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California Air Resources Board
1001 I Street
Sacramento, CA 95814
Via Online Submission

Comments on Proposed Low Carbon Fuel Standard Amendments

Dear California Air Resources Board (CARB) Low Carbon Fuel Standard Program Staff:

Thank you for the opportunity to provide comments in response to the proposed amendments to the Low Carbon Fuel Standard.

As background, Oberon is an innovative California company founded in San Diego 13 years ago with a focus on decarbonizing the global LPG/propane industry while laying the foundation for renewable hydrogen. We are accomplishing this today by producing renewable dimethyl ether (DME) at our Brawley, California production facility. Oberon's rDME® brand fuel can be made from various in-state waste streams (*e.g.*, dairy manure biogas, waste water treatment biogas), which can enable smaller, often stranded, biogas suppliers to participate in the LCFS program and produce low carbon DME.[1] Oberon's rDME fuel can reduce the carbon footprint of transportation when used as a: 1) blending agent with Liquid Petroleum Gas (LPG)/propane; 2) hydrogen carrier to power the growing fuel-cell electric vehicle and stationary source market; and 3) diesel substitute. This range of creative applications that clean fuels, such as DME, can support is underscored in the 2022 Scoping Plan Update—DME along with other clean alternatives to petroleum are a key part of the solution for the state to reach its legislatively-mandated greenhouse gas reduction targets.

Responses to Draft Amendments

Oberon supports the proposed amendment package and appreciates the significant efforts that have gone into developing these changes. In the 'Other Comments' section below we offer suggestions for further clarity where the proposed amendments may benefit from a more fulsome consideration of rapidly developing technology and commercial practices.

We also express our gratitude for your engagement and support for DME and we note with pleasure the inclusion of DME on *Table 4. Energy Densities and Conversion Factors for LCFS Fuels and Blendstocks*.

[1] The California Air Resources Board has estimated dairy biogas-based DME made by the Oberon process has a carbon intensity of -278. rDME® is a trademark of Oberon Fuels, Inc.

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Other Comments

- **Carbon Intensity (CI) Benchmarks**

Oberon strongly supports the increased stringency to a 9% carbon intensity reduction in 2025 from the 5% originally proposed in the 45-day package. This adjustment reflects a necessary step toward more robust climate action. This single adjustment will translate into millions of additional tons of GHG emission reductions and act as a supportive market signal for new clean fuel projects that have been or are being constructed to bring more clean fuels to market.

Additionally, we commend CARB for the inclusion of the Auto Acceleration Mechanism as a forward-thinking measure to ensure the program's dynamism. The AAM is a necessary compliment to the CI target adjustment and as designed, will send a clear, supportive, and unambiguous market signal to continue investments in clean fuels by tightening the program in the event overperformance occurs. Adoption and implementation of this mechanism will ensure that potential emission reductions are not left on the table and will help California reach its climate goals faster if triggered.

- **Avoided Methane Crediting**

Oberon strongly supports the inclusion of avoided methane crediting in the proposed changes. Avoided methane emissions are a critical part of science-based life cycle assessments, and their inclusion in CI scores is consistent with internationally recognized standards of carbon accounting. While we understand CARB's intention is to better align the proposed end dates for avoided emission pathways with its mobile source regulations focused on transitioning to electric vehicles, we are concerned about CARB's proposed limitation on the number of crediting periods for avoided methane emissions projects, reducing it from three to two consecutive 10-year periods for pathways breaking ground before January 1, 2030. This change negatively impacts these projects, particularly those that are already in development or near completion that were funded with the expectation they would be eligible for up to three 10-year crediting periods. The reduced crediting period could undermine the financial viability of these initiatives, which rely heavily on LCFS credits to justify the significant investments required. We urge CARB to reconsider this reduction, as it may inadvertently discourage the development of methane mitigation projects that are crucial to achieving California's climate goals. Instead, maintaining the original structure of three crediting periods for these projects would provide the necessary support to ensure the long term viability of these projects and their continued contribution to reducing greenhouse gas emissions.

- **Sustainability Requirements – Biomass for a Feedstock or Process Fuel**

We appreciate CARB's commitment to ensuring that forestry biomass projects are conducted in an environmentally responsible manner, contributing to both forest health

and the state's climate objectives. As industry continues to advance in this area, we believe it is essential to consider the progress made in sustainable forestry practices over recent decades, which has laid a strong foundation for the responsible utilization of forestry biomass.

The proposed definitions notably narrow the scope of feedstock material availability by excluding industrial lands, which remain undefined, and limiting the sources of material to those derived solely from fuel reduction or restoration projects. These terms, "fuel reduction" and "restoration projects," are themselves undefined, further complicating their application. By excluding other silvicultural treatments, the proposed language unnecessarily restricts the types of forest management practices that can contribute to low carbon fuel production. The added restrictions provide no incremental benefits, particularly in light of the new sustainability provisions CARB is proposing.

Section 95488.9(g), originally designed to ensure the sustainability of crop-based fuels, has been expanded to cover a wider range of waste biomass. While these requirements are suitable for purpose-grown crops, they are not applicable to agricultural or forest residues, where the feedstock is a waste product and fuel producers have no control over crop growing practices. Applying the same standards to agricultural or forest residues as to purpose-grown crops could hinder the production of fuels from these residues. The proposed rules could also restrict the use of previously approved waste feedstocks for process heat in biofuel production unless they can be proven to originate from certified sustainable operations.

- **Book-and-Claim – RNG Deliverability**

We recognize and appreciate CARB's efforts to enhance the integrity and accuracy of the proposed RNG deliverability requirements, consistent with RPS eligibility rules. While we support the intent behind these changes, we have concerns regarding the potential impact on investment in RNG projects under the proposed framework for *Book-and-Claim Accounting for Pipeline-Injected Biomethane Used as a Transportation Fuel or to Produce Hydrogen*. Particularly, the language concerning "if the Executive Officer approves a gas system map by July 1, 2026", as this proposal introduces a level of uncertainty that poses challenges for stakeholders considering investments in RNG projects. The lack of clarity on which pipelines will meet the new criteria until the map is finalized creates a precarious environment for project developers and investors, who require certainty and predictability to commit substantial resources.

This uncertainty could inadvertently disincentivize investment in RNG projects, as stakeholders may be reluctant to move forward without a clear understanding of directional flow-based deliverability requirements. Such ambiguity could stall progress in expanding RNG production, which is essential for meeting California's ambitious climate goals. We highly encourage CARB to provide more immediate and transparent guidelines coupled with a transparent public process to provide investors the confidence

needed to continue supporting RNG development in the state. We look forward to discussing these provisions with CARB staff in the coming year and highly encourage CARB to conduct a full and transparent public process to inform any gas maps the Executive Officer may consider.

- **Renewable Hydrogen Proposed Definition**

The 15-day changes propose an updated definition to "Renewable Hydrogen". We specifically wish to comment on the language in item (2) which identifies "steam methane reforming of biomethane or other renewable hydrocarbons" as a qualifying process. While we support the explicit inclusion of "other renewable hydrocarbons", we believe that this definition should also include renewable oxygenates, such as renewable DME, which serve the same function and purpose as renewable hydrocarbons in the production of renewable hydrogen via steam reforming. To better reflect the versatility of renewable feedstocks used in renewable hydrogen production, we recommend that CARB amend the language to include renewable oxygenates. For example, the phrase could be revised to "steam methane reforming of biomethane or other renewable hydrocarbons or oxygenates" or "steam methane reforming of biomethane, renewable hydrocarbons, or renewable oxygenates". This change would ensure that the definition accurately reflects the range of renewable sources that can be used with steam reforming technologies to maximize renewable hydrogen production, while promoting technology neutrality and innovation in hydrogen production technologies.

- **Credit True-up**

Oberon strongly supports CARB's proposal to expand the LCFS credit true-up provisions to include periods using temporary pathway CIs after annual verification. This is a highly positive change, particularly for projects that operate with conservative, temporary CI scores. By allowing these projects to reconcile their credits based on verified CI data, this helps to protect the financial viability of low carbon fuel projects by allowing them to recover lost value that might otherwise be forfeited due to conservative early reporting. Moreover, it promotes greater accuracy and transparency in the program, ensuring that stakeholders are rewarded based on their true environmental performance. This adjustment ultimately strengthens the LCFS program by fostering a more accurate and equitable system. We commend CARB for recognizing the importance of this adjustment and for taking steps to support the integrity and financial viability of renewable fuel projects. The proposal also includes true-up provisions that adjust credits based on verified operational CIs relative to certified CIs, applying a penalty of four times the spread for shortfalls. However, the justification for this 4X multiplier is unclear, as a smaller multiplier, such as 2X, would still effectively discourage overconfidence in CI analysis.

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- **Stakeholder Engagement – Source Specific Feedstocks**

While we sincerely appreciate the efforts CARB has made in developing the proposed changes, we are concerned about the inclusion of several items in the proposed changes that were not previously discussed or evaluated with stakeholders. Specifically, CARB failed to hold a workshop to address the complexities associated with forest biomass during this rulemaking process. This significant change to eligible forest biomass was included in the 15-Day Changes (i.e., §95488.8(g)(1)(A)(3) and §95488.9(g)) without the benefit of stakeholder engagement, in stark contrast to CARB's long-standing transparent approach when considering amendments to the LCFS as well as other regulations.

To maintain the integrity of the rulemaking process and ensure that final regulations are both effective and equitable, we strongly urge a review of these changes with a focus on promoting environmentally sustainable practices in the management of industrial forests. Limiting source-specified forest biomass feedstock to "non-industrial forestlands" could inhibit the use of these materials from a fate of productive use as a renewable feedstock, where the alternative is destruction or disposal. Waste and residues from industrial forestlands play a critical role in providing the reliable long-term supply agreements necessary for biofuel project success.

Proper review to allow for the necessary scrutiny and input that these proposed items deserve will ensure the final rule is based on robust data and stakeholder consensus. It is imperative that stakeholders have the opportunity to thoroughly review and provide feedback on such changes, particularly those that could have significant implications. As noted above, transparency and stakeholder engagement have always been cornerstones of California's environmental policy success, and it is critical that this process upholds those values to sustain the credibility and effectiveness of which the program is built upon and globally regarded for.

Recommendations for Future Action

Oberon encourages CARB to ensure there continues to be a market for low-CI liquid and gaseous fuels as they are an important decarbonization tool, especially in sectors that are hard to decarbonize. Oberon recommends that CARB send a clear policy signal that biofuels (e.g., biomethane, renewable propane, renewable DME) are necessary and effective decarbonization strategies in these other sectors (e.g., residential, commercial, industrial) and are fundamental to the state meeting its ambitious GHG reduction targets.

As the state transitions out of combustion in the transportation space gaseous and liquid fuels will continue to support the industrial, commercial, and residential sectors with escalating pressure to drive down GHG emissions. One approach for doing so is stronger signals and incentives for the production and use of low-CI fuels in those sectors.

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Expanding the LCFS or creating a LCFS-like structure to help facilitate decarbonization of other gasoline-, diesel-, fossil natural gas-, and propane-fueled applications in residential, commercial, and industrial markets is an opportunity that merits attention. Doing so would reward investments and use of cleaner fuels by these legacy sectors that are not anticipated to be electrified for many decades. In the last year new domestic and international policies have been established to apply the LCFS approach beyond transportation fuels such as Vermont's Clean Heat Standard, the Canadian Clean Fuel Regulation, and the EU ETS II which cover both transportation and non-transportation fuel. Policy expansion, as signaled in the Initial Statement of Reasons for the proposed LCFS amendments, will support additional reductions in greenhouse gas emissions by further accelerating the market development of low carbon fuels such as renewable DME.

Thank you for your time and consideration. Please do not hesitate to contact me at cristin.reno@oberonfuels.com with any questions.

Sincerely,

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Oberon Fuels