Comments of Pacific Gas & Electric Company

Flexible Resource Adequacy Criteria and Must Offer Obligation – Phase 2 Second Revised Flexible Capacity Framework

Submitted by	Company	Date Submitted
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Pacific Gas and Electric Company (PG&E) respectfully offers the following comments on the California Independent System Operator's (CAISO) Flexible Resource Adequacy Criteria and Must Offer Obligation – Phase 2 (FRACMOO2) Second Revised Flexible Capacity Framework.

1. The CAISO should better describe its concerns related to the 2019 Flexible Capacity Needs Assessment before continuing the FRACMOO2 Stakeholder Initiative.

On May 15, 2018, the CAISO sent a market notice indicating a delay in the release of the 2019 Flexible Capacity Needs Assessment. In its market notice, the CAISO shared fundamental concerns with the use of the CEC hourly forecast data in determining the Flexible Resource Adequacy (RA) requirements. The CAISO did not explain what these concerns were, nor did it explain whether these concerns are applicable to the Flexible RA requirements in previous years. PG&E asks the CAISO to let stakeholders know if there is any link between the issues identified in the 2019 Flexible Capacity Needs Assessment and the FRACMOO2 proposal. If any links exist, the CAISO should address these issues before proceeding with additional work on the FRACMOO2 proposal.

2. PG&E asks the CAISO to continue to validate its 2017 historical imbalances.

In the Second Revised Flexible Capacity Framework, the CAISO presents a comprehensive set of data to describe the basis of the Flexible Resource Adequacy (RA) requirement to address real-time uncertainty. The CAISO provides a distribution of 2017 historical imbalances, and proposes that the monthly maximum absolute values for imbalances reserves should be the real-time Flexible RA requirement. The CAISO's methodology is a step forward, however more details are needed. The Day Ahead Market Enhancements (DAME) stakeholder initiative describes the imbalance as comparing the ISO reliability forecast between markets. This imbalance is calculated by converting hourly schedules to 15-minute granularity, subtracting the Fifteen Minute Market (FMM) load forecast from the ISO reliability forecast to determine the total imbalance of load, then adding this value to the generator and intertie changes between DAM and FMM that require another resource to accommodate the schedule change.

The CAISO describes in its FRACMOO2 proposal that the imbalances are the overall imbalance between the Day Ahead Market (DAM) and Real-Time Dispatch (RTD). However, the data presented appears to be between the Day Ahead Market and the Fifteen Minute Market. The CAISO should clarify whether the estimated Flexible RA requirement values provided in the proposal were between

DA and FMM or DA and RTD. The CAISO should also clarify whether future Flexible RA real-time requirements will be based on the historical imbalances between the Day Ahead Market and the Fifteen Minute Market or between the Day Ahead Market and the Real-Time Dispatch (Five-minute market). Another clarification is which Day Ahead Market value is used to define the CAISO's initial need for imbalances. In the DAME Revised Straw Proposal, the ISO Reliability Forecast starts with a number that is labeled "IFM", however it is not clear whether this number is the CAISO Forecast of CAISO Demand (CFCD), or is the cleared Load in the Day Ahead Market. The CAISO should clarify what load metric will be used as the starting point for the Day Ahead Market imbalances. The CAISO should provide data to show the differences in imbalances if the CAISO were to use cleared bid-in load, CAISO's Day Ahead load forecast, or CAISO Forecast of CAISO Demand, with a description of which of these metrics includes CAISO operator imbalance conformance.

The distribution of historical imbalances provided in the FRACMOO2 Second Revised Flexible Capacity Framework provide a more detailed depiction of the CAISO's monthly imbalances. In the CAISO's 2017 data, all monthly averages were found to be significantly below zero. April, May, and June all have average imbalances of less than negative 2,000 MWs. This result is concerning, as it does not fit with the expected distribution of forecast error. Before adopting this metric as an appropriate methodology for assigning real-time Flexible RA requirements, the CAISO should better explain why the monthly average for all months is substantially below zero.

PG&E asks the CAISO to recognize that the recent market notice associated with the 2019 Flexible RA requirement should emphasize that changes to the existing Flexible RA requirement methodology should be pursued with the optimum amount of transparency to stakeholders. While including stakeholders in data validation can appear tedious, the benefit of additional review is likely to result in a durable definition of flexibility that will ensure reliable operation of the ISO grid for years to come.

3. PG&E supports the CAISO's adoption of Flexible RA counting rules for wind and solar resources

The CAISO presents several options to establish the Effective Flexible Capacity counting rules for Variable Energy Resources (VERs) in its Second Revised Flexible Capacity Framework. The CAISO considered PG&E's two proposals for calculating the Effective Flexible Capacity (EFC) for VERs. PG&E asked the CAISO to consider a simple approach that uses the CAISO's flexible capacity allocation methodology, as well as a complex approach that uses the CAISO's historical renewable forecasts to develop a hypothetical maximum monthly net load ramp. In addition to considering PG&E's proposals, the CAISO also considered an ELCC-like assessment of only ramping hours and an exceedance methodology for only ramping hours. The CAISO has recommended adopting PG&E's simple approach. PG&E supports this recommendation.

4. PG&E does not support the CAISO's proposed requirement to have 100% of the CAISO Flexible RA Requirement filed in the Year Ahead RA filing.

In Section 5.3.2 of the CAISO's Second Revised Flexible Capacity Framework proposal, the ISO proposes that 100% of the monthly needs be procured for year ahead showings. Under the existing RA rules, 90% of monthly Flexible RA requirements are required to be filed in the Year Ahead RA filing.

The remaining 10% of the requirements are required to be filed in the twelve Month Ahead RA filings.[1] These percentages are consistent with the percentages required for System RA. Due to recent issues with assigning costs to new Load Serving Entities for Year Ahead Capacity Procurement Mechanism designations, PG&E cannot support any rule changes that might make cost allocation flaws due to load migration even more harmful.

The CAISO has not presented a reasonable argument for why LSEs must procure 100% of their monthly Flexible RA requirements in the Year Ahead RA Filing. As CAISO has shown in Table 4 of the Revised Flexible Capacity Framework, there is not an immediate concern of a scarcity of Flexible RA capacity, and the changes associated with this proposal are likely to increase the supply of Flexible RA by including the ability of intertie and intermittent VERs to provide Flexible RA. This increased supply will reduce the potential for scarcity of Flexible RA. Therefore, the CAISO should not need the certainty of the additional 10% of the Flexible RA requirement in the Year Ahead RA Filing. Furthermore, the difference between the monthly Flexible RA requirements are not so large as to expect that resources needed in December would not be under contract for January. This, in addition to the fact that the January Monthly RA Filing is less than a month after the Year Ahead RA Filing, shows that there is an extremely small likelihood of several thousand of MWs that are needed for Flexible RA would retire or become unavailable in the intervening year while the LSEs balance their monthly RA positions.

On the other hand, the risks associated with intra-year load migration are significant for LSEs. In recent months, both the current Year Ahead Local RA framework at the CPUC[2] and the existing Year Ahead CPM allocation methodology at the CAISO[3] have become significantly more scrutinized due to the inability of regulators to ensure ratepayer cost indifference when new entrants start serving load after the Year Ahead RA Requirements are assigned. PG&E believes existing CAISO processes are insufficient to address these load migration issues and cannot support any rule changes that might make existing load migration flaws even more harmful.

5. <u>PG&E does not believe that flexible deliverability studies are needed. PG&E recommends the CAISO defer consideration of these studies until a clear need is demonstrated.</u>

The CAISO has indicated a need to develop a deliverability assessment for flexible capacity. Based on the conversation in the May 3rd, 2018 Stakeholder Meeting, this need appears to be based on the hypothetical benefits associated with resources that can provide flexible capacity without the need for a full capacity deliverability status designation determined at interconnection. Another discussion topic justifying the development of a flexible deliverability assessment was that ramping needs may not be coincidental, thus leading to the conclusion the existing deliverability study does not adequately determine flexible deliverability challenges. The CAISO refers to this benefit, as well as the benefit that the ISO will no longer have to rely on the use of the "dispatchable" flag in Masterfile as a primary

[1] http://www.cpuc.ca.gov/ra/
[2] Resolution E-4907 – Registration Process for Community Choice Aggregators
http://docs.cpuc.ca.gov/publisheddocs/published/g000/m208/k956/208956263.pdf
[3] "Review year-ahead CPM cost allocation to address load migration" is included in the scope of Phase 2 in the CAISO's Review of Reliability Must Run and Capacity Procurement Mechanism stakeholder process
http://www.caiso.com/Documents/DraftFinalProposal-ReviewofReliabilityMustRunandCapacityProcurementMechanism.pdf

qualifying attribute to provide flexible capacity in its Second Revised Flexible Capacity Framework. Another benefit discussed in previous stakeholder meetings would be that the EFC-only resource would not be required to provide bids in the Availability Assessment Hours associated with System RA.

Considering that flexible deliverability studies will be significant change to current rules and require substantial development, PG&E recommends that the CAISO defer consideration of EFC deliverability studies until after the FRACMOO2 proposal has been approved and implemented. Alternatively, the Interconnection Process Enhancements initiative has recommended a new initiative to review the deliverability assessment for energy storage facilities, PG&E recommends the CAISO consider including this topic as part of that new initiative.[4]

6. PG&E does not support the CAISO's proposal to require replacement capacity for when a Flexible RA resource reaches its use-limitations.

PG&E asks the CAISO to elaborate on its proposal to require replacement capacity for all use-limited resources providing Flexible RA that reach their use-limitation. The CAISO should describe whether this use-limitation restriction should apply for both predictable needs and unpredictable flexible capacity needs. Does the CAISO plan to require use-limited replacement capacity solely for Flexible RA resources, or all RA resources? What is the difference between Flexible RA and System RA that would justify requiring replacement capacity for use-limited resources for Flexible RA, but not System RA?

7. The CAISO should better describe the relevance of 15-minute transition time for energy storage Day Ahead Flexible RA counting rules.

In its discussion of the Flexible RA counting rules for energy storage resources, the CAISO indicates that for the purposes of providing the Day Ahead Load Shaping product, storage resources may receive an EFC based on the full charge-to-discharge range the resources can perform over three hours. The CAISO states that it is "extending" this counting rule to resources that are capable of transitioning from charge to discharge between two sequential 15-minute dispatch intervals. The charge-to-discharge range a resource can perform over three hours is unrelated to transition time. The CAISO does not explain the relevance of the two sequential 15 minutes dispatch intervals. Since the Day Ahead Load Shaping product is based on the full charge to discharge range a resource can perform over three hours, the CAISO should explain why a transition time less than three hours is relevant to the Day Ahead Load Shaping product.

8. The CAISO should ensure consistency between the amount of capacity an energy storage resource can be awarded for the imbalance reserve product and the amount of capacity an energy storage resource can sell for real-time Flexible RA.

There was a discussion in the May 3rd, 2018 FRACMOO2 Stakeholder Meeting about whether the full charge to discharge should be considered as available for a storage resource's real-time EFC. This

[4] 2018 Interconnection Process Enhancements Straw Proposal, pg. 28. http://www.caiso.com/Documents/StrawProposal-2018InterconnectionProcessEnhancements.pdf

debate seemed to be disconnected from the discussion of the amount of imbalance reserves that a storage resource could provide in the DAME initiative. The rules for real-time EFC should align with the imbalance reserves a resource can provide. This topic should be further evaluated in the next FRACMOO2 proposal.

9. The CAISO should clarify its proposal to have the availability of Flexible RA resources assessed during all hours of the month.

In Section 5.4.2 of the CAISO's proposal, the CAISO states that all Flexible RA resources will be required to submit economic bids into the day-ahead market all 24 hours for all flexible capacity for which the resources have been shown. This requirement also will change the Availability Assessment Hours for Flexible RA to apply to all hours of the month. The CAISO has only presented evidence that shows that the real-time Flexible RA need occurs in all 24 hours. Ramping needs associated with the Day Ahead Load Shaping product are unlikely to be similar, in that significant ramps are consistent, predictable, and do not occur in all 24-hour intervals. The CAISO should clarify whether the proposed change to 24-hour Availability Assessment Hours for Flexible RA capacity applies to all flexible capacity or simply the percentage of flexible capacity shown to address real-time uncertainty.

10. PG&E recommends the CAISO create a methodology to determine the amount of flexible capacity intermittent resources can provide to address real-time uncertainty.

PG&E recommends the CAISO develop a methodology to ensure that sufficient capacity is available in hours when the VER forecast is lower than its shown EFC. This methodology is needed to ensure sufficient reserves are available during periods when uncertainty is unrelated to renewable forecast error. PG&E recommends the CAISO compare the CAISO's historical renewable forecasts to its proposed EFCs for VERs as a starting point. The frequency that the forecasts are below EFCs could lead to an improved understanding of how often the CAISO will depend on non-VER resources for uncertainty management that is unrelated to renewable forecast error. Once uncertainty management is separated between VER related forecast error and non-VER related imbalances, the real-time EFC rules for VERs can be more easily re-evaluated in future years.

11. PG&E asks the CAISO to update its assessment of the existing fleet's capability to meet CAISO's stated needs.

In the CAISO's Revised Flexible Capacity Framework, the CAISO provided an analysis of if existing Flexible RA filings had provided sufficient flexible RA capacity based on the new Flexible RA requirements and EFC rules. The assessment in the Revised Flexible Capacity Framework presented evidence that while all months had sufficient Flexible MWs available, there were certain months that were found to be deficient in providing Flexible RA capacity for real-time uncertainty based on the existing RA filings. However, the MWs included in the supply available as well as the supply shown in existing Flexible RA filings are likely to be undercounted for real-time Flexible RA due to the recent change in CAISO's proposal to count long-start resources' Pmin to Pmax as available for real-time Flexible RA. To determine whether this assumption is correct, PG&E asks the CAISO to update Table 4 of the Revised Flexible Capacity Framework in its next FRACMOO2 proposal. PG&E also recommends the CAISO create a regular report that publishes the amount of Day Ahead Load Shaping, 15 min and 5 min flexibility provided by the existing RA filings. This consistently updated

information will provide stakeholders with valuable information that will communicate the beneficial impacts of the FRACMOO2 proposal, particularly as the resource mix and LSE contracting behavior changes.