



Hydrogen Means Business in California!

May 15, 2018

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Commissioner Janea Scott
California Energy Commission
1516 Ninth Street, MS-32
Sacramento, CA 95814

RE: Grant Solicitation GFO-17-602

Dear Commissioner Scott:

The California Hydrogen Business Council (CHBC) would like to express our appreciation for the award of a renewable hydrogen project in California under Grant Solicitation GFO-17-602 “Renewable Hydrogen Transportation Fuel Production Facilities and Systems.” We also write to share our concern that as important a step as this is, it will not go far enough to meet state demand.

The CHBC is a California industry trade association with a mission 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

The award addresses a growing demand for additional renewable hydrogen production in the state and a diversification of suppliers. We commend the CEC for identifying this need and issuing the GFO. However, we also believe the one award for 5,000 kg per day of hydrogen production will fall significantly short of actual demand by the time the project is operational.

To begin with, the \$92 million to be allocated to hydrogen infrastructure expansion under the ARFVTP for FY2019/2020 will very likely push the station count to over 100 stations, with newer stations dispensing much more than the current average of 200-250 kg/day. Due to the state requirement that 33% of that hydrogen be renewable, this will add considerable demand for renewable hydrogen.

In addition, we foresee a growing demand for medium and heavy duty fuel cell vehicles that are needed to achieve California’s goals for zero emission transportation. Medium and heavy duty vehicles produce 23% of California’s GHG emissions, and many cannot be electrified by pure battery-based strategies, as their range, recharging times, and weight limitations exceed what batteries can reasonably provide. For the foreseeable future, only fuel cell electric vehicles will be able to provide zero emission solutions for these vehicles and fleets.

Medium and heavy duty fuel cell electric vehicles are rapidly gaining market penetration. Their high power needs and high utilization rates create demands for hydrogen that far exceed those of passenger cars. Whereas a passenger car may require .5 to .7 kg of hydrogen a day, a medium duty delivery van requires over 5kg in a single day, a transit bus requires 30kg a day, and Class 8 trucks requires 50kg or more a day. As an example, a deployment of only 100 vehicles of each of these medium and heavy duty vehicles were put on the road in California **would add demand of 8,500 kg of hydrogen per day**. By comparison, the same hydrogen demand for light duty cars requires over 14,200 vehicles.

Fuel cell systems are ready to meet the cost requirements for transit agencies and fleet operators – what is lacking are substantial sources for renewable hydrogen at cost-effective prices. Because renewable hydrogen is still in the early stage of market development, additional state support is needed to ensure this affordable, renewable fuel is available.

Additional fuel production will support stronger competition among fuel providers and allow fueling station operators to negotiate better prices. This, in turn, will be a major contributor to reducing hydrogen fueling costs for both light and heavy duty fuel cell vehicle customers.

Achieving high volume renewable hydrogen production can be done through electrolysis from dedicated or excess renewable electricity. Additionally, renewable hydrogen can be produced by reforming biogas of which there are numerous sources manufacturers being developed to support hydrogen production. Both electrolyzer and biogas reformer manufacturers can achieve commercially viable cost targets only through large scale deployments to obtain economies of scale.

With this background, the CHBC requests that the CEC allocate additional funding to allow all proposals that passed CEC's comprehensive to review receive an award. This would increase competition, ease the challenge of renewable hydrogen availability in California, support in-state production and build a sustainable hydrogen supply for the near future for all hydrogen transportation options.

Such funding from supplemental sources would satisfy the need for deployment of a modest number of medium and heavy duty vehicles in 2020-2022, provide passenger car drivers with affordable, renewable hydrogen, and allow hydrogen production technology to achieve cost savings for commercial production.

For clarification, the CHBC does not endorse any of the projects that applied under the GFO. We merely seek to make the CEC aware of the massive shortfall of renewable hydrogen production in the very near future and the opportunity to address it under this GFO.

Sincerely,



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., 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.