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Additional submitted attachment is included below.

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March 18, 2022

Hannon Rasool
Deputy Director, Fuels and Transportation Division
California Energy Commission
1516 9th Street
Sacramento, Ca 95814

Re: CEC 19-TRAN-02 February 28 Staff Workshop, Response to select questions

Dear Deputy Director Rasool,

The California Fuel Cell Partnership (CaFCP) respectfully submits this letter of comment to the California Energy Commission (CEC) in response to 21-TRAN-02, Medium- and Heavy-Duty Zero-Emission Vehicles and Infrastructure. CaFCP, working within its charter, provided the membership a platform for open discussion and input. These are intended as broad comments, based on learnings from our over 20 years of collective global experience in the fuel cell electric vehicle market and rapidly growing light-, medium- and heavy-duty fuel cell vehicle sectors and infrastructure deployment.

Fundamentally, we view public ZEV infrastructure investment as the stimulus for private sector investment in ZEV technologies, with the goal of a self-sufficient ZEV marketplace. Due to the dominance of fossil-derived gasoline and diesel fuels, decarbonization of the transportation sector in the shortest time possible will require significant investment in all zero-emission technologies. Given the breadth of vehicle size, weight and duty cycle, across all weight categories, there is no single ZEV platform that is a 1:1 replacement for internal combustion engines. To maximize success, California needs significant ZEV infrastructure funding for the development of hydrogen fueling infrastructure to support Fuel Cell Electric Vehicles (FCEV) and Electric Vehicle Service Equipment (EVSE) to support battery-electric vehicles. Considering the multitude of funding support for EVSE by utilities and the CPUC, settlement programs such as VW and others it is especially important for the state's single hydrogen-focused funding support, the Clean Transportation Program, to maintain its technology neutrality and fund both technologies similarly to enable accelerated market development for all ZEVs and applications. This is a critical time for California to develop and implement a holistic and enduring action plan that achieves our short- and long-term objectives, without sacrificing one for the other. This is aligned with the Infrastructure Pillar of the GO-Biz California Zero-Emission Vehicle Market Development Strategy and the California Air Resources Board (CARB) published report on Hydrogen Station Network Self-Sufficiency[1], which highlights that California can achieve the world's first self-sustaining ZEV market LD hydrogen FCEVs if public and private investments continue in earnest.

[1] https://ww2.arb.ca.gov/resources/documents/self-sufficiency-report

Specific to the medium- and heavy-duty space, ZEVs have not yet achieved full-scale commercialization in either the battery-electric or fuel-cell electric vehicles, therefore it is sensible to invest similarly and aggressively in both categories to prepare for their impending commercial launch. Given this background we offer the following responses to select questions in the RFI.

Hydrogen Refueling Questions:

- **Is there interest in developing such projects?**
  There is interest in connector stations, but they should not be the focus of this solicitation, nor should this solicitation contain geographic restrictions on station locations.

- **Should a MD/HD fueling component be optional or required?**
  HD funding should be separate from LD funding. The scale of HD stations is vastly different from LD in terms of development site footprint, hydrogen capacity and fill-rate, operational performance, etc. Similarly, there is a separation of LD and HD fueling islands and infrastructure, reinforcing these differences and the need to develop funding mechanisms specific to these different market applications and needs. MD depending on the fleet may access both. For example, the construction fleet (class 2b-4) often utilize light-duty and heavy-duty stations depending on the jobsite and most convenient fueling option.

- **At what minimum daily capacity and number of fueling positions?**
  This largely depends on the whether the station is designed for LD or HD as their needs are drastically different. The program focus should be to build the most effective LD and HD hydrogen refueling network statewide. Specific to the HD-duty cycle, the funding program should be structured to advance the state of HD hydrogen station design which will inform future rounds of HD hydrogen station development funding.

- **Conformance to which MD/HD fueling protocols should be required?**
  J2601 for H70 and J2601-2 for H35 are still applicable, however, this solicitation should not preclude the additional faster fueling protocols currently in the development phase. The U.S. Department of Energy and hydrogen industry funded the establishment of a HD hydrogen fueling protocol working group and testing effort at NREL. While these advancements for the HD hydrogen fueling technologies are in the RD&D phase, for the practical purpose of HD-specific component development, station developers are adapting LD station components for HD applications, which has enabled the initial deployment of HD fuel cell trucks and buses.

- **What amount of grant funds per station is appropriate for a station that has both LD and MD/HD components?**
  LD and HD grant funds should be held in separate pots as they support different needs in drastically different use cases. Station demands are also drastically different and should not be merged for the purposes of minimizing the HRS networks into one. GFO 19-602 levels (re: grant funds per station) have proven sufficient for LD stations. HD stations will be designed at a significantly larger scale, physically and volumetrically, requiring substantially more land area, storage capacity compression capability, and

ultimately, cost. Specific to the existing LD retail hydrogen fueling network, the majority of stations cannot physically accommodate vehicles class 6 and bigger.

- **Should grant funding be limited to equipment costs, or should it be for all CEC budget categories (i.e., labor, subcontracts, indirect costs)?**
  The grant program should incentivize and accelerate the development of the initial network of stations. These development projects will need support from the other categories similar to the initial LD stations, to improve the business case and stimulate private investment for future HD hydrogen fueling station development.

- **Should this concept include support for onsite, direct renewable hydrogen production?**
  The program should be designed such that it encourages innovation, without discrimination, and have a focus on the most effective methods of hydrogen delivery at commercial scale. Ultimately, the program selection criteria should be designed to identify applicants who will expedite the construction of HD hydrogen fueling sites that cost-effectively deliver hydrogen to commercial transportation applications. Station funding should support what is necessary for delivering hydrogen to the vehicle fleet at that station.

- **Which production technologies should be eligible, at what minimum production capacity, and at what funding level?**
  Any LCFS, CARB approved, eligible hydrogen production pathway should be eligible. Additionally, grants for charging stations do not restrict the content of electricity as measured at the fueling interface at the time of fueling that can be used.

Within the greater ZEV marketplace, the provision of choice –BEVs *and* FCEVs[2]– will greatly enhance the speed at which the ZEV transition can occur, as neither is a perfect replacement for combustion fuels, yet in tandem, provide most, if not all of the features of gasoline or diesel. Therefore, comprehensive, holistic support for both ZEV technologies across support mechanisms is encouraged to achieve our common objectives. Furthermore, we anticipate that unknown synergies between and within these emerging energy economies will further shorten the time in which the transition can occur.

CaFCP is prepared to continue to offer our collective input and experience to CEC and would be happy to arrange a meeting with our leaders to offer further assistance. I can be reached at any time by email at dpark@cafcp.org or by phone at (213) 213-1968.

Sincerely,

David Park, Industry Affairs

[2] https://hydrogencouncil.com/wp-content/uploads/2021/10/Transport-Study-Full-Report-Hydrogen-Council-1.pdf