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**PG&E Comments on the Joint Agency Workshop
(CECCPUCCAISO) on Sumer 2021 electric reliability and n**

Additional submitted attachment is included below.



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July 23, 2021

California Energy Commission
Commissioners Siva Gunda and Andrew McAllister
Docket Number 21-IEPR-04
1516 9th Street
Sacramento, CA 95814

Re: Pacific Gas and Electric Company Comments on the Joint Agency Workshop (CEC/CPUC/CAISO) on Summer 2021 electric reliability and natural gas reliability (Docket Number 21-IEPR-04)

Dear Commissioners Gunda and McAllister,

Pacific Gas and Electric Company (PG&E) appreciates being given the opportunity to participate in the joint agency workshop on July 8 and 9, 2021 on Summer 2021 Electric and Gas Reliability, hosted by the California Energy Commission (CEC), the California Public Utilities Commission (CPUC), and the California Independent System Operator (CAISO). PG&E supports the CEC's Integrated Energy Policy Report proceeding including the analysis and near-and mid-term goals and planning for energy reliability for this year.

PG&E representatives spoke at two panels during this workshop; the first panel on the uncertainties presented by hydropower and the second panel on energy imports and demand response. PG&E also offered public comments during the third session on the relationship between the natural gas and electric systems. Aligned with our presentations during this workshop, PG&E offers the following comments on these three topics: hydropower and drought, energy imports, and the natural gas and electric systems as well as the multi-year reliability study and responses to the CEC's questions for stakeholder input:

1. Hydro Resources and Drought

PG&E is committed to delivering safe, reliable, and clean energy in a way that achieves the greatest value for our customers. We recognize the foundational role clean energy has in transitioning to a decarbonized economy, and we strongly support California's clean energy policies, renewable goals, and efforts to limit and adapt to climate change.

In a typical year, hydropower accounts for about 15 percent of PG&E's energy supply mix. Recent dry years have reduced the total amount of energy that PG&E generates. In 2020 (which was also a dry year), hydropower made up 11.4 percent of PG&E's energy supply mix. As of July 1, 2021, accumulated precipitation for the water year was 45 percent of normal. The water management team is forecasting a critically dry water year in 2021. This means that the following actions are taking place:

- PG&E is conserving water in its reservoirs so hydropower will still be available during peak demand periods in summer and fall. As of July 12, the combined storage in PG&E's reservoirs is

66 percent of capacity, which is similar to the 2015 drought year and the lowest on record for this date during the past 40 years (updated from July 8 presentation). Summer water levels at Lake Almanor, PG&E's largest reservoir, are projected to be four to five feet below normal.

- PG&E strategically generated less hydropower in the spring to save water in our reservoirs for generating power during the summer peak periods, when demand for power is higher. While calendar year total generation is likely to be comparable to the precipitation year at approximately 45 percent of average, summertime generation will likely be 60 to 70 percent of average.
- PG&E's Helms Pumped Storage Project east of Fresno is expected to have enough water in its two reservoirs, Wishon and Courtright, to be able to operate fully this summer and fall. While water levels in the two reservoirs are below normal seasonal levels, there is adequate water to pump between the two reservoirs and fulfill operational needs.
- PG&E also received state permission to close spill gates sooner than normal this year at certain dams to capture more spring runoff.
- PG&E is actively collaborating with appropriate regulatory agencies and other stakeholders to take appropriate steps to prolong availability of water for downstream users' needs. PG&E continually analyzes reservoir and stream conditions and works closely with stakeholders to seek variances to release less water from dams. These reduced flows allow retention of water for use later in the year while preserving environmental objectives in the affected streams.
- As for rotating power outages due to deficit of hydropower, PG&E is working hard to avoid such outages, including the steps listed above to maximize the contributions from our hydro fleet. The CAISO, CPUC and CEC issued a [final root cause analysis](#) on the mid-August 2020 heat storm. The final analysis provides recommendations for immediate, near and longer-term improvements to resource planning, procurement, and market prices, many of which are underway. The CPUC also opened an emergency reliability rulemaking to make more resources available on an expedited basis to prevent a recurrence of rotating outages if the western U.S. experiences similar conditions in 2021. PG&E is participating in the CPUC proceeding and is actively working to secure emergency procurement for Summer 2021, as directed by the CPUC.

2. Imports and Demand Response

PG&E has been working to deliver safe, reliable, affordable, and clean energy to California for over 100 years and serve our customer while doing so. PG&E's 23,000+ employees deliver resilient power and natural gas utility service to more than 16 million Californians with a resource portfolio that is more than 80% greenhouse gas free.

The western states have long relied on each other to share capacity and energy to meet their needs. Until recently this was relatively easy due to the diversity of demand needs and excess supply availability. While the impacts of climate change, shifting generation resources from fossil resources to limited renewable resources and storage adoption, and changing customer-usage patterns may be more acutely felt in California today, these shifts and their impact will disrupt operations throughout the West in the coming decades.

This is having an acute impact on the availability and cost of imports to California. As retirements of fossil resources in California and across the West continue, the availability of on-demand resources often used to deliver to neighboring areas with different peak needs is decreased. Recent rule changes by the CPUC and CAISO are impacting market supply and demand and with the tightening of resource adequacy import requirements to provide energy, importing capacity has become more difficult and the electric system is adjusting to this new normal. Further changes at this time could exacerbate the issue.

California has not historically depended heavily on capacity imports for various reasons, but changes in PG&E's portfolio, import rules, and resource adequacy needs are compelling PG&E to continue to evolve and develop its strategy regarding use of imports to address its needs. PG&E, like many others, is adapting and recent price surges in the market are a good indication of the market's reaction to many of these dynamics.

For California and the West to continue to work to address decarbonization goals while maintaining a reliable energy infrastructure we all need to embrace the opportunity to rethink the future before us and react swiftly to the changing environment. The existing Federal Energy Regulatory Commission (FERC) Open Access Transmission Tariff service paradigm throughout much of the West and the Independent System Operator (ISO)'s transmission rights structure within the CAISO will need to adapt to ensure reliability at just and reasonable prices.

Efforts toward regional planning and coordination, balancing authority agreements for normal and emergency operations, and clear, transparent rules and regulations are critical steps that should begin development today.

3. Gas Reliability Issues and Polar Vortex Impacts and Implications

PG&E encourages the CEC, the CPUC, and the California gas utilities to work collectively to look more closely at projected summer and winter peak conditions as electric vehicle (EVs) use and building electrification policies grow.

PG&E recognizes the need for more granular gas demand projections than annual average gas demand projections to better understand the following:

- Gas demand projections to inform on infrastructure needs with EV growth projections and municipal building electrification policies; and
- Relative daily and seasonal gas demand variability as California experiences:
 - More intermittent generation capacity;
 - Varying hydroelectric generation conditions;
 - Increasing electric load projections from EV penetration and building electrification policies.

PG&E acknowledges the importance of the relative northern and southern California gas prices impacting economic dispatch of electric generation in the CAISO marketplace. Electric generation gas throughput can change significantly due to lower or higher burner tip prices in one geographic region compared to another. Sensitivities on changes to regional gas prices inside California could impact infrastructure planning and execution and provide reliable and affordable gas and electricity supplies to PG&E's customers.

4. Multi-Year Reliability Study

PG&E applauds the recent efforts by the CAISO, CEC, and the CPUC to develop a multi-year reliability study. PG&E believes that a Loss of Load Expectation (LOLE) analysis is needed to ensure that the CAISO system reliability standards are based on a robust analysis that captures various weather and operating conditions and is a reliable measure across many hours. In these comments, PG&E offers its recommendations concerning this multi-year reliability study and responds to the stakeholder questions.

PG&E's comments aim to ensure that a consistent baseline set of input assumptions are shared and refined by all three state agencies and are validated against the recent CAISO system data and trends. Key points in response to specific questions are described below:

- The scope of the multi-year reliability study should include how often congestion on major paths (e.g., Path 26) and loss of load hours occur simultaneously:

According to the information presented during the CEC workshop, the current scope of this study includes “how much” and “when” is “additional capacity beyond current procurement orders needed to meet the 0.1 LOLE standard.” PG&E asks that the question of “when” should capture the year of need for additional capacity and provide information about the hours and months of need for additional capacity to help stakeholders procure the right type of resources.

In addition, and to the extent the CEC's model allows planning area (e.g., PG&E's planning area) specific LOLE analysis, PG&E asks that the CEC also include an inquiry about “where” additional capacity is needed within the scope of this study. The question of “where” should include an assessment of how often congestion on major paths (e.g., Path 26) and loss of load hours occur simultaneously and planning area specific LOLE during the hours of congestion. Without this additional information, new resources will likely be added at the wrong locations and will fail to help achieve the intended grid reliability goal.

PG&E's review of the congestion during the August 2020 heat wave and a zonal stack analysis shows that the planned once-through-cooling (OTC) thermal plant retirements in Southern California creates a zonal deficiency south of Path 26¹. The inclusion of “where” as a criteria in the CEC analysis will demonstrate that the goal of grid reliability will be better achieved by physically locating new capacity resources in the right locations, such as south of Path 26.

- For consistency across planning venues key assumptions should be aligned with the CPUC's Integrated Resource Plan (IRP) assumptions:

Key modelling assumptions should be aligned across all planning venues for consistency. PG&E recognizes that the multi-year reliability study needs to be completed in a very short time-period and the available time to complete this study may not provide sufficient time to align all modelling assumptions with the CPUC's IRP models. PG&E asks that at a minimum, the CEC should clearly document any input differences to ensure study results among the CEC and CPUC

¹ See PG&E's opening comment in the CPUC IRP proceeding for additional details of the high-level analysis conducted by PG&E and supporting data confirming the need to allocate procurement of new resources for system reliability south of Path 26.

http://prccappiiswc002/Docs/ElectricIntegratedResourcePlanningOIR/Pleadings/PGE/2021/ElectricIntegratedResourcePlanningOIR_Plea_PGE_20210326_648445.pdf

can be easily compared and any divergences in analyses, due to input or assumption differences, can be accounted for.

- 2020 weather-year historical data should be included in the CEC's multi-year reliability study:

PG&E understands the timeline constraints for the CEC to be able to incorporate the latest data in its multi-year reliability study. However, given the reliability events of 2020, incorporating the 2020 data is critical for a robust LOLE analysis. PG&E commends the CEC for incorporating the 2020 solar and wind data in the study and encourages the CEC to similarly include the 2020 demand data.

- Stakeholders should be provided an opportunity to review the CEC model and preliminary results:

PG&E's appreciates the CEC's initial outreach for stakeholders' inputs on the scope and high-level modelling assumptions. Since very limited information is currently available for this study, PG&E asks that the CEC provide an additional opportunity for stakeholders to review and comment on the CEC's modelling assumptions and preliminary LOLE results.

5. This section includes PG&E's high-level recommendations for assumptions related to questions posed by the CEC for stakeholders' inputs.

- How should imports be included in the analysis?

PG&E recommends that since the availability of CAISO imports is dependent on whether there is excess capacity available outside CAISO during stressed system conditions (e.g., west-wide heatwave), ideally a robust Western Electricity Coordinating Council (WECC) wide model would provide a reasonable level of information about available imports based on excess capacity available outside California during such conditions. In the absence of a robust model, and since this analysis is designed to identify the need for additional resources for resource adequacy, PG&E supports limiting the maximum import assumption to average historical resource adequacy (RA) showings. Although using this approach for import assumption will not reflect how much import energy could be available to California in the future, the results of the study will provide insights for how much additional capacity is needed and some of that capacity could be from imports.

- On wind, solar, and hydroelectric plants, should solar and wind weather years be linked to each other or demand?

PG&E recommends that wind, solar, and load should be linked to the same weather year. It is understood that load is a function of weather. Similarly, solar and wind shapes are weather related. Linking solar and wind to demand while still allowing for variance in shape will result in data that better captures possible weather scenarios and variances.

- How should hydroelectric generation be modeled?

PG&E recommends that to the extent possible and for consistency in modelling assumptions across all planning venues, as a starting point the CEC should utilize the CPUC IRP hydroelectric assumptions currently used in the CPUC's Strategic Energy Risk Valuation Model (SERVM). Hydro in SERVM is included in linked weather years which captures "dry hydro year" and "wet hydro year"

variance. As stated above, any variations in modelling assumptions should be clearly stated to allow a comparison of the CEC's study results with the CPUC's IRP results. In addition, future reliability modelling efforts also need to start addressing climate change impacts on future hydro generation.

- Should forced outage rates be applied to other technology?

PG&E recommends that forced outage rates should be applied to all technologies. Forced outage assumptions for some technologies (e.g., solar and wind) will depend on whether the CEC uses historic data for profiles or if artificially generated solar and wind profiles are used. If historical data is used, the forced outages may already be reflected in the historic data.

- What forced outage rate should be used for each technology?

Ideally forced outage assumptions should be unit specific (e.g., newer units have lower forced outage rate). However, given the short time-period to complete this study, it is reasonable to use the available information from other planning venues (CPUC and CAISO). For example, forced outage rates from North American Electric Reliability Corporations (NERC) Generating Availability Data System (GADS)² data³ could serve as a good proxy for forced outage statistics for different types of resources. Since outage rate is an important modelling assumption for this study, PG&E asks that the data be validated against historical forced outage rates to ensure that it is reasonable for use in the study.

- On planned resource build, what resource-mix should be used when adding capacity to meet the ordered procurement from all outstanding procurement orders?

Given the uncertainty associated with the quantity and the types of resources that will be built to meet the existing mandates, PG&E recommends that the LOLE study should dictate the portfolio(s) of resources necessary to meet the incremental capacity need. For example, if the LOLE for the CAISO system without the mid-term reliability procurement is 0.2 LOLE, this study develops a combination(s)⁴ of resources, if added to the system, that will result in bringing the LOLE to 0.1. The combination(s) of resources should then be tested using the marginal effective load carrying capability (ELCC) values that will be published by the CPUC in August to confirm that the marginal ELCC values of the combination of resources adds-up to 11,500 MW of CPUC's mid-term reliability procurement mandate.

PG&E appreciates the time and effort that the joint agencies took to organize this Summer 2021 reliability workshop and the opportunity to present and to provide further comments. Please do not hesitate to contact me if you have any questions.

Sincerely,

Licha Lopez

² [https://www.nerc.com/pa/RAPA/gads/Pages/GeneratingAvailabilityDataSystem-\(GADS\).aspx](https://www.nerc.com/pa/RAPA/gads/Pages/GeneratingAvailabilityDataSystem-(GADS).aspx)

³ Also used by the CAISO Resource Adequacy Enhancements initiative

⁴ More than one combination of resources can help achieve a 0.1 LOLE.