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SDG&E and SoCalGas Comments on SB 100 Implementation Workshop-Planning for SB 100 Resource Build

Additional submitted attachment is included below.

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California Energy Commission
Docket Office, MS-4
Docket No. 21-SIT-01
715 P Street
Sacramento, CA 95814

RE: San Diego Gas & Electric Company and SoCalGas Joint Comments on the SB 100 Joint Agency February 22, 2022, Workshop on Land Use Implications; Docket No. 21-SIT-01

Dear Vice-Chair Gunda, Commissioner Douglas, President Reynolds, Commissioner Rechtschaffen, Commissioner Houck, Commissioner Reynolds, and President Mainzer:

San Diego Gas & Electric Company (SDG&E) and SoCalGas appreciate the opportunity to submit comments regarding the Senate Bill (SB) 100 Workshop on Land Use Implications jointly hosted by the California Energy Commission (CEC), the California Public Utilities Commission (CPUC), and the California Independent System Operator Corporation (CAISO) on February 22, 2022.

The goals set forth in SB 100 call for a complete transformation of the way energy is generated, delivered, and consumed. Decarbonizing California's grid will require new solutions, unprecedented build-out rates, and a massive infrastructure overhaul. SDG&E believes scenario creation, modeling, and analysis should be viewed from a lens that prioritizes the following three pillars: **reliability, flexibility/technology inclusivity, and energy affordability**. The August 2020 reliability events confirm the importance of the first two pillars. To preserve reliability as we continue to shape the path to achieving California's electricity sector decarbonization goals, we must assure an adequate and flexible energy supply consisting of a mix of technologies,

utilizing clean fuels, that can be routed to load centers by transmission. Similarly, evidence of economic disparities, heightened by the pandemic and rising cost of energy, highlights pillar three, the need for energy affordability, especially for customers least able to afford it. It is critical that our decisions and actions uphold these three pillars as we push to achieve decarbonization.

SDG&E's March 2021 pledge and SoCalGas's ASPIRE commitment to reach net zero GHG emissions in operations and delivery of energy by 2045 show that we are committed to enabling and accelerating the transition to zero-carbon electricity on behalf of our customers and the communities we serve.[1] The Joint Agency SB 100 report, the CPUC Integrated Resource Planning (IRP), the Scoping Plan, and the CAISO's 20-Year Transmission Outlook are necessary starting points to provide high level estimations of the costs, multiple pathways, procurement planning, and evaluation of grid feasibility with the goal of achieving zero-carbon electricity. SDG&E and SoCalGas agree that Land Use Implications need to be part of scenario analysis within SB 100 analysis. SDG&E and SoCalGas agree that Land Use Implications need to be part of scenario analysis within SB 100 and Scoping Plan analysis.

At the workshop, the agencies shared that land use analysis is already being incorporated in areas such as the IRP, Busbar Mapping, TPP, the Starting Point Scenario, and SB 100 analysis. Further, the agencies made clear their intentions to expand the utilization of land use considerations and analysis in these areas and in the CEC's Integrated Energy Policy Report (IEPR). SDG&E and SoCalGas appreciate this progress and observe that, to the extent feasible, increasing land-use analysis could provide an opportunity for the agencies to refine planning efforts from statewide to a more granular scope based on regions identified in land use analysis. For example, the upcoming 2024 SB 100 Report scenarios could show build-out rates by region as informed by its land-use analysis. This increased granularity could be helpful in expediting resource and transmission build planning.

SDG&E and SoCalGas look forward to the inclusion of land-use planning as part of the 2024 SB 100 Report analysis and modeling, and support the opportunity to be partners in the transparent process. The coordination between the CEC, CPUC, CAISO, and SB 100 stakeholders is especially encouraging as this collaborative effort is critical to ensure that SB 100 scenarios result in a reliable, diverse, and an affordable grid whose clean resources are supported by transmission and pipelines that can deliver clean electricity and clean fuels to homes, businesses, and industry.

[1] "Building a Better Future," SDG&E, October 2021, available at: https://www.sdge.com/sites/default/files/documents/Sustainability_2021.pdf and "Leading Through Sustainability," SoCalGas, August 2021, available at: https://www.socalgas.com/sustainability/leading-through-sustainability.

Land-Use Assessments will be needed to create realistic scenarios for reliability assessments

As stated in the 2021 SB 100 Joint Agency Report[2], future SB 100 Reports need to include robust reliability modeling. As SDG&E and other stakeholders[3] have emphasized, the metric used in future reliability modeling must include Loss of Load Expectation (LOLE)[4] reliability assessments with a planning target of 0.1 days/year, or 1 day in 10 years to ensure each scenario is reliable, and therefore feasible, while minimizing cost. Ensuring each proposed scenario is based on realistic portfolios of resources and transmission is a necessary precursor to appropriately model those scenarios via an LOLE study. Credible results of reliability assessments can only be obtained if the inputs and assumptions are based on realistic assumptions.

As was well documented in the SB 100 Report, the future California grid will primarily consist of utility-scale solar and wind resources and will require unprecedented build-out not only of both resource types but also the new transmission necessary to bring this renewable power to load centers. As was acknowledged in the workshop, this build out will require unprecedented land use. Work being conducted by the Environmental Defense Fund (EDF), the Clean Air Task Force (CATF) and the Nature Conservancy supports the SB 100 conclusion that grid decarbonization is achievable; the work also emphasizes there are significant constraints that must be considered including limited available land for large renewable buildouts as shown in the red portions of the map below.[5] As such, the inputs and assumptions used to build the next round of SB 100 scenarios will need to include land use considerations. SDG&E therefore is pleased that the agencies are focusing on coordinating resource and transmission planning with land use for future SB 100 modeling and analysis.

SDG&E further recommends that the land use analysis be used to build scenarios whose portfolios are feasible from a land use perspective and that scenarios that are unsupported by this analysis be discarded regardless of other benefits from the scenario. The accuracy of SB 100

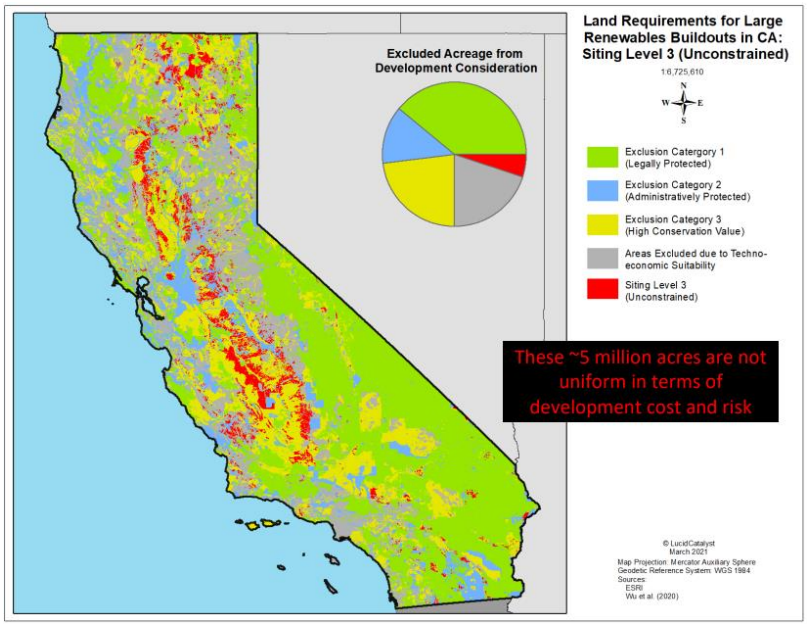
[2] California Energy Commission, California Public Utilities Commission, and California Air Resources Board. March 2021. 2021 SB 100 Joint Agency Report, Achieving 100 Percent Clean Electricity in California: An Initial Assessment. CEC-200-2021-001, p. 17. https://www.energy.ca.gov/sb100#anchor_report.

[3] Los Angeles Department of Water and Power's (LADWP) September 15, 2020 comments on SB 100 modeling draft results; Sacramento Municipal Utility District (SMUD) September 15, 2020 comments on SB 100 modeling draft results; Joint LSEs' December 18, 2020 comments on the draft SB 100 Report; Peninsula Clean Energy Authority December 18, 2020 comments on the draft SB 100 Report

[4] LOLE studies are the industry-accepted approach traditionally used by resource planners to establish system resource need. Modeling efforts that attempt to take short-cuts may provide a false sense of security. LOLE studies address all 8,760 hours of the year and are thus able to assess the reliability contributions of all resource types including intermittent resources and use-limited 4-hour batteries. In slide 120 of the CPUC's September 1, 2021 IRP Workshop on Proposed Preferred System Plan Analysis, the CPUC recognizes that a 0.1 days/year LOLE is the "industry standard for probabilistic system reliability."

[5] From the November 2, 2021 Scoping Plan workshop presentation by EDF titled "Building a Zero Carbon California Grid: Moving From Models to an Implementable Plan"

modeling, including the upcoming reliability modeling is dependent on sound inputs and assumptions. There is not enough time to entertain scenarios that are not grounded in reality.



Land-Use Assessments should be used to assess the feasibility of the Non-Combustion Scenario

Reaching California's aggressive GHG targets will require a diverse set of resources. Three independent modeling teams' work on efforts conducted on the future of California's power system all conclude that California needs a diverse set of resources that must include firm and dispatchable carbon-free electricity sources[6]. Scenarios that rely on a narrow subset of available resource types, such as the SB 100 Non-Combustion scenario, may not be possible due to land use constraints, particularly after accounting for reliability requirements.

SDG&E and SoCalGas note that while solar energy density (in MW/acre and MWh/acre) is improving[7], solar and wind will still require a large land footprint. It will be important to balance wind and solar with other resource types that require minimum land use such as combustion generation which has the distinction of delivering high density energy in that it requires small amounts of land to produce large quantitates of energy. Combustion of natural gas (NG), renewable natural gas (RNG), or green hydrogen can help to maintain a diverse portfolio, provide reliability and reduce the burden on land use. Combustion generation can be clean energy if using clean fuels. For instance, NG or RNG combustion can be paired with carbon capture sequestration (CCS) to become a zero-emission or near zero-emission

[6] See "California needs clean firm power, and so does the rest of the world: Three detailed models of the future of California's power system all show that California needs carbon-free electricity sources that don't depend on the weather" at https://www.edf.org/sites/default/files/documents/SB100%20clean%20firm%20power%20report%20plus%20SI.pdf

[7] Bolinger, M. and G. Bolinger. 2022. "Land Requirements for Utility-Scale PV: An Empirical Update on Power and Energy Density." IEEE Journal of Photovoltaics, https://doi.org/10.1109/JPHOTOV.2021.3136805

dispatchable generation source. SDG&E and SoCalGas encourage the agencies to measure the feasibility of the Non-Combustion scenario from the land-use lens and to recall the value of a diverse and technology inclusive portfolio.

The Non-Combustion scenario would prohibit combustion of green hydrogen which SDG&E and SoCalGas support as a clean and reliable generation source that could complement intermittent resources. SoCalGas recently proposed the Angeles Link project, a green hydrogen pipeline network in Los Angeles that would support the integration of renewable electricity resources like solar and wind and significantly reduce greenhouse gas emissions from electric generation.[8] The green hydrogen used in the pipeline would be produced entirely from renewable electricity and substantially expand SoCalGas's renewable energy storage capabilities. The renewable electricity will be generated from multiple sources, including electricity that is currently being curtailed. The Angeles Link project will facilitate SB 100 goals by supporting renewable solar integration as well as harness energy that is currently being captured but not utilized. The project could also address many issues raised in the 2021 SB 100 Joint Agency Report regarding the need for firm dispatchable generation that would support electric grid reliability.[9]

Conclusion

Reliability, flexibility/technology inclusivity, and energy affordability are essential to the success of decarbonizing California's electricity grid. SDG&E highlights the need to incorporate LOLE reliability assessments and land-use constraints within each SB 100 scenario. SDG&E and SoCalGas believe land use analysis can also support flexibility/technology inclusivity and energy affordability in the SB 100 modeling and analysis. Including land-use restrictions as it relates to these three pillars is critical to avoiding unrealistic or unachievable scenarios. SDG&E and SoCalGas strongly believe that these considerations will help lead to an SB 100 2024 Report that can help California achieve its 2045 electricity decarbonization goals.

Sincerely,

/s/ Chris A. Summers

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[8] "Angeles Link," SoCalGas, March 2022, available at: https://www.socalgas.com/sustainability/hydrogen/angeles-link.
[9] Ibid, 2021 Joint Agency SB 100 Report.