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SDG&E and SoCalGas Joint Comments, SB 423 Lead Commissioner Workshop

Additional submitted attachment is included below.

December 1, 2023

Vice Chair Siva Gunda
California Energy Commission
Docket Unit, MS-4
Docket No. 21-ESR-01
715 P Street
Sacramento, CA 95814

Subject: Comments on the November 17 Lead Commissioner Workshop on SB 423 Implementation of Emerging Renewable and Firm Zero Carbon Resources (Docket No. 21-ESR-01)

Dear Vice Chair Gunda:

San Diego Gas & Electric Company (SDG&E) and Southern California Gas Company (SoCalGas) appreciate the opportunity to provide comments in response to the November 17, 2023, SB 423 Firm Zero-carbon Resources Workshop (Workshop). SDG&E and SoCalGas recognize the importance of identifying the set of firm zero-carbon technologies that, coupled with renewables, can reliably deliver California's carbon neutral future. As has been noted recently by the CEC[1] and others, reliability is a requisite to maintaining public support of California's carbon goals. Thus, electricity planning must ensure all hours and all seasons have sufficient clean firm resources to balance California's clean intermittent resources.

Our companies support California's carbon neutrality goals and the necessary reliability measures to help enable those goals. Both SDG&E and SoCalGas have published studies whose inclusion of robust reliability modeling resulted in clean energy portfolios that reliably achieve carbon neutrality by 2045[2]. Both studies' portfolios include the use of clean renewable hydrogen as a key firm zero-carbon resource. These studies revealed that significant incremental renewable resource buildout must be paired alongside significant renewable hydrogen development to ensure a clean and reliable grid. Priority deployment of clean, dispatchable generation – such as renewable hydrogen resources

[1] California Energy Commission (CEC) workshop updating the outlook for summer 2022 through 2026 and midterm electric system reliability; May 20, 2022 where CEC Vice-Chair Siva Gunda stated, "…if we stumble on *keeping the lights on* the whole climate agenda is at risk." California Energy Commission (CEC) workshop updating the outlook for summer 2022 through 2026 and midterm electric system reliability; May 20, 2022..

[2] *The Path to Net Zero: A Decarbonization Roadmap for California,* SDG&E, April 2022, available at: https://www.sdge.com/netzero.

The Evolution of Clean Fuels in California, SoCalGas, July 2023, available at: https://issuu.com/stfrd/docs/cleanfuelsreliabilityreportjuly23?fr=sNDA4OTYwNzQ4NTk

– provides firm zero carbon resource support during extreme weather events and energy consumption fluctuations, addressing a need currently served by natural gas generation.[3]

SDG&E and SoCalGas respectfully offer the following comments on the development of the SB 423 Emerging Renewable and Firm Zero Carbon Resources Report (SB 423 Report) with the intent of fostering robust stakeholder consideration of large-scale resource and market development needs to enable a net zero future.

1) **The SB 423 Report should clearly define "firm zero-carbon resources" to include a diversified, combined resource approach that can be adopted in ongoing and related proceedings, such as SB 100 and SB 1075.**

The upcoming SB 423 Report will be critical in identifying "firm zero-carbon resources" that can be used to meet SB 100 goals. SB 423 defines "firm zero-carbon resources" as

> …*electrical resources that can individually, or in combination, deliver zero-carbon electricity with high availability for the expected duration of multiday extreme or atypical weather events, including periods of low renewable energy generation, and facilitate integration of eligible renewable energy resources into the electrical grid and the transition to a zero-carbon electrical grid.*[4]

SDG&E and SoCalGas agree with slide 13 of the Workshop's presentation in which the CEC includes hydrogen-sourced electricity as a firm zero-carbon resource, and carbon capture as a technology that can be combined with a separate electricity resource such that, in combination, they become a firm zero-carbon resource. Clearly, hydrogen and carbon capture will have important roles to help achieve SB 100 electric generation and economy-wide carbon neutrality goals.

Renewable hydrogen and clean hydrogen should be included in the definitions of "firm zero-carbon resources."[5] Furthermore, we request the CEC to clarify whether the footnote on slide 14 that states: "Note on hydrogen: combustion produces NOx emissions" is a reference to the table indicating the hydrogen is "Low Emissions" or just a recognition of other emissions. The same footnote was not added for RNG or carbon capture. If it is a recognition of other emissions, there are post-combustion technologies that reduce NOx emissions.

[3] *Ibid.*
[4] https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220SB423
[5] Consistent with SoCalGas' comments on SB 100, renewable hydrogen should be able to qualify for the 60 percent. The other 40 percent could include clean hydrogen consistent with the federal definition in 42 USC 16166. See Docket Number 23-SB-11, TN# 252202, https://efiling.energy.ca.gov/GetDocument.aspx?tn=252202&DocumentContentId=87207

2) Carbon capture and sequestration (CCS) can be utilized to further reduce the emissions associated with low carbon resources.

CCS will therefore likely play an increasingly important role augmenting the diversity of reliable firm low carbon resources available. Similar to how an intermittent resource coupled with storage can be deemed firm, low carbon resources can also be identified as zero carbon when coupled with carbon capture. Clearly identifying specific roles for CCS will enable more holistic consideration of the technology in line with the 2022 Scoping Plan Update, SB 100's "100% carbon capture" analysis considerations,[6] and other key proceedings.

SDG&E and SoCalGas support the CEC's clarification in the SB 423 analysis that "firm zero-carbon resources" include natural gas pairing with CCUS in instances where there is a 100% capture rate and the inclusion of *partial counting* for capture rates less than 100%.[7] It is important to consider all potential combinations of resources that qualify under SB 423's definition of "firm zero-carbon resources," and jointly recommend that the SB 423 Report include other combined resources such as "RNG combustion + CCS" and "NG combustion + CCS" within this definition.

3) The full suite of clean hydrogen technologies – including combustion – should be robustly considered in the SB 423 Report to enhance the State's ability to consider reliability and long-term market development factors.

Achieving broad hydrogen demand can in part be supported by using hydrogen to generate clean dispatchable firm power resources within the electric sector. CARB's Scoping Plan identified the need of about 4 gigawatts (GW) of hydrogen combustion capacity in 2035, and 9 GW to meet 2045 targets.[8] Independent third-party modeling analysis has also shown the need and value of clean firm power to maintain reliability in a cost-efficient manner in an increasingly decarbonized future.[9]

SoCalGas' *The Evolution of Clean Fuels in California* analysis, which includes a Loss of Load Expectation (LOLE) reliability analysis,[10] found that deployment of clean fuels, like hydrogen, to support a reliable electric sector can catalyze clean fuels adoption in other hard-to-abate sectors of the economy by leveraging the build out of shared clean fuels

[6] 2021 SB 100 Joint Agency Report, California Energy Commission, March 2021, p. 17, available at: https://efiling.energy.ca.gov/EFiling/GetFile.aspx?tn=237167&DocumentContentId=70349
[7] Slide 13 of CEC staff's presentation during the November 17, 2023, SB 423 Firm Zero-carbon Resources Workshop.
[8] 2022 Scoping Plan for Achieving Carbon Neutrality, California Air Resources Board, December 2022, p. 203, available at: https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf.
[9] "California needs clean firm power, and so does the rest of the world," Environmental Defense Fund (EDF), Clean Air Task Force, Harvard Center for the Environment, p.2, available at: https://www.edf.org/sites/default/files/documents/SB100%20clean%20firm%20power%20report%20plus%20SI.pdf. Modeling done in the study specifically looked at what resources could replace natural gas in order to reach 100% carbon-free clean electricity supply by 2045 while maintain cost-effectiveness. The study found, "An ambitious but achievable investment in clean firm power, with installed capacity similar in magnitude to our existing gas fleet—or roughly 25-40 gigawatts— could eliminate the need for ten times that amount of wind and solar capacity, and significantly reduce associated transmission expansion and the land area required for electricity generation facilities."
[10] The North American Electric Reliability Corporation's (NERC) industry standard for evaluating electric system reliability is "one day in ten year" or 1-in-10 LOLE analysis.

infrastructure. The modeling results indicated that while more battery, solar, and wind resources will be needed, additional clean, firm generation and its unique ability to follow energy consumption fluctuations are critical to balancing the grid and preventing service disruptions.[11] SoCalGas found that up to 10 GW of additional clean renewable hydrogen generation could be needed in the CFS electric portfolios for reliability purposes.

SDG&E's *The Path to Net Zero* decarbonization study,[12] which also incorporated LOLE reliability assessment, concluded similarly that clean fuels like hydrogen will play a significant role in reliable electricity sector decarbonization.

State energy agencies should support investment in dispatchable clean firm power resources and supporting infrastructure, including common carrier pipeline transportation infrastructure; it will support electric reliability and help develop the hydrogen market for all hydrogen end-users.

Given multiple analysis supporting the need for clean firm power, the state energy agencies should explore the use of hydrogen combustion as a dispatchable clean firm power resource. Use of hydrogen in the power generation sector will not only support energy system reliability, but also help achieve significant air quality and greenhouse gas emissions reductions benefits. In addition, scaling up the use of hydrogen in power generation will facilitate its adoption in hard-to-electrify sectors.

Conclusion

The final SB 423 report must be submitted to the Legislature before December 31, 2023; as was noted during the workshop, the report does not require Commission adoption prior to submittal. However, in the spirit of transparency, SDG&E and SoCalGas respectfully request the draft SB 423 report be made available for public review and comment prior to the final report's submittal by year-end.

Thank you for the opportunity to provide input on this important discussion and for your consideration of our comments. Please do not hesitate to contact me if you have any questions or should additional information be helpful.

[11] SoCalGas' July 2023 *The Evolution of Clean Fuels in California* Reliability Analysis, available at https://issuu.com/stfrd/docs/cleanfuelsreliabilityreportjuly23?fr=sNDA4OTYwNzQ4NTk, reveals how clean fuels like clean hydrogen and renewable natural gas (RNG) offer a solution to keep the electric grid reliable as California scales up intermittent renewable resources and electric demand. The Analysis expands on the company's 2021 Clean Fuels Study (CFS) finding that infrastructure development for the delivery of clean fuels like hydrogen could support critical power generation and drive further adoption of clean fuels solutions for other hard-to-electrify sectors in California. The Reliability Analysis specifically modeled the High Clean Fuels Scenario, which was a scenario designed to understand the impact of high reliance on clean fuels for decarbonization. It is assumed in this scenario that drop-in fuels would help to decarbonize the system.

[12] *The Path to Net Zero: A Decarbonization Roadmap for California,* SDG&E, April 2022, available at: https://www.sdge.com/netzero.

Sincerely,

/s/ Adam Jorge

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