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The Honorable Liane Randolph
Honorable Members of the Board
California Air Resources Board
1001 I Street
Sacramento, CA 95814

SUBJECT: San Diego Gas & Electric Company (SDG&E) Comments on the California Air Resources Board's 2022 Draft Scoping Plan Update

Dear Chair Randolph and Members of the Board:

San Diego Gas & Electric Company (SDG&E) appreciates the opportunity to provide feedback on the Draft 2022 Scoping Plan Update (Draft Update) released on May 10, 2022. It has been clearly maintained throughout that the California Air Resources Board (CARB) is committed to a transparent process that values stakeholder input. Feedback, engagement, and buy-in from California's many sectors is important and necessary to align a collective effort to achieve the state's greenhouse gas (GHG) reduction goals, including carbon neutrality. Economy-wide decarbonization solutions require a transformation of the way energy is generated, delivered, and consumed.

SDG&E would like to reiterate its commitment to doing its part by enabling the energy transition for the customers and the communities it serves. California's electricity generation sector is a leading contributor to the state's GHG emissions reductions. Between 1990 and 2019, the electricity generation sector reduced its emissions by more than 46%.[1] SDG&E is proud of the role it played in helping the sector advance this important progress and in supporting the state's achievement of reaching the Assembly Bill 32 goals four years before the 2020 target. Recently, SDG&E published "The Path to Net Zero: A Decarbonization Roadmap for California," (Roadmap) the first analysis to model economywide California decarbonization utilizing industry modeling software to

[1] This information is based on data provided in CARB's GHG Inventory for 2000-2019 (2021 Edition) and 1990-2004, both available at: https://ww2.arb.ca.gov/ghg-inventory-archive.

apply the industry standard for electric system reliability through 2045.[2] SDG&E would also like to acknowledge that CARB has incorporated over five dozen recommendations from the Environmental Justice Advisory Committee (EJAC) in this draft. SDG&E welcomes this inclusive process and acknowledges the critical role this committee plays in ensuring that environmental justice is a pillar of the Draft Update.

SDG&E is acutely aware of the challenges associated with developing a scenario that achieves decarbonization goals while balancing considerations around equity, affordability, and feasibility. As such, SDG&E offers the following high-level comments, with additional information on each provided in this letter.

- **The 2045 decarbonization timeline is appropriate and aligns with state policy.** Unprecedented buildout rates for renewable energy projects, grid infrastructure, and zero-emission vehicles will be critical for achieving state policy goals. Further expediting the State's carbon neutrality goals may be infeasible due to both cost and technical constraints.

- **Electric reliability is critical for successful decarbonization.** Without reliable electricity, California cannot achieve the decarbonization progress that is needed in the transportation and building sectors. SDG&E strongly recommends that CARB incorporate a comprehensive Loss of Load Expectation (LOLE) electric reliability analysis for the Proposed Scenario through 2045. If such modeling cannot be incorporated in the 2022 Scoping Plan, SDG&E encourages CARB to incorporate this supplemental modeling in future Scoping Plan updates. Further, SDG&E encourages coordination between state agencies to support well-aligned policies and planning efforts that guide industry action.

- **Technology inclusivity and feasibility are essential.** SDG&E agrees that the State must keep all options on the table to achieve its decarbonization goals. A diverse technology portfolio, including low-carbon fuels, will be needed to support the energy and transportation sectors' transition to carbon neutrality.

- **Solutions must prioritize equity and affordability.** Decarbonization will have significant impacts on affordability and, as a result, may exacerbate equity concerns. Rate reforms and well-designed and publicly-funded equity programs and policies will be necessary to support a just transition for California residents who cannot afford to electrify their homes, businesses, and vehicles.

- **Regulatory and policy support will be necessary.** The Scoping Plan establishes a strong base to guide the refinement of State programs, policies, and regulations. Further regulatory and policy action will be needed to ensure

[2] The published Roadmap is available at: www.sdge.com/netzero.

that California can stay on track for achieving the aggressive targets outlined in the Draft Update. SDG&E recommends maintaining the Cap-and-Trade program through this period of transition to carbon neutrality and encourages CARB to prioritize strengthening the Low-Carbon Fuel Standard (LCFS) requirements to ensure an equitable transition to a carbon neutral economy.

In addition to these points, SDG&E respectfully requests CARB staff provide clarification in the following areas:

1. While cumulative resource build is provided in Figure 4-5, no further details regarding the supply side modeling appear to have been published. SDG&E requests that the full RESOLVE model data set be released.

2. The Proposed Scenario quotes an annual buildout of solar at 7 gigawatts (GW)/year, every year, beginning in 2023 through 2045.[3] Multiplying 7 GW/year by 23 years amounts to 161 GW of cumulative solar build. However, in Chapter 4 of the Draft Update, a total of 90 GW of solar build is quoted.[4] Please clarify this perceived discrepancy in total solar build.

3. The Proposed Scenario appears to significantly reduce the use of the gas system; however, no further details appear to have been released. SDG&E seeks clarification from CARB on the following questions:
    a. How much does gas system throughput decline?
    b. What is the schedule for this decline and impact to the gas system?
    c. What is the supply composition of the gas that remains in 2045?
    d. What is the mix of gas end-uses in 2045?

The 2045 Decarbonization Timeline is Appropriate and Aligns with State Policy

SDG&E would like to re-emphasize that the selected alternative must be realistic and feasible. As such, SDG&E concurs with the sensible selection of the 2045 date for achieving net neutrality as proposed in CARB's preferred Alternative 3 (Proposed Scenario). This date aligns with state policy, including SB 100, as well as the proposed Advanced Clean Cars II and Advanced Clean Fleets regulations. It also allows for nascent technology to mature, scale, and be deployed at lower costs, as noted in the Draft Update.[5]

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[3] Draft Update at 52.
[4] *Id.* at 161.
[5] "On balance, the Proposed Scenario is more feasible than the two 2035 scenarios due to the longer time frame for clean technology and fuel deployment. The additional 10 years for achieving carbon neutrality also allow for technologies to scale and be deployed at lower costs" (Draft Update at iv). The statewide goal to achieve carbon neutrality is established in Executive Order B-55-18.

State policies for carbon neutrality already require unprecedented buildout rates for renewable energy projects and electric grid infrastructure. Further expediting the timeline for decarbonizing the electricity sector may not be feasible from both cost and technology perspectives.

Per the Draft Update, the annual build rate of new utility-scale solar generation required to support decarbonization is projected to be 7 GW/year through 2045, which is similar to SDG&E's estimate of 8 GW per year.[6] These are unprecedented rates of renewables deployment. Even with all of the great progress made to date, California had an average annual build rate of 1 GW of utility-scale solar per year over the past decade.[7] This means that providing the renewable generation required to achieve net neutrality by 2045 will require an estimated build rate of utility-scale solar seven to eight times greater than the historical average going forward, all while navigating complex and ongoing challenges with the timelines for permitting, interconnection, supply chain delays, and competing land use and tariff issues impacting the process for bringing new projects online quickly.[8]

Further, as clean energy resources are being developed, additional transmission infrastructure and grid upgrades will be needed to support safe and reliable power delivery. Typically, transmission buildout processes take 7 -10 years or longer to complete planning, approvals, and construction. As an example, when SDG&E commenced planning for the Sunrise Powerlink, a 117-mile, high voltage transmission line which brings power from the Imperial Valley to San Diego County, the timeline from initial planning phases to final completion and energization of the line was approximately 10 years. Utilities are experiencing similar, and in some cases longer, lead times for planning, permitting/approval, and construction of substations needed to support increasing electricity demand.

Decarbonizing the transportation sector will require significant market transformation. Consideration must be given to ensure that this transition does not (1) result in cost impacts which disproportionately impact lower- and middle-income Californians, nor (2) put at risk the availability and reliability of critical service and emergency response fleet vehicles.

In the transportation sector, the Proposed Scenario aligns with state policies established in Executive Order (EO) N-79-20 to adopt 100% zero emission vehicles (ZEVs) for light-duty vehicles (LDVs) by 2035, with medium- and heavy-duty vehicles following by 2045, as feasible. Currently, there are roughly 30 million LDVs (including roughly one million ZEVs) on California roads. Last year, CARB calculated that to reach the 100% zero-

[6] Draft Update at 52. Roadmap at 11.
[7] 2021 SB 100 Joint Agency Report at 11.
[8] As discussed during the CEC's May 20th Staff Workshop on Summer and Midterm Reliability.

emission LDV sales target by 2035, California would need 8 million light-duty ZEVs on the road and nearly 1.2 million public chargers to service those vehicles by 2030. The current EO target is already ambitious, given that light-duty ZEV sales were only 16% of total LDV sales in the first quarter of 2022. As proposed in Scenario 1, ending all sales of non-ZEV LDVs in 8 years and removing all non-ZEV LDVs from California roads in 13 years – roughly 29 million vehicles using today's numbers - requires unprecedented transformation of the transportation sector.

The state should be cautious of mandating removal of non-ZEVs that are still within their useful life from circulation, given that early transition costs could be prohibitive for lower-income and middle-income Californians and may pose greater lifecycle impacts in terms of the carbon footprint of transporting these vehicles to other markets or recycling the components. The latter issue needs to be studied for unintended carbon consequences related to early retirement of efficient non-ZEV vehicles. An earlier transition away from plug-in hybrid electric vehicles (PHEVs), as proposed in Alternatives 1 and 2, may also limit access to emissions-reducing PHEVs for these residents and may curb development of a robust secondary market.

In addition, non-ZEV fleet vehicles may still be needed to fulfill critical and emergency duty cycle requirements when ZEVs and ZEV refueling infrastructure may be unavailable or their availability otherwise unreliable. The state should keep public safety and the delivery of critical services at the forefront when determining the timeline and parameters for removing non-ZEV MD/HD vehicles from circulation, especially those that still have a useful life.

Reaching carbon neutrality in California is a formidable task, and one that cannot be taken lightly. It would be exceptionally difficult from a technical perspective and prohibitively expensive, as shown in the Draft Update, to do so in any timeline that accelerates the 2045 target date.[9]

Electric Reliability is Critical for Successful Decarbonization

Electrification of the California economy will play a significant role in achieving the state's decarbonization goals; however, this foundational element of reaching carbon neutrality is only possible with a clean, safe, and reliable electric grid. Currently, there is no detailed modeling completed around reliability in this scoping plan update. SDG&E strongly recommends the incorporation of a comprehensive LOLE analysis of the Proposed Scenario through 2045. Conducting such an analysis may yield critical

[9] Draft Update at 96, Figure 3-2. Alternative 1 has a total incremental cost of $130B in 2035, in large part due to the enforcement of immediate stock switching, and Alternative 2 has a total incremental cost of $106B in 2035, in large part due to an immediate heavy reliance on direct air capture (DAC). These two Alternatives are 6-7x more costly than the Proposed Scenario in year 2030, and 1.3-2.2x more costly in year 2045.

insights. For example, SDG&E's Roadmap shows a need for 6.5 million metric tons (MMT) of clean hydrogen – 80% of which is used to enhance the reliability of electric supply.[10]

In a case where a LOLE analysis is not conducted, SDG&E suggests that inter-agency coordination must increase to ensure state goals are achieved. As multiple California agencies are engaged in climate-related work, this creates an increased need for further collaboration, especially in regard to improving the timing and interaction of various agency deliverables, such as the SB 100 Joint Agency Report, this Scoping Plan Update, the California Public Utilities Commission's (CPUC's) Integrated Resource Planning (IRP) proceeding, the utilities' Distribution Planning Processes (DPPs) and the California Independent System Operator (CAISO) Transmission Planning Process (TPP). To the extent practical, these processes should synchronize their cycles such that each produces its deliverable in consecutive years, so each process can inform the next in the series. This further ensures that new directives on rate design, reliability analysis, technology changes and/or updates to cost curves can be incorporated annually by whichever proceeding is active in that year.

Technology Inclusivity and Feasibility are Essential

SDG&E appreciates the Draft Update's technology inclusive approach and CARB's acknowledgement that in order to be successful we need to keep "all options on the table."[11] For instance, the acknowledgement of the need to broaden supply-side technology inclusivity to include dispatchable, low-carbon generating resources that provide the clean, reliable electricity required to support an electrified economy and meet the State's goals is a critical step forward.[12] SDG&E's Roadmap mirrors the need for such a diversified approach, including 205 GW of in-state wind and solar generation, 40 GW of battery storage, 20 GW of clean hydrogen generation, 4 GW of carbon capture and sequestration (CCS), and 34 GW of imported renewable power in 2045.[13]

Additionally, the importance of low carbon fuels as a means to not only support electric reliability, but also assist with the decarbonization of hard-to-abate sectors of the economy, cannot be lost. In pursuit of a technology inclusive approach, SDG&E supports the inclusion of low carbon fuels to decarbonize portions of the building and industrial sectors in the Proposed Scenario.[14] Low carbon fuels and near-zero emission technologies, like plug-in hybrid electric vehicles, will also be instrumental in establishing a technology inclusive transportation decarbonization portfolio. These

[10] Roadmap at 11.
[11] Draft Update at vii.
[12] These resources include hydrogen retrofits of existing gas generators, carbon capture and sequestration (CCS) retrofits of existing gas generators, new hydrogen combustion turbines, new gas generators with CCS, new hydrogen fuel cell generators, and Allam cycle CCS (Draft Update Appendix H at 11-12).
[13] Roadmap at 11.
[14] Draft Update at 62, Table 2-2.

important bridge technologies are readily available and can provide immediate emissions reduction benefits while the State continues its transition to carbon neutrality.

Solutions Must Prioritize Equity and Affordability

Equity and cost-effectiveness are appropriately cornerstones of this Draft Update;[15] however, decarbonization can only be successful if everyone benefits. We cannot further disadvantage low-income communities nor communities of color throughout this decarbonization process. Affordable electricity will become increasingly critical to achieving our shared carbon neutrality goals. To achieve success, low-income communities and communities of color must have equitable access to electric vehicles and appliances, as well as EV charging.

To achieve equity and maintain affordability in the transition to carbon neutrality, well-designed and publicly-funded equity programs and policies will be necessary to support the journey of California residents who in many cases do not own their homes, or cannot afford to electrify their homes and businesses or purchase ZEVs, who cannot afford or do not have access to at-home charging, and/or who do not have access to public transportation that can meet their transportation requirements. While some funding exists at the state and federal levels to support these efforts, it does not completely alleviate the cost burden and competing priorities of the most vulnerable populations.

CARB's modeling demonstrates that the timeframe and selected technology in the Proposed Scenario are more cost-effective to implement over the coming decades. Accelerating the decarbonization transition across transportation and electricity sectors would put additional pressure on affordability concerns in the state at a time when multiple issues (e.g., inflation, supply chain, housing) have already created a dynamic and uncertain environment for California residents and businesses.

SDG&E also acknowledges that the path to carbon neutrality will have significant effects on jobs and the gross state product (GSP). Selecting the alternative that has the least negative effect on both seems a prudent decision for the State.[16]

Regulatory and Policy Support will be Necessary

SDG&E acknowledges the effort made in this Draft Update to identify policy changes required to make carbon neutrality a reality. The Draft Update should serve as a high-level guide against which existing programs and policies should be refined, or new programs and policies established. The Scoping Plan's policy discussions should not

[15] *Id.* at vi and 12.
[16] *Id.* at 53.

supersede implementation details included in corresponding agency regulations or programs.

- Regulatory and political support are critical in achieving the end goals of the Draft Update. Similarly, broad support from the general public will be necessary for advancing carbon reduction strategies.
- SDG&E appreciates CARB's position on reforming utility rate design to support building decarbonization.[17] SDG&E would also suggest maximizing California's ability to leverage federal funding, as well as reevaluating state funding mechanisms, like potentially reapportioning taxpayer funds to support state-mandated public purpose programs.[18] As the demand for clean, reliable electricity increases as we pursue statewide carbon neutrality, it will be critical to ensure energy rates are affordable and equitable.
- SDG&E concurs with the recommended incorporation of electric sector reliability and expansion of renewable resources and infrastructure deployment in long-term state planning, including timely approval of long-lead substation and transmission projects to accommodate increasing electrification, and addressing build-out challenges.[19] This is particularly important as the demand for clean, reliable electricity increases as we electrify the building, transportation, and industrial sectors of the economy.
- CARB proposes significant support for low-income households so they can benefit from the clean energy transition.[20] SDG&E welcomes this level of support in the form of appropriately designed and publicly-funded, incentive programs to assist consumers with the up-front costs of decarbonization.
- SDG&E recommends maintaining the Cap-and-Trade program through this period of transition to carbon neutrality.
- SDG&E encourages CARB to prioritize strengthening the LCFS requirements to ensure an equitable transition to a carbon neutral economy.
- The California Energy Commission's (CEC) Integrated Energy Policy Report (IEPR) load forecasts should be updated and aligned with the Scoping Plan to ensure that investor-owned utilities that are required to use IEPR forecasts for distribution planning can build the system needed to support widespread electrification for transportation, building, and other sectors.

Conclusion

SDG&E appreciates the transparent, multi-stakeholder engagement and feedback process informing this Proposed Scenario and Draft Update, and thanks the CARB Board and Staff for considering these comments. SDG&E would like to reiterate the

[17] Draft Update Appendix F at 32.
[18] Roadmap at 18.
[19] Draft Update at 163-164.
[20] *Id.* at 171-172.

importance of electric reliability in our path towards carbon neutrality. SDG&E would welcome the opportunity to provide additional clarity should CARB staff wish to learn more about the suggested reliability analysis.

Sincerely,

/s/ Samantha Pate

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