

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking Regarding
Microgrids Pursuant to Senate Bill 1339

Rulemaking 19-09-009
(Filed September 12, 2019)

**COMMENTS BY CALIFORNIA HYDROGEN BUSINESS COUNCIL ON ORDER
INSTITUTING RULEMAKING REGARDING MICROGRIDS PURSUANT TO
SENATE BILL 1339**

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I. INTRODUCTION

The California Hydrogen Business Council¹ (CHBC) welcomes the opportunity to provide comments on the Order Instituting Rulemaking (OIR) Regarding Microgrids Pursuant to Senate Bill 1339. Hydrogen fuel cells and electrolyzers have important roles to play in microgrid systems in California, as essential providers of long duration, flexible storage, generation, and grid support services. Fuel cells emit zero criteria pollutants, and electrolyzers can produce hydrogen from renewable electricity that make it greenhouse-gas free over its lifecycle. Many microgrids that use hydrogen technology are in operation today, such as the Massachusetts Clean Energy project that integrates renewable power-based hydrogen storage into its microgrid system,² and the Dunsfold Park microgrid project in the UK, which includes a 1.5 MW hydrogen fuel cell microgrid, using renewable hydrogen sourced from bioenergy, that is capable of powering 2500 homes.³

We support the proposed scope as laid out in the OIR. We additionally request that the following recommendations be considered, which are elaborated upon in the Comments section below:

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 are listed here: www.californiahydrogen.org/aboutus/chbc-members/

² http://verdellc.com/Main_Press/press_solar40.html

³ <https://www.dunsfoldpark.com/news/afc-energy-commences-feed-on-landmark-hydrogen-fuel-cell-micro-grid-in-surrey-at-dunsfold-park.html>

1. We urge the proceeding discussions and decisions to adhere to the principle of technology neutrality.
2. The focus of microgrid development in California ought to go beyond just supporting the electricity system.
3. Interoperability standards across multiple sectors should be developed to fully support the cross sectoral benefits of solutions like hydrogen and fuel cell technology.
4. Microgrids, including excess electricity (either consumed or delivered) to and from the microgrids that would otherwise be curtailed, ought to have access to the wholesale market.
5. The CPUC should provide relief from standby or non-bypassible charges to encourage adoption of microgrids.
6. Microgrid system design should have some flexibility to be customized to suit the needs of the end user.
7. Due to the urgency of securing resilient electricity services to help manage planned power shutdowns, and the requirements of SB 1339, we urge the Commission to resolve all issues relevant to this proceeding more expeditiously than proposed, and enable microgrid solutions to help protect communities before the 2020 wildfire season.

II. COMMENTS

We urge the proceeding discussions and decisions to adhere to the principle of technology neutrality. There are many microgrid technologies on the market, and they should all be treated with parity with regard to regulatory frameworks, including but not limited to those pertaining to standardizing interconnection standards and incentives. A core purpose of microgrids is enhancing resiliency, and to fulfill this purpose, they should be allowed – if not encouraged – to deploy a diverse range of technologies. One example that demonstrates this diversity principle is the microgrid at Gordon Bulboz Nature Preserve in Wisconsin, which uses 200 kW of solar panels, an electrolyzer that supplies hydrogen for a 25 kW hydrogen fuel cell, a 100 kW lithium-ion battery storage system, a 65 kW micro-turbine that can run on gas or

biogas, and a 60 kW Kohler natural gas generator to power the 18,000-square-foot nature center building and supply power for EV charging stations.⁴ No microgrid technologies, including electrolyzer and or fuel cell technologies, should be excluded or disadvantaged by regulatory decisions.

The focus of microgrid development in California ought to go beyond just supporting the electricity system. Microgrids can connect to the electricity system, and also to the gas system. UC Irvine’s research shows how storing renewable energy in the gas grid in the form of hydrogen can allow for expansion of renewables on a microgrid. The campus has a microgrid⁵ 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 which is 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.⁶

Interoperability standards across multiple sectors should be developed to fully support the cross sectoral benefits of solutions like hydrogen and fuel cell technology, which can carry electricity related benefits (as solutions for flexible, long duration storage, electricity generation, and grid services), heating related benefits (as a CHP or natural gas grid decarbonization solution), and transportation and equipment related benefits (in hydrogen fuel cell vehicles of all classes, as well as off-road equipment).

⁴ <http://www.bubolzpreserve.org/education/micro-grid/>

⁵ http://www.a pep.uci.edu/Research/PDF/Microgrid/UCI_Microgrid_APEP_100518_1012am.pdf

⁶ <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>

Microgrids, including excess electricity (either consumed or delivered) to and from the microgrids that would otherwise be curtailed, ought to have access to the wholesale market.

Microgrids have the capability to provide services to the larger electric grid through participation in wholesale energy and ancillary service markets. Present regulations do not allow behind-the-meter resources direct wholesale access, thus depriving microgrids of a value stream the technology is capable of accessing. Electrolyzers or tri-generation hydrogen systems behind-the-meter microgrid solutions, for example, at university campuses and hospitals etc.). Electrolyzers can produce hydrogen either from on-site solar as part of the microgrid, and/or they could be given access to curtailed electricity from wholesale access. This hydrogen can supply fuel cells to produce electricity onsite to support the microgrids and also support the larger grid with ancillary services.

The CPUC should provide relief from standby or non-bypassible charges to encourage adoption of microgrids. Currently, demand charges and non-bypassible charges, such as Public Purpose Programs (PPP) charges, Nuclear Decommissioning (ND) charges, Competition Transition Charge (CTC), Department of Water Resources Bond Charge (DWR-BC), risk hampering the economics of microgrid deployment. While we understand the CPUC's desire to avoid long term subsidizing of technologies via special rates, we also think it important to recognize the enormous economic benefits that microgrids stand to offer and for this to be reflected in the kinds of support the state is willing to offer to enable their adoption. Microgrids can, for example, help mitigate the staggering toll of grid outages – some researchers estimate the economic impacts of PG&E's recent outage alone could surpass \$2 billion.⁷ With this in view, we urge the Commission to include in the scope of this proceeding an exploration of relief from some or all demand and non-bypassible charges to support accelerated adoption of microgrids.

Microgrid system design should have some flexibility to be customized to suit the needs of the end user. As concluded in a 2015 study for the Energy Commission, lack thereof has

⁷ <https://www.cnbc.com/2019/10/10/pge-power-outage-could-cost-the-california-economy-more-than-2-billion.html>

resulted in numerous conflicting management and controls infrastructure and vendor specific platforms, resulting in high cost of deployment.⁸ For example, microgrids should be given the cross-sectoral flexibility to use both the electric and natural gas grid. Hydrogen produced in a microgrid setting can support both use and support the electricity grid, while also using the gas grid for storage, along with decarbonizing gas end uses. The CPUC ought to develop tariff structures that are flexible to suit the needs of the end user.

Due to the urgency of securing resilient electricity services to help manage planned power shutdowns, and the requirements of SB 1339, we urge the Commission to resolve all issues relevant to this proceeding more expeditiously than proposed, and to specifically enable microgrid solutions to be deployed ahead of the next wildfire season. As planned power shutdowns interrupt daily life and business for hundreds of thousands of ratepayers – and pocketbooks, health, and even life for the most vulnerable – it is imperative that California accelerate action on implementing microgrids. These ought to include fuel cells, in order to ensure that microgrids can provide long duration, zero emissions generation that are necessary to reliably provide critical energy services – especially in the face of multiday public safety power shutoffs, which utilities have suggested could last a week or more, as well as disaster events, which can leave customers without power from the grid for weeks or longer.⁹ SB 1339 specifically requires the PUC to take specified actions by December 1, 2020, in order to facilitate the commercialization of microgrids for distribution customers of large electrical corporations.¹⁰ The OIR, however, does not schedule all issues to be resolved until the end of 2021¹¹ – a full year after the date imposed by SB 1339. We understand the CPUC’s need for time to grapple with complex issues, but also believe Californians should not be left at risk from burdensome power losses and that the schedule put forth by SB 1339 should be respected. We, therefore, request that this OIR be accelerated to ensure that a tariff is issued for installations which can already be installed and connected via Rule 21 in time for the next wildfire season,

⁸ See pp. 13, 16, *Microgrid Assessment and Recommendation(s) to Guide Future Investments*, Prepared by DNV GL for CEC Energy Research Division, July 2015 <https://ww2.energy.ca.gov/2015publications/CEC-500-2015-071/CEC-500-2015-071.pdf>

⁹ We have received reports from people impacted by the Woolsey fire of outages lasting for months.

¹⁰ Sec. 1871 https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB1339

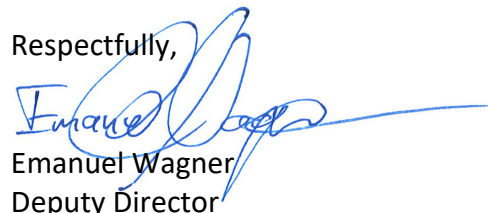
¹¹ pp. 9-10, OIR

within 6 months from the adoption of the OIR, and that multi-technology site standards to be developed in 24 months of the adoption of OIR.

III. CONCLUSION

The CHBC appreciates the CPUC's consideration of these comments and looks forward to working with you on this proceeding to help you understand the role of hydrogen technologies in microgrids and to apply this understanding to advancing the most technically and cost effective microgrids for California communities.

Respectfully,



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