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RE: Pacific Gas and Electric Comments on the Electricity Sector Technical Workshop for the 2022 Scoping Plan Update

Pacific Gas and Electric Company (PG&E) appreciates this opportunity to comment on the California Air Resources Board (CARB)'s Scoping Plan Update (SPU) Electricity Sector Technical Workshop held on November 2, 2021. PG&E would like to thank CARB and the California Public Utilities Commission (CPUC), California Energy Commission (CEC), the California Independent System Operator (CAISO) and the panelists for participating in this critical discussion of the opportunities and challenges facing the state's electric sector in supporting economy-wide decarbonization. At PG&E, we support and embrace our foundational role in helping the State achieve carbon neutrality and transitioning California to a decarbonized and climate-resilient economy. We approach this work through the "triple bottom line" framework of serving people, the planet and California's prosperity—underscored by performance. This includes our belief that clean energy alternatives should be affordable and accessible by all households. Many important themes related to this belief were raised across the day's panels and require additional discussion on how to effectively incorporate these topics into the SPU analysis. PG&E reflects on some of these topics below.

Rates and Affordability

Affordability of electricity rates is necessary to enable continued investment in grid safety and reliability – especially as climate change impacts that can affect the grid continue to evolve. Affordability of rates is also critical to enable the electrification of end uses in other sectors of the economy (such as in buildings, industry, and transportation). High energy prices also raise equity issues and can further the economic burden on vulnerable populations. PG&E supports additional discussion of the points raised by several panelists on exploring non-utility ratepayer funding mechanisms to cover programs and costs currently included in electricity rates, but which provide larger societal benefits. Professor Severin Borenstein of UC Berkeley identified

alternative funding options such as through the State budget or income-based fixed charges.[1] The CPUC and CEC also mentioned identifying funding sources other than ratepayer money for electric-sector programs, as well as exploring new financing mechanisms and measures to reduce rate pressure.[2]

PG&E also acknowledges the points raised by the Greenlining Institute and TURN on the need for rate structures that better support equity for low-income and vulnerable communities. The costs of the natural gas system also need to be accounted for in the overall affordability of energy rates for Californians. As end-uses transition from natural gas to electricity, the fixed costs of the gas system will be spread over a smaller and smaller number of users over time. This is particularly of concern from an equity perspective as the remaining natural gas residential customers are likely to be low-income customers who are least able to afford and access the transition to electricity. As noted in PG&E's prior comments, securing funding from sources external to gas rates could help to recover some natural gas system costs, reduce customer gas bills or fund other gas strategy measures (such as managed, strategic electrification projects) and is a critical element of the broader solution to declining gas throughput and the related impacts on customer energy affordability.[3]

PG&E strongly encourages CARB to continue to elevate the consideration of energy rate affordability in its analysis of various scenarios and in the final SPU. While CARB does not have authority to alter rates itself, it can provide recommendations in the final Scoping Plan Update to the Legislature and other State agencies and ratemaking authorities that do have jurisdiction, and it can indirectly support affordability by selecting cost-effective measures in this SPU and continuing appropriate cap-and-trade allowance allocations to utilities. High electricity rates undermine electrification, which will continue to be a crucial element of the final portfolio of measures identified in the SPU to best achieve the State's goals. As such, the SPU should make recommendations on what will need to be done to enable that pathway, including how to ensure a future safe, reliable and decarbonized electric grid that all Californians can afford.

Zero-Carbon Grid Implementation

PG&E supports California's decarbonization goals. However, there are many challenges the electric sector currently faces in achieving a future zero-carbon grid in addition to affordability that require coordinated solutions. Several of these issues were raised in the CPUC and CEC's presentation on SB 100 Implementation including long-term reliability, permitting, land use, transmission planning, and procurement of long lead-time resources. In order to achieve the requirements of SB 100, an unprecedented pace and scale of resource buildout will

[1] "Designing Electricity Rates for an Equitable Energy Transition", Borenstein, Severin et. al, UC Berkeley, Slide 11: https://ww2.arb.ca.gov/sites/default/files/2021-11/UCB-sp22-electricity-ws-11-02-21.pdf

[2] SB 100 Implementation Presentation, CPUC and CEC, Slide 14: https://ww2.arb.ca.gov/sites/default/files/2021-11/SB100-CEC-CPUC-sp22-electricity-ws-11-02-21.pdf

[3] Link to PG&E's July 9, 2021 Scoping Plan comments: https://www.arb.ca.gov/lists/com-attach/94-sp22-kickoff-ws-BnVRNAZoU3ALZFI8.pdf

be needed. Absent coordinated and improved policies, plans, and investments to address these challenges, the barriers to this buildout will be magnified and further constrain the ability to meet the State's goals if the targets are accelerated. The feasibility of overcoming these challenges must be considered as part of the SPU scenario analysis process.

PG&E believes that to adequately address the feasibility and the costs of different decarbonization pathways, the cost estimates must include adequate reliability analysis even if the analysis is only able to provide directionality. Unfortunately, the first SB 100 report results that CARB is using as inputs in the SPU do not include such a reliability assessment. While a comprehensive reliability assessment that would require inputs from the entities responsible for transmission planning and operations may not fit within the current SPU, CARB should identify how it intends to review and use the grid reliability impacts from the energy portfolios and timelines in the final scenarios it will be modeling, and how it will use the results of the modeling to determine future electric sector greenhouse gas emission targets for use in the Integrated Resource Planning (IRP) processes.

Zero-Carbon Grid Technologies

As part of our commitment to provide customers with safe, reliable, and clean energy, PG&E continues to explore multiple options for decarbonizing its system, including the potential use of hydrogen. PG&E appreciates the points raised by Dr. Jack Brouwer, UC Irvine in his presentation on hydrogen during the Electricity Workshop. PG&E believes that California needs an overarching strategy for how renewable hydrogen can help the State decarbonize before imposing procurement mandates on utilities and hydrogen injection standards for the gas system. PG&E sees regulatory certainty as important for scaling the hydrogen economy and long-term affordability; however, risks and barriers need to be researched and piloted. This includes but is not limited to safety and engineering standards for combustion, blending, leakage, and fuel transportation, as well as direct and indirect environmental impacts like net GHG emissions, criteria pollutants, and NOx emissions.

While still in its early stages, PG&E has developed a research and development (R&D) hydrogen roadmap[4] as a guide for prioritizing the knowledge gaps that need to be addressed for injection of hydrogen into the gas system. As of November 2021, PG&E has 20 active projects and 7 completed projects related to hydrogen and will continue to collaborate with others in the industry and globally.

PG&E supports establishing guidelines for renewable hydrogen and supports the use of natural gas-hydrogen blends in existing combined-cycle gas-fired power plants. PG&E also supports further research and investigation into whether fuel cells could be used as a means of creating firm, clean, baseload power. Allowing blended hydrogen into underground gas storage facilities would also enable the long-term seasonal storage of currently curtailed renewable electricity. While PG&E believes that renewable hydrogen may be able to serve as a future firm

[4] Link to PG&E Gas R&D Hydrogen Roadmap: https://www.pge.com/pge_global/common/pdfs/for-our-business-partners/interconnection-renewables/interconnections-renewables/RNG_Roadmap_2020.pdf

non-emitting resource to complement other intermittent renewables, it continues to support the procurement of attributes, rather than specific technological types or carveouts, and cautions CARB on selecting winning and losing technologies in the SPU.

PG&E appreciates the opportunity to provide these comments on the Electricity Sector Workshop. We look forward to continuing the discussion across agencies on these critical topics in order to ensure a safe, reliable, and affordable electric grid.

Please feel free to contact me if you have any questions or concerns.

Sincerely,

/s/

Fariya Ali

Air & Climate Policy Manager, PG&E