

**DOCKETED**

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**SDG&E Comments on the SB 100 Joint Agency Report's Draft  
Report Workshop**

*Additional submitted attachment is included below.*



Miguel Romero  
Vice President  
Energy Supply  
8362 Century Park Ct.  
San Diego, CA 92123

December 18, 2020

California Energy Commission  
Docket Office  
1516 Ninth Street  
Sacramento, CA 95814-5512

Joint Agencies: California Energy Commission, California Public Utilities Commission, and  
California Air Resources Board

**RE: San Diego Gas & Electric Company Comments on the SB 100 Joint Agency  
Report's December 4, 2020 Draft Report Workshop; Docket No. 19-SB-100**

Dear Commissioners and Board Members:

San Diego Gas & Electric Company (SDG&E) appreciates the opportunity to submit comments regarding the December 4, 2020 Draft Report Workshop on the Senate Bill 100 (SB 100) Joint Agency Report.

Recent events make it abundantly clear that bold action is necessary to address climate change and shape a sustainable future. We are seeing unprecedented weather and fire patterns every year and billion-dollar investments to protect Californians from the threats posed by climate change. At SDG&E we're committed to enabling and accelerating the transition to zero-carbon electricity in every feasible way on behalf of our customers and the communities we serve. We support the SB 100 report efforts as they serve as a starting point to evaluate grid feasibility and provide high level estimations of the costs to achieve multiple pathways to zero-carbon electricity.

SDG&E understands the analysis informing the SB 100 reports require large amounts of data inputs and that every report is a snapshot of the best available data and assumptions at the time. However, every four years is not frequent enough to effectively capture changing market dynamics. Due to the urgency of addressing climate change, and the need to send appropriate market signals given long lead times in the development and adoption of certain technologies, it is imperative that SB 100 modeling and reporting be conducted more often. SDG&E believes that issuing the SB 100 reports every two years will capture changes in emerging technologies and better align with procurement proceedings. SDG&E looks forward to more frequent iterations of this analysis.

The goals set forth in SB 100 call for a complete transformation of the way energy is generated, delivered and consumed. This call to action requires a massive infrastructure overhaul that can only be accomplished by adopting a multifaceted approach that prioritizes reliability, flexibility and affordability. Further, recent blackouts confirm that to preserve reliability we must assure an adequate and flexible energy supply consisting of a mix of technologies and dual fuels pathways as we continue to shape the paths to achieve California's 100% renewable and zero-carbon electricity goals. Similarly, evidence of severe and systemic economic disparities, heightened by the recent pandemic confirms that we must maintain affordability. And we must do these things even as we push to achieve decarbonization.

SDG&E has prepared the enclosed comments in an effort to support achieving the goals of SB 100. In summary, SDG&E urges the Joint Agencies to (i) commit to support emerging technologies by more frequent analysis, (ii) prioritize robust reliability assessments in its examination of opportunities to decarbonize and to retain strategic components of the gas fleet and gas infrastructure to ensure reliability, (iii) make progress toward measuring the affordability impact of SB 100 by ensuring modeling and input cost assumptions are underpinned by best available data, and (iv) remain technology neutral as a mix of solutions will likely reveal opportunities for reliability and affordability. SDG&E believes that this additional analysis will enable the Joint Agencies to put forward a policy framework to achieve the goals of SB 100 without sacrificing reliability or affordability.

SDG&E looks forward to working collaboratively with the Joint Agencies to enable the transition to 100% renewable and zero-carbon electricity in a manner that is most reliable, affordable, flexible and sustainable.

Sincerely,

A handwritten signature in black ink, appearing to read 'Miguel Romero', written in a cursive style.

Miguel Romero  
Vice President  
Energy Supply

COMMENTS SUBMITTED BY SDG&E

**The SB 100 Report will be influential to California’s clean energy future and should thus be updated often.**

- **SB 100 Joint Agency Report will inform and influence California’s energy procurement proceedings and the evolution of the clean energy future .** SDG&E appreciates repeated assertions by the Joint Agencies both in the draft report and in the presentation that the SB 100 report is limited to being “Directional-Only.” Procurement mandates and targets will not come from the report as the Joint Agencies have asserted, but rather from actionable procurement proceedings from the CPUC and CEC such as the CPUC’s Integrated Resource Plan (IRP). Despite this message being clear to SDG&E, comments made by other stakeholders illuminates the fact that others still view the report as “actionable.” Thus, SDG&E recommends that statements need to go beyond stating the report is “directional.” To avoid misinterpretations by stakeholders, legislators and regulators, the Joint Agencies should additionally state that the report is not “actionable” and point to proceedings that are actionable. The report’s strength is twofold. Firstly, the report will be the primary input that will inform directions of procurement proceedings. Secondly, and equally if not more important, the report will inform clean energy technology investors, clean energy purchasers (LSEs), regulators, legislators and the public of the probable scenarios of California’s energy future. The energy sector and investment market will most likely read the report to inform their assumptions on which technologies they should be focused on. Additionally, the investment market is also looking to the SB 100 report to define what is eligible to qualify as a zero-emission resource. It is therefore a great responsibility to ensure that the directionality and signals of the SB 100 report be unbiased, transparent and inclusive. Today’s report will likely have a substantial effect on the resource types available in the future.
- **The SB 100 modeling and SB 100 Joint Agency Report should be updated every two years to capture changes from procurement proceedings and updates on emerging technologies.** SDG&E understands that the SB 100 report frequency is required to be at least every four years. However, as explained in the section above, the SB 100 modeling and Report will be viewed by many and will have substantial impact on the Clean Energy technology development and deployment. Important pricing assumptions, regulatory requirements, model updates, procurement mandates, and other relevant important information will change often. Given the dynamic and evolving nature of energy markets and decarbonization technologies, modeling and reporting should be done at least every two years. More frequent reporting would ensure that policymakers and market participants do not rely on outdated information to make investment decisions, which could serve to the detriment of ratepayers.

**SB 100's success hinges on the grid's ability to reliably deliver carbon free energy.**

- **Draft report recognizes the need to incorporate reliability assessments in modeling** SDG&E appreciates the draft report's acknowledgement of the need for reliability assessments. In the next modeling iteration, the Joint Agencies will be able to satisfy the SB 100 requirement to maintain "... reliable operation and balancing of the electric system" by adding the upcoming evaluations of scenarios in all 8,760 hours of the year and utilizing probabilistic production cost model runs to assess reliability over multiple different conditions. SDG&E understands that each individual scenario will have unique reliability needs as well as unique reliability associated costs and SDG&E looks forward to seeing these results in the next reporting of modeled scenarios. SDG&E is also encouraged that the current draft report is transparent in making disclaimers that modeled scenario costs may be affected by the upcoming reliability assessments. SDG&E is, however concerned that the current report, which does not incorporate the required reliability assessments, continues claims of achievability despite being unsupported. Until reliable operation is modeled in upcoming reports, today's claim that the desired SB100 outcome is "achievable with existing technologies" is premature.
- **Future modeling should include gas fleet retention costs.** The draft report states that "Natural gas capacity is largely economically retained, but fleet-wide utilization decreases by 50% compared to a 60% RPS future." This statement recognizes the need for natural gas plants to support the reliability of California's electricity grid. SDG&E is encouraged that the report recognizes that SB 100 costs estimates need to include the cost of supporting a portfolio that consists primarily of intermittent resources and that future modeling will conduct further analysis to "evaluate costs associated with maintaining an aging gas fleet operating in a high renewables system, including an evaluation of existing gas capacity maintenance costs."

**The Joint Agency Report (Report) should submit an implementable solution based on modeling efforts that incorporate all costs and includes affordability.**

- **Measuring affordability starts with an affordability metric and reasonable cost modeling.** SDG&E agrees that there is no "baseline threshold to determine when something is or is not affordable" and that it is reasonable to utilize the definitions and methodology of the CPUC's Affordability OIR, proceeding (R.18-07-006), to answer that question. However, defining an affordability metric is only part of the challenge in answering the affordability question. Another element is the costs of SB 100 scenarios. It is imperative that realistic cost inputs, assumptions and modeling be utilized to estimate the true costs. SDG&E requests that the final report detail next steps once the Affordability metrics are finalized. For example, the Joint Agencies should commit to a rate impact study of each scenario with the goal of comparing rates resulting from SB 100 scenarios to the Affordability benchmarks.
- **New modeling will better estimate costs and should include cost ranges.** The draft report acknowledges that transmission planning and development and reliability

associated costs were not included in the current round of modeling. SDG&E is encouraged by the draft report's commitment to use CAISO's Transmission Planning Process (TPP) study for Offshore Wind transmission costs if/when that information becomes available and the report's recognition to address local resource and transmission needs through "a unified planning process for the development of utility-scale energy projects and their respective transmission lines." This collaborative process needs to occur especially as new LSEs are entering the market and other LSEs are experiencing load departure. The electricity sector is experiencing a challenge in determining which entities should be responsible for new resource builds in a landscape where there is uncertainty of load for LSEs. The Joint Agencies should work with relevant proceedings at the CPUC and CEC that address this uncertain responsibility and the potential for a Central Procurement Entity.

SDG&E is also encouraged by the Joint Agencies' commitment to new modeling that will analyze all hours of the year and use probabilistic production cost model runs to analyze reliability over a wide range of conditions. Since this type of modeling will create multiple cost outputs for each scenario, SDG&E recommends that the Joint Agencies include the cost ranges at a specified confidence level, (for example 95%), in their analyses of modeled scenarios. Adding cost ranges to the scenarios should address and make transparent the cost impacts with each scenario. This feedback loop will help stakeholders understand that each scenario comes with different ranges/risks of success and affordability.

**New modeling will better represent cost impacts associated with reliability assessments; report needs to be more transparent in addressing all cost pressures.** It is worth noting that the lack of reliability assessment modeling, necessarily means that draft report cost estimates are missing reliability assessment costs. Adding more constraints to modeling, all things being equal, increases costs. Thus, the absence of a reliability assessment, resulted in cost estimates that were too low. While the draft report makes clear that reliability assessments were excluded in the modeling, it falls short of explaining that its absence resulted in overly optimistic costs for all scenarios. The draft report instead claims that costs are likely to decrease, for example: "SB 100 is achievable, though opportunities remain to reduce overall system costs." Or "Cost reductions and innovation in zero-carbon technologies, as well as load flexibility and energy storage development, can further reduce implementation costs." These generalizations mischaracterize costs associated with achieving decarbonization targets. SDG&E recommends that wherever costs are mentioned, that the report be transparent and objective by including both potential upward pressures from including reliability assessments and potential downward pressures due to technology advancement.

The Joint Agencies should consider performing a power flow model to incorporate transmission constraints as well as the capacity expansion model. Battery storage modeling presents its own challenges that need to be considered. Power flow modeling is necessary to ensure batteries are charged in hours that energy is available. In addition, not allowing the battery to charge will make it unavailable in later hours when the battery output was expected/scheduled. Power flow modeling would also help more accurately

model new build wind and solar candidate resources which will, as stated in the September 2, 2020 Draft Modeling Workshop, require hundreds of square miles of land which will necessarily be located far from load and will thus need transmission lines for delivery. Again, more robust reliability screening will help illuminate more accurate resource needs and costs.

- **Realistic and affordable decarbonization pathways are critical to achieving carbon neutrality across all sectors, especially transportation in California.** Affordability is also critical for transportation and building electrification because the success of electrification is inversely linked to the price of electricity. Lower electricity costs will likely accelerate transportation and building electrification. Accordingly, affordability is key to help lower emissions and air pollution in other sectors. The Joint Agencies should keep this cross-sector end goal in mind when modeling costs and affordability. Assessing the inter-sector trade-offs and impacts can materially impact costs and portfolio needs. Successful modeling of SB 100 requires a thoughtful balance to minimize customer costs while meeting State policy goals.
- **Measuring costs against a sustainability test may also be useful.** SDG&E has given some thought to the challenges with decarbonization and affordability issue. Due to the unprecedented build-out that will be required to meet SB 100 goals, it is likely costs will be quite high and possibly above the benchmarks determined as a result of the Affordability OIR. It is imperative that the Joint Agencies include customer bill analysis in conjunction with the Affordability OIR and that analysis should be transparent and disclose cost trajectory and impact to customers in achieving SB 100 goals. The bill analysis will help address the statute requirement that the Joint Agencies to prevent “unreasonable” impacts to rates. However, it is not clear that this will be possible if the definition of unreasonable is solely compared to the Affordability OIR metrics. One potential alternative perspective is to run a study or analysis that calculates the total estimated cost (to the extent quantifiable) of climate change impacts if the state were not to implement SB 100. One such study is being conducted by E3 as part of the Integrated Distributed Energy Resources (IDER) proceeding (R.14-10-003). In the study E3 attempts to quantify the avoided costs of air quality improvements associated with distributed energy resources (DERs). A similar study could be conducted for SB 100 that could result in a Sustainability metric that the Joint Agencies could use to benchmark the SB 100 costs against.

**The pathway to SB 100 requires a framework that supports flexibility and technology inclusivity.**

- **Emerging technologies should be encouraged by fair treatment under the report.** SDG&E supports technology inclusivity and is encouraged with the draft report’s seeming agreement in stating that “[p]ortfolio diversity, both technological and geographical, is generally valued by the model” and that this diversity lowers overall costs. However, the report also seems to send market signals that certain technologies are



unlikely to be selected, thus potentially sealing the fate of that technology. Instead, the focus ought to be on encouraging enabling technologies like carbon capture, utilization, and storage (CCUS) and green hydrogen and other clean fuels as drop-in fuels. These emerging technologies hold the key to innovative and transformative breakthroughs and can provide discernable long duration grid reliability benefits.

Further, SDG&E appreciates the report's clear statements that emerging technologies will continue to be analyzed as part of the ongoing SB100 efforts and that these technologies will be added to Core scenarios as more information is available. The broadening of technology diversity will help make SB 100 more cost effective and reliable. However, the draft report also appears to pre-determine the success of some technologies over others. For example, the draft report includes Offshore Wind (OSW) as a Candidate Resource in Core Scenarios, even though similar to drop-in fuels, it is not yet commercially available in California. Selecting OSW over other emerging technologies may send market signals to develop OSW over other technologies that were not treated as favorably by the draft report. Similarly situated technologies such as CCUS and Hydrogen as a drop-in fuel should have been equally considered. While it is too late to include these other resource types for the first report, the final report should signal to developers that in the next round all emerging technologies (including CCUS, Hydrogen as a drop in fuel, OSW, and all other technologies with cost estimates) will be available for the model to select in every Core Scenario. Pre-determining the future success of potential emerging technologies into the core scenarios is a disservice to California. Given the magnitude of the climate challenges we face today, all viable technologies should be on the table.

- **Keep Natural Gas plants and infrastructure to ensure resource diversity and reliability.** SDG&E is concerned with the presentation of the No Combustion scenario as a feasible low-risk scenario. This scenario that completely eliminates combustion has the opposite effect of technology inclusivity. The No Combustion scenario would categorically eliminate multiple resource types and reduce the flexibility and availability of resources to achieve SB 100 goals in an affordable manner. Without combustion, multiple viable *zero-carbon and potentially negative carbon* solutions are categorically eliminated. For example, the outright elimination of combustion would foreclose natural gas generation with carbon capture, utilization and sequestration (CCUS), renewable natural gas (RNG) generation, and hydrogen (H<sub>2</sub>) generation. These are important tools that can help California achieve its zero carbon goals while meeting the reliability standards of the electric grid in an affordable way. Removing these decarbonized firm resources would decrease the diversity of resources and overall reliability of the grid. Fewer choices typically lead to higher costs and reduced resource availability, thus potentially jeopardizing the robustness and stability of the electric system. The Joint Agencies should seriously consider the reliability implications of removing natural gas plants and infrastructure as would be required in the No Combustion Scenario. SDG&E is also concerned with the viability and higher costs associated with No Combustion. The draft report estimates that the No Combustion scenario is directionally \$8 Billion above the Core Scenario. However, the No Combustion Scenario largely replaced the gas fleet with zero-carbon firm resources which already assumes reduced prices of \$60/MWh. The current pricing for the zero-carbon firm resources used in this

scenario, hydrogen fuel cells and new geothermal resources, both have Levelized Cost of Energy (LCOEs) above \$100/MWh. Were the LCOE prices used, the No Combustion Scenario cost would have been above \$8 Billion. The draft report is also hopeful that future innovations can reduce technology costs and thereby lower the cost of meeting SB 100. The draft should make clear that the scenarios with opportunities to benefit from declines in technology pricing are those that do not rely on the pre-reduced technology prices assumed in zero-carbon firm resource categories. In addition, SDG&E expects that once reliability assessments are incorporated and capacity is added to this scenario, the cost of the No Combustion scenario will increase above the \$8B/year premium to the Core Scenario. This additional \$8B+/year will need to be paid by ratepayers who are already struggling. And while the Affordability OIR has not yet defined what affordability means, \$8B+/year will surely be deemed significant. Thus, due to cost and reliability concerns, the initial draft report should caveat that for the No Combustion scenario to become a feasible scenario it will require additional reliability and transmission cost modeling as well as using technology-specific pricing; the addition of this modeling and change of pricing assumptions will increase the cost estimates of scenario.