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SoCalGas Comments on SB 100 Draft Joint Report

Additional submitted attachment is included below.



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California Energy Commission
Dockets Office, MS-4
1516 Ninth Street
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Subject: SoCalGas Comments on the Senate Bill 100 Draft Report, Docket #19-SB-100

Dear Commissioners and Board Members:

Southern California Gas Company (SoCalGas) appreciates the opportunity to provide comments on the Joint Agency report from the California Energy Commission (CEC), California Public Utilities Commission (CPUC), and California Air Resources Board (CARB) regarding the Senate Bill (SB) 100 Draft Report on Charting a Path to 100% Clean Energy Future (Draft 2021 Report). SoCalGas supports California’s efforts to reduce greenhouse gas (GHG) emissions in the energy sector and believes that decarbonizing our pipeline system can play a vital role in this effort. We urge the joint agencies to design a clean energy future that is reliable and affordable for all Californians.

SoCalGas recognizes the policy implications that could result out of interpreting or perhaps misinterpreting the scenarios. The core scenarios are built from actual tangible resources that could conceivably come to fruition. Some of these are commercially available like solar photovoltaic (PV) and some are emerging like floating offshore wind projects. However, technologies like solar PV are fundamentally different than the hypothetical and non-existent technologies like “generic zero-emission firm dispatchable” resources that make up a large percent of the study scenarios. There are no real load profiles or cost data for firm zero-emission baseload or dispatchable resources. Any scenario based on non-existent resources should be highly caveated as such and the costs of the scenarios should not be compared to the core scenarios. If they are not properly caveated, then they could easily be misinterpreted as having the same level of certainty and feasibility of a core scenario.

1. SoCalGas Urges the Joint Agencies to Incorporate Reliability and Affordability Assessments in the Final 2021 Report and not 2025, as proposed in the Draft Report

The Draft 2021 Report states that the analysis presented in the draft report is the first step in an ongoing effort to evaluate and implement SB 100 and that further analysis is necessary to determine reliability and affordability of the portfolios and emerging technologies including, but

not limited to, hydrogen.¹ While these remaining items are intended to be incorporated in the Final 2025 Report, delaying evaluation of these critical issues for four more years minimizes their importance. The Draft 2021 Report will influence and dictate energy policies for years to come.

A. Reliability

Recent events in California demonstrated the operational vulnerabilities posed by a solar/wind-based energy system backed by batteries. The power outages experienced in August and September of this year further illustrated the critical need for long duration storage to bridge the gap between energy demand and reliable supply. The recent power outages also highlighted the fundamental difference between renewable energy, which is variable and only available during a limited time frame, and firm capacity, which is available on-demand. To that end, the gas system provides a reliable source of dispatchable, “on-demand” electricity to customers to meet peak energy demand. It is also a critical component in managing the daily and seasonal ramping needs of the electric grid, which are expected to increase in frequency given California’s greater reliance on intermittent renewables (i.e. solar and wind). In fact, electric generators and grid operators prefer firm capacity over batteries for a variety of fundamental energy applications, including energy flow smoothing, dynamic reactive power and VAR support.² These ramping services coupled with the State’s gas infrastructure have proven invaluable in responding to the rapid fluctuations of an increasingly volatile energy system.

California finds itself at a clear inflection point where it must develop a sustainable plan to safely and equitably deal with potentially significant electricity cost increases. California’s electricity grid was pushed to the brink of failure this summer with its frailties exposed by sustained heat waves and more frequent and intense wildfires. The Draft 2021 Report should therefore encourage solutions that do not rely on a single source of energy but rather encourages policies that support a diverse energy portfolio that includes multiple fuels and technologies. As more intermittent electric resources are relied upon by the State’s grid system, more long duration, dispatchable capacity will be needed. This is a somewhat linear commensurate relationship, which does not necessarily equate solely to gas generation capability.³ However, gas is the current primary means to compliment renewable energy and to maintain an affordable reliable and resilient electric grid as well as provide long-duration storage. The existing gas infrastructure will play a critical role in maintaining an integrated energy system and providing the flexibility for intermittent renewable resources to be seamlessly added to the grid without interruption.

This summer, SoCalGas’ system served an essential role in storing surplus energy for long durations and was available for immediate dispatchability. If California is to succeed, stakeholders must be made aware that the more intermittent power (solar and wind) utilities add to the grid, the

¹ SB 100 Joint Agency Draft Report at p.26.

² CAISO Comments on OIR to Establish Policies, Processes, and Rules to Ensure Safe and Reliable Gas Systems in California and Perform Long-Term Gas System Planning, January 16, 2020 at p.2

³ Jacqueline A. Dowling, et al. "Role of long-duration energy storage in variable renewable electricity systems." *Joule* 4, no. 9 (2020): 1907-1928.

more dispatchable power will be needed – virtually megawatt for megawatt to maintain affordable, reliable power. Moreover, the State’s gas system can also play a critical role as a common carrier of renewable natural gas (RNG) and hydrogen as well as future greener, cleaner fuels. SoCalGas, for instance, has 100,000 miles of local infrastructure which can be leveraged as an additional solution to help address climate change by directly serving customers including California’s electric generators with increasingly decarbonized molecules.

As policy discussions about achieving carbon neutrality continue, it is essential to build a well-planned strategy looking at how that existing pipeline infrastructure can play in meeting the State’s greenhouse gas reduction goals. This realistic framework is important in order to expand the understanding of this critical infrastructure for stakeholders and decision makers. The gas system is not incompatible with electrification. Rather, SoCalGas’ system compliments and enables the use of intermittent renewables by providing reliability, resiliency and cost effective, long-duration storability. That means an integrated energy system of the future with decarbonized molecules and electrons working together to drive down emissions and offering “dual-fuel” options to safely and reliably meet all Californians’ energy needs now and in the future.

B. Affordability

The Draft 2021 Report indicates that meeting the 100 percent clean electricity target will likely require substantially new investments in the electric system, which may have impacts on electricity rates for consumers, and that further analysis is required to better understand how these costs will be factored into rates that directly affect consumers.⁴ Not only should affordability be incorporated into the final 2021 report, but additional analysis should be included to evaluate the cost impacts of different technologies and fuels, especially in disadvantaged or economically stressed communities. For example, a home may need electrical rewiring, reconfigured or upgraded plumbing, or other physical alterations to accommodate new technologies.

An analysis of affordability must include impacts to customer’s bill as well as policy drivers that could provide cost controls for procurement, specifically government incentives to procure renewable fuels like green hydrogen to reduce the cost of production for renewable fuels until the market reaches maturity. An increase in renewables is an increase in costs, at least initially. The way to mitigate the costs is through rate socialization, incentives, and cost controls

2. California’s Clean Energy Future Must Support an Inclusive Energy Strategy that Considers and Encourages Current and Future Innovations

California must invest in decarbonizing the pipeline system in the same way as the electric grid in order to achieve our carbon reduction goals. The Draft 2021 Report identifies the Renewables Portfolio Standard (RPS) as a primary driver for increasing clean electricity generation, requiring the State’s electric utilities to make renewables an ever-greater percentage of their power base.⁵ California’s leadership in driving aggressive emissions reductions has helped bring to market

⁴ SB 100 Joint Agency Draft Report at p.27

⁵ SB 100 Joint Agency Draft Report at p.11

many new forms of renewable energy and fuels. This includes supporting a rapid decline in prices for renewable power such as solar, wind, and battery storage, and has accelerated adoption and price reduction of zero-emission vehicles. For instance, the cost of utility-scale solar power dropped by 50 percent in just four years between 2011 and 2015, while electric vehicle battery prices dropped 87 percent in real terms from 2010 to 2019. These cost reductions although hard to predict when they will occur and by how much, should be incorporated into the modeling. Therefore, the analysis in the Draft 2021 Report is intended to be a first step in an iterative and ongoing effort to assess barriers and opportunities to implement the 100 percent clean electricity policy.⁶ The Draft 2021 Report does not consider a price drop in renewable fuels including hydrogen, due to the “technology for synthetic fuel not yet becoming commercially available in California and/or inadequate cost and supply for modeling.”⁷ The Joint Agencies should consider how to accelerate viable technologies and identify barriers of entry for these technologies. Scaling up green hydrogen will be essential to helping global economies to achieve net zero emissions and could supply up to 25 percent of the world’s energy needs by 2050 and become a US \$10 trillion addressable market by 2050, according to Goldman Sachs.^{8,9}

Achieving commercialization and cost reductions for the deployment of renewable hydrogen at scale would help decarbonize many difficult-to-decarbonize sectors (including buildings, industry, thermal power plants, and the transportation sector, including light-, medium- and heavy-duty vehicles, goods movement, and air travel) and accelerate progress towards the state’s climate, clean air, and clean energy goals.

At SoCalGas we are committed to achieving hydrogen’s potential by studying and piloting the introduction of clean molecules into our pipeline system. In fact, SoCalGas recently filed with the CPUC a proposal to safely explore our existing system’s ability to deliver hydrogen to customers. SoCalGas has teamed with the National Fuel Cell Research Center (NFCRC) at the University of California, Irvine (UCI) to launch the first U.S. Power-to-Gas (P2G) project. An electrolyzer powered by the on-campus solar electric system that feeds its renewable hydrogen to the campus power plant. This research shows that P2G technology can increase the use of renewable energy and should be an important component in meeting California’s clean energy and greenhouse gas reduction goals. Demonstrating the conversion of renewable electricity to hydrogen will enable long-term storage of large amounts of carbon-free power.¹⁰

⁶ SB 100 Joint Agency Draft Report at p.10

⁷ SB 100 Joint Agency Draft Report at p.18

⁸ Mike Scott. “Green Hydrogen, The Fuel Of The Future, Set For 50-Fold Expansion.” *Forbes*, (2020). Available at <https://www.forbes.com/sites/mikescott/2020/12/14/green-hydrogen-the-fuel-of-the-future-set-for-50-fold-expansion/?sh=18df8fa76df3>.

⁹ Alberto Gandolfi, et al. “Green Hydrogen: The next transformational driver of the Utilities industry.” *Goldman Sachs International*, (2020). Available at <https://www.goldmansachs.com/insights/pages/gs-research/green-hydrogen/report.pdf>.

¹⁰ SoCalGas. “SoCalGas and University of California Irvine Demonstrate Power-to-Gas technology Can Dramatically Increase the Use of Renewable Energy.” *Sempra Energy*, (2017). Available at: <https://www.sempra.com/newsroom/press-releases/socalgas-and-university-california-irvine-demonstrate-power-gas-technology>.

The findings that come from the SB 100 report must serve all of California’s residents, who depend on a reliable and affordable energy supply for their homes and businesses. The solutions should be approachable (in both cost and use) to encourage acceptance and adoption by consumers. Accordingly, we recommend that the Draft 2021 Report be designed to include all alternatives that could lead to the reduction of GHG emissions, including the decarbonization of the pipeline system.

3. SoCalGas Requests Clarification for the Items Listed Below

- a. Do the Joint Agencies plan to adopt the SB 100 report at their commission and board meetings prior to sending it to the State legislature?
- b. The Joint Agencies should clarify what is allowed as a zero-emission resource to create some certainty in the investment market. Setting criteria of eligibility should be the first issue tackled in the SB 100 exercise.

These scenarios are sending market signals for investors. By the Joint Agencies not even allowing biogas and hydrogen to compete on a cost basis with other zero-emission resources, it is sending the market signal that the State does not value these resources.

- c. Is carbon capture and storage (CCS) included for existing natural gas power plants? Staff mentioned it was not included, however, it was unclear as to whether this is for new resources or only existing resources.

Based on a recently released study by the Energy Futures Initiative and Stanford, “*California cannot afford to limit its flexibility by eliminating technology options or pursuing unfocused or suboptimal policies that may hinder, rather than accelerate, decarbonization...Carbon capture paired with permanent geologic storage (e.g. deep saline reservoir) offers a viable and important option for reducing emissions from the industrial and electricity sectors that are key contributors to California’s economy and the reliability of its grid.*” “*...natural gas plants with CCS, for uninterrupted firm energy, can be \$750m/yr. cheaper than the combination of solar plus utility-scale batteries.*”¹¹

- d. How did the Joint Agencies calculate \$60 per MWh for generic zero-emission from firmed resources? SoCalGas believes that at a minimum the Joint Agencies should note the extreme uncertainty of these unknown resources as being in a different classification of unknowns as all the other resources counted on in the scenarios.

SoCalGas is concerned with the broad-based “stand-alone” assumptions used in the study scenarios as discussed in the Draft SB 100 Joint Agency Report. For example, in the zero-carbon

¹¹ Sally M. Benson, et al. “An Action Plan for Carbon Capture and Storage in California: Opportunities, Challenges, and Solutions.” *Energy Futures Initiative, Stanford University’s Precourt Institute for Energy, and Stanford Center for Carbon Storage*, (2020). Available at <https://sccc.stanford.edu/sites/g/files/sbiybj7741/f/efi-stanford-ca-ccs-full-rev1.vf-10.25.20.pdf>.

scenario, the “generic baseload” resource assumes high capital cost and low operating cost and assigns a \$60/MWh at a 90 percent capacity factor.¹² The analysis lacks the reasoning behind the blended levelized cost assumption considered across several zero-carbon firm resources. These types of broad-based assumptions without analytical rigor can skew the analysis and modeling conclusions. SoCalGas requests the commission to identify the stand-alone assumptions used in the SB 100 modeling as discussed above and caveat the rationale using footnotes in the final report to provide the right context and conclusions.

SoCalGas is committed to decarbonizing the energy system and maintaining customer choice, while prioritizing the reliability, resiliency, and affordability of our energy sector. We look forward to working with the Joint Agencies throughout this process.

Sincerely,

/s/ Tim Carmichael

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¹² SB 100 Joint Agency Draft Report at p.98