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August 8, 2022

Cheryl Laskowski, Ph. D.
California Air Resources Board
1001 I Street
Sacramento, CA 95814
Comment submitted electronically

RE: Comments on Public Workshop on July 7, 2022 Regarding Potential Changes to the Low Carbon Fuel Standard

Dear Dr. Laskowski,

CleanFuture, Inc. ("CleanFuture) appreciates the opportunity to comment on the July 7, 2022, public workshop regarding potential changes to the Low Carbon Fuel Standard (LCFS) regulation. CleanFuture is a leading environmental company that has worked for over a decade to electrify and improve the efficiency of a wide range of vehicle fleets; CleanFuture works with fleets in some of the hardest sectors to decarbonize. CleanFuture has built a strong platform connecting clean vehicle fleet customers with low carbon fuels (electricity and other fuels), particularly zero and sub-zero CI fuels, serving both on the supply and demand side in multiple programs and jurisdictions. Our work provides us with unique insights into the mechanics of the LCFS program, and also into the decision-making processes of fleet managers and corporate decision makers regarding fleet and equipment electrification strategies.

Our overall recommendations are summarized as follows:

- We would caution that prematurely phasing out credits for forklifts is likely to:
  - undermine investor confidence in the LCFS program across platforms and technologies, reduce investment, and slow electrification
  - impact corporate fleet and equipment electrification programs by decreasing revenues and undermining confidence in recouping capital expenses for electrification via LCFS program revenues
- We recommend CARB update and revise the energy economy ratio (EER) for numerous fuel-vehicle applications to better recognize and reward carbon reductions, including novel and emerging technologies.
- We encourage CARB increase equity in LCFS for EVSE at multi-family dwellings by authorizing crediting across a wider range of market participates for EVSE in multi-unit dwellings.
- We recommend streamlining and accelerating review of LCFS Pathway Applications
  - Revise process, allow deemed complete for crediting
  - Temporary CI for biogas electricity
  - True-up CI

- Biogas electricity
    - Efficiency adjustment
    - Allow book and claim for biomethane to EV
    - organics

The following comment letter provides additional input on detail on some but not all of our recommendations. We look forward to further engagement with CARB during the rulemaking process to fully address these issues.

Recommendations #1: CARB should maintain investor confidence in the durability and long-term value of the LCFS Program and LCFS credits by not prematurely sunsetting electric forklift crediting.

CleanFuture is a member of the Low Carbon Fuel Coalition (LCFC) and strongly supports the concerns expressed by the organization's comment letter regarding the potential unintended consequences of sunsetting crediting for electric forklifts:

> ***Proposed technology sunset***
> *As a technology-neutral trade association, the LCFC continues to support a technology-neutral approach to ensure that the LCFS program maintains sufficient incentive to motivate ongoing clean fuels investments from the private sector. The LCFC encourages ARB to carefully consider any proposals to sunset individual technologies, including the full implications for private investments. Market certainty is a significant factor in investment decisions. Signals of uncertainty such as calling into question whether other technologies may be subject to future sunsets can inhibit the investments that drive innovation and ultimately ensure continued effectiveness of the LCFS program. In particular, investors may impose a conservative "LCFS Credit Sunset" into the financial model for a facility or capital expenditure that has a long-term return on investment (ROI). This would change the financial model and could preclude the investment.*

Regarding the forklift market in particular, CleanFuture is extremely familiar with the companies that utilize electric forklifts and the importance of LCFS crediting to companies with substantial materials handling equipment. Based on this experience, we anticipate significant unintended consequences will result if CARB phases out electric forklift crediting.

Recommendations #2: CARB should update and revise the energy economy ratio (EER) on numerous fuel-vehicle applications to better recognize and reward carbon reductions, including novel and emerging technologies.

CleanFuture is a market leader in the development of both ultra-low carbon fuel pathways and cutting-edge EER pathways. LCFS Guidance 20-04[1] provides the following overview of the requirements for establishing new EER values:

[1] CARB, LCFS Guidance 20-04, "Requesting EER-Adjusted Carbon Intensity Using a Tier 2 Pathway Application," at p. 1; available at https://ww2.arb.ca.gov/sites/default/files/2020-09/lcfsguidance_20-04.pdf

> *"Table 5 of the LCFS regulation1 (see Appendix A) provides Energy Economy Ratio (EER) values for several fuel-vehicle combinations, which are used for calculating credits or deficits as per section 95486.1(a). If a fuel-vehicle combination is not represented by an EER value in Table 5, and both the fuel and vehicle type are eligible pursuant to section 95482 of the LCFS regulation, then the reporting entity may request an EER-adjusted carbon intensity (CI). An EER-adjusted CI is determined using a Tier 2 pathway application pursuant to section 95488.7(a)(3) of the LCFS regulation.*

CleanFuture is working with novel and innovative clean vehicle technologies and sought CARB approval for several EER-adjusted CI scores for new fuel-vehicle-combinations. However, CleanFuture has experienced situations where CARB staff are reluctant to consider or have declined to pathway applications for EER-adjusted pathways. This reluctance to establish pathways seems to be primarily caused by a lack of available staff time.

CleanFuture recommends that CARB look for ways to streamline the review process for EER-adjusted CI scores in order to enable more EER adjustments to be made. The approval of an EER score is beneficial for the equipment owner as well as the original equipment manufacturer (OEM). It is in California's interest to promote efficient technologies for electrification and the investment of staff time is likely to result long-term in significant additional GHG reductions driven by increased demand for the most efficient technologies.

Recommendations #3: Increase equity in LCFS by expanding eligibility for crediting on Electric Vehicle Supply Equipment ("EVSE") in multi-unit dwellings.

As emphasized by CARB's Draft 2022 Scoping Plan Update,

> "*The Draft 2022 Scoping Plan starts—and ends—with a focus on communities that continue to be burdened by air pollution and will be hardest hit by the impact of climate change and rising temperature. (…) The state must ensure that these costs do not disproportionately burden consumers. In addition, the state has an important role to play in providing financial incentives, especially to low-income consumers, to allow for uptake of clean technologies*."[2]

A key opportunity to expand financial incentives to low-income consumers to allow for the uptake of electric vehicles, and to expand access to necessary charging infrastructure for these vehicles is to provide additional flexibility regarding credit generation for multi-unit dwellings. These dwellings are largely underserved by EV charging infrastructure. This problem can be addressed by enabling companies that supply the equipment to generate credits from the charging.

Specifically, CleanFuture suggests that CARB authorize crediting for EVSE at multi-family dwellings for a broader group of market participants. In today's LCFS regulations the crediting for multi-family residential prioritizes base crediting to the electric distribution utility, or incremental crediting to the vehicle OEM, yet denies the owner of EVSE at multi-family

[2] California Air Resources Board, Draft 2022 Scoping Plan Update (May 10, 2022), at p. vi of Executive Summary, available at https://ww2.arb.ca.gov/sites/default/files/2022-05/2022-draft-sp.pdf

residential locations to receive credits to offset the investment to procure and install EVSE and denies any LCFS revenues for ongoing repairs, maintenance, or upgrades. This discourages EVSE deployment at multi-family dwellings where access to EV charging is challenging.

EVSE at multi-family dwellings is more like at commercial/retail/workplace locations. We suggest that owners of EVSE at multi-family residential locations with common access (for instance, with non-assigned parking space available for any resident or visitor) should generate credits. Charging at multifamily locations can be geofenced to avoid double crediting for non-metered residential EV charging assigned to the electric distribution utilities.

CARB can increase equity in the LCFS and encourage EVSE by allowing EVSE owners at multifamily locations to generate credits or designate an aggregator. This benefits low-income or disadvantaged communities by reducing barriers to transportation electrification for residents at multifamily dwellings.

Recommendation #4: Establish Temporary CIs for Dairy Biogas Electricity Projects
Currently there is no mechanism in the LCFS regulation to allow electricity generated from dairy biogas and used in electric vehicles to claim apply for a temporary CI pathway code and thereby generate credits. CARB staff has denied CleanFuture's numerous applications for temporary CIs on biogas electricity projects because there was no applicable temporary pathway code. As a result, these pathways missed out on crediting during the lengthy pathway application process. A temporary CI pathway of -200 for biogas-based electricity is conservative based on the multiple Tier 2 pathway scores that have been approved. Implementing this change will avoid the loss of multiple quarters of credits during the lengthy review process.

Recommendation #5: Eliminate or Revise the Benchmark Efficiency Penalty for Biogas to Electricity

In May 2019 CARB Staff implemented a 50% benchmark engine efficiency requirement ("Benchmark Standard") through LCFS Guidance 19-06: Determining Carbon Intensity of Dairy and Swine Manure Biogas to Electricity Pathways. The result of this Benchmark Standard is that all certified biogas electricity generation projects are awarded substantially fewer LCFS credits than the GREET model indicates they should receive. Rather than relying upon the science of greenhouse gas quantification methodology, this approach applies a penalty to certain generation technologies based upon considerations outside the greenhouse gas calculations. There is no comparable efficiency standard imposed upon biogas upgraded to biomethane as a transportation fuel.

This Benchmark Standard is contrary to the stated methane reduction goals of SB 1383 in addition to the transportation electrification goals of Executive Order N-79-20. Small to medium sized dairies have limited options for developing a cost-effective digester project, especially if they are not located near an existing dairy cluster project or near a pipeline injection point. This benchmark efficiency requirement serves to prevent construction of new stationary electricity generation projects that cannot meet an established efficiency standard.

The findings from CARB's Analysis of Progress toward Achieving the 2030 Dairy and Livestock Sector Methane Emissions Target ("Progress Report") indicate that the state's current trajectory of methane reduction puts the state on track to fall dramatically short of its methane reduction goals in the sector. To respond to this harsh reality, CARB must make necessary course corrections to meet the SB 1383 requirements. In CleanFuture's comment to the Progress Report, CleanFuture encouraged CARB to fully leverage the LCFS to capture and convert methane to electricity to power California's rapidly growing electric vehicle ("EV") fleet with in-state sub-zero carbon intensity ("CI") power generated by the state's small and medium sized dairies ("Smaller Dairies").

As stated in the Progress Report, this LCFS solution with biogas electricity represents the lowest-cost option of all available alternatives which range from $0.7 billion to $3.7 billion. It also represents the only economically viable solution for small and medium sized dairies. The Progress Report appears to dismiss this low-cost solution out of concern that it would result in on-site criteria pollutant emissions. CleanFuture recognizes the importance of controlling criteria pollutants and transitioning to the cleanest commercially available technology and has developed its recommendations to meet this objective. The comment proposes the establishment of a dynamic efficiency standard to enable CARB to work with the dairy sector to fulfill SB 1383 methane reduction requirements, provide economically viable options for small and medium sized dairies, and to strictly control criteria pollutant emissions.

Based on the requirements of SB 1383, the importance of ZEVs to the California's criteria pollutant and GHG reduction goals, and the current state of technological feasibility, cost effectiveness, and pipeline interconnection, it is appropriate for CARB to set an escalating efficiency standard that is feasible for Smaller Dairies to meet. This standard should be applied to generators that operate at 1 MW or lesser capacity. The efficiency standard should escalate such that it does not penalize existing assets that can provide immediate GHG benefits, but instead ratchets up efficiency on an annual basis based on the date of pathway certification and thereby incentivize progressively more efficient generation equipment each year. By setting a five-year escalating efficiency standard, CARB will send a clear market signal to the industry that to the extent that new generating assets are being acquired, these new assets should meet or exceed the efficiency standard for 2025 for the year the assets are deployed. The efficiency standard should be based on the best available data from the California Energy Commission, and should be linked to commercially available technologies in the early years and CARB's aggressive efficiency targets in years four and five. An escalating efficiency standard with market-based reference points is recommended.

Such a standard would send the strong market signal that CARB intends, support the rapid deployment and purchase of high efficiency generators, and maximize methane emission reductions from Smaller Dairies.

Alternative to Recommendation #5: Provide book-and-claim flexibility for biomethane transferred via pipeline to electricity generating facilities that meet the Benchmark Standard

As an alternative to establishing a new small farm efficiency standard, CARB could authorize book-and-claim treatment for biomethane transmitted via pipeline to a larger scale generating facility that would be capable of meeting CARB's Benchmark Standard. The change to the regulation would be to authorize the transfer of the environmental attribute of RNG to include power generation that is then dedicated by contract to electric vehicle usage. This would effectively allow the aggregation of biomethane from multiple small farms and its conversion to electricity at a different location. The existing book-and-claim system established for the transfer of the environmental attributes including the CI of the electricity generated via the transfer of Renewable Energy Certificates could be utilized.

Recommendation #6: CleanFuture supports the Coalition for RNG's comment previously submitted on January 7, 2022, on the following issue (the following is an excerpt from that comment letter):

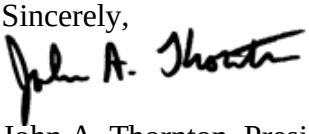
> **"Crediting Should be Adjusted to Use Demonstrated CIs Using Full Ex-Post True Ups** With the implementation of third-party verification of actual CI performance, CARB can now adjust all crediting to be based on verified carbon intensity. We support CARB making a full transition to crediting based on verified CI performance, while still retaining the current credit issuance cycle (i.e., truing up to CI actuals ex-post rather than delaying crediting until CI actuals are known).
>
> True ups would be especially helpful for dairy RNG projects. Dairy RNG projects have variability in their CI because their operations are impacted by external factors such as temperature and herd count. In annual verification there will be instances where a project may unexpectedly over or under generate credits, based on these external factors. Allowing dairy RNG projects to true up their credit generation (both up and down) after completing their annual verification—rather than penalizing them if they exceed their certified CIs—will improve the accuracy of credit generation in the program and ensure these projects are obtaining the full value of their true GHG reductions.
>
> None of this should impact the ability of a project to quickly receive a CI from CARB and begin to generate credits as soon as it is actively producing RNG. Temporary pathways should also be easy to obtain, as an onerous process is an impediment to low carbon fuel project growth. CARB may also wish to establish a greater number of temporary fuel pathway codes. At a minimum, a new temporary code should be set for diary biogas to electricity (aligned with the current diary biomethane to CNG/LNG/LCNG temporary pathway set at -150 gCO2e/MJ).
>
> At the workshop CARB staff explored simplifying pathway processing steps, possibly by removing the "deemed complete" designation. We would support the removal of deemed complete if implemented in conjunction with a full true up. Currently project developers must wait up to a full year to receive any cashflow on a certified pathway and pathway certification timing is often out of the applicant's control. The deemed complete date signifies that a pathway applicant has satisfied all submission requirements as required under the Regulation. Although not guaranteed, the deemed

complete date has essentially worked as a timestamp as to when credit generation can take effect, assuming the pathway can be certified in the subsequent quarter. Removing the deemed complete designation adds further uncertainty to the timeline of approval for pathway applications which will certainly extend cashflow receipt for project developers, therefore, we would not support removal of the deemed complete step unless a full true up is also implemented. A full true up approach could also eliminate the somewhat confusing "provisional" status for pathways.[3]

Conclusion

Thank you for this opportunity to submit these comments. Please advise if any further input on these issues would be constructive.

Sincerely,



John A. Thornton, President
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[3] Sam Wade, Coalition for RNG, "Comment RE: LCFS December 2021 Workshop," available at https://www.arb.ca.gov/lists/com-attach/91-lcfs-wkshp-dec21-ws-BTdWYldmUDIEMgE2.pdf