February 20, 2024

California Air Resources Board
1001 “I” Street, Sacramento, CA 95812

RE: Air Liquide Comments regarding the Proposed Low Carbon Fuel Standard Program

Dear CARB Staff:

On behalf of Air Liquide, thank you for the opportunity to submit our comments regarding the proposed changes to the Low Carbon Fuel Standard Program.

A world leader in gases, technologies and services for industry and health, Air Liquide has a presence in all 50 states, employing more than 20,000 people in the U.S. at more than 1,400 locations and plant facilities, offering industrial gases and related services to customers in a range of industries, including oil and gas, chemicals, steel, construction, food and beverage, research and analysis, electronics, and healthcare. Hydrogen has been, and continues to be a core growth area for our business in the U.S.

Air Liquide has more than 60 years of expertise across the entire hydrogen value chain. From production and storage to distribution and the development of applications for end users, Air Liquide is focused on hydrogen as a key molecule for investment, research, and technology development. Air Liquide is a global leader in clean hydrogen development and has made significant investments worldwide, exceeding more than $1 billion dollars invested in hydrogen in the U.S. and has a commitment to invest an additional $10 billion dollars globally in low-carbon hydrogen by 2035.

The LCFS regulations are among the most effective and influential regulations governing clean transportation fuels. In order to make the program as effective as possible and in order to ensure that the goals of the State of California with respect to implementation of zero emission vehicles and supporting infrastructure are met, we have the following recommendations:

Carbon Intensity Benchmarks and Market Stabilization: We believe the extension of the Carbon Intensity Benchmarks to 2045 and the “automatic acceleration mechanism” or “ratchet” that would advance the benchmark to the next year’s target will prove to be an effective tool in managing the state’s clean fuels targets. These benchmarks will help assure that by 2045 all fossil fuels, and also many alternative fuels, would generate deficits for almost all of the greenhouse gases that they create. The proposed mechanisms will also have the potential to strengthen the LCFS credit market. Low credit values have been a significant hindrance to investments, especially in the development of the much needed hydrogen refueling infrastructure. We are supportive of these and other actions needed to stabilize the credit market.

Hydrogen Refueling Infrastructure Credits. The LCFS currently provides credits for the unused capacity of hydrogen fueling stations that service light-duty vehicles and as proposed, its expansion to heavy duty vehicles.

> Heavy Duty Vehicle Program - The Heavy duty vehicle market represents both one of the largest emitters of carbon and particulates and one of the most difficult to abate sectors. Hydrogen fuel

cell vehicles now being made available to the market provide an ideal solution to address these challenges provided there is sufficient infrastructure and low carbon, low-cost, reliable hydrogen production and supply. The proposed expansion of the HRI credits to include Heavy Duty stations will provide a mechanism to encourage this infrastructure investment and we are strongly supportive of the proposed program introduction.

Light Duty Vehicle Program - Expanding the light-duty (LD) Hydrogen Refueling Infrastructure (HRI) capacity is imperative. This is particularly crucial to accommodate the unique needs of medium-duty (MD) vehicles, given their co-mingling with LD fleets. The alignment of LCFS capacity credits with market behavior is paramount for station crediting. To support this, maintaining the existing 1200kg credit is recommended, considering its success in driving private sector investment. This credit has proven effective in supporting the existing HRI, and its continuation is aligned with the ongoing success of the infrastructure.

Station Location Limitations To enhance the viability of hydrogen refueling stations, flexibility in locations for both HD and LD is paramount. The current absence of a comprehensive station network argues against stringent geographic limitations. These limitations have the immediate consequence of limiting decarbonization and air quality impacts of transitioning from fossil fuels, especially in the overburdened communities along these statewide transportation corridors.

Inequity in Capacity Crediting Standards We suggest that the requirement of 80% renewable content requirement exclusively for HRI should be eliminated as it is unnecessary and counter to the carbon intensity focus and technology-neutral principles that have driven innovation and investment in the LCFS program to date. The requirement will reduce available supply, increase the cost of H2 thereby hindering adoption and achievement of the state's zero carbon goals. The imposition of an 80% renewable content requirement exclusively for HRI raises concerns in comparison to Fast-Charging Infrastructure which will place hydrogen at a competitive disadvantage to other energy sources, electricity in particular, which benefit from substantial federal, state, and ratepayer subsidies not extended to hydrogen.

Biomethane. We are aligned with CARB's continued acknowledgment of the importance of methane reduction to address Global Climate Change and that the responsible use of RNG as a feedstock to hydrogen production can be a strong proponent of methane reductions regardless of the sourced location. We strongly support the changes in regulatory language which provide visibility to the eligibility of RNG as a feedstock for extended years, a necessary step in our investment in these technology and energy sources. We make the following additional recommendations:

Deliverability Language The creation of barriers to prevent the importation of RNG into California markets or for use as a feedstock in both in-state and out-of-state production of fuels should not be adopted. RNG is physically interchangeable with fossil natural gas and can be distributed in the same natural gas pipeline networks across the US. This established distribution network provides a proven, national distribution network that should be leveraged, not restricted in the deployment of low carbon fuels. The 50% flow requirement is arbitrary and unjustified.

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Landfill Methane Recognition of the methane avoidance of projects diverting organic material from Landfills should be revisited and expanded. The ability to increase methane capture rates through landfill RNG projects should be included.

RNG Power Sourcing Renewable natural gas facilities need flexibility to source renewable power as an input to RNG production in order to further incentivize the carbon reduction potential in its acquisition.

Book-and-Claim Accounting for Process Electricity. The expansion of the book-and-claim accounting for process energy will provide strong incentive to hydrogen producers to seek low-carbon alternatives in process energy to further reduce their process carbon intensities. To best take advantage of this proposed change we recommend the following:

Expansion to all process energy The opportunity to incentivize carbon reduction in process energy exists for all sources of energy. We recommend that the process energy allowance be expanded to include all energy sources used in production including such sources as the fuel used for thermochemical conversion energy.

Clarification on delivery The regulation reads as follows:

> *The low-CI electricity must be supplied to the grid within the local balancing authority where the electricity is consumed or delivered to that local balancing authority consistent with the requirements of California Public Utilities Code section 399.16, subdivision (b)(1).*

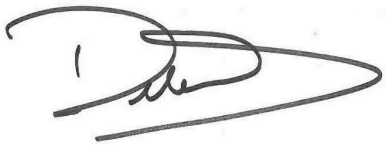
CPUC Section 399.16(b)(1) requires delivery to ***California***, which makes this provision ambiguous. Presumably, the proposed amendment is intended to require delivery only to a "local balancing authority," even if outside of California, but it could be interpreted to require delivery to California. We recommend the wording be updated to ensure delivery to an end use such as hydrogen production, outside of California is included.

Sourcing from new production The proposal requires that Low-CI electricity must come from new or expanded electricity production (after January 1, 2022, or within three years of the start of the hydrogen production facility, whichever is later.) This is an overly restrictive requirement that burdens hydrogen production, disadvantages it to other electricity usage, and has not been shown to provide benefits in a regulated electricity market that includes significant grid renewables and a Renewable Portfolio Standard. We recommend the elimination of this requirement.

Book-and-Claim Accounting for Low-CI Hydrogen. The proposed amendments allow book-and-claim accounting for low-CI hydrogen injected into a pipeline. We recommend that this allowance include not only hydrogen used as a transportation fuel but also for hydrogen used as a feedstock to produce other low-CI fuels. Substituting low-CI hydrogen in these production processes can be one of the most effective mechanisms to improve the environmental footprint of traditional fossil fuel production, SAF, and renewable diesel. Including these uses in the eligible accounting for hydrogen provides a strong incentive for these producers to reduce their product CI.

We appreciate CARB staff's work on the development of the proposed rule and their commitment to improving the LCFS. Successful adoption of battery and fuel cell electric vehicle technologies requires changes in LCFS to reinforce market pricing, parity in policy, and encourage deployment of fueling and charging infrastructure for zero-emission fleets. Thank you for the opportunity to provide input to this critically important program. If you have any questions or comments, please contact me at any time.

Sincerely,



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