California Hydrogen Business Council

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California Energy Commission
Docket No. 24-EVI-01
715 P Street
Sacramento, CA 95814

RE: Response to 24-EVI-01, Joint Workshop on Concepts for the CFI West Coast Truck Charging and Fueling Corridor Project – California Hydrogen Business Council Comment

Dear Commission:

The California Hydrogen Business Council (CHBC) writes to comment on the Commission's proposed project to establish a hydrogen fueling corridor along Interstate 5, extending from the Mexican border to the Canadian border. This initiative is of critical importance to the advancement of hydrogen fuel cell technology and the realization of zero-emission transportation across the West Coast. Without a comprehensive network of hydrogen fueling stations along this vital corridor, seamless north-south travel across California for hydrogen-powered vehicles will remain unfeasible. We are committed to supporting the best possible outcome for this project, ensuring the infrastructure needed for a sustainable, hydrogen-powered future.

We appreciate the funding of a hydrogen fueling station in California to support medium- and heavy-duty commercial trucks through the US DOT CFI grant program.
Recognizing that one hydrogen fueling station is not sufficient to support a market the size of California, growing this emerging economy will require a holistic strategy. Fortunately, the California Transportation Commission (CalSTA), through its SB 671 Clean Freight Corridors Assessment,[1] has laid important groundwork by identifying the need for an initial viable

[1] California Transportation Commission • SB 671 Clean Freight Corridors Assessment, November 2023, p. 39, https://catc.ca.gov/-/media/ctc-media/documents/programs/sb671/sb671-final-clean-freight-corridor-efficiency-assessment-dor.pdf, accessed February 24, 2025.

network of hydrogen fueling stations, with one station approximately every 270 miles—equating to about 15 heavy-duty hydrogen fueling stations along California's major corridors. We appreciate the funding provided for the development of hydrogen fueling stations through various programs, such as this CFI grant; however, hydrogen infrastructure remains significantly underrepresented in California's ZEV infrastructure funding, especially when compared to the support allocated for BEV charging stations. We greatly appreciate that CalTrans and CEC will aggressively pursue funding for hydrogen fueling infrastructure development in the future, in the spirit of CalSTA's SB 671 work. To that end, we kindly request an update on the status of the US DOT CFI Round 1 application resubmittal. Commercial manufacturers of heavy-duty zero-emission trucks are facing increased risk due to the loss of Private Fleet requirements of CARB's Advanced Clean Fleet (ACF) regulation, resulting in a setback for California's entire zero-emission vehicle program, impacting manufacturers of both hydrogen fuel cell and battery-electric platforms. In particular, hydrogen-powered trucks will be essential for meeting the performance and range demands of long-distance freight operations, highlighting the need for continued investment and support in hydrogen infrastructure.

In addition to preparing stations to power fuel cell electric trucks, we recommend preparing stations for hydrogen internal combustion engines (H2ICE) as a potential supporting off taker of hydrogen from the stations, which would further enhance the economic viability of the stations.

The success of any single hydrogen fueling station depends on a capacity significantly higher than the proposed minimum, 1,000 kg/day. The commercial trucking market has zero tolerance for fueling station outages of any kind, as maintaining truck fleet uptime is critical to operations. A station capacity of 1,000 kg/day is likely to be overwhelmed by market demand, leading to underperformance and risk of downtime. Unlike battery-electric trucks, which face challenges with long charging times, Class 8 hydrogen fuel cell trucks can refuel within 30 minutes, supporting optimal truck uptime. However, if stations are down or unable to meet demand, fueling times increase, negatively impacting fleet operational efficiency, and thus the success of the fleet transition itself. To ensure reliability and meet the needs of the commercial market, hydrogen fueling stations must be designed with sufficient capacity and redundancy. We recommend aligning the station's capacity closer to the CARB approved 2024 LCFS Regulatory Amendments, which set a 6,000 kg/day threshold for generating Heavy-Duty

Hydrogen Refueling Credits (HD-HRI), with an absolute minimum of 2,000 kg/day and a preferred capacity of 4,000 kg/day and above. For background, the rollout of light-duty hydrogen fueling stations taught us that more and slightly oversized stations are needed for initiating a market, as the larger capacity provides flexibility to manage demand fluctuations and outages. A station with name plate capacity of 1,000 kg/day station is too small, for the market success case, supporting a maximum of 25 trucks per day and would require daily hydrogen deliveries (or even multiple times per day), with increased cost of operations as well restricting fueling during deliveries. That model is more akin to a temporary demonstration project and not a commercial station. If 1,000 kg/day is the goal, then the state would require a network of multiple 1,000 kg/day stations to support a micro-corridor within the larger I-5 project area.

We are now beginning the commercial rollout of the heavy-duty hydrogen-powered truck market. There is an urgency to install hydrogen fueling infrastructure of sufficient density to support this new market. One of the most active truck corridors in the United States exists along I-5, from Los Angeles to the San Francisco Bay Area, where the majority of California's 33,500 drayage trucks operate,[2] making this region an immediate priority. From a market readiness perspective, hydrogen fueling for commercial trucking is severely under resourced, with minimal fueling in Los Angeles and Oakland, and no fueling in Sacramento and the Central Valley, leaving no connectivity between the Bay Area and Los Angeles.[3] Addressing these gaps is essential to establishing a robust and reliable hydrogen fueling network in California.

The capital cost for constructing a single heavy-duty hydrogen fueling station ranges from $10 million to $15 million, depending on the station type and configuration,[4] with cost

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[2] https://ww2.arb.ca.gov/resources/fact-sheets/advanced-clean-fleets-regulation-detailed-drayage-truck-requirements, accessed 2/26/25.

[3] The Los Angeles hydrogen truck market region faces significant challenges, with only three public heavy-duty hydrogen fueling stations that have limited capacity (1,600 kg/day) and a handful of private, temporary fueling sites supported by Nikola's HYLA infrastructure arm. However, Nikola's recent filing for Chapter 11 bankruptcy raises concerns about the reliability of these sites. In Oakland, the newly developed First Element Fuel hydrogen fueling station is not yet fully operational, further highlighting infrastructure gaps. A critical geographic gap exists in the Sacramento region and Central Valley, which have no commercial hydrogen fueling options.

[4] This cost is based on real-world experience developing HD hydrogen fueling stations and is higher than the $8.6 million - $12.6 million estimate in the California Transportation Commission, SB 671 Clean Freight Corridors Assessment, https://catc.ca.gov/-/media/ctc-media/documents/programs/sb671/sb671-final-clean-freight-corridor-efficiency-assessment-dor.pdf, December 2023, p. 46, accessed February 24, 2025.

variation depending on the capacity, station archetype (liquid vs. gaseous) and other exogenous factors such as cost of real estate, site development (e.g., utility hookups, etc.) which could significantly contributes to the overall expense, particularly in strategic urban locations. To effectively support the development of a robust hydrogen fueling network, adequate funding, proportional in magnitude, will ensure that California's CFI funded hydrogen station is set up for success in meeting market demands.

Furthermore, hydrogen supply and delivery agreements should be based on actual demand rather than the nameplate capacity of the station, as it is unrealistic to secure supply solely on the maximum capacity of the infrastructure. To encourage market growth, building excess station capacity should be incentivized, allowing for scalability as demand increases. Linking supply contracts directly to station capacity introduces unnecessary financial exposure and operational risk. Therefore, supply agreements should be decoupled from station capacity to ensure flexible, demand-driven fueling solutions that support market development while maintaining financial viability.

Hydrogen fueling is highly technical, requiring careful planning and coordination to ensure successful deployment of infrastructure. Historically, California's hydrogen fueling grant funding programs were developed through workshops between the CEC and industry members to achieve the best possible outcomes.

In closing, we thank the California Energy Commission and CalTrans for your continued leadership and commitment to advancing zero-emission transportation. Establishing a comprehensive hydrogen fueling corridor along Interstate 5 is a crucial step toward achieving California's clean energy, air pollution reduction and decarbonization goals. We appreciate the opportunity to provide input and stand ready to partner with your agencies to ensure the successful deployment of this infrastructure. Together, we can accelerate the transition to a hydrogen-powered future. Thank you for your consideration and support.

Sincerely,

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