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**Comments on SB 100 Joint Agency Report Update Kickoff
Workshop**

Additional submitted attachment is included below.



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

SUBJECT: SDG&E Comments on SB 100 Joint Agency Report Update Kickoff Workshop (Docket # 23-SB-100)

San Diego Gas & Electric Company (SDG&E) appreciates the opportunity to provide comments in response to the August 22, 2023, SB 100 Joint Agency Report Update Kickoff Workshop. SB 100, as codified in California Public Utilities Code Section 454.53, directs the California Energy Commission (CEC), California Public Utilities Commission (CPUC) and California Air Resources Board (ARB) to include all of the following in the Joint Agency Report:¹

- A. A review of the policy described in subdivision (a) focused on technologies, forecasts, then-existing transmission, and maintaining safety, environmental and public safety protection, affordability, and system and local reliability.
- B. An evaluation identifying the potential benefits and impacts on system and local reliability associated with achieving the policy described in subdivision (a).
- C. An evaluation identifying the nature of any anticipated financial costs and benefits to electric, gas, and water utilities, including customer rate impacts and benefits.
- D. The barriers to, and benefits of, achieving the policy described in subdivision (a).
- E. Alternative scenarios in which the policy described in subdivision (a) can be achieved and the estimated costs and benefits of each scenario.

The initial *2021 SB 100 Joint Agency Report*² (“SB 100 Report”) laid an important framework for informing the electricity sector’s transition to providing energy sourced from 100% renewable and zero-carbon resources by 2045. In the report, the Joint Agencies recognized that further analysis would be necessary to ensure that portfolios presented in future reports would benefit from reliability analyses.

¹ Subdivision (d) of California Public Utilities Code Section 454.53.

² *2021 Joint Agency SB 100 Report*, available at <https://www.energy.ca.gov/publications/2021/2021-sb-100-joint-agency-report-achieving-100-percent-clean-electricity>.

SDG&E was encouraged by much of the discussion in the Kickoff Workshop and pleased to hear CEC staff's interest in incorporating several significant improvements in the forthcoming 2025 SB 100 Joint Agency Report Update. **As the Joint Agencies undertake modeling efforts for the upcoming SB 100 Report Update, it is critical that consideration be given to how each portfolio balances providing a clean, reliable, affordable, and feasible resource mix.**

SDG&E respectfully submits the following feedback for Joint Agency consideration and looks forward to engaging in more detailed discussion as the SB 100 processes continue.

I. “Zero-carbon resources” should be clearly defined to provide greater market certainty that subsequently facilitates infrastructure development over long lead times.

A diverse portfolio of clean energy resources will be needed to support shared decarbonization objectives while maintaining a reliable and affordable power supply. While the State's Renewables Portfolio Standard (RPS) clearly outlines certain technologies that can satisfy clean electricity procurement through 2030, no such clarity has been provided for “zero-carbon resources.”

However, based on the results of the initial SB 100 modeling in the 2021 Report, and CARB's 2022 Scoping Plan Update,³ it is clear that historical investments in new energy infrastructure will be needed to support California's clean energy and climate goals. The 2025 SB 100 Report Update presents an important opportunity to provide strong signals that encourage development of these resources.

The modeling completed in the 2021 Report included important “generic firm dispatchable” and “generic firm baseload” resources as possible zero-carbon resources, noting that this could include a wide variety of emerging technologies.⁴ The 2025 SB 100 Report should clearly define the suite of “zero-carbon resources” that will be needed to meet SB 100 decarbonization goals; doing so will reduce uncertainty and encourage timely industry action in developing adequate resources and delivering necessary infrastructure.

SDG&E understands that arriving at specific definitions for which resources should be considered “zero-carbon” will require a multitude of considerations. As an important next step, we encourage discussion with the Joint Agencies and stakeholders to advance clear definitions that will shape the trajectory of the electric sector's decarbonization transition.

This past week, ARB initiated its discussions on implementation of SB 1075, which – amongst other tasks – directs the joint agencies to holistically evaluate the applications and use cases of hydrogen and its role in helping to achieve the state's climate, clean

³ California Air Resources Board *2022 Scoping Plan for Achieving Carbon Neutrality*, available at: <https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf>

⁴ 2021 SB 100 Joint Agency Report at page 12.

energy, and clean air objectives. Planned alignment with the SB 1075 effort provides another helpful and timely avenue to clearly define and articulate key terms and principles, develop robust recommendations for hydrogen policies, and send clear and strong market signals to leading stakeholders.

Parallel to the development of specific definitions, SDG&E encourages the Joint Agencies to proceed with scoping and initiating the reliability modeling process. While establishing specific definitions for “zero-carbon resources” will be critical from a state policy perspective, the ability to model the reliability of technologies utilizing certain fuels should not be dependent on such specifics. That is – for example – the type of hydrogen being used in hydrogen fuel cells or hydrogen combustion turbines should not impact the outcome of the reliability analysis.

The gamut of potential hydrogen definitions to be considered certainly calls for further discussion. As noted above, SDG&E encourages alignment of this discussion with SB 1075 implementation. However, while there are implications related to the production pathway associated with the hydrogen utilized – whether that be electrolysis, steam methane reformation, autothermal reformation, pyrolysis, or other methods not yet commercialized – the modeled reliability attributes of the electricity produced from this dispatchable fuel should be consistent.

Separate from necessary discussions on definitions to inform policy, and specifically pertaining to recommendations for SB 100 modeling assumptions, SDG&E suggests the following be explicitly incorporated as “zero-carbon resources,” and not categorized broadly as “generic” resources:

- **Clearly defined candidate resources including:**
 - Hydrogen combustion facilities⁵
 - Hydrogen fuel cells
 - Natural gas generation with carbon capture and storage (CCS)
 - Includes natural gas-fired generation facilities retrofitted with on-site, point-source carbon capture technologies and direct air capture, if needed, to capture additional generation emissions netting those facilities to zero emissions.

These candidate resources should capture a reasonable forecasted capital and operational cost included in the Capacity Expansion Modeling (CEM) and will provide insight to the role they play in achieving a reliable decarbonized electric system.

⁵ CARB’s 2022 Scoping Plan Update calls for approximately 4 GW of hydrogen combustion turbine generating capacity in 2035, and approximately 9 GW in 2045, to support the electricity sector. Further definition around the types of hydrogen that could be used for this purpose should be discussed in the SB 1075 proceeding to ensure alignment of reliable energy system needs with emissions reduction objectives.

In addition, SDG&E recommends that SB 100 modeling incorporate various fuel pricing scenarios:

- **Various fuel price scenarios including:**
 - High, medium, and low hydrogen in \$/kg
 - High, medium, and low natural gas in \$/MMBtu

These fuel price scenarios will help to identify the points at which these resources represent viable – and potentially necessary, in some cases – options to achieve reliability in a decarbonized system. Additionally, modeling a range of fuel price scenarios will be critical in informing policy decisions, and will help identify how further assessments of fuel types can expand collective understanding of potential impacts to ratepayer costs. Adequately modeling and evaluating the impacts of SB 100's expectations and resources inclusion will help stakeholders identify, plan, and build out the State's infrastructure.

II. Reliability modeling is essential for ensuring that all identified SB 100 pathways will result in dependable power.

As has been previously noted by many esteemed energy and climate leaders, the transition to a decarbonized economy will require transformative action in many sectors. California's clean energy policies, including SB 100 and the Renewables Portfolio Standard, pave the way for clean electricity. To facilitate decarbonization of other sectors, such as buildings and transportation, this clean electricity must also be reliable and affordable.

In 2022, SDG&E released its *Path to Net Zero* decarbonization analysis.⁶ The study was the first to evaluate economywide decarbonization in California while maintaining electric system reliability based on the 1-in-10 loss of load expectation (LOLE) industry standard adopted by the North American Electric Reliability Corporation (NERC).

The LOLE method of measuring reliability models the expected number of days per year that electricity production cannot meet customer demand; the NERC standard models an approach where reliability is not met on 1 day in a 10-year span. The findings in *Path to Net Zero* provide new insights about generation capacity and technologies needed to support reliable decarbonization.

Like ARB's 2022 Scoping Plan Update, SDG&E's study shows that electric consumption will significantly increase, and the utilization of renewable resources will grow along with it. However, by incorporating reliability into the SDG&E's analysis, the amount of renewable capacity needed is greater in SDG&E's analysis than the capacity needs identified in the Scoping Plan. In addition, the modeling found that clean fuels will play a significant role, by helping to provide clean, dispatchable electric generation resources

⁶ SDG&E's *The Path to Net Zero: A Decarbonization Roadmap for California*, available at www.sdge.com/netzero.

and helping to reduce emissions from hard-to-decarbonize sectors and end-uses, such as medium-duty and heavy-duty transportation and certain industrial applications.

As the Joint Agencies decide on the details of performing reliability analyses, SDG&E strongly recommends the base case use of a 1-in-10 LOLE. SDG&E supports additional scenarios to model more stringent reliability metrics as long as they remain as additional scenarios and do not vary from the current industry standard in the base case.

- A. *SDG&E is supportive of the CEC’s proposal to model a wide range of scenarios and resources.*

California’s electricity sector will need all options on the table for exploring how to decarbonize quickly, reliably, and at the lowest cost to energy consumers. SDG&E is supportive of an inclusive approach to evaluating decarbonization with various resources, including technologies such as hydrogen and natural gas paired with CCS. In addition, SDG&E acknowledges and supports the CEC’s proposed scenario which would model a greater amount of resources from the broader western grid – which could inform cost-effectiveness determinations and shape California electric grid resiliency.

- B. *Reliability modeling should be applied for the 2045 long-term decarbonization goal, as well as in the interim goal years.*

Recent legislation established interim clean electricity targets of 90% clean energy by 2035 and 95% by 2040.⁷ While the 2045 timeline allows for further infrastructure and technological development, the truncated adoption timelines for the interim year targets may present a greater challenge for reliability. This highlights the critical need for reliability checkpoints on the path to decarbonization. By incorporating reliability modeling for the interim years in addition to 2045 analysis, the SB 100 Report Update will provide a stronger perspective on realistic portfolio approaches.

- C. *Incorporating modeling for future weather variants and projected climate trends will help calibrate the anticipated impacts of extreme weather events on energy demand.*

During the workshop, CEC Demand Forecast staff discussed updated approaches to addressing the impacts of extreme weather events and climate change. As SDG&E has shared in the Demand Forecast process,⁸ SDG&E is generally supportive of the efforts to incorporate modeling for future weather variants and projected climate trends within this year’s demand forecast. In recent years,

⁷ Senate Bill 1020 (Statutes of 2022), as codified in California Public Utilities Code Section 454.53: https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=202120220SB1020.

⁸ SDG&E September 1, 2023, Comments on IEPR Commissioner Workshop on Load Modifier Scenario Development: <https://efiling.energy.ca.gov/GetDocument.aspx?tn=252121&DocumentContentId=87126>.

California has witnessed extreme weather events with increasing frequency. As these types of events occur with greater regularity, utilizing historical weather data may not appropriately factor in climate risks that may result in changes in customer load, as well as resource availability. SDG&E is currently exploring the translation and integration of the latest data from California's Fifth Climate Change Assessment,⁹ (CMIP6 SSP based scenarios) expected to be released in 2023 and align with the best climate science data. A refreshed focus on modeling anticipated weather impacts should better support reliability assessments by giving needed consideration to observed and anticipated changes in trends that could have significant impacts on energy demand. Acknowledging the thoughtful remarks made by ARB Chair Liane Randolph during the Kickoff Workshop regarding the potential need to incorporate a wider array of extremes impacting reliability, SDG&E notes that including updated CEC Demand Forecast data could help address this concern.

III. Electricity must be affordable to facilitate consumer adoption of electric vehicles and appliances.

The electricity sector will play an increasingly important role in supporting transportation and building sector decarbonization.

A. Non-ratepayer sources of public funding can help reduce energy costs.

The federal Infrastructure Investment and Jobs Act (IIJA) and Inflation Reduction Act (IRA) create unique opportunities to advance clean energy and climate policy while reducing costs borne by California ratepayers. SDG&E is supportive of the State's efforts to tap into these non-ratepayer sources of public funding; SDG&E is similarly exploring opportunities to pursue these and other funding sources.

It is critically important that the state move rapidly to create a policy environment that can attract the influx of funding available to support decarbonization and the innovative technologies needed to achieve carbon neutrality goals. Utilizing federal funding could significantly reduce the cost of investments in clean technologies that will facilitate a balanced clean energy portfolio. But there is a limited window of time to establish clear policy goals and provide the necessary signals to federal agencies and market stakeholders.

B. The transmission infrastructure needed to support the highlighted pathways will vary and should be evaluated in a manner that measures affordability and resiliency across scenarios.

⁹ See [Climate Assessment, Science, and Research - Office of Planning and Research \(ca.gov\)](#) for more information.

To the extent possible, the SB 100 report should evaluate how the state can prioritize developing transmission infrastructure to deliver clean energy in a manner that is resilient and cost effective to ratepayers. This means that the SB 100 portfolio should not cluster resources in only a few areas but should take advantage of new transmission opportunities to unlock cost-effective resources close to the various load centers. It should be recognized that transmission development may represent a cost-effective solution that is essential to support regional Load Serving Entities (LSEs) in their procurement efforts. Subsequently, potential challenges related to the long lead time required to deploy this transmission should be accounted for and potential streamlining opportunities considered.

Further, exploring required transmission infrastructure could shed light on important land use considerations that may impact the feasibility or implementation time frame of certain pathways.

Conclusion

SDG&E encourages the CEC and Joint Agencies to continue to actively solicit stakeholder feedback throughout the SB 100 Report Update process. Staff identified several key milestones in the Update process, such as completion of initial modeling, that would benefit from public review and input. As part of public engagement processes, SDG&E encourages the release of technical appendices outlining the specifics of inputs and assumptions being used to inform the Report Update so that stakeholders can fully evaluate the modeling pathways.

Thank you for your consideration of this feedback. If you have any questions or would like to discuss these comments in greater detail, please contact me at (916) 708-7409 or staheri@sdge.com.

Sincerely,



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