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The Honorable Liane Randolph
Chair, California Air Resources Board
1001 I Street
Sacramento, CA 95814

August 8, 2022

RE: Potential Changes to the Low Carbon Fuel Standard

Dear Chair Randolph and Members of the Board:

Clean Energy, a leader in air quality and climate change mitigation, and an original stakeholder and continued strong supporter of California's Low Carbon Fuel Standard (LCFS), is pleased to submit the following comments regarding potential changes to the program. We support the California Air Resources Board's (CARB) adjustments to the LCFS that would further accelerate the decarbonization of California's transportation fuels, and have provided comments below to address several important policy and programmatic issues:

- The need to make reducing Short-Lived Climate Pollutants (SLCP) a priority
- Continued reductions in dairy and livestock methane emissions
- Do not eliminate deep negative carbon intensity values
- Continued reductions in landfill methane emissions
- More stringent pre- and post-2030 carbon intensity targets are needed
- Biomethane should be a priority end-use in the heavy-duty transportation sector
- Carbon intensity true-up
- Pathway/verification & Annual Fuel Pathway Report reporting timing
- Allow locally procured renewable energy as done in zero carbon intensity pathway applications
- Do not limit end-uses

Focused Priority on Reducing Short-Lived Climate Pollutants

If California is to achieve carbon neutrality by 2045 and meet the requirements set forth in SB 1383, the LCFS must continue to significantly reduce both methane and black carbon emissions. We urge CARB to not make any changes contrary to this goal. Nothing can do this more effectively than the continued incentivization of renewable fuels production to displace diesel (a major source of black carbon). Additionally, renewable natural gas (RNG) is the most advantageous of alternative fuels in that its production and displacement of diesel eliminates both methane and black carbon, two of the three identified SLCPs.

Immediate reductions in SLCPs need to be encouraged as they will benefit the climate right away and time is running out to avoid the most severe and irreversible impacts of climate change. Climate change is happening more quickly and more destructively than was predicted even a few years ago. Scientists agree we have only six to seven years left to slow global warming and stay within a 1.5-degree Celsius increase to limit the worst effects of climate change. If we focus only on carbon dioxide reductions, we will not begin to reverse global warming for several decades or more.

The most cost-effective and readily available clean truck technology is low NOx trucks with 0.02g/bhp-hr engines. Currently, the policy consideration is really between low NOx and diesel trucks, not heavy-duty zero-emission trucks because they are not commercially available on a widescale basis nor is there sufficient charging infrastructure. Low NOx trucks are available now and 90 percent cleaner than diesel. Furthermore, the average carbon intensity value for all renewable natural gas (RNG) sold into California's transportation sector for all of 2021 on average was -33.36. This is the lowest known carbon transportation fuel available today on the planet. Consequently, RNG use combined with low NOx trucks in heavy-duty transportation should be encouraged as a core strategy to achieving the purpose and credibility of the 2022 Scoping Plan Update.

In a presentation on SLCP reductions in late June 2021, Dr. V. Ramanathan from UC San Diego and the Scripps Institute stated that we have much less than 10 years to bend the warming curve.[1] He also states that the only lever we have left to make a difference in that time frame is reducing SLCPs.[2] Dr. Ramanathan, along with experts from Environmental Defense Fund and ClimateWorks Foundation, said we must go all out – and fast – on SLCP reductions by doing the following:

- Eliminate diesel use right away since it causes black carbon emissions and other climate pollution;
- Reduce wildfire emissions and open burning of forest and agricultural waste;
- Reduce methane included from livestock and from landfill waste;
- Reduce HFCs[3].

Scientific experts also agree that these same steps will provide enormous benefits for air quality, public health, agricultural productivity, forest health, and more. SLCP reductions MUST be prioritized. Encouraging greater uptake of bioenergy in the transportation sector, particularly renewable natural gas, will provide immediate and significant greenhouse gas emission reductions.

Continued Dairy and Livestock Methane Reductions

We strongly support CARB's science-based conclusions in the draft Scoping Plan, both denials[4] [5] of the Petition[6] and the CARB-sponsored workshop[7] concerning dairy and livestock methane reductions.

[1] Presentation by Dr. Verrabhadran Ramanathan, UC San Diego, on June 24, 2021, at MoveCA's symposium on SLCP Reductions.
[2] Id.
[3] Id.
[4] "Response to Petition to Rulemaking," California Air Resources Board, January 26, 2022
[5] "Response to Petition for Reconsideration," California Air Resources Board, April 25, 2022
[6] "Petition for Rulemaking to Exclude All Fuels Derived From Biomethane From Dairy and Swine Manure From the Low Carbon Fuel Standard Program," Petitioners, October 27, 2021
[7] "Workshop on Methane, Dairies and Livestock, and Renewable Natural Gas in California," California Air Resources Board, March 29, 2022

We urge CARB to encourage and grow the capture of methane from dairy and swine operations and expand the inclusion of all fuels derived from these sources, as not doing so would result in the on-going substantial release of greenhouse gas emissions into the atmosphere. We have realized that with a weakened LCFS price, funding for these projects has become more difficult. Solid and encouraged growth of this methane capture investment is absolutely essential if it is to be continued.

Furthermore, CARB must also signal the use and shift from diesel as the dominant fuel in California's heavy-duty transportation sector to utilizing RNG in today's HD trucks, again providing for methane and black carbon reductions to improve SLCP.

There is substantial danger to the climate if the dairy and swine industries are not provided the tools and incentives to properly mitigate manure emissions and prevent leakage, which is why we strongly support the statement made by CARB staff in the draft Scoping Plan that "…further reductions of approximately 4.4 MMTCO2e of methane will be needed to achieve the 2030 methane emissions reduction target for the sector set by SB 1383…If the remaining reductions are met through a mix of dairy projects in which half are dairy digesters and half are alternative manure management projects, then it is estimated that at least 420 additional projects will be necessary. Additional emissions reductions beyond this level will likely be necessary to ensure that the overall state methane emissions reduction targets are met."

Do Not Eliminate Deep Negative Carbon Intensity Values

To the points provided directly above, we are very concerned that CARB could eliminate or establish an artificial limit to deep negative carbon intensity values. These negative values are driving the market and incentivizing fleets to switch from diesel to lower carbon alternative technologies and net negative climate fleet operations. Without these negative values projects will be significantly challenged in moving forward to completion. Even with the existing rules and currently low LCFS prices, planned investment in projects is becoming increasingly challenged or has slowed at a time when it requires us to move quickly to mitigate SLCPs.

Continued Landfill Methane Reductions

As the draft Scoping Plan highlights, there is a problem that annual landfill methane emissions will be higher through 2030 than originally anticipated because the state did not achieve reductions in organic waste disposal of 50 percent below 2014 levels by 2020. Therefore, we support that biomethane captured from landfills and organic waste digesters be prioritized for end-use in the heavy-duty transportation sector to reduce SLCPs per the points already raised. The highest and best use of biomethane remains in the transportation space as it provides for immediate and sustained reduction of SLCPs.

More Stringent Pre- and Post-2030 Carbon Intensity Targets Are Needed

We are pleased with the expressed commitment by CARB in the draft Scoping Plan to evaluate and propose accelerated carbon intensity targets pre-2030 and post-2030. The CARB PowerPoint

presentation from the July 7th workshop considers up to a 30% carbon intensity reduction target by 2030 (Scenario B).

We strongly encourage CARB to consider and adopt a more ambitious target beyond 30% in order to drive deep decarbonization in the transportation sector and to help achieve climate, carbon neutrality, and SB 1383 goals. This action is urgent and vitally important considering that since January 2022, LCFS credit prices have fallen by more than 32%, per CARB's latest Monthly Credit Transfer Activity Report. OPIS's assessment of spot LCFS credit prices has showed values bouncing off late-June lows, though credits continue to trade well below the $100 level.

We urge CARB to extend the compliance curve beyond 2030, but more importantly, tighten it pre-2030. The credit bank continues to build which will keep LCFS prices lower. Tightening the curve pre-2030 should help alleviate the pricing issues we have today. Many projects are being delayed and/or canceled due to current LCFS price conditions, and investment in future projects is at risk. Private industry will not be willing to further invest in the expansion of alternative fuel projects unless there is market certainty around such investments.

Also, slide 14 of the CARB PowerPoint presentation asks, "Do we need five-year interim CI targets between 2030 and 2045?" We are unclear if CARB is considering these targets now for that time period or if these targets would be revisited after 2030 and before 2045. Alternative fuels used for transportation fuel, including from dairy and swine operations and LFG digester projects, continue to drive progress toward the State's carbon neutrality goal. Frequent changes in regulation or the regulatory approach will significantly hamper infrastructure investment. Therefore, it would be preferable for CARB to establish during this regulation a set target from 2030 to 2045 with a weighted average CI over these fifteen years. We support aggressive targets post-2030 as long as they are incrementally tightened. This would further support infrastructure investment and encourage further development of carbon neutral and net negative transportation fuels.

Biomethane Use in the Heavy-Duty Transportation Sector

The Draft Scoping Plan states, "In addition to building the production and distribution infrastructure for zero-carbon fuels, the state must continue to support low-carbon liquid fuels during this period of transition and for much harder sectors for ZEV technology such as aviation, locomotives, and marine applications. Biomethane currently displaces fossil fuels in transportation and will largely be needed for hard-to-decarbonize sectors, in addition to continuing to play a targeted role in some fleets while the transportation sector transitions to ZEVs."

We urge CARB to send an immediate unambiguous market signal that heavy-duty on-road transportation is considered a "hard-to-decarbonize" sector and low carbon fuels will continue to be incentivized for their utilization. This is compounded by the draft Advanced Clean Fleets (ACF) regulation proposing, in large part, to require that all new vehicles be zero emission by January 1, 2024, unless an exemption is granted by the Executive Officer in an opaque and non-transparent process.

The trucking industry is reluctant to shift from diesel to any other fuel. The RNG application along with advances in low NOx engine technology are beginning to penetrate the marketplace that has been developing over the last 10 to 20 years. It is unreasonable to think that immature HD ZEV technology, with limited range, weight constraints, and limited proven infrastructure and operational applications,

will make fast in-roads into the heavy-duty transportation sector. California will benefit from all RNG and ZEV applications, so CARB's clear direction and encouragement is essential if programs are to succeed.

In addition, there are jurisdictional issues with the marine and locomotive sectors. Some marine applications are already transitioning to liquefied natural gas, but many of those ships largely operate outside of California. These segments will take longer to transition, requiring federal participation, particularly with locomotives. This is compounded because the federal government has been very slow to act, which is why meeting federal attainment in the South Coast air basin has been a problem. The appropriate policy and direction in the ACF and LCFS will help these vehicle / trucking segments abandon the diesel status quo in favor of RNG and where / when possible transition to ZEV technology.

As far as aviation is concerned, this will be a long transition with at least a decade of testing required. This is another example where the focus and benefit of SLCP reduction is lost on a segment that is not ready to immediately transition. Again, this is compounded by slow federal regulation.

We urge CARB to ensure that the LCFS and ACF be in alignment by continuing to incentivize RNG in the LCFS and providing an effective available end-use in ACF. Otherwise, the LCFS could incentivize production of a fuel without a widely available end-use in heavy-duty transportation.

Carbon Intensity True-Up

The LCFS allows an RNG project to store its biomethane for up to nine (9) months before it must be dispensed, or the project loses its credit generation capabilities. Dairy and swine RNG projects store and inventory their RNG production while they go through the LCFS pathway approval process. Unfortunately, pathway approvals are taking around 12-15 months to get approved which puts financial hardship on a project and those in the entire value chain.

Buying gas storage is expensive and requires significant working capital for the owner / project(s). Additionally, the project carries commodity spread risk when balancing the costs to store gas vs. what it is sold at when it is withdrawn from storage. As we have seen over the past several years, natural gas prices have swung between $4-10 per MMBtu for a variety of reasons. While an RNG project does have the ability to withdraw gas faster or immediately dispense production gas, in doing so the project is making a suboptimal financial decision since the temporary pathway CI is -150 whereas most dairy/swine projects are below -250 CI.

We recommend a "true-up" mechanism be added to the LCFS where the project would be able to apply its provisional CI retroactively to the start of a project. This would eliminate the need to store gas from a project and ensure the project is eligible to claim the full benefit of its project CI even when starting with the temporary pathway. It would also result in greater market availability of low carbon fuel and earlier emissions reductions.

Pathway/Verification & Annual Fuel Pathway Report Reporting Timing

Pathway applications are not being reviewed by CARB until approximately four months after submittal. Overall, Tier 2 pathway application approval schedules have stretched from around 9-12

months to 12-15 months, which puts significant financial hardship on projects. Continued delay in pathway approvals means projects are less attractive to both public and private investors because LCFS revenue does not offset start up and operation costs let alone begin a return on the large capital invested in project development. We urge CARB to expedite the process which will continue to support market certainty. Adding staff or third-party contractors dedicated to review new LCFS pathway applications should expedite this process and give investors some peace of mind. Industry is willing to help fund additional staffing. The "true-up" suggested above could also simplify and streamline the approval process. In addition, annual reporting and compliance could be streamlined through timely agency communication and greater staff availability.

Use Locally Procured Renewable Energy As In Zero Carbon Intensity Pathway Applications

We urge CARB to allow indirect accounting mechanisms for renewable energy, such as the use of renewable energy certificates (RECs), to reduce carbon intensity of the grid electricity components of RNG projects, so long as the renewable electricity comes bundled with a REC from the local program where it was procured or a REC is within the same utility region and shows additionality. This is allowable for zero-carbon intensity electric vehicle pathway applications and should also be allowed for RNG projects.

In general for RNG projects, project developers are forced to build a renewable solar/wind project on-site to tie into the project to reduce carbon intensity, but electric vehicle pathways can do this by the purchase of renewable energy credits from the grid in their region (in California through WREGIS).

Currently, per *Section § 95488.8 Fuel Pathway Application Requirement Applying to All Classifications,* renewable energy must be directly connected through a dedicated line to a facility such that the generation and load are both physically located on the customer side of the utility meter. The generation source may be grid-tied, but a dedicated connection must exist between the source and the facility. This means project developers must build a solar or wind farm on the site behind the meter to power the landfill or dairy farm RNG production process. RNG project developers looking to reduce their carbon intensity face an enormous capital expense in building their own on-site wind or solar plant or may not have the space to add solar photovoltaic on-site in the case of a landfill.

Instead, if a landfill or dairy RNG project could procure 100% solar or wind power locally bundled with RECs, this could help projects further lower their carbon intensity while increasing the use of renewable energy in the region. CARB should not limit the potential for an RNG project to reduce its CI to only direct connected renewable energy projects when there could be an option in the associated region to sign an agreement with a utility/CCA that allows receipt of renewable energy and REC's. For example, an RNG project developer using solar energy from a Bakersfield solar project in SCE's GTSR-CR (Green Tariff Shared Renewables-Community Renewables) program to power a Bakersfield dairy RNG project 20 miles away should be eligible to lower the CI of their RNG produced, in the same way that a Bakersfield renewable electricity project could be used in LCFS Guidance 19-01 to create a zero-CI electricity pathway for EV's to reduce their CI score.

Do Not Limit End-Uses

CARB is considering a Summary of Changes to the Draft Regulatory Language for the Zero-Emission Forklift Regulation. We urge CARB to retain the performance standard in the LCFS which has proven successful in decarbonizing California's transportation fuels and pursue the utilization of deeper decarbonized fuels rather than pursue a policy of eliminating select end-uses. The Regulation is indeed intended "to transition the remaining internal combustion forklifts to zero-emission technology where feasible, as zero-emissions forklifts have already achieved substantial market acceptance and deployment volumes," according to CARB. However, as with heavy-duty ZEVs, it's the last half, not the early adopters, that pose the greatest challenge and reluctance to changing, as they would have changed technologies without various barriers.

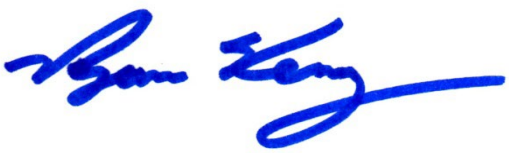
For this reason, we are concerned this action will not make a difference in emissions reductions and is only used to artificially graduate technologies and thereby set a precedent for more technology graduations where performance is irrelevant. California cannot afford to pick winners and losers with technologies when we have just ten years to achieve our climate goals. Technologies should be allowed to compete and achieve the established performance standard. And California needs business certainty and a stable rule set, especially around capital intensive projects, not wasted and stranded assets.

Conclusion

Thank you for considering our views. As mentioned, Clean Energy was an early and consistent strong supporter of the LCFS and we remain committed to a collaborative partnership to ensure an effective and successful LCFS Update. We urge CARB to continue to incentivize biomethane production, ensure the transportation sector is the top prioritized end-use for biomethane, and not eliminate the deep negative carbon intensity values that are driving successful dairy and swine operation projects. We also urge CARB to adopt more aggressive carbon intensity targets pre- and post-2030, maintain the performance standard in the LCFS, make the recommended programmatic changes and include a near-term time horizon for emission reductions while the HD ZEV market is developing.

California has a substantial opportunity to reduce near-term SLCP, carbon and NOx emissions, with approximately 800,000 diesel trucks that can substantially and immediately begin to transition to RNG and ultimately to ZEV technology as it is commercially viable and accepted. Any attempt to curtail biomethane use in the heavy-duty transportation sector will greatly jeopardize the ability of our state to achieve our climate and clean air goals.

Sincerely,



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