Pacific Gas and Electric Company®

2020-21 Transmission Planning Process

Submitted by	Company	Date Submitted
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PG&E appreciates the opportunity to engage the CAISO and provide comments on the topics discussed in the June 3rd stakeholder meeting for the 2020-21 Transmission Planning Process. PG&E's comments can be summarized as follows:

- PG&E supports the CAISO's efforts to evaluate 2019 wildfire information to assess potential mitigations for the 2020-21 TPP cycle.
- PG&E supports CAISO's proposed storage mapping and resource retirement framework and seeks clarification on several assumptions.
- PG&E requests that the Local Capacity Technical (LCT) analysis identify the mitigations needed to significantly reduce or eliminate resource requirements based on the mandatory standards.
- PG&E requests that LCT analysis account for the required battery characteristics for the transmission capability under the most limiting contingency.

Wildfire Risk Assessment

PG&E appreciates and supports the CAISO's efforts to evaluate 2019 wildfire information to assess potential mitigations in the PG&E service territory within 2020-21 TPP cycle.

Overall, PG&E is supportive of CAISO's inclusion of a wildfire risk assessment in the Transmission Planning Process. PG&E looks forward to coordinating with the CAISO on transmission system hardening and welcomes the opportunity to support CAISO's identification of approved and potentially new projects that mitigate wildfire risk.

For additional context, PG&E refers the CAISO to its 2020 Wildfire Mitigation Plan (WMP) submitted on February 7, 2020, in compliance with California SB 901, AB 1054 by direction from the California Public Utilities Commission's (CPUC) Wildfire Safety Division. The WMP provides details on PG&E's comprehensive Community Wildfire Safety Program and, incorporating lessons learned from the 2019 wildfire season, outlines the additional programs planned from

2020 to 2022 to prevent catastrophic wildfires. Below is a partial list of strategies and programs outlined in the WMP.

1. **Asset Inspection and Repair.** Identifying lines that can potentially be excluded from PSPS by repairing all tags to improve the wildfire risk score of the line below the de-energization threshold from PSPS decision making.

2. **Transmission Line System Hardening.** PG&E's Transmission Line System Hardening Program includes a number of elements intended to mitigate wildfire risk by reducing the risk of potential ignitions associated with PG&E's facilities and equipment. As a part of this program, PG&E is performing full line assessments for overhead electric transmission lines in high fire threat areas to effectively evaluate the need of equipment replacement based on circuit risk.

3. **Sectionalizing Through SCADA Devices.** Separating the grid into small sections for operational flexibility and upgrading automation that will allow PG&E to remotely control and operate field equipment.

4. **Temporary Microgrids.** Safely energizing customers during a PSPS event.

5. **Situational Awareness and Forecasting.** Understanding of weather and fire conditions through improved situational awareness and sophisticated meteorology operations in order to identify the highest-risk fire locations.

6. **Enhanced Vegetation Management**. Inspecting, pruning and removing vegetation in order to reduce the risk of trees, limbs and branches coming into contact with power lines and equipment.

As discussed in the June 3rd stakeholder meeting, system performance of Extreme Events such as PSPS does not require mitigation. That said, PG&E welcomes continued discussion on planning standards performance requirements and looks forward more engagement on this important topic with the CAISO

Round Mountain

PG&E appreciates the CAISO providing an update to the Round Mountain 500 kV Area Dynamic Reactive Support Project.

In the project update, the CAISO recognized that the existing series capacitors at Round Mountain and Table Mountain 500 kV Substations would need to be adjusted to meet PG&E's protection design criteria and to maintain the overall line compensation between Round Mountain and Table Mountain. PG&E wants to add that in addition to the series capacitors adjustments, the Remedial Action Scheme (RAS) which currently monitors the 500 kV system in the Round

Mountain and Table Mountain area will also need to be modified to be able to incorporate the Round Mountain 500 kV Area Dynamic Reactive Support Project. PG&E will conduct detailed studies, design and implementation of the series capacitor adjustments and modification to the RAS.

In addition, as the Round Mountain 500 kV Area Dynamic Reactive Support Project could involve several potential affected systems, PG&E urges the CAISO to notify WECC of the project and connect LS Power with potential affected systems to initiate affected system impact studies as needed as soon as possible. PG&E requests to be part of those notifications and outreach.

Storage Mapping and Resource Retirement

PG&E supports the CAISO's proposed framework and seeks clarification on several assumptions.

Overall, PG&E supports the proposed framework re: "Storage mapping and resource retirement in policy assessment." PG&E finds the CAISO proposal a thoughtful approach to refine the CPUC IRP portfolios, and an appropriate way to address the distinct needs of the more certain base case scenario, and the more dynamic sensitivities scenarios.

PG&E is particularly supportive of the proposed mapping refinements based on retirement assumptions and charging limitations in LCR areas. PG&E finds this approach, by prioritizing resource replacement in LCR areas (i.e., area of the higher reliability and subsequently economic value) while recognizing battery's LCR charging limitations, a reasonable and effective enhancement upon the more generic IRP scenarios. PG&E believes this type of approach, of creating planning portfolios that are more integrated with the CAISO's transmission planning process and insights, will likely yield portfolios that align better with future realities, both in terms of system reliability and market economics. For this reason, PG&E strongly encourages the CPUC to work more closely with the CAISO to incorporate elements of CAISO's proposed mapping method here upstream into the CPUC's IRP process, which PG&E believes will yield a more robust set of portfolios from the IRP.

Lastly, PG&E provides the following comments, and asks the CAISO to provide additional clarity or considerations on specific input and modeling assumptions as it undertakes this mapping process.

- **Additional details on load and resource assumptions** – to the extent practical, PG&E encourages the CAISO to share additional details on the load and resource assumptions for the local areas for the 10 years studies (e.g., level of EV and electrification load growth assumptions, and generic renewable generation build-out assumed in the local areas).

- **Consistency in CAISO import assumption** – PG&E would like to understand TPP's assumptions regarding CAISO import, and compare it against the assumptions used in the CPUC's IRP process. PG&E believes there is desire for consistency across these planning processes, such that the resulting portfolios – generation and transmission – are meaningfully aligned.
- **Plan to assess stressed system conditions** – PG&E would like the CAISO to provide a narrative on how the system level portfolios will be assessed under stressed system conditions. For example, will the CAISO test the portfolios using production cost modeling tools such as PLEXOS? And if so, will the CAISO consider a stress scenario such as one where 100% of the load is being met by inverter-based technologies to assess a potential bookend future state?
- **Consider capacity factors below typical historical values** – PG&E recommends that the CAISO consider the historical dispatch of the resource technologies as an approach to layering into its analysis the retention of the resources with the most valuable reliability characteristics. Resources that have dispatch values above average capacity factors are likely to be economically effective at mitigating multiple constraints rather than the single constraint identified within the local area capacity studies. Using the historical capacity factors for each resource technology is a previous method that the CAISO utilized when evaluating resources for economic retirement.

10-Year LCR Study and Approach

PG&E requests that the Local Capacity Technical (LCT) analysis identify the mitigations needed to significantly reduce or eliminate resource requirements based on the mandatory standards.

PG&E supports the Local Capacity Technical (LCT) studies that will be evaluated over a longer planning horizon to identify the need for longer lead time economically driven transmission elements that would reduce LCR needs. Due to the alignment of the LCT criteria with the bulk electric system (BES) and non-BES with mandatory NERC planning standards, it is reasonable to assume that results from this year's analysis will deviate from previous studies.

The studies from 2018-2019 and 2019-2020 planning cycles utilized the previous LCT standards prior to the tariff changes that aligned the standards between the two processes. The previous planning cycles identified second and third order constraints that would either reduce or eliminate resource requirements for areas and sub-areas. This may be a significant undertaking to complete in a single cycle and PG&E recommends that the CAISO follow the same ordering process that evaluated 50% of the total areas and sub-areas. This will allow the submission of robust solutions that can consider a combination of transmission and storage options.

PG&E requests that LCT analysis account for the required battery characteristics for the transmission capability under the most limiting contingency.

The charging limitations provided are based upon a specific transmission constraint and this process will evaluate alternatives assuming that the constraint is mitigated until the next constraint is identified. The charging characteristics from one constraint to the next could result in a different set of profiles and it is important to understand these profiles to ensure that solution combinations submitted are enough to address the identified reliability need. In addition to this, it would be useful to understand how the CAISO will evaluate the economics of whether it should ensure sufficient in-area resources to recharge the batteries versus expanding transmission capacity that would entirely eliminate that particular need.