

DOCKETED	
Docket Number:	23-SB-100
Project Title:	SB 100 Joint Agency Report
TN #:	254782
Document Title:	SoCalGas Comments on the SB 100 Inputs and Assumptions Workshop
Description:	N/A
Filer:	System
Organization:	Southern California Gas Company
Submitter Role:	Public
Submission Date:	3/1/2024 4:42:10 PM
Docketed Date:	3/1/2024

*Comment Received From: Southern California Gas Company
Submitted On: 3/1/2024
Docket Number: 23-SB-100*

SoCalGas Comments on the SB 100 Inputs and Assumptions Workshop

Additional submitted attachment is included below.



Kevin Barker
Senior Manager
Energy and Environmental Policy
555 West 5th Street
Los Angeles, CA 90013
Tel: (916) 492-4252
KBarker@socalgas.com

March 1, 2024

Chair David Hochschild
California Energy Commission
Docket Unit, MS-4
Docket No. 23-SB-100
715 P Street
Sacramento, CA 95814-5512

Subject: Comments on the February 2024 SB 100 Inputs and Assumptions Workshop

Dear Chair Hochschild,

Southern California Gas Company (SoCalGas) appreciates the opportunity to provide comments on the February 16, 2024, Senate Bill (SB) 100 Inputs and Assumptions Workshop jointly held by the California Energy Commission (CEC), California Air Resources Board (CARB), and California Public Utilities Commission (CPUC) (collectively, the Joint Agencies). The workshop resulted in many positive developments, including the addition of reliability analysis to SB 100 scenario modeling which was a commitment of the previous 2021 SB 100 Report. In addition, the proposed inclusion of hydrogen combustion and retrofit of natural gas plants to be fueled with hydrogen or operated with carbon capture is an important step to enable the continued use and leveraging of existing and new carbon capture, utilization, and storage (CCUS) technologies and infrastructure. This can provide a broader portfolio of dispatchable resources to enhance reliability and resilience of California's energy system.

SoCalGas' comments focus on the following topics: 1) electric system reliability analysis is integral in helping mitigate power outages in SB 100 modeling and should be included in all scenario/sensitivity analysis, 2) hydrogen and carbon capture and storage (CCS) are valuable expansion candidates for SB 100 modeling and the SB 100 discussion would benefit from more specifics about these resources, and 3) land use considerations in SB 100 scenario modeling need to take into account siting and deliverability constraints.

- 1) Electric system reliability analysis is integral in helping mitigate power outages in SB 100 modeling and should be included in all scenario/sensitivity analysis.**

As scenarios are developed for carbon neutrality by 2045, it is imperative to plan on developing safe and reliable pathways to reach those goals. Unreliable electric portfolio planning can be susceptible to power outages which would negatively impact public health and safety and cause economic damage to businesses, and negatively impact California’s progress towards meeting long-term decarbonization goals. Thus, SoCalGas is strongly encouraged by the workshop’s commitment to include reliability analysis in the SB 100 modeling.¹ SoCalGas believes a loss of load expectation (LOLE) reliability analysis will lead to a better economy-wide understanding of how clean, fast-ramping and dispatchable resources will serve to meet planning targets and decarbonize the electric system.² Further, the inclusion of PLEXOS stochastic modeling to conduct the SB 100 “one day in ten year” or 1-in-10 LOLE standard reliability analysis will provide improved scenarios over those of the 2021 SB 100 Report. The workshop presentation indicated that the Sensitivity Scenarios will not be subject to reliability analysis. SoCalGas believes that it is in the public interest to include reliability in every SB 100 scenario and thus encourages the Joint Agencies to include reliability analysis in all scenarios inclusive of the Sensitivity Scenarios.

Finally, in the August 2023 SB 100 Kick-Off workshop, CARB Chair Liane Randolph stated that a 1-in-10 standard may not be sufficient in a largely electrified future where California residents and businesses are primarily dependent on electricity for their building energy needs.³ The CARB Chair speculated that the future may necessitate a higher LOLE standard threshold as climate impacts coupled with increased dependency on electricity may change the level of risk tolerated by California residents. SoCalGas recommends that the Joint Agencies maintain flexibility in their reliability modeling to allow for potentially increasing the LOLE threshold in the future.

2) Hydrogen and Carbon Capture are valuable expansion candidates for SB 100 modeling and the SB 100 discussion would benefit from more specifics about these resources.

Renewable hydrogen is a clean fuel that emits zero carbon when combusted, thus SoCalGas appreciates the Joint Agencies’ inclusion of hydrogen combustion as a potential resource and expansion candidate in the 2025 SB 100 scenarios. An important step in the current SB 100 modeling is the expansion of hydrogen production methods beyond centralized proton membrane exchange (PEM) electrolysis, specifically, the inclusion of steam methane reformation (SMR) with and without carbon dioxide (CO₂) capture enables the use of existing technologies and allows for greater use and growth of hydrogen. SoCalGas appreciates the inclusion of hydrogen as a potential

¹ CEC, Senate Bill 100 Modeling Inputs and Assumptions Staff Workshop, February 16, 2024, available at: <https://www.energy.ca.gov/event/workshop/2024-02/senate-bill-100-modeling-inputs-and-assumptions-staff-workshop>.

² “*The Evolution of Clean Fuels in California*,” SoCalGas, July 2023, available at: <https://issuu.com/stfrd/docs/cleanfuelsreliabilityreportjuly23?fr=sNDA4OTYwNzQ4NTk>.

³ CEC, SB 100 Kick Off Workshop, August 22, 2023, available at: <https://www.energy.ca.gov/event/workshop/2023-08/senate-bill-100-kickoff-workshop>

resource and believes the SB 100 discussion would benefit from a higher level of detail on SMR, such as defining which fuel sources are considered in SMR.

An important factor for realizing the use of renewable hydrogen will be ensuring that the fuel will be available at or deliverable to all intended generators and fuel cells when the time is needed. A key concern is that current SB 100 assumptions that hydrogen fuel will be produced and stored on-site may limit the ability to select/utilize hydrogen resources. Delivery of all energy sources will be a critical component to the cost analysis. Wind and solar development, a key production source for renewable hydrogen, are likely to occur hundreds if not thousands of miles from demand centers and will need to rely on new transmission capacity to deliver the power.⁴ Similarly, electrolytic hydrogen coupled with renewable generation will have similar geographic constraints. Electrolytic hydrogen may need to depend on both electric transmission and pipeline transportation for ultimate delivery to a generator. SMR hydrogen will also likely be dependent on pipelines for delivery of hydrogen. **SoCalGas encourages the Joint Agencies to consider the delivery costs for all energy resources in its modeling.**

The proposed 2025 SB 100 Expansion Candidates presented at the workshop also includes in-state retrofit of natural gas combined cycle with carbon capture. Carbon capture is widely accepted as a necessary mechanism for reaching carbon neutrality⁵ and is included in CARB's Scoping Plan.⁶ Its inclusion is a positive step forward from the 2021 SB 100 Report. SoCalGas is concerned however, with the exclusion of retrofit of natural gas combustion turbine with carbon capture. Candidate resources only include retrofit of combined cycle natural gas plants with carbon capture, but the list of candidate resources should be inclusive of the existing natural gas generation technologies (including combustion turbines). Natural gas combustion turbines are more flexible and have superior ramping capabilities as compared to natural gas combined cycle plants, making combustion turbines an important tool for balancing renewable intermittency and providing the grid with load following capabilities and peak time ramping. For this reason, **SoCalGas recommends expanding the SB 100 Expansion Candidate list to include carbon capture with all technologies of retrofit natural gas generation.**

The inclusion of hydrogen production as a potential resource in SB 100 scenario modeling acts as a positive market signal to hydrogen turbine and electrolyzer manufacturers, hydrogen producers, and power generators. This will help to develop the hydrogen market which may in turn lower overall costs for hydrogen production. Similarly, highlighting the role CCUS will play in reaching

⁴ "CAISO 2022-2023 Transmission Plan approved," CAISO, May 18 2023, available at: <https://www.aiso.com/Documents/caiso-2022-2023-transmission-plan-approved.pdf>.

⁵ The International Energy Agency (IEA) recognizes the role of carbon capture, utilization, and storage (CCUS) in retrofitting existing fossil fuel-based power and industrial plants as well as lower-cost CO₂ capture opportunities such as hydrogen production. Energy Technology Perspectives 2020: CCUS in the Transition to Net-Zero Emissions, IEA, p. 14, September 2020, available at: https://iea.blob.core.windows.net/assets/181b48b4-323f-454d-96fb-0bb1889d96a9/CCUS_in_clean_energy_transitions.pdf.

⁶ "CARB Scoping Plan", CARB, December 2022, p. 96, available at: <https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf>.

SB 100 targets will send a signal to industry players, power plants, manufacturers, and chemical companies which could help to develop the CCUS value chain and lead to effective integration of capture, storage, and utilization processes. Furthermore, the more geographic granularity included for these resources, the greater the market response local regions can play in the energy transition.

SoCalGas also recommends the inclusion of other clean fuels as the path to net-zero requires a diverse set of solutions. A clean fuel option not explicitly mentioned during the workshop is renewable natural gas (RNG), which can utilize the existing natural gas system and be used in existing natural gas (NG)-fueled power plants with or without carbon capture. In addition, it is unclear how biomass, which can be used to produce RNG and hydrogen, would be treated in the resource diversification scenario which is the scenario that is considering increased CCS adoption. The modeling framework laid out during the workshop is a great foundation. However, there are still many areas that could benefit from additional clarity on how the hydrogen and CCUS resources will be considered in the SB 100 scenarios.

3) Land use considerations in SB 100 scenario modeling need to take into account siting and deliverability constraints.

SoCalGas supports the workshop's premise that SB 100 Scenario definitions should begin with thorough consideration of land use screens. The SB 100 Inputs and Assumptions Workshop quickly followed on the heels of the SB 100 Land Use Workshop, which highlighted critical considerations for land use constraints when evaluating SB 100 resource portfolios. In the Land Use workshop, CARB's Dr. Adam Moreno noted the incredible complexity of balancing natural and working lands management for purposes of energy development, environmental quality, habitat sensitivity, greenhouse gas (GHG) and climate mitigation, and cultural importance.⁷

SoCalGas agrees with CARB and acknowledges that land use constraints pose some of the most significant challenges to the SB 100 process, given the necessary inclusion of critical project siting, stakeholder engagement, natural resource preservation, and energy system considerations. For this reason, SoCalGas recommends that the Joint Agencies consider a more holistic suite of project siting and electric deliverability factors. The State does not have unrestricted space for resource development of renewables such as solar and wind, and for the installation of electric transmission lines to transport energy to areas of highest usage. Thus, these land use constraints underscore the need for such renewable resources to be deliverable. The Joint Agencies could augment their SB 100 analyses by coupling considerations for siting with transmission and deliverability constraints and utilizing the California Independent System Operator's (CAISO) Transmission Planning Process (TPP) for where new transmission is likely to occur. Long-duration energy storage and batteries can play a significant role in avoiding new transmission by more efficient line loading of

⁷ CARB, "Natural and Working Lands Climate Planning," Dr. Adam Moreno's presentation for the 2025 Senate Bill 100 Report Land Use Workshop, February 1, 2024, available at: <https://efiling.energy.ca.gov/GetDocument.aspx?tn=254243&DocumentContentId=89602>.

existing transmission and distribution.⁸ As such, these resources should be considered in the cost analysis.

SoCalGas additionally suggests that the Joint Agencies provide a more specific suite of assumptions for each scenario to help identify where land use may pose a specific challenge to each resource portfolio scenario. It is also important for the Joint Agencies to include a scenario that decreases land impacts, favoring use of biogenic resources that have captured current atmospheric carbon. This information would allow more direct and informed stakeholder engagement and expand the ability to proactively identify challenges to resource, project, and portfolio development.

Conclusion

SoCalGas appreciates the opportunity to provide feedback as the Joint Agencies set up the inputs and assumptions framework to be used in scenario modeling for the next iteration of the SB 100 Report. The information presented at the SB 100 Inputs and Assumptions Workshop is a great start and the public would benefit from seeing a higher level of specificity around the above-mentioned topics, which should be considered as the Joint Agencies get further along in the scenario modeling process. We look forward to working with the Joint Agencies throughout the 2025 SB 100 process. Thank you for your consideration of our comments.

Respectfully,

/s/ Kevin Barker

Kevin Barker
Senior Manager
Energy and Environmental Policy

⁸ Jacqueline A. Dowling, Katherine Z. Rinaldi, Tyler H. Ruggles, Steven J. Davis, Mengyao Yuan, Fan Tong, Nathan S. Lewis, and Ken Caldeira, "Role of Long-Duration Energy Storage in Variable Renewable Electricity Systems," *Joule*, Volume 4 Issues 9, 2020, p. 1907-1928, available at: <https://www.sciencedirect.com/science/article/pii/S2542435120303251>.