Amp Americas

March 15, 2023

Dr. Cheryl Laskowski
Branch Chief, Transportation Fuels
California Air Resources Board
1001 I Street
Sacramento, CA 95814

**RE: LOW CARBON FUEL STANDARD FEBRUARY 22, 2023 WORKSHOP**

Dear Dr. Laskowski:

Thank you for the opportunity to comment on the February 22, 2023 Low Carbon Fuel Standard ("LCFS") Public Workshop: Potential Regulation Amendment Concepts. Amp Americas ("Amp") appreciates the California Air Resource Board's ("CARB") leadership on addressing climate change and the significant success the LCFS program has had on decarbonizing transportation. Amp also appreciates the thorough and ongoing stakeholder engagement CARB is creating through the LCFS amendment process, including on issues related to renewable natural gas ("RNG").

**SUMMARY**

Amp supports California's climate change goals, including a future transition of RNG to other hard-to-electrify sectors, in-line with the Final 2022 Scoping Plan. We note, however, that successful development of additional RNG projects – which is critical to reducing methane and short-lived climate pollutant emissions from the agriculture and waste sectors, as well as providing renewable energy to meet California's climate goals in sectors that can't be easily electrified – requires programs, like the LCFS, that provide a strong and clear market signal sufficient to capitalize and maintain operations of RNG facilities. In order to continue to see RNG projects developed, that signal needs to be strengthened, and if CARB wants to see RNG flow into other sectors besides transportation, similar policies and market signals as the LCFS are needed for those sectors.

With that in mind, and in response to the February 22 workshop, we offer the following high level recommendations and observations, which are fleshed out further in the sections below.

- We support strong targets, in-line with California's climate goals and the Scoping Plan, and sufficient to maintain the LCFS's historically strong market signal for low carbon fuels projects. In particular, we support:
    - A step down in carbon intensity ("CI") in 2024 to rapidly correct the market and address the current oversupply of credits
    - CI reduction targets of no less than 35% in 2030, although we encourage CARB to consider targets more in-line with California's climate goals (40-48% reduction by 2030)
    - A one-way ratchet mechanism to automatically strengthen the program when low carbon fuel is oversupplied and credit prices fall below a certain trigger, or when supply generates lower carbon intensity than program targets

- We emphasize that avoided methane crediting is critical for both financing digester project development and long-term operating viability, and urge CARB to avoid changes to avoided methane crediting until there are replacement strategies that ensure similar levels of methane reductions and renewable gas development occur.
- We are opposed to limitations on book-and-claim accounting for biomethane. We would note that CARB's most recent proposed sunset date for book-and-claim appears to correspond to steep price increases in the modeled pricing forecasts presented during the workshop. We urge CARB to allow additional book-and-claim eligibility that aligns with CARB's ZEV, refinery transition, and stationary decarbonization goals:
    - RNG book-and-claim eligibility for fuels serving zero emission vehicles, including both hydrogen production and electricity production, in line with the proposal for eRINs under the federal Renewable Fuel Standard, and
    - RNG book-and-claim eligibility for process energy for any transportation fuel pathway, in order to align with the Scoping Plan and begin to shift RNG away from transportation to stationary sources.

**ABOUT AMP**

Founded in 2011, Amp develops and operates RNG facilities that convert dairy waste into carbon-negative renewable energy. Over our history, Amp's projects have prevented over 1.2 million metric tons of carbon equivalent emissions. In 2022 alone, our projects abated approximately 480,000 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 was 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 development activity. 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.

**MAXIMIZE EMISSIONS REDUCTIONS UNDER THE PROGRAM BY STRENGTHENING NEAR-TERM AND ONGOING CI TARGETS AND IMPLEMENTING A RATCHET MECHANISM**

The market for low carbon transportation fuels created by the LCFS has proven powerful in supporting development of new projects and deep emissions reductions in fuel pathways. Maintaining the strength of this market signal is critical to maintaining progress to reduce emissions from transportation fuels in California, which in turn is imperative to meeting California's climate change goals. The production and use of transportation fuels is by far the largest source of greenhouse gas ("GHG") and criteria pollutants in California, and is responsible for about half of the State's greenhouse gas emissions. California cannot meet its greenhouse gas targets without transportation leading the way.

Accordingly, Amp supports a thorough evaluation of appropriate CI reduction targets that align with current market conditions and the modeling and objectives of the Scoping Plan. Given the outsized role transportation plays in California's greenhouse gas emissions inventory and climate change policies, we

anticipate that such an evaluation would find that 2030 CI targets should be more in-line with statewide targets of 40-48% greenhouse gas reductions, rather than the 25-35% range proposed thus far, and that 2045 targets should at least align with the objective of net-zero emissions, and perhaps even require negative average carbon intensities. However, we encourage a fair and complete modeling of Scoping Plan requirements, and support setting targets accordingly. We have little doubt such an analysis would suggest targets of greater than 35%, and therefore encourage CARB to consider that a minimum target for 2030 CI targets. As described in our comment letter in response to the November 2022 LCFS workshop, we believe such targets are readily achievable based on programs and precedent outside of California, and expected impacts from the recently passed Inflation Reduction Act.[1]

In addition to overarching guiding CI targets for 2030 and 2045 that align with California's climate goals, maintaining a strong LCFS marketplace on an ongoing basis is important to supporting development of low carbon fuels projects and further innovations to reduce CI. Accordingly, we support CARB including a step-down in CI in 2024 to respond to current market oversupply and the large credit bank, and support a one-way ratchet mechanism to increase program stringency when price and/or credit conditions warrant. As noted in our November comment letter,[2] a one-way ratchet mechanism should be seen as a separate and complementary element of the program to advance California's climate change goals, but not an alternative to establishing baseline CI reduction targets needed to achieve California's climate change goals.

We strongly agree with CARB's assertion at the workshop that these mechanisms would support near-term investment in low carbon transportation fuel projects.[3] In doing so, these mechanisms will not only deliver additional GHG reductions, but will also reduce cost of capital required for developing new projects, as well. By providing greater certainty to the market, including a ratchet mechanism that will help to reduce volatility of credit prices, stronger near-and long-term targets coupled with a ratchet mechanism will help to significantly reduce the cost of capital, and therefore the price at which investors are willing to underwrite projects that rely on the LCFS market.

**MAINTAIN AVOIDED METHANE CREDITING UNTIL ALTERNATIVE MECHANISMS ARE IN PLACE TO DELIVER SIMILAR METHANE AND GREENHOUSE GAS REDUCTIONS**

As we have previously described, the LCFS is perhaps the world's most powerful program for achieving methane reductions, especially from the agricultural sector. This success stems directly from avoided methane crediting as part of lifecycle GHG emissions accounting for biomethane pathways, which is both scientifically accurate and has been proven successful at supporting project development and significant methane reductions. Given this demonstrated success and scientific accuracy, a number of new programs are taking a similar approach to California, including the Inflation Reduction Act and other programs based on the Argonne GREET model.

Dairy digester projects cost tens to hundreds of millions of dollars and take 2-3 years to develop and construct. Methane crediting is the source of revenue for these projects. Unless and until farm methane

[1] https://www.arb.ca.gov/lists/com-attach/125-lcfs-wkshp-nov22-ws-VzZcN1EgAg5QOghr.pdf
[2] Ibid.
[3] See slide 25 of the workshop presentation.
https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/lcfs_meetings/LCFSpresentation_02222023.pdf

emissions are regulated and milk buyers required to foot the bill, methane crediting and direct subsidies are the only way to pay for them.

Project infrastructure and equipment have a finite life. Creating a limited time period over which to 'pay back' project capital is a false construct. If methane crediting goes away, projects will either shut down immediately because they cannot pay capital costs, or will shut down within a few years because the owner will not be able to invest to extend asset lives or replace end-of-life equipment. In both cases, we will backslide to pre-LCFS methane emissions on dairies.

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.

**AVOID RESTRICTING ACCESS TO BIOGAS IN THE PROGRAM AND ALLOW BIOMETHANE TO DECARBONIZE HYDROGEN, ELECTRICITY AND OTHER FUEL PATHWAYS**

As described in our previous comments,[4] 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. 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. Further, 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 corresponding to the amount their supplier injected on the other end of 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. In any event, RNG should be treated no less preferentially compared with fossil natural gas.

We oppose restrictions to book and claim accounting of RNG under the LCFS, which according to the modeling,[6] appears to correspond to an elimination of biomethane in the LCFS and a significant run-up in credit prices from 2025-2030. (Note that a second, smaller but still significant price spike appears to correspond to the phase out of avoided methane and petroleum crediting in 2040.) We also oppose restricting access to CNG markets for book-and-claim biomethane, which feels arbitrary, given the planned phaseout of CNG vehicles in most applications through the forthcoming Advanced Clean Fleets regulation. Instead of limiting book-and-claim eligibility, we strongly encourage CARB to allow book-and-claim eligibility for additional pathways that align with State goals:

[4] https://www.arb.ca.gov/lists/com-attach/125-lcfs-wkshp-nov22-ws-VzZcN1EgAg5QOghr.pdf

[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

[6] See slides 49-51 of the workshop presentation.

- **Enable book-and-claim accounting of RNG sourced from projects in North America to be eligible for both hydrogen production *and* electricity generation.** This would align with state goals around zero emission vehicles (ZEVs), maintain equal treatment among ZEV options – including both hydrogen and electricity – as the state has always done, and would align with expected forthcoming changes under the federal Renewable Fuel Standard to enable biogas-to-electricity ("eRIN") pathways. We recommend making this change in 95488.8(i)(2) so that this section expressly allows book-and-claim accounting for biomethane used to produce electricity for transportation purposes. As noted in our November comment letter, a significant percent of the LCFS value generated from RNG flows to the stations that distribute our fuel. This same dynamic would remain true in RNG-to-electricity-to-EV pathways, accelerating EV adoption by directing LCFS value to the EV ecosystem.
- **Enable book-and-claim accounting of RNG sourced from projects in North America used as process energy in any transportation fuel pathway.** While CARB appears reluctant to expand the LCFS to the industrial sector (which would directly enable the transition of RNG from transportation to industrial uses in the State), allowing book-and-claim of RNG as process energy in refining, ethanol production, sustainable aviation fuels production, or any other transportation pathway would serve as an important step and enabler in shifting RNG to stationary sources in the industrial sector. We recommend changes to 95488.8(h) to expressly allow book and claim delivery of RNG to qualify as a low-CI process energy source. We recommend aligning such changes with others in the section to allow low-CI hydrogen to qualify as a low-CI process energy source so that avoided emissions from RNG can be used to decarbonize refinery production of other fuels.

**AVOID SETTING POLICY PRECEDENTS THAT WILL HINDER EFFECTIVE METHANE ABATEMENT PROGRAMS IN OTHER JURISDICTIONS**

CARB is a widely recognized leader on decarbonization policy and must not set policy precedents that will hinder implementation of effective methane abatement programs in other jurisdictions. States including Washington, Oregon, New York, Michigan, Minnesota, New Mexico, Vermont, Illinois, and Massachusetts either already have LCFS inspired programs or are pursuing legislative efforts to create similar programs. CARB's LCFS program has been successful at reducing methane emissions because it credits avoided methane emissions and allows projects to deliver RNG into the program via book-and-claim. Failing to maintain these two key program features would send a false signal to policymakers in other jurisdictions. Without avoided methane and book-and-claim, new LCFS programs will fail both at reducing methane emissions and creating the RNG demand pull that CARB desires.

**AMP SUPPORTS OTHER PROVISIONS TO ACCELERATE DECARBONIZATION AND ALIGN WITH STATE GOALS**

Finally, we wish to offer the following comments related to other aspects of the LCFS and proposals discussed at the workshop:

- We support expanding capacity crediting for hydrogen and fast charging infrastructure to the heavy-duty sector. This will advance the state's transportation electrification goals, support markets for low carbon hydrogen and electricity fueling, and inject additional private sector investment into developing infrastructure. As noted above, allowing book-and-claim accounting

of biomethane for both hydrogen production and electricity generation to support ZEV fueling will inject even more value and investment into supporting ZEV infrastructure.

- We encourage CARB to adopt additional CCS protocols as part of these LCFS amendments, to allow a wider array of carbon utilization or storage pathways to be rapidly deployed to reduce industrial sector emissions and emissions associated with several different transportation fuel pathways, including biogas.
- We appreciate CARB's efforts to streamline implementation, including through revised Tier 1 calculators, and we look forward to commenting on the calculator separately, as requested. However, we note here that CARB should incorporate the latest scientific understanding into this, and every set of regulatory amendments, and we encourage CARB to update global warming potential values for methane and other greenhouse gases in the GREET model and LCFS accounting.

Thank you again for the opportunity to comment on the February 22 workshop, and your ongoing engagement with stakeholders. Amp supports CARB's ongoing evaluation of appropriate programmatic changes to strengthen the LCFS and align it with State goals, and we look forward to continuing to work with CARB and stakeholders throughout the rulemaking process.

Sincerely,

Cassandra Farrant

Cassandra Farrant
Head of Environmental Credit Compliance
Amp Americas