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March 15, 2023

Matthew Botill
California Air Resources Board
1001 I Street
Sacramento, CA 95814

RE: Comments on February 22, 2023, Low Carbon Fuel Standard Workshop

Dear Mr. Botill:

True North Renewable Energy (TNRE) appreciates your time in hosting and the opportunity to comment on the February 22, 2023 Low Carbon Fuel Standard (LCFS) public workshop regarding potential regulation amendment concepts. TNRE would like to express our continued support for the LCFS as a transformational, technology-neutral and performance-based program that has helped to rapidly usher in a wide array of low carbon fuels for California's transportation market. Our primary comments and recommendations include the following, with additional details provided below:

- CARB should adopt final carbon intensity (CI) reduction targets that align with the goals and outcomes included in the Final Scoping Plan. We support ongoing scenario analysis incorporating inputs and outputs from the Final Scoping Plan modeling, which we anticipate may suggest CI targets greater than currently proposed in the scenarios, and more inline with the State's economywide greenhouse gas reduction targets for 2030.
- We support the proposed near-term step down in CI to address the current credit bank and an automatic, one-way ratchet mechanism to strengthen the CI targets when prices or credit banks reach specified levels.
- The LCFS is one of the most powerful tools to develop biomethane projects. Now is not the time to restrict the market by limiting avoided methane crediting or book-and-claim accounting for biogas. We oppose the proposal to phase out avoided methane crediting for biomethane projects, especially those projects needed to meet the State's organics diversion targets, and to restrict book-and-claim accounting for biogas projects, which would create an uneven playing field for organics diversion projects compared to dedicated composting projects or landfilling.
- Instead, CARB should leverage the LCFS to more quickly develop anaerobic digestion infrastructure needed to meet SB 1383 requirements by updating the landfill capture rate assumptions and global warming potential values for methane in the GREET model to account for the latest scientific understanding. We look forward to reviewing the forthcoming Tier 1 calculator updates and commenting on those separately.
- We encourage CARB to update the CATS model to include biomethane from organics diversion, carbon capture and sequestration as an option on all fuel pathways, including biomethane pathways, and all available federal incentives.

About TNRE

TNRE develops, builds, and operates state-of-the-art organics-to-renewable energy facilities, including large scale, regional high-solids anaerobic digestion infrastructure. These facilities reuse and repurpose organic resources diverted from landfills to create beneficial, sustainable products, including biomethane and soil-amending compost. TNRE is focused on partnering with communities in California to meet local and state requirements for diverting organic waste from landfills and cutting short-lived climate pollutant (SLCP) emissions, while generating compost and renewable natural gas to help decarbonize other sectors of the economy and meet California's climate goals.

CARB should adopt strong new LCFS targets of no less than 35% by 2030 and in-line with the Final Scoping Plan

As you undoubtedly know, the LCFS is one of the most powerful climate policies in California. In particular, it provides a strong and targeted market signal for hard-to-abate sectors, which enables low carbon solutions to come to market that would not necessarily emerge otherwise through the Cap-and-Trade Program or the State's other climate policies. Indeed, recognition that Cap-and-Trade or other policies likely would be insufficient to foster investment in low carbon transportation fuels is what led to the creation of the LCFS in the first place.

Now it is time to amend the CI reduction targets in the program to align with the Final Scoping Plan. We appreciate that in the November 2022 workshop, CARB introduced new scenarios, including stronger 2030 CI targets and longer-term targets through 2045 than originally proposed in July. We also appreciate that the workshop was held before the Final Scoping Plan was released, and accordingly includes assumptions based on the Draft Scoping Plan. The Final Scoping Plan, however, includes a wide array of new targets and activities that have yet to be incorporated into the CATS modeling and that will affect the LCFS market moving forwards. These should be accounted for in target setting and cost modeling, and CARB should work to ensure that new CI targets align with the State's carbon neutrality objectives.

Given that transportation is the state's largest source of greenhouse gas emissions, we expect achieving the state's 2030 climate change targets, or increased targets identified in the Final Scoping Plan, would require similar reductions (~40-48%) in the transportation sector and in CI under the LCFS. We encourage CARB to continue evaluating alternative scenarios, including those that are designed to achieve the outcomes identified in the Final Scoping Plan in terms of petroleum reduction, biomethane deployment, carbon dioxide removal and other objectives.

CARB should include a step-down in carbon intensity requirements in 2024 and a one-way ratchet mechanism

TNRE strongly supports CARB's suggestion to adopt a near-term step down in CI targets and development of a one-way ratchet mechanism to automatically strengthen the program when conditions warrant. These proposals will improve market certainty, which will support project development and potentially reduce costs for projects relying on LCFS credits to obtain financing. This, in turn, will create a virtuous cycle that will allow more projects to be developed, more greenhouse gas reductions, and greater CI reductions for the transportation sector, above and beyond whatever initial targets might be set. We encourage CARB, however, to not see these proposals as alternatives to setting strong CI requirements

inline with the Final Scoping Plan, but rather separate and unique elements of the program to advance the state's objectives.

Regarding a step-down in CI, we encourage CARB to modify the 2024 CI target from current levels, in a way that reflects current market conditions and that could phase out the current credit bank over 3 years. For example, CARB should specifically evaluate the volume of credits currently available, from existing low carbon fuel pathways, zero emission vehicles, and any other source, and add in one-third of the current credit bank to identify a new CI target for 2024. This will serve to immediately recalibrate the market while providing ongoing flexibility for covered entities, and will support ongoing and rapid development of low carbon fuel projects.

Regarding a ratchet, it is important to design such a program in a way that does not discourage ongoing procurement of projects and banking of credits. We believe a similar mechanism, where a portion (~1/3) of a credit bank is added to future year compliance obligations could strike this balance. Another option might be to host auctions for future-year credits at specified prices, and adjust future year CI targets based on the results. Regardless, we believe a ratchet mechanism will add an important element to the LCFS to ensure its ongoing success, and we look forward to evaluating specific proposals and participating in future conversations on the topic.

CARB should not restrict avoided biomethane crediting, especially for organics diversion pathways, or limit book-and-claim access for out of state projects

We remain alarmed at proposals to phase out crediting for avoided methane emissions. Accounting for avoided methane emissions accurately reflects a pathway's carbon intensity compared to the no project alternative, and has proven incredibly effective at rapidly developing infrastructure to reduce methane emissions and projects supplying biomethane in the State, especially for dairies. If CARB were to eliminate crediting for avoided methane, it would send a very negative signal to the biomethane market, restrict project development, and invariably lead to increased SLCP methane emissions and lower availability of biomethane.

This is especially critical for organics diversion projects, which are still struggling to be developed in California, and have a hard time competing with landfilling or composting alternatives. We strongly urge CARB to maintain crediting for avoided methane emissions under the LCFS, especially for organics diversion biogas projects, which have yet to scale in California.

We are also concerned with the proposal to phase out book and claim accounting for out-of-state biogas projects. TNRE has evaluated several sites and approaches to supporting anaerobic digestion projects to meet the State's goals, including some just outside of the state's borders. While our assumption was that those out-of-state projects would comply with CPUC requirements for providing instate benefits and directed biogas flows to California, we have not been able to confirm that, and we are not sure at this point that *any* out-of-state project – even those specifically designed to comply with the State's organics diversion goals – would be eligible under these rules. Meanwhile, waste destined for landfills or compost operations face no similar restrictions, putting anaerobic digestion and biogas projects at a competitive disadvantage with those alternatives that provide less environmental benefit.

Should CARB choose to restrict book-and-claim access for biogas serving CNG vehicles in the future, we support allowing ongoing book-and-claim for hydrogen production, and encourage CARB to allow book-and-claim use of biogas for electricity production and process energy for other fuel pathways, as well. This will ensure ongoing technology neutrality of the program and equal treatment of fuels for zero emission vehicles, and help shift biogas into stationary applications and hard-to-abate sectors, per CARB's objectives identified in the Scoping Plan.

Instead, CARB should leverage the LCFS to further enable organics diversion pathways

In fact, we hope CARB will consider similarly leveraging the proven success of avoided methane emissions in accounting for dairy digester projects and update avoided methane accounting for organics diversion projects to enable similar outcomes for those needed projects. We hope CARB will update the GREET model during this set of amendments to reflect the latest understanding of the science related to landfill methane emissions and global warming potential of methane. These changes would more accurately reflect the true environmental benefits of landfill-diverted organics projects, and also serve to help them get developed quickly, and on timelines needed to achieve the State's organics diversion goals and SB 1383 regulatory requirements.

We appreciate CARB recently hosting a workshop on landfill methane emissions, highlighting the latest science, which continually shows landfill methane emissions to be higher than estimated in the State's greenhouse gas inventory and other programs, including the LCFS. The last two global scientific consensus Assessment Reports from the Intergovernmental Panel on Climate Change both highlight that the global warming impact of methane is higher than currently represented in California's programs. For example, while the LCFS and other programs continue to use the outdated 100-year GWP value of 25, the U.S. EPA acknowledges the latest science pegs the 100-year GWP at 27-30.[1]

We understand the inventory and other programs may have separate processes and timelines that are appropriate to consider before updating accounting there. However, the LCFS accounting should reflect the latest science, and we encourage you to incorporate updated landfill methane capture assumptions and methane GWP values in the GREET model in the next set of LCFS amendments, regardless of the approach or timing CARB takes for other programs. The success of LCFS is based on the stringent lifecycle greenhouse gas emissions accounting – down to the hundredths of a g/MJ – and CARB should endeavor to always reflect the latest science in every iteration of the GREET model and set of LCFS amendments. Making this change now will also have important impacts on developing the anaerobic digestion infrastructure needed over the next three years to achieve 75% organics diversion by 2025.

We recognize that CARB will soon release an updated Tier 1 calculator for organics diversion projects, and we look forward to sharing these and other targeted comments separately.

CARB should update the CATS model to include biomethane from organics diversion, CCS on all pathways, and all relevant federal incentive programs

Finally, we note that there appears to be an ongoing bias towards composting as an organics diversion strategy, despite the greater benefits offered by anaerobic digestion, and important and growing role that

[1] https://www.epa.gov/ghgemissions/understanding-global-warming-potentials

biomethane will play in meeting the State's climate targets. As described in comments we submitted related to the Draft Scoping Plan,[2] TNRE has completed a comparison of composting and anaerobic digestion pathways using CARB's greenhouse gas quantification calculator for the State's organics programs. That calculator shows that anaerobic digestion technology like TNRE's delivers significantly greater criteria and greenhouse gas emissions benefits than traditional or advanced composting – up to twice the greenhouse gas reductions and about 4-12 times more NOx reductions.

Nonetheless, and despite the fact that CARB is developing a Tier 1 calculator for anaerobic digestion of organic waste, the CATS modeling does not include anaerobic digestion from diverted organic waste as a fuel production pathway. These projects are difficult to develop and require ongoing support and attention from the state to develop in the quantity and timelines needed. It's imperative that CARB and other State agencies increasingly focus on supporting anaerobic digestion from diverted organics, if we are to achieve our organics diversion and SLCP goals and deliver the volumes of biomethane from the resource expected in the Final Scoping Plan, as reflected in the FAQ document released as part of the workshop materials in November.

We ask that you add organics diversion pathways for CNG, electricity and hydrogen into the CATS model, and we would be happy to work with you on appropriate modeling assumptions to include. It also appears that the model does not include CCS on biomethane pathways, despite the fact that anaerobic digestion produces a fairly pure stream of CO_2 that may be relatively affordable to capture – as reflected in the technical documentation for ethanol – and could deliver significant additional greenhouse gas benefits under the program. We urge you to enable CCS for all relevant pathways in the model, and also ensure available federal incentives for biomethane and all other pathways are accounted for.

Conclusion

Thank you again for the opportunity to comment on this important workshop. We hope you will continue evaluating appropriate CI reduction targets based on the Final Scoping Plan, and continue to leverage the LCFS as a critical tool to achieve SLCP methane reductions and organics diversion goals. As noted in our comments on a previous workshop, California has enough existing organic waste resources to achieve greater than a 90% reduction in CI, *just from in-state, waste-based pathways.*[3] Accordingly, we hope CARB will fully explore the opportunity the LCFS can play in advancing the State's carbon neutrality and other climate goals, and enable it to do so.

Sincerely,

Gary Aguinaga
President
True North Renewable Energy, LLC

[2] https://www.arb.ca.gov/lists/com-attach/2454-scopingplan2022-BXFdNVEiU2UAWVQn.pdf
[3] https://www.arb.ca.gov/lists/com-attach/16-lcfs-wkshp-jul22-ws-AXUHb1EiVmAGX1Q4.pdf