

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking to Develop an
Electricity Integrated Resource Planning
Framework and to Coordinate and Refine Long-
Term Procurement Planning Requirements.

Rulemaking 16-02-007
(Filed February 21, 2016)

**REPLY COMMENTS OF CALIFORNIA HYDROGEN BUSINESS COUNCIL ON
ASSIGNED COMMISSIONER’S RULING ON INPUTS AND ASSUMPTIONS
FOR DEVELOPMENT OF THE 2019-2020 REFERENCE SYSTEM PLAN**

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Pursuant to the Assigned Commissioner’s Ruling dated Nov. 29, 2018, California Hydrogen Business Council (CHBC) ¹ respectfully submits these reply comments on the proposed ruling.

¹ The California Hydrogen Business Council (CHBC) is a California industry trade association, comprised of over 100 companies and agencies involved in the business of hydrogen, 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. 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 Air Liquide; Advanced Technologies U.S.; 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 (BAAQMD); Beijing SinoHytec; Black & Veatch; BMW of North America; California Air Resources Board (CARB); California Fuel Cell Partnership (CaFCP); CALSTART; Cambridge LCF Group; Center for Transportation and the Environment (CTE); Chiyoda Corporation; Coalition for Clean Air; Community Environmental Services; CP Industries; Dash2energy; Eco Energy International; EcoNavitas; ElDorado National – California; Energy Independence Now (EIN); EPC - Engineering, Procurement & Construction; Ergostech Renewal Energy Solution; EWII Fuel Cells LLC; FIBA Technologies; First Element Fuel; FuelCell Energy; GenCell; General Motors, Infrastructure Planning; Geoffrey Budd G&SB Consulting; Giner ELX; Gladstein, Neandross & Associates; Greenlight Innovation; GTA; GTM Technologies; H2B2 USA; H2Safe; H2SG Energy Pte; Hexagon Lincoln; Hitachi Zosen Inova ETOGAS; HODPros; Hydrogen Law; Hydrogenics; Hydrogenious Technologies; HydrogenXT; HyET - Hydrogen Efficiency Technologies; Hyundai Motor Company; ITM Power; Ivys; Johnson Matthey Fuel Cells; KORE Infrastructure; Kraft Powercon; Life Cycle Associates; Linde North America; Longitude 122 West; Loop Energy; Millennium Reign Energy; Mitsubishi Hitachi Power Systems Americas; Montreux Energy; Motive Energy; Natural Gas Fueling Solutions (NGFS); Natural Hydrogen Energy; Nel Hydrogen; Neo-H2; Neuman & Esser USA; New Flyer of America; Next Hydrogen; Noyes Law Corporation; Nuvera Fuel Cells; Pacific Gas and Electric Company (PG&E); Pacific Northwest National Laboratory (PNNL); PDC Machines; Planet Hydrogen; Plug Power; Politecnico di Torino; Port of Long Beach; 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; Strategic Analysis; Sumitomo Corporation of Americas; Sumitomo Electric; Sunline Transit Agency; T2M Global; Tatsuno North America Inc.; Terrella Energy Systems; The Leighty Foundation; TLM Petro Labor Force; Toyota Motor Sales; Trillium - A Love's Company; University of California, Irvine; US Hybrid; Valley Environmental Associates; Vaughan Pratt; Verde; Vinjamuri Innovations; Winkelmann Flowform Technology; WireTough Cylinders; Yanli Design; Zero Carbon Energy Solutions.

CHBC agrees with comments submitted by Form Energy and Southern California Gas Company (“SoCalGas”) that modeling needs to expand beyond the 24-hour dispatch window to include examination of circumstances and resource requirements across multiple days and seasons.² As California transitions to increased amounts of variable renewable generation and zero carbon resources, pursuant to SB 100, and to remain on track to meet its ambitious climate targets, we strongly believe the state must evaluate and integrate longer-duration and seasonal energy storage, including hydrogen technologies that are capable of supplying uniquely massive amounts of long term, modular zero carbon storage, along with other benefits such as fueling heavy duty long haul trucks, shipping, aviation, and cooking.

We also agree with SoCalGas that the Commission must include hydrogen energy storage in its modeling to comply with Senate Bill (“SB”) 1369.³ Without expanding modeling beyond the 24-hour optimization window and factoring in the multi-day and seasonal storage benefits of hydrogen energy storage, this will not be possible.

Lastly, we believe projecting technology cost and performance into the future is critical to optimal resource planning and modeling efforts. This is particularly true for technologies undergoing rapid technology improvement, such as electrolyzers. To this end, we reference the attached report projecting the cost and performance of electrolyzers and other hydrogen production technologies prepared by the UC Irvine Advanced Power and Energy Program as part of California Energy Commission agreement 600-17-008 (Roadmap for the Deployment and Buildout of Renewable Hydrogen Generation Plants).⁴

We hope to provide additional data inputs and assumptions to the Commission either via future IRP rulings or through the IRP Modeling Advisory Group and also work with E3 as needed on a regular basis to update the inputs and assumptions for future IRP cycles. In the meantime, we appreciate the Commission’s consideration of these comments and looks forward to continuing to work with the Commission and other stakeholders in this proceeding.

Respectfully submitted,

By:



Emanuel Wagner
Deputy Director

California Hydrogen Business Council

² Form Energy’s comments at p. 6 and SoCalGas’ comments at p. 14.

³ SoCalGas’ comments at pp. 3-7 and CHBC’s comments at p. 15.

⁴ <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=17-HYD-01>