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October 16, 2024

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

Comments submitted electronically

RE: Comments Related to the October 1st, 2024 Second 15-Day Changes

Dear Chair Randolph and fellow board members,

Air Products is pleased to provide comments in support of the California Air Resources Board (CARB) rulemaking for the Low Carbon Fuel Standard (LCFS). We are very appreciative that CARB has recognized the substantial role that hydrogen will play in decarbonizing transportation, but we are disappointed that the second proposed 15-day package amendments leave some impediments in place hindering market development for lower-carbon hydrogen. Our comments focus on the further refinements that are needed to support the nascent and growing clean hydrogen market and help realize California's decarbonization goals. **In particular, we are requesting the Board direct necessary but targeted amendments to key provisions to ensure the greatest access and market competition for new supplies of low carbon hydrogen for California's transportation fuels market.**

About Air Products

Air Products is a global company providing essential industrial gases, related equipment, and applications expertise to customers in more than 50 countries. As the world's largest producer of hydrogen, Air Products is committed to driving the energy transition through a $15 billion global investment in clean hydrogen production capacity, including projects in California, Arizona, Texas, Louisiana, New York and other international regions.

California Climate Policy Should Drive and Support the Global Energy Transition

Air Products is on the leading edge of the global energy transition, making significant investments in developing new, low CI hydrogen production facilities to serve California's mobility markets which will enable our customers to transition. We strongly support California's climate goals and general efforts to achieve carbon neutrality by mid-century and are backing up our global sustainability commitment with billions of dollars of investment in new low carbon intensity (CI) hydrogen supply and associated distribution infrastructure.

Replacing conventional transportation fuels for drivers in the state with low CI alternatives, including low CI hydrogen, sustainable aviation fuels and diesel alternatives requires rapid scale up new hydrogen technologies for production and distribution which must be supported by regulatory certainty and strong market signals from the LCFS program.

Each of our low CI hydrogen production and distribution projects are designed for scale and to support a rapid, global transition to clean energy, including prioritizing supply options for California's hydrogen fuel cell customers and industrial customers investing in alternative low CI refining. To support these and other near-term market investments, it is critical that early growth markets – like California's clean fuels market – do not isolate themselves from the global economy and Californians have access to a broad array of low CI fuel supplies. Limiting low CI hydrogen supply to "made-in-California" mandates is counter to state goals to expand supplies, drive down the cost of hydrogen and ultimately reduce the cost to drivers who choose hydrogen fuel cell vehicles. While California's fuel market and LCFS rules allow for equal access and competition among suppliers of fossil-based gasoline, diesel, and liquid biofuels, the same rules as proposed in the draft LCFS regulations, unfortunately, do not apply to low CI hydrogen thus disadvantaging it from fully and fairly participating in the clean fuels transition and ultimately limiting access to a broad supply base. An unequal playing field will delay the availability of low CI hydrogen for the California fuels market, increase costs for California hydrogen consumers, and hinder the energy transition.

Low CI Hydrogen Production, Handling and Delivery Requirements Should Support all Early Market Projects While Ensuring Environmental Benefits

Air Products appreciates CARB's willingness to provide a 'book-and-claim' accounting approach for CI hydrogen, and we strongly support the provision's focus on a technology-neutral, CI-focused metric to establish eligibility for low-CI hydrogen. A robust book-and-claim system for hydrogen will leverage existing infrastructure to support development of new low CI hydrogen supply, reduce costs, and ensure that the low-carbon attributes of a hydrogen pathway are retained and applied to end-uses where the most environmental benefit can be derived. This compliance system supports the necessary, long-term signal to significantly increase investments in the production, storage, and distribution of low-carbon hydrogen that will be fundamental to decarbonizing the transportation sector. CARB's design of this system will be a model to other jurisdictions implementing LCFS programs.

To that end, one key improvement is still needed for policy conformity as it was missed during the amendment process likely due to an oversight. Specifically,

> ***The CARB Board should direct staff to eliminate the requirement that eligible hydrogen utilizing book-and-claim provisions must be supplied to California in a dedicated pipeline as proposed in §95488.8(i)(3)(A).***

The in-state pipeline requirement places an unnecessary constraint on a nascent market and will stifle investments at a time when significant capital outlays are needed to bring low-carbon hydrogen to scale. We are not aware of any other fuel, much less a low carbon fuel that is just beginning to ramp up production and use in California, being subject to such a requirement that discriminates against out-of-state projects.

Air Products owns and operates the only dedicated hydrogen pipeline network in California, and there are no dedicated interstate hydrogen pipelines that move hydrogen into California. This requirement that the low CI hydrogen consumed in California or used by a low CI fuel producer be transported in an in-state hydrogen pipe severely limits the eligible available supply. Further, the in-state only pipeline requirement fails to recognize the value of using hydrogen as an input for renewable fuels produced out of state and delivered for use in California, or hydrogen imported for mobility that will be produced and transported in dedicated pipelines outside of California before ultimately being transported by truck into the state. This approach inequitably dictates a project-specific design for out-of-state pipelines – where each low CI hydrogen project must have its own dedicated pipeline – rather than a scaled clean and efficient hydrogen economy where multiple production projects are able to utilize the same transportation and distribution infrastructure – including shared pipelines. Please note that this request is not to allow for a "papered attribute" system, like has been and continues to be used for biogas and renewable electricity Power Purchase Agreements, but rather for demonstrated mass balancing in a physically connected system.

For the best emissions outcomes, lowest cost, access to a larger pool of low CI hydrogen supplies and thus a reliable supply chain, California should support the use of low CI hydrogen in multiple fuel value chains and geographies as long as the finished fuel is consumed in state and creditable under the LCFS. To correct this oversight, **we request that the Board ask CARB staff to modify §95488.8(i)(3)(A) as follows:**

> *"Low-CI hydrogen is injected into a dedicated hydrogen pipeline physically connected to ~~California~~ a distribution system or a production facility that provides transportation fuel to California."*

CARB Should Reconsider and Clarify Renewable Hydrogen Provisions

In response to the first 15-day change package, we expressed concern with the new requirement that all hydrogen used in mobility applications be renewable after 2030.[1] This was a substantial new requirement that was not subject to workshop discussion and places hydrogen on unequal footing with electricity as a zero-emission fuel or biogas and other pathways with longer run times to transition to new requirements, moves away from the technology-neutral approach that the LCFS has always taken, undermines the beneficial role of carbon capture and sequestration, forgoes additional emission reductions that low carbon hydrogen can provide, obviates the important work being done at CARB to develop a wide ranging market evaluation of all forms of hydrogen (including non-renewable pathways) as directed by SB 1075, and presents timing challenges for the industry to rapidly move away from existing supplies to new sources.

We appreciate the slight modification proposed in the second set of 15-day changes, which would impose an 80% renewable requirement by 2030 and push the fossil hydrogen ban, including low CI blue hydrogen, back to 2035. However, any restrictions on hydrogen supplies under the program – aside from specific rules on Hydrogen Refueling Infrastructure (HRI) crediting and the market-wide reduction in CI that will naturally phase out crediting for higher carbon intensity hydrogen pathways in the 2030s – are counterproductive. These restrictions create barriers to market liftoff for zero emission hydrogen fuel supplies that don't exist for other pathways, including fossil-based diesel and impede state goals to expand low CI supplies of hydrogen for fueling stations, improve supply reliability and drive down costs for consumers. Further, it is concerning that the proposal leaves significant greenhouse gas reductions on the table and stifles the rapid ramp up in hydrogen production, storage, distribution and use that is foundational to California reaching its climate change targets. We encourage CARB to reconsider this proposal, its merits and the potential for unintended consequences which would increase hydrogen costs in California and create challenges for achieving the state's Zero Emission Vehicle (ZEV) and low CI hydrogen market goals.

Should CARB move forward with proposed restrictions on fossil-based hydrogen pathways, we request resolution language and subsequent guidance that clarifies that the 2030 and 2035 renewable hydrogen requirements only apply to any proportional volume of hydrogen that is delivered for use in California, rather than the entirety of a hydrogen project including output utilized in markets outside of the state. We also request that the resolution language and guidelines recognize improvements to the CI of fossil hydrogen by requiring renewable credits be purchased in proportion to the residual CI of the dispensed hydrogen above a CI threshold of 0 g/MJ. This way, CI improvements for fossil hydrogen are still incented and consumer costs are minimized with respect to biomethane credit purchases when other measures to reduce the hydrogen CI have been implemented.

Additional Clarification on Other Hydrogen Provisions Would be Helpful

There are other hydrogen-related provisions that would still benefit from additional clarification. Air Products encourages Resolution language that would identify and help clarify these issues, and we look forward to continuing to work with staff to effectively implement these provisions. Specifically:

[1] https://www.arb.ca.gov/lists/com-attach/7468-lcfs2024-UDEGaVAjBwsFcwR2.pdf

- ***Hydrogen Price Reporting Requirements:*** The requirement to report hydrogen prices remains unchanged, which continues to raise concerns. We hope that further clarification will be provided in Resolution language and CARB's responses to public comments, ensuring that reporting requirements are not overly burdensome or detrimental to market competitiveness.

- ***HD-HRI Crediting Provisions:*** We support the proposed changes to HRI crediting, including adjusting the credit caps to 100% for public stations and 50% for private stations, now set against a 1,200 kg/day credit cap rather than 2,000 kg/day. In response to the first 15-day change package, we supported the proposed changes to align light- and medium-duty (LMD) stations in one category and heavy-duty (HD) in another category for generating HRI credits but requested clarification about how multi-modal stations that serve both LMD and HD vehicles will be treated within the HRI crediting framework.[2]

  We appreciate that CARB has proposed an approach that enables stations serving both LMD and HD vehicles to apply for credits but remain concerned that there is no guarantee the LMD-HRI and HD-HRI applications will both be approved at the same time if either LMD-HRI or HD-HRI crediting have exceeded their respective 2.5% quarterly deficit caps. Also, since HRI applications are approved on a first-come first-served bases the approval timelines for LMD-HRI and HD-HRI may not occur in the same quarter of LCFS crediting. For a scenario where the HD-HRI application is approved, and LMD-HRI application is not approved because LMD-HRI credits exceed the 2.5% cap there is need to edit **Section 95486.3(a)(1)(C)2 as follows:**

  > *Any station previously approved for HRI crediting submitted before the effective date of the 2024 LCFS amendments or approved for LMD-HRI crediting;*

CARB guidance also needs to confirm that multimodal station design is supported with LMD Hydrogen Fueling Capacity Model (HyCap) and HD HyCap ratings. Based on multimodal station design and costs, the HyCap ratings are allocated based on the hydrogen dispensing capacity for LMD and HD fueling and any operating constraints. We trust that CARB will address these points in the responses to comments and through future guidance, and we look forward to working with staff to implement these new provisions.

Strong Support for Adopting the Package at the November 8, 2024 Board Meeting

Finally, we wish to reiterate our support for staff's efforts throughout this process and many amendments to the program that have been previously proposed, including:

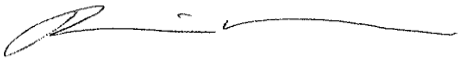
- The 9% step down in program stringency in 2025 and extension of the program and CI benchmarks through 2045
- Development of the Auto Acceleration Mechanism, and proposed change in the second 15-day change package to move from annual to quarterly review
- Amendments to the provisions for low CI electricity book-and-claim to extend the existing approach to include process energy associated with other components used to process and distribute hydrogen, like liquefaction and compression, and to treat hydrogen and electricity equitably in terms of the time matching
- Development of a Tier 1 Hydrogen Calculator and incorporation of these new low-CI electricity book-and-claim provisions into it
- Removal of the work "electrolytic" in subsection 95488.8(i)(1)(C), per our previous comments

[2] Ibid.

We strongly encourage CARB to adopt LCFS amendments at its November 8, 2024 Board meeting, and implement the amendment package as soon as possible following adoption to ensure that the 9% stepdown in stringency takes effect in Q1 2025. We look forward to continuing to work with CARB and stakeholders to effectively implement this critical policy and advance the state's clean energy and climate change goals.

Air Products appreciates the opportunity to provide this feedback on the October 1st Second 15-day package and we would be happy to meet with CARB to discuss any of these topics further. Please feel free to contact me at hellermt@airproducts.com.

Respectfully,



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