



October 16, 2024

The Honorable Liane Randolph
Chair
California Air Resources Board
1001 I Street
Sacramento, CA 95864

Re: Second 15-day Changes to the Proposed Low Carbon Fuel Standard Regulation

Our issues are technical and not political – we fully support the need for and continuation of the LCFS, but changes are necessary prior to adoption.

On behalf of the undersigned associations, we are pleased to submit the following comments for consideration as the California Air Resources Board (CARB) deliberates the updates to the Low Carbon Fuel Standard (LCFS) and 2nd 15-day changes to the proposed rule. We appreciate the years that staff have committed to developing the proposed LCFS updates, as well as the time working with stakeholders. The LCFS is one of the primary drivers of private investment in California's climate change programs and remains one of the pivotal policy innovations that influences other states to adopt climate policies. The LCFS is one of three visible market signals in California's suite of climate change policies, making it a target of criticism seeking to erode support for the program. However, simple analysis of the 2022 Scoping Plan illustrates that even at LCFS's highest credit prices, this program is less costly than the average direct regulatory measure. Additionally, the LCFS drives innovation and investment that has substantially reduced emissions in the transportation sector.

Our sector relies on the investment signal sent by the declining carbon intensity standard, which incentivizes hydrogen producers to make significant long-term investments to deliver zero-emission, low carbon fuel to California drivers and fleets who are adopting fuel cell electric vehicles (FCEV). It is imperative that CARB consider the investment climate when deliberating this rulemaking package.

Unfortunately, the 2nd 15-day changes omit necessary updates to support hydrogen refueling infrastructure (HRI). The 2nd 15-day package falls short of incentivizing investment in this market due to several layers of limitations that have not been adequately addressed, which will severely impact hydrogen deployment in California. Hydrogen production, infrastructure and offtake markets have not received commensurate investment from California to support the requirements and credit limitations that are being imposed in this rule. The LCFS is the only market signal that supports private investment in this sector, and we are concerned that, as drafted, the LCFS rule will discourage investment as the market will naturally look for more secure investment opportunities.

Outstanding Issues

We appreciate the continuation of the HRI pathway for light- and medium-duty vehicles, as well as the creation of a heavy-duty HRI pathway. However, shortening the crediting window from 15 years to 10 years significantly alters the economics of our proposal. This challenge is compounded by the cap on revenue generation for both pathways and the lack of adjustment to the derate for the heavy-duty HRI sought by our members.

The HRI mechanism is self-regulating and does not require additional constraints. It was designed to support early investments in hydrogen stations while waiting for vehicles to come to market, offering assurance to manufacturers, buyers, and end users of FCEVs that stations will be available (ahead of the cars and trucks) and supported. As vehicle demand grows, more credits become available, fostering investment in additional stations and creating a natural balance within the program. If vehicle adoption is slower than expected, initial stations will still be supported, preventing overbuilding and ensuring the network remains sustainable. Introducing further credit and revenue constraints undermines private investment in (zero-emission refueling) stations, jeopardize their operational viability and will result in a failure to deploy the early market stations the program is designed to support.

The original HRI policy was intended to drive hydrogen station development ahead of vehicle deployment, while providing financial protection in case the rollout of hydrogen vehicles occurred more slowly than anticipated. This policy ensures that stations can minimize capital risk and operating costs regardless of how quickly FCEVs are adopted. Additionally, the policy was designed to be self-regulating and to phase out on its own over time. When vehicle adoption is slower, stations generate more HRI credits to sustain their operations in place of sales revenue. If station capacity growth outpaces vehicle deployment, the availability of HRI credits for new stations decreases, preventing overbuilding. Conversely, when vehicle adoption is faster, stations generate fewer HRI credits as their sales revenue increases, while HRI credits remain available to support the development of new stations to keep up with vehicle growth.

This original HRI policy has delivered several key benefits during periods when LCFS credit values were strong. It has unlocked private investment to build stations in advance of vehicle deployment, lowered hydrogen prices at the pump even in early years of low utilization, drove investment in R&D to improve station performance and reliability, and promoted the installation of higher-capacity stations capable of serving more vehicles with fewer delays.

1.5X Cap - § 95486.3 (a)(4)(H) and § 95486.4 (a)(4)(I)

The 1.5X cap on credit generation limits the effectiveness of the HRI program in achieving its goals of supporting early hydrogen station development. By capping credit generation at 1.5X the station's capacity, the policy unintentionally stifles the very private investment and market expansion that the program is designed to encourage. The goal of the HRI is to bridge the gap between station construction and the arrival of vehicles on the market, ensuring that stations remain financially viable even when vehicle rollout is slower than expected. However, the 1.5X cap hinders this dynamic by placing an artificial ceiling on the amount of support available for station operations, especially during the critical early years.

Eliminating the 1.5X cap would allow the HRI mechanism to function more effectively as a self-regulating tool, in line with its original intent. When vehicle adoption is slow, stations should be able to generate more credits to offset lower sales revenue, ensuring they remain operational and supported while waiting for the market to grow. As vehicle deployment picks up, the reliance on HRI credits would naturally decrease, since stations would begin generating revenue from fuel sales. This organic balance between credit generation and market demand is key to a healthy hydrogen infrastructure, and the 1.5X cap disrupts this balance by prematurely limiting the financial support available to stations.

Conversely, removing the cap would stimulate greater private investment in the hydrogen sector. Investors are more likely to commit to building new stations if they are confident that the credit system will provide adequate returns in the early years of operation. With the 1.5X cap in place, the financial risk remains too high, deterring the very investments that are necessary to scale the hydrogen infrastructure to meet future demand. By lifting the cap, CARB would foster a more favorable environment for private capital, leading to more stations being built ahead of vehicle deployment, which in turn would spur vehicle adoption.

Furthermore, the 1.5X cap may inadvertently lead to inefficiencies in the design and operation of hydrogen stations. To maximize credit generation within the restricted framework, developers may feel pressured to build smaller stations that can reach their credit cap more easily, rather than designing stations with higher capacity that can better serve growing vehicle numbers over time. This short-term approach could result in stations being underbuilt and unable to meet demand once the hydrogen vehicle market accelerates. Removing the cap would encourage the construction of larger, more robust stations that are better equipped to handle long-term demand and serve more vehicles efficiently.

By eliminating the 1.5X cap, the HRI program would become more aligned with its purpose of supporting early-stage infrastructure development and long-term market growth. It would reduce the financial uncertainty surrounding station operations, attract greater investment, and encourage the construction of stations designed for the future, all while allowing the self-regulating nature of the program to maintain balance between station capacity and vehicle rollout.

Recommendation: Eliminate the 1.5X cap for both HRI pathways by striking, in full, § 95486.3 (a)(4)(H) and § 95486.4 (a)(4)(I).

De-Rate of Heavy-Duty Stations - § 95486.4(a)(2)(F)

The current proposal to impose a 50% de-rate on HD HRS within a shortened 10-year crediting window poses significant financial challenges for station developers. This combination drastically alters the economic feasibility of investing in HD hydrogen stations, creating a substantial risk of capital recovery. By reducing the potential credits generated by 42.5% from our initial proposal in 2022, this policy undermines the financial foundation of these costly investments and increases the likelihood that developers will be unable to recover their costs, making these projects far less attractive.

HD HRS investments are exceptionally expensive and securing take-or-pay agreements with commercial fleets to guarantee a return on investment is difficult given the current stage of market development. Without a clearer and more favorable signal from CARB in the form of an adjusted de-rate, developers

may simply refrain from building these essential stations. The result would be a stalled market, perpetuating the “chicken-and-egg” problem this program was originally designed to solve. In essence, without adequate incentives, the necessary infrastructure won’t be built, hindering the growth of heavy-duty hydrogen vehicle adoption.

While our original proposal suggested a 25% de-rate, we acknowledge that a compromise is necessary. However, the 50% de-rate is simply too restrictive, especially given the shortened crediting period. We propose a 37.5% de-rate as a middle ground, providing a more feasible path forward for developers while still allowing CARB to meet its goals. This adjustment would significantly reduce the financial burden on developers and encourage the construction of more stations. Even with this compromise, station developers will still be taking considerable risks, as the de-rate still results in a loss of potential credits, and a 13% adjustment would be necessary to make developers whole based on our original industry proposal.

The proposed compromise of a 37.5% de-rate strikes a balance between CARB's objectives and the need to incentivize station development. This compromise would allow the crediting of upwards of 80 heavy-duty stations, substantially supporting and exceeding what is currently planned through funding programs like the Clean Transportation Fund, the General Fund, and ARCHES. Additionally, if fuel cell vehicle adoption and hydrogen throughput increase over time, more credits will naturally become available, enabling further expansion of the hydrogen refueling network.

Ultimately, this compromise offers a practical solution that meets both the needs of developers and the goals of CARB, ensuring that HD HRS can be built and that the hydrogen market can continue to grow without undue financial burden. Without this adjustment, the risk to developers will be too great, and the market risks stagnation at a critical juncture.

Compared to a <u>15 year crediting period for the original proposal</u>	2022 Initial Proposal	2024 Proposed Regulation Order #1 (Jan 5th 2024):	2024 Proposed Regulation Order #2 (August 2024):	CHC Recommendation 15-day comment period (Sep 24) De-rating factor of 25% and remove cap of 1.5x of CAPEX	CHC Recommendation 15-day comment period (Sep 24) De-rating factor of 37.5% and remove cap of 1.5x of CAPEX	Equivalent De-rating factor to match credit generated based on original proposal
Station Capacity (kg/day)	6000	6000	6000	6000	6000	6000
HRI Eligibility (years)	15	10	10	10	10	10
Benchmark	Current Standard	5% Step Down in 2025	9% Step Down in 2025	9% Step Down in 2025	9% Step Down in 2025	9% Step Down in 2025
De-rating factor	50%	50%	50%	25%	37.5%	13%
Credits	282131	163432	162167	243250	202708	282131
Impact on Credit Reduction from 2022 Proposal		42.1%	42.5%	16.0%	28.2%	0.0%
Number of HD stations that can be supported by the program*			90	60	80	55

¹ Deficit projection is from [ICF’s forecast](#).

Recommendation: Adjust the derate to 37.5%, meeting HRS developers in the middle of the two proposals and providing additional investment certainty while they assume additional risk from the original proposal.

¹ [ICF’s forecast](#)

Modifications to Section 95482. Fuels Subject to Regulation.

60% is not aligned with 80% and December 31, 2030, is not aligned with January 1, 2030

The proposed modifications continue to hold hydrogen to a higher standard than the electricity grid both in terms of timing and renewable content. Senate Bill 100 (De León, Chapter 312, Statutes 2018) requires that retail electricity sales achieve **60% renewable by December 31, 2030**, and 100% zero-carbon by 2045, with no intermediate targets between those two mandates. The proposed LCFS requires that hydrogen be 20% more renewable than the grid a year earlier, without the substantial financial support that rate basing renewable procurement provides to retailers of electricity. By contrast, there is no fossil ineligibility in SB 100, nor is there any law that prohibits the use of fossil fuel for electricity production even in 2045. In fact, California's laws focus solely on retail sales which further omits approximately 10-15% of the electricity on the grid.

Unfortunately, the HRI constraints advanced in this proposal create a higher standard for hydrogen which will add substantial costs that bias economics against hydrogen; therefore, will slow the uptake of FCEVs. As written, the LCFS will add the cost of Federal Renewable Fuel Standard RIN credits to hydrogen retailed in California because at present there are no RINs for hydrogen fuel. Additionally, the content requirement and dates are not aligned with the grid requirements.

Recommendation: Align the requirements with SB 100 – 60% renewable by December 31, 2030.

Modifications to Section 95486.3. Generating and Calculating Credits for ZEV Fueling Infrastructure Pathways for Light- and Medium-Duty Vehicles.

We appreciate and support the elimination of the derate and the changes to the station capacity. The current HRI pathway works when market prices support investment. As described earlier in this letter, the advantage of the HRI pathway is the natural self-regulation based on current economics. However, with the 1.5X cap proposed the HRI is unlikely to perform as it has in the past. As proposed, HRI will not support capital and operational expenditures to support station economics during the ebbs and flows of market transition away from fossil fuels thus eliminating the risk management that this pathway was intended to solve.

Additionally, planned stations with existing awards should be grandfathered into the existing pathway as the 1.5X cap undermines investment and will further risk those awards. Preferably, the 1.5X cap will be eliminated and therefore eliminate the need for grandfathering.

Recommendation: Eliminate the 1.5X cap for both HRI pathways by striking, in full, § 95486.3 (a)(4)(H) and § 95486.4 (a)(4)(I).

Modifications to Section 95486.4. Generating and Calculating Credits for ZEV Fueling Infrastructure Pathways for Heavy-Duty Vehicles.

We appreciate and support the addition of local funding for eligibility and by extension the location flexibility added for those stations.

§ 95486.4 (a)(4)(D)

This subsection incorrectly states “HD-FCI” as opposed to “HD-HRI.”

Recommendation: A fleet-owned shared HD-HRI station cannot be reserved for one HDV fleet for more than 12 hours each day. There is no limit on the length of reservations at shared ~~HD-FCI~~ HD-HRI sites that are owned by third parties and designed for multi-fleet access so long as the site is shared and open to multiple fleets.

Modifications to Section 95488.8. Fuel Pathway Application Requirements Applying to All Classifications.

We appreciate and support the clarification that will allow all hydrogen production to utilize low-CI electricity for production and processing further deliver on California’s goals to deeply decarbonize the economy. With a focus on carbon intensity reductions this change will facilitate the development of decarbonized hydrogen production from a variety of biogenic feedstocks.

Modifications to Section 95488.9. Special Circumstances for Fuel Pathway Applications.

We appreciate and support the temporary pathway. With consideration to the near-term requirements proposed for hydrogen, it will be critical to have these pathways available.

§ 95481. Definitions and Acronyms

The definition of “Medium-Duty Vehicle” (MDV) is misaligned for vehicle refueling behavior. While there are varying government definitions for MDVs, based on the utilization for this rulemaking it is best to use the Federal Highway Administration Gross Vehicle Weight Rating (GVRW) Category.²

We strongly encourage CARB to adopt the standard definition of medium-duty vehicles (MDVs) as those in Classes 3-6 (10,001 to 26,000 lbs. GVWR). Currently, many MDVs up to Class 6 utilize light-duty fueling stations as part of their routine operations, while heavy-duty vehicles (HDVs) in Classes 7 and 8 typically use dedicated HDV fueling lanes or truck stops. Aligning this definition and fueling practices with industry norms is essential. Introducing a different classification for MDVs under LCFS risks creating confusion among station developers and MDV fleet operators, potentially delaying station development and leading to stations that aren’t suited to all vehicle types.

Recommendation: Increase MDV to mean a vehicle that is rated at 10,001 and 26,000 pounds GVRW. This also requires adjusting the “Light-Duty Vehicle” (LDV) definition to mean a vehicle that is rated at 10,000 pounds or less GVRW.

Additionally, there is a typo in the definition of “Public LMD-HRI Station” where “EV” is used instead of “FCV.”

² <https://afdc.energy.gov/data/10380>

Recommendation: “Public LMD-HRI Station” means a hydrogen refueling station that can be restricted to light- and medium-duty **EVs FCVs** and that is available to the public for at least 12 continuous hours each day, including the time interval between 9 a.m. and 5 p.m. The station must not be reservable during public hours.

Conclusion

We fully support the need for the LCFS as a tool to drive decarbonization at the pace and scale necessary to achieve California’s carbon neutrality goal in 2045. It is imperative, however, that if CARB requires a higher standard for hydrogen, then policy must support these requirements. The continued inclusion of a 1.5X cap on capex for both HRI pathways and the 50% derate will undermine investments necessary to provide hydrogen fuel to a growing market. We are disappointed that our openness with staff and disclosure of data has been ignored. We urge the board to eliminate the 1.5X cap and adjust the HD HRI derate to 37.5% to support the hydrogen sector in supporting CARB’s vehicle deployment targets in ICT, ACT, ACF, and ACCII, not to mention trains, maritime, and cargo handling equipment.

Thank you,

Teresa Cooke, Executive Director
California Hydrogen Coalition

Katrina Fritz, President & CEO
California Hydrogen Business Council

cc: Rajinder Sahota, Deputy Executive Officer
Matt Botill, Division Chief
Jordan Ramalingam, Manager