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California Energy Commission
 Docket No. 17-ALT-01
 1516 9th Street, MS-4
 Sacramento, CA 95814

November 17, 2017

**Comments of the CHBC on the Draft Staff Report
Version of the 2018-2019 Investment Plan Update**

Dear Commissioner Scott,

The California Hydrogen Business Council (CHBC) appreciates the opportunity to comment on the California Energy Commission’s Draft Staff Report for the 2018-2019 Investment Plan Update of the Alternative and Renewable Fuel and Vehicle Technology Program.

The CHBC is a California industry trade association with a mission to advance the commercialization of hydrogen in transportation and stationary sources to reduce greenhouse gas, criteria pollutant emissions and dependence on oil. Our more than 100 members include fuel cell and electrolyzer companies, auto manufacturers, industrial gas companies, and natural gas companies with an interest in hydrogen and hydrogen infrastructure in California.ⁱ

First, we would like to thank the CEC staff for their outstanding work on the ARFVTP and the draft staff report. We would also like to extend deep appreciation for the allocation of funding to support an additional five hydrogen fueling stations under the 2017-2018 Investment Plan (Investment Plan), bringing the number of funded retail hydrogen fueling stations in California to 65.

Additionally, it is clear that it remains challenging for the State to ramp up the fueling station deployment to meet the projected demand of hydrogen fueling past 2020, according to the latest ARB AB 8 Report “2017 Annual Evaluation of Fuel Cell Electric Vehicle Deployment and Hydrogen Fuel Station Network Development” (Annual Evaluation).ⁱⁱ Even with 65 funded stations, it is likely that by 2020, the demand will exceed possible supply of hydrogen stations, which the Investment Plan recognized when stating “*the state may experience capacity shortfalls as early as 2020*”ⁱⁱⁱ.

The CHBC fears that the lack of timely station deployment may have a chilling effect on OEM vehicle sales and customer enthusiasm for the technology, decreasing the likelihood of FCEVs being widely adopted and hindering to meet the goal of 1.5M ZEVs on California's roads by 2025. As ARB's Annual Evaluation states:

"The above analysis demonstrates a clear need to accelerate hydrogen fueling station deployment in order to keep pace with projected demand. The current process of grant funding is necessarily time-intensive due to the requirements of encumbering funds on a fiscal year basis (\$20 million per year), developing a solicitation, preparing applications, reviewing applications, and awarding and contracting grants. The long timeline required for this funding structure may not allow the necessary flexibility to accelerate overall station deployment. As a secondary effect, it also has the potential to create uncertainty for station developers and financial partners. The Energy Commission is actively investigating alternative funding mechanisms to enable network-wide acceleration of growth; the ARB has begun parallel preliminary exploration of additional concepts." ^{iv}

Despite these warnings in the Annual Evaluation and in the Investment Report, the level of funding has not been adjusted accordingly. Since the Electrify America Investment Cycle 1 does not provide any private funding for the urgent hydrogen infrastructure buildout, we implore the CEC to strongly consider utilizing alternative funding mechanisms and approaches to allow for more stations to be built at a faster pace, including the allocation of additional funding in the current and future investment plans.

In addition, the CHBC is very supportive of the SB1505 requirement of 33% renewable hydrogen being utilized in California, which allowed hydrogen to be one of the transportation fuels with the highest percentage of renewable energy content, currently ranging from 37% to 44%.^v However, the cost of renewable hydrogen needs to decrease considerably by increasing the volume of renewable hydrogen production. We therefore support the allocation of funding for the development of dedicated high volume renewable hydrogen production facilities. However, the \$2M envisioned for that program is far too low to have a meaningful impact for the projected demand. In order to support an array of projects using different technology approaches, the CHBC deems it important to increase the funding level for in-state renewable hydrogen production 10-fold, to \$20M. This would enable considerable renewable hydrogen production in a competitive environment at mass scale, significantly reducing cost for the fuel. If it is the goal is to reduce the ownership cost of renewable hydrogen stations to a level that incentivizes private industry to build stations with limited or no funding, then only affordable renewable hydrogen will enable that. Therefore, substantive and sustained investment in renewable hydrogen is critical.

We also recommend that the Investment Plan expand the hydrogen technology options eligible for funding. Hydrogen and fuel cell technology are highly scalable, and demonstrations for medium and heavy duty transportation projects are underway across California. Fuel cell electric buses, heavy duty trucks, off-road equipment, goods movement, vessels and ferries, as well as rail, offer significant opportunity to reduce GHG, NOx, SOx and other pollutants. In the freight sector, several recent announcements have focused on medium and heavy duty vehicles from US Hybrid^{vi}, Toyota^{vii}, Kenworth^{viii}, GM^{ix}, Loop Energy^x, Nikola Motor Company^{xi}, FedEx^{xii}, and UPS^{xiii}.^{xiv} Meanwhile, hydrogen fuel cell rail is becoming a cost-effective alternative to electric rail with catenary infrastructure, as demonstrated in Germany^{xv} and China^{xvi}. Railyards and ports are ideal places to implement an array of hydrogen fuel cell technology options, as the fuel supply requires a small footprint, and

refueling is fast to allow for highly time sensitive and efficient operations. With all these examples, we recommend the Investment Plan recognize these technology options as viable program funding options.

Lastly, throughout the document, there is inconsistency in the terminology around fuel cell electric vehicles (FCEVs), partly referred to as hydrogen fuel cell vehicles (sans electric). The terminology should be consistent to refer to “fuel cell electric vehicles” or “hydrogen fuel cell electric vehicles.”

We appreciate the opportunity to provide comments and are available to provide clarifying answers, if needed.

Emanuel Wagner
Assistant Director
California Hydrogen Business Council

ⁱ The views expressed in these comments are those of the CHBC, and do not necessarily reflect the views of all of the individual CHBC member companies. Members of the CHBC include Advanced Emission Control Solutions, Air Liquide Advanced Technologies U.S. LLC., Airthium, Alameda-Contra Costa Transit District (AC Transit), American Honda Motor Company, Anaerobe Systems, Arriba Energy, Ballard Power Systems, Inc., Bay Area Air Quality Management District, Beijing SinoHytec, Black & Veatch, BMW of North America LLC, Boutin Jones, Cambridge LCF Group, Center for Transportation and the Environment (CTE), CNG Cylinders International, Community Environmental Services, CP Industries, Dash2energy, Eco Energy International, LLC, Eldorado National – California, Energy Independence Now (EIN), EPC - Engineering, Procurement & Construction, Ergostech Renewal Energy Solution, EWII Fuel Cells LLC, First Element Fuel Inc, FuelCell Energy, Inc., GenCell, General Motors, Geoffrey Budd G&SB Consulting Ltd, Giner ELX, Gladstein, Neandross & Associates, Greenlight Innovation, GTA, H2B2, H2Safe, LLC, H2SG Energy Pte Ltd, H2Tech Systems, Hitachi Zosen Inova ETOGAS GmbH, HODPros, Horizon Fuel Cells Americas, Inc., Hydrogenics, Hydrogenious Technologies, Hydrogen Law, HydrogenXT, HyET - Hydrogen Efficiency Technologies, Hyundai Motor Company, ITM Power Inc, Ivys Inc., Johnson Matthey Fuel Cells, Kontak, LLC, KORE Infrastructure, LLC, Life Cycle Associates, Linde North America Inc, Longitude 122 West, Inc., Loop Energy, Luxfer/GTM Technologies, LLC, McPhy Energy, Montreux Energy, MPL Consulting, Inc., National Renewable Energy Laboratory (NREL), Natural Gas Fueling Solutions – NGFS, Natural Hydrogen Energy Ltd., Nel Hydrogen, New Flyer of America Inc, Next Hydrogen, Noyes Law Corporation, Nuvera Fuel Cells, Pacific Gas and Electric Company - PG&E, PDC Machines, Planet Hydrogen Inc, Plug Power, Port of Long Beach, PowerHouse Energy, Powertech Labs, Inc., Primidea Building Solutions, Proton OnSite, RG Associates, Rio Hondo College, Rix Industries, Sacramento Municipal Utility District (SMUD), SAFCell Inc, Schatz Energy Research Center (SERC), Sheldon Research and Consulting, Solar Wind Storage LLC, South Coast Air Quality Management District, Southern California Gas Company, Sumitomo Corporation of Americas, Sunline Transit Agency, T2M Global, Tatsuno North America Inc., The Leighty Foundation, TLM Petro Labor Force, Toyota Motor Sales, United Hydrogen Group Inc, US Hybrid, Verde LLC, Volute, Inc., WireTough Cylinders, LLC, Zero Carbon Energy Solutions.

ⁱⁱ https://www.arb.ca.gov/msprog/zevprog/ab8/ab8_report_2017.pdf

ⁱⁱⁱ [http://docketpublic.energy.ca.gov/PublicDocuments/17-ALT-](http://docketpublic.energy.ca.gov/PublicDocuments/17-ALT-01/TN221664_20171102T105305_20182019_Investment_Plan_Update_for_the_Alternative_and_Renewab.pdf)

[01/TN221664_20171102T105305_20182019_Investment_Plan_Update_for_the_Alternative_and_Renewab.pdf](http://docketpublic.energy.ca.gov/PublicDocuments/17-ALT-01/TN221664_20171102T105305_20182019_Investment_Plan_Update_for_the_Alternative_and_Renewab.pdf), p. 54

^{iv} https://www.arb.ca.gov/msprog/zevprog/ab8/ab8_report_2017.pdf, p. 67

^v According to ARB AB 8 Report and conversation with ARB Staff

^{vi} <https://www.trucks.com/2017/05/04/us-hybrid-hydrogen-fuel-cell-truck>

^{vii} <https://www.trucks.com/2017/10/12/toyota-hydrogen-fuel-cell-electric-truck-hits-road>

^{viii} <https://www.trucks.com/2017/05/02/kenworth-class-8-hydrogen-fuel-cell-truck>

^{ix} <http://media.gm.com/media/us/en/gm/news.detail.html/content/Pages/news/us/en/2017/oct/1006-fuel-cell-platform.html>

^x <http://www.marketwired.com/press-release/loop-energy-fuel-cell-range-extended-yard-truck-in-operation-2228935.htm>

^{xi} <https://arstechnica.com/cars/2017/09/nikola-motor-company-and-bosch-team-up-on-long-haul-fuel-cell-truck>

^{xii} <https://www.gasworld.com/plug-power-fuel-cell-engines-power-fedex-/2012236.article>

^{xiii} <https://www.trucks.com/2017/05/02/ups-fuel-cell-electric-delivery-truck>

^{xiv} <https://www.forbes.com/sites/heatherclancy/2014/01/30/run-your-engine-on-water-sprint-fedex-test-hydrogen-fuel-cells/#736b4ef874ec>

^{xv} <http://www.alstom.com/press-centre/2017/11/14-coradia-ilint-in-salzgitter-for-lnvg/>

^{xvi} http://www.chinadaily.com.cn/china/2017-10/27/content_33769630.htm