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**PG&E Comments on Research to Support a Climate Resilient
Transition to a Clean Electricity System**

Additional submitted attachment is included below.



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California Energy Commission
Energy Research and Development Division, Electric Program Investment Charge (EPIC)
Docket Number 19-ERDD-01
1516 9th Street
Sacramento, CA 95814

Re: Pacific Gas and Electric Company Comments on Staff Workshop Research to Support a Climate Resilient Transition to a Clean Electricity System (Docket Number 19-ERDD-01)

Pacific Gas & Electric Company (PG&E) appreciates the opportunity to submit comments regarding the California Energy Commission (CEC) Staff Workshop on Research to Support a Climate Resilient Transition to a Clean Electricity System, held Friday, March 5, 2021. PG&E enthusiastically supports this initiative and related CEC-funded efforts to advance climate research and develop tools in support of a climate resilient energy system in California.

The research proposed in this grant funding opportunity (GFO) is timely and necessary as California's energy system undergoes multiple transitions at the same time: the shift to 100% carbon-free energy, the integration of new and emerging technologies in support of carbon reduction and energy reliability, and an increasingly challenging operating environment characterized by more frequent and extreme climate-driven natural hazards. PG&E views the proposed research as directly responsive to the complexities of this multidimensional transition and is hopeful that the results can inform PG&E's core mission to provide safe, clean, affordable, reliable energy now and into the climate-altered future.

PG&E's comments on the proposed research scope and responses to the specific questions posed during the workshop are provided below. PG&E does not have answers to all of the questions posed by CEC staff at this time but hopes to be able to continue to engage with staff on this GFO in pursuit of relevant and actionable research outcomes.

PG&E Comments on Proposed Research Scope

The research questions posed by both efforts one and two are timely and necessary given the multidimensional transition facing California's energy system. PG&E is heartened that both efforts:

- Emphasize the importance of stakeholder engagement from initial framing to project completion. Coordination will be essential to ensure that these complex questions are investigated in a way that meaningfully contributes to the resilience of the energy system.
- Acknowledge the need to coordinate with ongoing related research efforts regarding climate change and climate resilience.

- Leverage CMIP6-based scenarios for the next iteration of this and related research contributing to California's 5th Climate Change Assessment.
- Consider extremes as well as averages.
- Recognize the need for California's energy system planning and modeling to further incorporate climate change considerations.

Regarding effort one specifically, PG&E appreciates that investigating the future relationship between natural gas and electric generation has been called out, as this relationship will be impacted by climate change, decarbonization, and technology advancements. PG&E is also very interested in the equity implications and economic costs of the multidimensional transition.

Regarding effort two specifically, PG&E is especially interested in the questions focused on using next generation climate models to better understand the interactions between future climate and renewable generation and assessing strategies to maintain energy supply in the face of climate hazards with a high penetration of renewables.

PG&E Responses to Workshop Questions

1. What suggestions would you make to improve the scope and/or focus of these efforts, given the total of \$3 million available for these efforts?

Given the amount of funding available for this research and the complexity of the topics, PG&E anticipates that grantees and energy sector stakeholders will need to work together to carefully scope research approaches. All questions considered by efforts one and two are interesting but given limited resources grantees should target research approaches that can ultimately inform near-term decision-making by energy sector stakeholders. PG&E will continue to think about what specific research outputs are most needed given related ongoing research.

4. A total of \$3 million is available for these efforts, with a proposed allocation of \$1.5 million for each effort. In what manner should funds be allocated across the two efforts?

It is difficult to anticipate what the optimal allocation of funds across efforts one and two should be delving into much more detail about the scope and research approach for each project. However, based on an initial assessment of the relative complexity of the two efforts, PG&E suggests that relatively more funding be allocated to Effort one. Effort one will require considering climate projections, grid and technology changes, and demographic and social changes. PG&E views effort two as necessary, innovative, and useful, and seeming to lend itself to a much more easily defined technical approach i.e., determining what next-generation climate data can now be applied to understand future renewables availability and then perform that analysis.

PG&E reiterates the Company's strong support of CEC-funded research to better understand, anticipate, and respond to the expected impacts of climate change on California's energy system. PG&E is very interested in the research questions posed in both efforts one and two and would be grateful for the opportunity to provide further advisory input should the CEC find it valuable.

Sincerely,

Licha Lopez