also, as a significant portion of the LCFS value generated from RNG flows to the stations that distribute fuel, and this same dynamic would apply to RNG-to-electricity-to-EV pathways, enabling RNG book-and-claim eligibility will inject additional LCFS value into the EV ecosystem, supporting further infrastructure investment in support of CARB's goals.

**ADDITIONAL PROVISIONS TO SUPPORT AN ONGOING, SUCCESSFUL LCFS**

In addition to these recommendations on the proposed amendments, we appreciate the opportunity to reiterate our comments on the following issues[6]:

- CARB should apply Less Intensive Verification for all QFTR reports identified in Section 95500(c)(1) which is consistent with the CARB Regulation for the Mandatory Reporting of Greenhouse Gas Emissions, Title 17 of the California Code of Regulations ("CCR") Section

[6] https://www.arb.ca.gov/lists/com-attach/7007-lcfs2024-UjNdNlEgUl4CdAFz.pdf

95130(a)(1), and allows for less intensive verification services for the following two years if the less intensive verification criteria are met, instead of for electricity QFTR only.

- Data substitution the Missing Data Provisions, Section 959491.2(b)(2)(B), are based on a calendar year; however data substitution is required to be completed monthly to determine fuel allocations for Pathways with multiple fuel pathway codes. If the quantity of data substitution changes over a year, the data substitution methodology will change, which will change fuel allocation and require all entities, not just the fuel pathway holder, to re-open and re-report every all four QFTR annually. Amp requests that the use of "reasonable temporary methods" continue to be allowed to address missing data, which allows for operational realities and engineering best practices to be used. As the majority of data being substituted is continuous data (e.g., 15-minute data), data substitution using data directly prior and after is likely to be more accurate than a 30-day average or highest/lowest value over a one- to two-year time period.
- CCRUS protocols should be utilized as they are developed, pursuant to SB 905 or if the CCS Protocol is updated otherwise.
- The proposed CA-GREET 4.0 and revised Tier 1 calculators should be updated with minor revisions to improve accounting for current practice:[7]
    - All biomethane pathway calculators should include the option to model biogas-to-electricity carbon intensity scores.
    - Applicants should be allowed to account for actual fugitive methane performance.
    - The avoided emissions boundary should include biogas flared during normal operations.
    - The volatile solids table should be updated to include new technologies (e.g., Dissolved Air Flotation, Hydrocyclones).

**CLOSING**

Thank you again for your collaboration with stakeholders through this public process, the opportunity to comment on the proposed 15-Day Changes. In addition, Amp supports the Coalition for Renewable Natural Gas's comment letter. We appreciate your consideration of these comments and your work to amend and strengthen this critical program. We very much appreciate the diligent effort CARB staff, leadership, and the Board are putting into this rule-making process.

Sincerely,

Cassandra Farrant

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Amp Americas

[7] https://www.arb.ca.gov/lists/com-attach/360-lcfscalculators23-ws-UTBVPgZ3U19QIgNq.pdf