BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Continue the Development of Rates and Infrastructure for Vehicle Electrification.	Rulemaking 18-12-006 (Filed December 13, 2018)

OPENING COMMENTS OF THE CALIFORNIA HYDROGEN BUSINESS COUNCIL TO R18-12-006

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I. Introduction

The California Hydrogen Business Council (CHBC) appreciates the opportunity to provide opening comments on the *Rulemaking to Continue the Development of Rates and Infrastructure for Vehicle Electrification* issued on December 19, 2018. The CHBC is comprised of over 100 companies and agencies involved in the business of hydrogen. Our mission is to advance the commercialization of hydrogen in the energy sector, including transportation, goods movement, and stationary power systems to reduce emissions and dependence on oil.[1] We

[1] 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., Airthium, Alameda-Contra Costa Transit District (AC Transit), American Honda Motor Company, Anaerobe Systems, Arriba Energy, Ballard Power Systems, Bay Area Air Quality Management District, Beijing SinoHytec, Black & Veatch, BMW of North America, California Performance Engineering, Cambridge LCF Group, Center for Transportation and the Environment (CTE), CNG Cylinders International, Community Environmental Services, CP Industries, DasH2energy, Eco Energy International, ElDorado National – California, Energy Independence Now (EIN), EPC - Engineering, Procurement & Construction, Ergostech Renewal Energy Solution, EWII Fuel Cells, First Element Fuel, FuelCell Energy, GenCell, General Motors, Geoffrey Budd G&SB Consulting Ltd, Giner ELX, Gladstein, Neandross & Associates, Greenlight Innovation, GTA, H2B2, H2Safe, H2SG Energy Pte, H2Tech Systems, Hitachi Zosen Inova ETOGAS GmbH, HODPros, Hydrogenics, Hydrogenious Technologies, Hydrogen Law, HydrogenXT, HyET - Hydrogen Efficiency Technologies, Hyundai Motor Company, ITM Power, Ivys, Johnson Matthey Fuel Cells, Kontak, KORE Infrastructure, Life Cycle Associates, Linde North America, Longitude 122 West, Loop Energy, Luxfer/GTM Technologies, McPhy Energy, Millennium Reign Energy, Montreux Energy, National Renewable Energy Laboratory (NREL), Natural Gas Fueling Solutions – NGFS, Natural Hydrogen Energy, Nel Hydrogen, New Flyer of America, Next Hydrogen, Noyes Law Corporation, Nuvera Fuel Cells, Pacific Gas and Electric Company - PG&E, PDC Machines, Planet Hydrogen, Plug Power, Port of Long Beach, PowerHouse Energy, Powertech Labs, Primidea Building Solutions, Proton OnSite, RG Associates, Rio Hondo College, Rix Industries, Sacramento Municipal Utility District (SMUD), SAFCell, Schatz Energy Research Center (SERC), Sheldon Research and Consulting, Solar Wind Storage, South Coast Air Quality Management District, Southern California Gas Company, Sumitomo Corporation of Americas, Sunline Transit Agency, T2M Global, Tatsuno North America, The Leighty Foundation, TLM Petro Labor Force, Toyota Motor Sales, True Zero, United Hydrogen Group, US Hybrid, Verde, Vinjamuri Innovations, Volute, WireTough Cylinders, Zero Carbon Energy Solutions.

agree with the California Public Utilities Commission's (Commission's) assessment that there is a need to review outstanding issues regarding transportation electrification in a quickly evolving landscape, to establish rate designs that encourage zero emissions vehicle adoption, and to better understand investment requirements going forward. Our comments are focused on how fuel cell electric vehicles (FCEVs) and hydrogen fuel technologies fit in to the Commission's efforts, how the Commission can best support the California's zero emissions vehicle (ZEV) and climate goals by ensuring that this proceeding is inclusive of FCEVs along with plug-in electric vehicle (PEV) technology, and the critical importance of leveraging renewable electricity generation to produce renewable hydrogen, which is needed to realize the most promising zero carbon pathway to adopting ZEVs, including heavy duty vehicles, at mass scale.

II. Comments

a. We agree with a broad definition of "Zero Emission Vehicle" that includes FCEV technology.

The CHBC appreciates the Commission reinforcing a broad definition of zero-emission vehicle (ZEV) that includes fuel cell electric vehicles (FCEV), noting: "Since 2009, legislation and executive orders have established a priority on battery electric and hydrogen fuel cell electric vehicles that are not sources of emissions when in operation, also known as ZEVs."[2] We would add that there are also vehicles commercially available and under development that use a combination plug-in fuel cell electric drivetrain, such as buses (New Flyer), light-duty vehicles (Mercedes-Benz GLC F-Cell), and heavy duty trucks.

b. To remain consistent with state policy aimed at advancing ZEVs, as well as recent discussions at the Commission on rate design for ZEVs (hydrogen fuel cell vehicles and battery electric vehicles), we urge the Commission to focus its efforts in this rate setting proceeding on advance both hydrogen fueled and plug in ZEV technologies , rather than limiting the effort to "transportation

[2] See p. 3 of R. 18-12-006 *Order Instituting Rulemaking to Continue the Development of Rates and Infrastructure for Vehicle Electrification.*

electrification" (TE) as narrowly defined by the Commission back in 2016, at which time hydrogen FCEV technology was explicitly excluded.

Supporting broad advancement of ZEVs that includes both battery electric *and* fuel cell electric vehicle technology, as well as combination fuel cell and battery options, is critical to reaching California's clean air and climate goals. The need to not focus exclusively on only one technology is clearly recognized in Executive Order B-48-18, which calls for California putting 5 million ZEVs on state roads by 2030 and for infrastructure development to support deployment of both types of technologies. The fuel cell electric vehicle industry has committed to bringing 1 million FCEVs to market to help that goal, with the right infrastructure made available.

This is also in regional planning, such as the South Coast Air Quality Management District 2016 Air Quality Management Plan[3], which views hydrogen fuel cell vehicle technology as among the solutions to solving the region's pernicious pollution problems.

We encourage the current OIR to reflect this more technology neutral approach to supporting zero emissions transportation. In September 2016, the Commission ruled that

> *'TE "means the use of electricity from external sources of electrical power..., and the related programs and charging and propulsion infrastructure investments to enable and encourage this use of electricity." (Pub. Util. Code § 237.5.) Clearly, vehicles that are unable to use grid electricity and rely exclusively on…hydrogen do not fit the TE definition.'*[4]

The current OIR acknowledges that much has been learned since then. Hydrogen can be made by using electricity to power electrolysis, a mature type of technology that splits water and hydrogen, which is the most flexible and promising pathway to producing renewable and low carbon hydrogen at scale. Hydrogen fuel distribution and dispensing processes for transportation also use the electricity grid. Notably on June 8, 2018, the Commissioner for that

[3] http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf?sfvrsn=15

[4] See p. 14 of R. 13-11-007 Assigned Commissioner's Ruling filed September 14, 2016 http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M167/K099/167099725.PDF

same proceeding that created the September 2016 ruling held a workshop on rate setting for electric transportation that explicitly included panels dedicated to fuel cell electric vehicles and hydrogen fueling from production to distribution and dispensing, in addition to panels focused on plug-in technology and infrastructure. This reflected growing understanding that FCEVs make "use of electricity from external sources of electric power," as described above, and their importance in the ZEV landscape, including the unique potential of hydrogen fuel cells to unlock zero emissions solutions in the heavy-duty truck sector. We urge the Commission in the current OIR to build on the effort in the June 8 rate design workshop by addressing rate setting for not only PEV-related requirements, but also for FCEV-related requirements.

c. ***We urge adding rate design for electrolytic fuel production, among other electricity needs related to hydrogen fueling, to the Issues subsection of the Scoping Memo section, as it is aligned with*** **the objective to resolve** ***"the most prominent outstanding issues that need to be addressed to ensure the investments and programs the Commission is authorizing to accelerate transportation electrification are aligned with other state efforts."***[5]

In order to realize the full promise of zero emission vehicles and policy goals of the state with respect, electricity rate design that supports renewable hydrogen production and cost-effective distribution and dispensing is urgent. SB 1505 mandates that a third of hydrogen for transportation come from renewable sources. The hydrogen industry has notably surpassed that goal, and large industry groups, including CHBC, have endorsed the goal of achieving 100% renewable hydrogen for transportation in California by 2030.[6] Energy Commission and Air Resources Board staff reports, however, that a shortfall of renewable hydrogen is imminent.[7] Among the greatest regulatory barriers to producing renewable hydrogen is the availability of

[5] OIR p. 2
[6] Hydrogen Council: http://hydrogencouncil.com/our-2030-goal/; CHBC: https://www.californiahydrogen.org/2018/12/20/chbc-endorses-full-decarbonization-goal-of-hydrogen-in-transportation-by-2030/
[7] https://www.energy.ca.gov/2018publications/CEC-600-2018-008/CEC-600-2018-008.pdf and https://ww2.arb.ca.gov/sites/default/files/2018-12/ab8_report_2018_print.pdf

low-cost electricity feedstock for electrolysis. This has been the conclusion of numerous analyses around the world, including UC Irvine senior scientist, and CHBC Chair Jeffrey Reed's *Renewable Hydrogen Roadmap Progress Report to Stakeholders* presented to the California Energy Commission on November 13, 2018.[8]

The Commission supporting electrolytic hydrogen production is also aligned with SB 1369's mandate, which specifically requires the Commission "to consider green electrolytic hydrogen an eligible form of energy storage, and to consider other potential uses of green electrolytic hydrogen." Providing zero GHG fuel to zero emissions FCEVs is one of the most promising other uses of electrolytic hydrogen.

In addition to needing to examine rates for electrolysis, it is important to also design rates that support economical distribution and dispensing of hydrogen fuel for fuel cell vehicles. This would include electricity used to compress hydrogen, station cooling systems and other hydrogen fueling station electricity consumers.

d. We also request that the Commission begin to include FCEVs and hydrogen fueling in the discussion of vehicle-to-grid integration.

To date, California's focus on electric vehicle-to-grid (VGI) integration has focused on battery electric vehicles, which makes some sense, due to the earlier commercial deployment of these technologies compared to hydrogen fuel cell electric options. However, as the FCEV market is maturing, the Commission ought to bring this technology into its development of VGI. This would bring the Commission's VGI program in line with the Department of Energy's National Renewable Energy Laboratory (NREL), which includes both PEV and FCEV technology in its research and development of VGI.[9] Vehicle-to-grid pilot projects using FCEVs have shown promise, such as one conducted in the Netherlands, which showed that utilizing an FCEV

[8] Filed on November 15, 2018; see p. 8 - https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=17-HYD-01

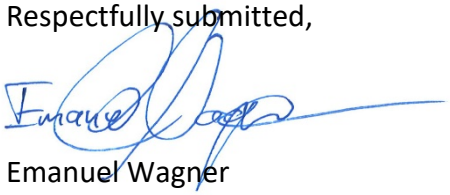
[9] https://www.nrel.gov/esif/vehicle-grid-integration.html

working in VGI "mode can reduce the annual imported electricity from the grid by approximately 71% over one year, and (aid) the buildings in the microgrid to achieve a net zero-energy building target."[10]

Conclusion

The CHBC thanks the Commission for their consideration and looks forward to working together to facilitate adoption of ZEVs in California.

Respectfully submitted, Dated: February 4, 2019



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[10] *Integrating a hydrogen fuel cell electric vehicle with vehicle-to-grid technology, photovoltaic power and a residential building*, Carla B.Robledo, Vincent Oldenbroek, Francesca Abbruzzese, Ad J.M.van Wijk; February 2018 https://www.sciencedirect.com/science/article/pii/S0306261918301636