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SoCalGas Comments on Renewable Hydrogen Generation Plant Deployment Roadmap Webinar

Additional submitted attachment is included below.

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Subject: Comments on Renewable Hydrogen Generation Plant Deployment Roadmap Webinar held on April 4th, 2019. (17-HYD-01)

Southern California Gas Company (SoCalGas) would like to thank the California Energy Commission's (CEC) Fuels and Transportation Division and the Advanced Power and Energy Program (APEP) at the University of California, Irvine (UCI) for its efforts to develop the California Renewable Hydrogen Generation Plant Deployment Roadmap. SoCalGas continues to support this important effort to develop a strategic long-term roadmap for renewable hydrogen production and usage in the transportation sector as part of "sector coupling" in California.

SoCalGas commends UCI's efforts to analyze the long-term impacts of the Low Carbon Fuel Standards (LCFS) program as part of the Hydrogen Roadmap that was presented during the workshop. SoCalGas strongly believes the LCFS program provides greater opportunities and incentives for emerging low carbon technology pathways in California to mature over the long term and help achieve California's aggressive carbon reduction goals by 2045. SoCalGas however, would like to emphasize the need for stronger policy and regulatory support mechanisms in ensuring the longevity and continued success of the LCFS program. While recent increases in LCFS credit price have in effect reduced the net cost of renewable hydrogen production to become more price competitive with other fossil fuels, long term credit price risks have shunned private debt financing from investing in more renewable hydrogen projects. Mechanisms such as loan guarantees and credit floor price mechanisms can reduce investors' concerns and allow for continuous build-out of renewable hydrogen infrastructure needed to meet California's climate goals.

With California's ambitious goal of 100% clean energy and zero-carbon electricity by 2045 (Senate Bill 100)[1], it's important to address the role of hydrogen energy storage in the electric sector to address grid management with ancillary services and resiliency needs. The need for long term energy storage sources that are flexible, scalable and affordable becomes important with higher penetrations of renewable distributed energy resources coupled with higher levels of

[1] https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB100

curtailments by 2045. Hydrogen can be produced with surplus solar and wind generation, a growing resource in California. The rapid rise of solar and wind generation has created challenges with managing the electric grid. Solar and wind production frequently exceed electrical demand with limited ability to store this surplus energy optimally. In the absence of a comprehensive energy storage solution, the California Independent System Operator (CAISO) curtails these renewable sources, resulting in missed opportunities to utilize these valuable renewable energy resources. Curtailment of renewable resources decreases the efficiency of using State and public funds. In 2015, the CAISO curtailed more than 187 gigawatt hours (GWh) of solar and wind generation. In 2016, the curtailment rose to more than 308 GWh. In 2017, California curtailment rose again to 380 GWh of solar and wind generation.[2] As the Renewable Portfolio Standard (RPS) requirement climbs to 100%, one can project that these curtailments will grow even more sharply, yielding significantly less GHG emission reductions than anticipated, and potentially leaving California in a disadvantaged position paying for expensive partial solutions and over-procuring renewable electric resources with diminishing returns. Hydrogen produced from excess electricity and injected into the gas pipeline network is a scalable and comprehensive energy storage solution that can play a vital role in supporting the growth of the RPS by optimizing and synchronizing California's energy resources and providing a much-needed linkage between variable renewable electric resources, seasonal energy storage, and dispatchable electric generation. Enabling this hydrogen technology in California will help remediate time-of-day and seasonal energy imbalances between supply of power from renewable sources and its demand.

While short-term balancing of electricity is likely to employ technologies such as demand-side management and batteries, long-term storage options will be required to optimize California's electric system under a growing RPS. Hence, as part of the "electric sector coupling" of hydrogen, SoCalGas urges the CEC to kick-start a study to develop a similar strategic long-term roadmap for renewable hydrogen production and long-term storage and its use in providing electric grid support and other ancillary services in California. The proposed study can also inform and support the data and input assumption needs as part of the Integrated Resource Planning Process (IRP) undertaken by the California Public Utility Commission (CPUC).[3]

We look forward to working with the CEC to ensure success in establishing foundation projects for renewable hydrogen production as hydrogen will play a vital role in California's clean energy future.

Sincerely,

/s/ Tim Carmichael

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[2] Impacts of Renewable Energy on Grid Operations, California Independent System Operator, available at https://www.caiso.com/Documents/CurtailmentFastFacts.pdf
[3] http://www.cpuc.ca.gov/irp/