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Green Hydrogen Coalition Comments on Future role for Microgrids

Additional submitted attachment is included below.



Comments of the Green Hydrogen Coalition (GHC)

on

The Future Role for Microgrids in California

to

the California Energy Commission (CEC)

Docket # 20-IEPR-04

2020 Integrated Energy Policy Report Update

Green Hydrogen Coalition

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A. Introduction

The Green Hydrogen Coalition (“GHC”), a California 501 (c)(3) educational non-profit corporation, is pleased to provide comments in response to the California Energy Commission (“CEC”) Integrated Energy Policy Report (“IEPR”) Commissioner Workshop on Assessing the Future Role for Microgrids in California held on July 7, 2020 and July 9, 2020.

The GHC was formed in 2019 in recognition of the game-changing potential of green hydrogen to accelerate multi-sector decarbonization to combat climate change, including providing a commercially viable and cost-effective solution as a renewable fuel source for microgrids, transportation, and long-duration energy storage to effectively and reliably realize decarbonization goals. The GHC’s mission is to facilitate policies and practices that advance green hydrogen production and use at scale in all sectors of the economy where it will accelerate a carbon-free energy future and result in multi-sector decarbonization, investment and jobs. Our sponsors include both renewable electricity users and providers and those in the renewable natural gas industry.

In the aftermath of the 2019 public safety power shutoff (“PSPS”) events, and amid the 2020 wildfire season, the CEC’s hosting of this workshop is timely. Microgrids can be deployed and coordinated to provide customer resiliency, enhance grid reliability, and support the state’s decarbonization goals, and green hydrogen has an important role to support the future of microgrids in California. GHC appreciates and supports the CEC’s explicit focus on accelerating the deployment of microgrids and resiliency solutions.

B. Green Hydrogen’s Critical Role in Ensuring Clean, Safe, and Reliable Microgrids and Resiliency Strategies

GHC believes that all clean, safe, and reliable microgrids and resiliency strategies should be explored to ensure California can mitigate the impacts of planned and unplanned outages, including PSPS events. Critical facilities, disadvantaged communities, remote locations, and medical baseline customers across California use diesel, natural gas, and/or battery energy

storage as backup generators to maintain electricity supply during emergency events and support system resilience (event recovery). However, based on commercially available technology, GHC believes that green hydrogen can be used today as a clean energy solution for back-up supply and resilience. Adding green hydrogen to California's clean energy toolkit supports mitigating the impact of energy disruptions and emergencies and will provide for deployment of clean technologies to meet resiliency requirements. . For example, hydrogen fuel cells running on green hydrogen can provide backup power to vulnerable communities and critical facilities during PSPS events. During the July 9 IEPR Workshop panel *Resiliency Impacts on the Microgrid Market*, San Benito Health Foundation and Kaiser Permanente spoke about the importance of mitigating the negative health impacts associated with existing fossil-fueled backup generators, especially diesel generators. Green hydrogen can offer a clean, safe alternative to diesel and natural gas generators as either a drop-in replacement fuel for existing generators or use in a hydrogen fuel cell.

Green hydrogen can be used as a form of multi-day energy storage, providing a flexible and dispatchable clean resource with greater energy capacity than most commercially-available energy storage backup solutions. In California, renewable generation combined with battery energy storage is increasingly a solution to provide backup power.¹ However, battery energy storage systems are energy-limited resources which may be capable of providing backup power for a short outage, but may not be able to meet resiliency needs for multi-day PSPS events. In contrast, green hydrogen, used as either a replacement fuel for backup generators or an input into fuel cells, can provide clean, long-duration energy storage during multi-day PSPS. This use of green hydrogen can reduce the need to overbuild or overspend on paired renewable and battery storage capacity by providing a more cost-effective solution.

Additionally, while renewable generation and battery energy storage are cost-effective in some cases, siting renewable generation, such as solar PV, presents key implementation challenges. Not all sites are viable for solar PV installations, and areas with dense populations and/or high land costs may be better-suited for a green hydrogen backup power solution. In these

¹ *Tesla Powerwall, Powerpack deployment grows 81% to 415 MWh in Q2*, Utility Dive (July 30, 2019) <https://www.utilitydive.com/news/tesla-powerwall-powerpack-deployment-grows-81-to-415-mwh-in-q2/559790/>

cases, green hydrogen can be produced on-site using an electrolyzer and stored for resiliency uses, transported from a local green hydrogen production facility, such as a grid-connected electrolyzer, or one coupled with renewable generation, or distributed through supply infrastructure from a centralized green hydrogen production facility.

The fundamental challenge for all commercially viable pathways to produce green hydrogen today is how to *achieve scale* and reduce cost. Globally, production of green hydrogen is currently being pursued to help get to scale, accelerate decarbonization and to meet climate goals. Expanding green hydrogen use to offset fossil fuels by supporting microgrid applications for renewable hydrogen is critical to achieving scale, reducing cost for green hydrogen, and increasing use across multiple sectors.

Technologies exist today to produce green hydrogen, and near-term opportunities are available for the development of hydrogen storage, fuel cells, and large-scale commercial operations. However, to realize the microgrid and resiliency benefits of green hydrogen, California must send strong signals to industry to promote private investment in green hydrogen infrastructure. *Producing green hydrogen at scale will drive down its production cost and further accelerate the use of green hydrogen to decarbonize the energy system as a fuel for back-up generation, transportation, and fuel cells.*

Given the near-term capabilities of green hydrogen use in microgrids and resiliency applications, including combustion in backup power generators or use in fuel cells to provide long-duration energy storage, the GHC recommends the CEC include green hydrogen in its evaluation and modeling to deliver microgrid solutions, meet future resiliency demands, and realize *multi-sector zero-carbon solutions*.

C. Recommendations

The GHC recommends and appreciations the CEC's consideration and inclusion of green hydrogen as a game-changing resource for microgrids, long-duration energy storage, energy reliability and resilience, and as a unique resource to provide multi-sector decarbonization.



We recommend that consideration for the role of green hydrogen is consistent with the goals of the 2020 IEPR Update and its vision for the future role of microgrids. We believe that expanding the inclusion of green hydrogen in the CEC's modeling and planning overall is consistent with targeting the expansion of zero-emission microgrid and backup power solutions, including during PSPS events.

We also recommend that the CEC can play a significant role in breaking down market barriers for green hydrogen through its planning and programs. By providing support for green hydrogen infrastructure, in microgrid applications and beyond, the CEC can expand California's clean energy system and accelerate the diversity of clean fuel resources for power and transportation, as well as across other multi-sector applications, and create the clean, reliable energy network needed to meet California's renewable energy and climate goals.

Expanded infrastructure will necessarily include deployment of fuel cells for providing back up generation and grid services for flexibility and reliability. As part of the IEPR's overview of energy policy, the GHC recommends identifying the importance of fuel cell and green hydrogen infrastructure to meet the state's policy climate and energy goals.

The CEC is a powerful voice to demonstrate that there is a vision and a roadmap for meeting California's climate goals through production and utilization of "green" hydrogen. We commend CEC's hosting of hydrogen infrastructure and emerging technologies in microgrids workshop sessions as part of the 2020 IEPR update. We recommend CEC host an additional workshop dedicated to *green* hydrogen and its many applications for power, gas, industry, transportation, and agriculture to further build planning and momentum for meeting California's clean energy future.

As a non-profit aligned with the decarbonization goals among states nationally, the GHC is focused on the role of green hydrogen to transition our energy systems to a cleaner future. We believe that green hydrogen is a critical backbone for California's clean, reliable energy future and an accelerated the transition to a carbon-free system that benefits everyone.

July 30, 2020



GHC appreciates the leadership of the CEC in addressing this foundational issue in its 2020 IEPR Update.

Respectfully submitted,

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