BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking Regarding Policies, Procedures and Rules for the Self-Generation Incentive Program and Related Issues.	R. 20-05-012 (Filed May 28, 2020)

REPLY COMMENTS OF THE CALIFORNIA HYDROGEN BUSINESS COUNCIL ON ORDER INSTITUTING RULEMAKING REGARDING POLICIES, PROCEDURES AND RULES FOR THE SELF-GENERATION INCENTIVE PROGRAM AND RELATED ISSUES

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I. Introduction

The California Hydrogen Business Council (CHBC)[1] appreciates the opportunity to provide the following reply comments on the Order Instituting Rulemaking Regarding Policies, Procedures and Rules for the Self-Generation Incentive Program and Related Issues (SGIP OIR), filed on May 28, 2020. Our comments can be summarized as follows:

a. **We call attention to and agree with the interest expressed by a number of parties in green hydrogen being included in the SGIP program as a clean and resilient generation resource capable of providing reliable power.**

b. **To ensure green hydrogen is actually adopted by participants in the SGIP program and that SB 1369's mandate to accelerate use of green electrolytic hydrogen is fully implemented, the Commission ought to concurrently establish additional incentives and programs to encourage demand and routes to market.**

[1] 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. 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. CHBC Members are listed here: https://www.californiahydrogen.org/aboutus/chbc-members/

II. Comments

a. We call attention to and agree with the interest expressed by a number of parties in green hydrogen being included in the SGIP program as a clean and resilient generation resource capable of providing reliable power.

Several parties commenting on the SGIP OIR welcomed including green hydrogen in the SGIP because of its flexibility, long duration storage capability, and environmental benefits. The CCAs, for example, pointed to a "number of attributes that make it (green hydrogen) particularly appealing," like when combusted, it "emits no GHGs and when returned to electricity via a fuel cell emits only water."[2] They added that hydrogen solutions "are mature technologies" and that "green hydrogen can be generated locally through electrolysis using renewable power or through biogas from local organic waste, and can be stored locally for resiliency purposes. Many natural gas generators can be modified to run off of hydrogen."[3] The CHBC strongly agrees with these comments and that supporting hydrogen made from all renewable feedstocks as a storage and generation resource in the SGIP program is in line with SB 700.[4]

NFCRC[5] and So Cal Gas[6] also supported inclusion of green electrolytic hydrogen, specifically in their opening comments. PG&E echoed this support, additionally pointing out that green electrolytic hydrogen is appropriate to consider in the context of "customer resiliency during power outages" because "for many customers storage or even storage paired with solar is not adequate to power their entire building's load. Renewable generation could not only drive market participants to address this challenge, but also accelerate the deployment of larger scale renewable generation technologies."[7] CHBC agrees with these comments, but joins NFCRC[8] in cautioning that additional programmatic support will likely be needed to enable green electrolytic hydrogen to be economical and to fully implement SB 1369. These concerns are elaborated on below.

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[2] Marin Clean Energy, East Bay Community Energy, and Peninsula Clean Energy Comments to SGIP OIR, p. 6
[3] ibid.
[4] SB 700 specifies that only generation technologies using renewable fuels are eligible for incentives under the program on and after January 1, 2020
[5] NFCRC Comments to SGIP OIR, p. 5
[6] So Cal Gas Comments to SGIP OIR, p. 5
[7] PG&E Comments to SGIP OIR, p. 9
[8] NFCRC Comments to SGIP OIR, p. 5

b. To ensure green hydrogen is actually adopted by participants in the SGIP program and that SB 1369's mandate to accelerate use of green electrolytic hydrogen is fully implemented, the Commission ought to concurrently establish additional incentives and programs to encourage demand and routes to market.

The CHBC agrees with NFCRC's comment that "the SGIP represents a very specific deployment program with goals of emissions reduction and grid support. A fuel cell generation system paired with an electrolyzer producing renewable hydrogen should absolutely be considered for eligibility within this program; it should not, however, be the only program to support for further research, development, deployment and market facilitation. Large-scale electrolysis from wind and solar resources is needed to enable real economies of scale, larger than the scale of the SGIP that is limited both by system size, as well as available funding for generation incentives."[9] While the SGIP program is a welcome opportunity for green electrolytic hydrogen to provide clean energy to Californians and to help ensure that the program succeeds in lowering GHG, the program alone, with a sunset date at the end of 2024, risks not having the long term horizon and market size needed to drive demand and investment at the scale required to make green hydrogen cost competitive. Numerous analysts, like Bloomberg[10] and McKinsey with the Hydrogen Council[11], forecast that the economic prospects for green electrolytic hydrogen are very promising, with cost reductions of 50-80% realistic, but to achieve this supportive policies are needed to drive scale over time.

To achieve this and to ensure inclusion of green electrolytic hydrogen and hydrogen made from bio-energy feedstocks, as called for by the aforementioned parties, is a meaningful component of the SGIP. We also urge the Commission to concurrently create further incentives and programs, including:

1) ***Establishing a renewable gas procurement program*** that includes green electrolytic hydrogen, hydrogen produced using organic waste pathways, and synthetic methane derived from renewably produced hydrogen, among other renewable gases, in alignment with the

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[9] Ibid.
[10] https://data.bloomberglp.com/professional/sites/24/BNEF-Hydrogen-Economy-Outlook-Key-Messages-30-Mar-2020.pdf
[11] https://hydrogencouncil.com/wp-content/uploads/2020/01/Path-to-Hydrogen-Competitiveness_Full-Study-1.pdf

renewable gas provision in SB 1383[12] and per legislative direction in SB 1352 introduced earlier this year.[13] We encourage the Commission to expeditiously pursue this through the currently open biomethane procurement rulemaking in R.13-02-008;

2) ***Making green electrolytic hydrogen an eligible resources for long duration storage and renewable or zero carbon electricity generation using fuel cells or thermal power plants***, in the Continued IRP proceeding (R.20-05-003) and implementation of SB 100 per the direction in SB 1122 introduced in the legislature earlier this year.[14]
3) ***Opening a rulemaking for a utility scale green electrolytic hydrogen gigawatt scale storage target and procurement program***, similar to what helped open the market for battery storage technologies. Germany is targeting 5 GW of electrolysis by 2030 and 10 GW by 2035 or 2040, with billions of euros of public funding to back this target.[15] California should join Germany in leading this effort and create the 21st century job market that comes with it;
4) ***Supporting extension of interconnection incentives*** for renewable gas production, qualifying renewable hydrogen technologies as eligible to participate, and ensuring funding is adequate to accommodate electrolyzers.
5) ***Enabling onsite generation, microgrid and disaster preparedness and response programs to immediately adopt hydrogen technologies, while allowing for a reasonable transition to 100% renewable or zero carbon hydrogen content.*** The rise of fossil fuel generators in the wake of wildfires and PSPS has negative air quality impacts, which is all the more devastating when communities have elevated pollution from fires or are grappling with COVID-19. Hydrogen fuel cells for backup generation are an obvious choice over fossil fuel combustion generators because along with supplying long duration power like traditional generators do, they emit zero criteria air pollutants, as well as being

[12] Sec. 5, 39730.8 (b) https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB1383
[13] http://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200SB1352
[14] http://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200SB1122
[15] https://www.cleanenergywire.org/factsheets/germanys-national-hydrogen-strategy

more reliable[16] and emitting less greenhouse gas, even when using conventional hydrogen.[17] The CHBC supports a transition to a 100% renewable or zero carbon hydrogen content requirement. That said, the renewable hydrogen market, similar to the renewable electricity market, needs transition time to achieve the economies of scale and get to 100%. In the meantime, the Commission should make it easier for consumers to affordably choose hydrogen fuel cells for multi-day onsite generation over the polluting status quo fossil fuel generators currently dominating the market.

Electrolyzers also have a role to play in resilience applications, such as microgrid systems. UC Irvine's research, for example, shows how deploying electrolysis to store renewable energy in the gas grid in the form of hydrogen can allow for expansion of renewables on a microgrid. The campus has a microgrid[18] made up of combined-cycle turbines, chillers, thermal energy storage, EV chargers, hydrogen fueling stations, 4 kW of solar PV and 113 kW of concentrated solar PV**.** The campus also has a 60 kW electrolyzer that produces hydrogen, which is used to fuel vehicles and also injected into the gas grid and blended with the natural gas that fuels the combined cycle generation plant. Simulations conducted by UC Irvine showed that by using excess solar power on sunny days to power their electrolyzer to produce renewable hydrogen, the microgrid could support an additional 30 MW of solar panels. This represents an increase in solar deployed on campus from 3.5 percent of the total to 35 percent.[19]

[16] Hydrogen fuel cells were found to be rated for reliability at 99.6% compared to diesel generator reliability of up to 88.4% in the Survey of Reliability and Availability Information for Power Distribution, Power Generation and HVAC Components for Commercial, Industrial and Utility Installations, Hale/Arno, IEEE Industrial and Commercial Power Systems Technical Conference, 2005

[17] p. 10, *Fuel Cycle Comparison of Distributed Power Generation Technologies*, A. Elgowainy and M.Q. Wang, Center for Transportation Research, Argonne National Laboratory; November 2008 https://www.energy.gov/sites/prod/files/2014/03/f9/fuel_cycle_comparison_report.pdf

[18] http://www.apep.uci.edu/Research/PDF/Microgrid/UCI_Microgrid_APEP_100518_1012am.pdf

[19] https://www.prnewswire.com/news-releases/socalgas-and-university-of-california-irvine-demonstrate-power-to-gas-technology-can-dramatically-increase-the-use-of-renewable-energy-300432101.html

b. Conclusion

The CHBC thanks the Commission for their consideration and looks forward to working together to facilitate advancement of green electrolytic hydrogen and other hydrogen solutions across a broad range of applications, both in this proceeding and others to ensure full implementation of SB 1369.

Respectfully submitted, **Dated: July 7, 2020**

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