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Submitted electronically via ww2.arb.ca.gov

Chair Liane M. Randolph and
Members of the Board
California Air Resources Board
1001 I Street
Sacramento, CA 95814

RE: Comments on the October 1, 2024 CARB Low Carbon Fuel Standard 15-Day Changes

Dear Chair Randolph and Members of the Board:

Carbon TerraVault Holdings, LLC ("CTV") appreciates the opportunity to comment on the California Air Resources Board's ("CARB" or "the Board") proposed amendments to the Low Carbon Fuel Standard ("LCFS"), released on October 1, 2024 (the "15-Day Changes").[1] CTV believes that the proposed modifications to LCFS credit generation for hydrogen projects introduces significant uncertainty and ambiguity, putting multibillion dollar industry-wide investment in H2 at risk. CARB must modify the 15-Day Changes or risk suppressing California's nascent low-carbon hydrogen industry.

Restricting LCFS credits to hydrogen produced using fossil gas starting with a 2030 quota and ending with a 2035 credit phase out:

- Creates significant uncertainty with the introduction of a poorly defined 2030 quota tied to an unknowable future volume of renewable hydrogen;
- Leaves insufficient time to develop and meaningfully operate an available and affordable source of low-CI hydrogen derived from fossil gas with carbon capture and storage;
- Inhibits economic incentives that will constrict supply and slow the development of California's hydrogen economy;
- Ignores the State's technology-neutral approach to carbon reduction; and
- Sends a message to investors that California's regulatory agencies may arbitrarily change rules that negatively impact the investment landscape without notice laid out by the state's own legislation.

Consistent with the 2022 Scoping Plan, California energy companies have planned for low carbon intensity ("CI") hydrogen projects that mitigate carbon emissions by employing carbon capture and storage ("CCS"),[2] with the understanding that these projects would receive LCFS credits. The 2022 Scoping Plan calls for a broad approach to defining low-CI hydrogen projects to support a projected massive increase in demand for hydrogen in the future. Developing a pipeline

[1] California Air Resources Board, Proposed 15-Day Changes, https://ww2.arb.ca.gov/rulemaking/2024/lcfs2024.
[2] *E.g.*, Elk Hills Hydrogen Project Press Release, California Resources Corporation (July 31, 2023).

of low-CI hydrogen projects with CCS is essential to meet state climate targets, which compels CARB to provide long-term incentives in support of this emerging industry. The 15-Day Changes, as proposed, would restrict these financial incentives starting in 2030 and eliminate them entirely by 2035, materially jeopardizing the long-term business justification for these projects and undercutting California's chance to be a leader in low-CI hydrogen production.

Moreover, finalizing such disruptive changes sends the wrong signal to investors with respect to support for low-CI hydrogen projects. The 15-Day Changes represent an unexpected and surprising proposal, exactly the kind that sends shocks through the investment and lending communities and ultimately risk provoking a sweeping retreat from investment in ***any*** type of low-carbon fuels because of fears of arbitrary and last-minute regulatory changes. CARB must modify the 15-Day Changes and refocus its efforts on supporting the development of California's low-CI hydrogen economy.

About Carbon TerraVault Holdings, LLC

Carbon TerraVault Holdings, LLC ("CTV"), a subsidiary of California Resources Corporation ("CRC"), provides services that include the capture, transport and storage of carbon dioxide for its customers. CTV is engaged in a series of CCS projects that inject CO_2 captured from industrial sources into depleted underground reservoirs and permanently store CO_2 deep underground. For more information about CTV, please visit www.carbonterravault.com.

About Carbon TerraVault Joint Venture

Carbon TerraVault Joint Venture ("CTV JV") is a carbon management partnership focused on carbon capture and sequestration development, and was formed between Carbon TerraVault, a subsidiary of CRC, and Brookfield Renewable. CTV JV develops both infrastructure and storage assets required for CCS development in California. CRC owns 51% of CTV JV with Brookfield Renewable owning the remaining 49% interest.

CTV JV is involved in several new clean energy initiatives. These include the Grannus Ammonia and Hydrogen Project, which expects to sequester 370,000 metric tons ("MT") of CO_2 annually and produce clean ammonia and hydrogen in California. The project aims to be California's first clean ammonia and hydrogen facility producing an expected 150,000 MT per annum of clean ammonia and an expected 10,000 MT per annum of clean hydrogen. The Lone Cypress Hydrogen Project, in collaboration with Lone Cypress Energy Services, expects to sequester 205,000 MT of CO_2 per year from a new hydrogen plant and the production of an expected 65 tons per day of hydrogen.[3,4] Lastly, the Yosemite Hydrogen Facility, in partnership with Yosemite Clean Energy, expects to sequester 40,000 MT of CO_2 per year from a new hydrogen plant expected to produce 24 tons per day of hydrogen, with plans for two additional facilities. These projects contribute to our sustainability goals to reduce carbon emissions and promote clean energy.

[3] Lone Cypress CDMA Press Release, California Resources Corporation (Dec. 7, 2022).
[4] CTV expects that the Lone Cypress Hydrogen Project will utilize a blended feedstock consisting of natural gas and RNG, subject to the availability of RNG.

Recommendations

As a California-based company committed to the energy transition, CTV supports CARB's overall goal of achieving carbon neutrality by 2045 and reducing greenhouse gas ("GHG") emissions by 2045 to a level that is 85% below 1990 levels. In its Statement of Reasons for the December 2023 proposed LCFS amendments, CARB stated that "[m]eeting this goal will require the deployment of greenhouse gas emission reduction strategies ***at an unprecedented scale and pace***."[5] However, we are concerned that many aspects of the 15-Day Changes unnecessarily restrict or prohibit established and proven strategies for reducing GHG emissions in connection with the production of low-CI hydrogen from generating LCFS credits. In particular, by introducing an 80% renewable hydrogen target in 2030, followed by a 2035 removal of LCFS credit generation eligibility for hydrogen produced using fossil gas as a feedstock, the proposed amendments only support incentives for hydrogen produced using (1) electricity generated from renewable power sources and (2) renewable natural gas ("RNG") as a feedstock. Neither source can practically meet CARB's projected demand for low-carbon hydrogen production, likely inhibiting the foundation of a meaningful low-carbon hydrogen industry in California.

To fix the issues that the 15-Day modifications create and ensure the LCFS program continues to support the development of a low-CI hydrogen economy, we respectfully request that prior to finalization of the 15-Day Changes, CARB must:

— **Reject the proposed 2030 80% renewable hydrogen target in Subsection 95482(h)**;
- This interim target is unnecessary given the eventual phase out of credits for hydrogen production using fossil gas.
- The target is opaque, with no description of how 80% renewable hydrogen would be measured or enforced. To proceed with such a target would require additional rulemaking describing in detail what qualifies as renewable hydrogen, for example when renewable natural gas is blended with fossil gas, and how credits would be assigned in the case of exceeding the allowable amount of hydrogen produced from fossil gas.
- The target ties hydrogen produced using fossil gas to unknowable future amounts of renewable hydrogen. With large uncertainty and varying forecasts for renewable hydrogen production, there is no way to know how much hydrogen produced using fossil gas will qualify for LCFS credits. For example, if 8,000 tons of renewable hydrogen is produced in 2030, 2,000 tons of non-renewable hydrogen would qualify for LCFS credits. If 800,000 tons of renewable hydrogen is produced in 2030, 200,000 tons of non-renewable hydrogen would qualify. Thus, an investment in hydrogen produced using fossil gas would be predicated on future production of renewable hydrogen, making investment decisions extremely difficult.

[5] 2024 LCFS Amendments Staff Report: Initial Statement of Reasons at 4 (Dec. 2023) [hereinafter "Initial Statement of Reasons"] (emphasis added).

— **Delay to 2045 the phase out of crediting for hydrogen production using fossil gas in Subsection 95482(h)**;
  - Delaying the phase out to 2045 would allow sufficient time for development and financial recovery of low-CI hydrogen projects, which is needed for projects to succeed. Additionally, CARB should insert language that revisits the 2045 deadline in case renewable hydrogen takes longer to scale than anticipated.
  - This would align with the 2022 Scoping Plan's intent to allow affordable low-CI production methods, like fossil gas + CCS, to meet California's growing hydrogen demand, while ensuring that renewable hydrogen becomes the dominant source of production when it becomes available in sufficient quantities.

Conclusion

As explained above, CARB must revisit various provisions of its proposed 15-Day Changes to the LCFS regulations that restrict projects producing hydrogen from fossil gas and CCS from LCFS credit generation starting in 2030. Revisions to the 15-Day Changes are necessary to ensure consistency with the 2022 Scoping Plan and, importantly, to recognize the importance of low-CI hydrogen in meeting the state's ambitious climate goals. To that end, we respectfully ask CARB to consider the proposed revisions to Subsection 95482(h) contained in this letter.

CTV appreciates the opportunity to comment on the October 1, 2024 LCFS 15-Day Changes. We thank CARB for its consideration and look forward to continued dialogue and public workshops on this matter.

Respectfully submitted,

Chris Gould

Chris Gould
Managing Director