Pacific Gas and Electric Company

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Flexible Resource Adequacy Criteria and Must Offer Obligation – August 2nd Working Group

Submitted by	Company	Date Submitted
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Pacific Gas and Electric Company (PG&E) offers the following comments on the California Independent System Operator's (CAISO) Flexible Resource Adequacy Criteria & Must Offer Obligation Phase 2 (FRACMOO2) August 2nd Working Group.

PG&E supports the CAISO resetting the FRACMOO2 initiative to focus on clear operational needs that can be procured in advance to ensure the CAISO can operate the grid reliably.

PG&E requests more information to understand better the CAISO's operational needs.

In order to assist in translating operational needs into viable market products, PG&E seeks more information on the CAISO's stated operational needs. PG&E appreciates the CAISO providing example days when the CAISO was challenged to maintain control performance at levels required to meet NERC and WECC Standards[1]. After a brief investigation, PG&E was unable to find the CAISO's control performance data over time. In order to understand the overall trend of CAISO's control performance and to isolate when there were challenges limiting its Area Control Error, the CAISO should produce several years of hourly control performance data.[2]

The CAISO also provided 'actual upward and downward ramping needs' data over various time horizons.[3] While PG&E appreciates the added specificity of the data provided, the CAISO did not make clear how these data were actually measured, and how they supported the CAISO's assertion that short-term ramping needs were not being met. The CAISO also expressed concern that ramps may be overlapping, and thus even if a set of resources can meet a high 5 minute ramp, it is possible that the capacity in the same set could be unable to help to meet a ramp in the next interval. PG&E understands the rationale for this concern, but has seen no evidence that this is the case. In order to

[1] NERC BAL-001-2, R1 & R2 (for CPS1 and BAAL standards relating to ACE requirements); BAL-002-WECC-2 (relating to maintenance of contingency reserves); BAL-003-1.1 (relating to frequency response obligations).

[2] An example of this type of data can be found on slide 25 of "ERCOT's Experience in Integrating Renewable Resources" presented at 2016 Fall Reliability Conference. Presentation can be found here: https://www.midwestreliability.org/MRODocuments/RC2%20ERS%20in%20ERCOT%20Sandip%20Sharma.pdf

[3] August 2nd FRACMOO 2 Working Group Agenda and Presentation, pg. 12-16, http://www.caiso.com/Documents/Agenda_Presentation_FlexibleResourceAdequacyCriteria_MustOfferObligations.pdf

understand the impact of overlapping ramps on operational needs, the CAISO should provide an assessment of the magnitude and frequency of overlapping ramps.

PG&E appreciates the CAISO's commitment to taking a holistic, operationally-focused approach to addressing its flexibility needs.

The CAISO stated it is taking a holistic, operationally-focused approach to addressing its flexibility needs, including what ISO market enhancements are needed. PG&E supports this approach, and asks the CAISO to develop a comprehensive trajectory of energy market design and Resource Adequacy (RA) changes. This will help stakeholders understand the timeline of specific improvements, and the amount of stakeholder effort needed to effectively contribute.

PG&E supports the CAISO conducting further analysis on several topics that was discussed during the August 2nd Working Group call. These include: redefining net load as load minus inflexible capacity, increased granularity in Day Ahead schedules, Integrated Forward Market (IFM) - Residual Unit Commitment (RUC) integration, and expanding the Short Term Unit Commitment (STUC) outlook horizon. In addition, PG&E asks the CAISO to investigate using maximum ramp rate restrictions on variable energy resources and how this impacts the operational challenges facing the CAISO currently. This strategy has been used in a number of Regional Transmission Operators (RTOs)[4]. This could be an effective short-term change while the CAISO transitions to a future grid where non-carbon resources provide reliability services without fossil fueled resources.

PG&E does not support determining the need for additional Flexible RA products before establishing the proper analytical approach to support solutions.

During the August 2nd Working Group call, the CAISO indicated that it wanted to develop shorter duration capacity products to address operational needs created by uncertainty. The CAISO specified that, in addition to the existing three hour product, Flexible RA products should be designed to address one-hour and intra-hour net load ramps. The CAISO states the products would be designed to address both uncertainty and variability in four different time horizons. PG&E observes it is unclear how many products the CAISO believes are needed. Based on the time horizons and need to account for variability and uncertainty, the CAISO could be suggesting a need for as many as nine products.[5]

PG&E is concerned that the CAISO may have already determined multiple flexible capacity products are needed before completing an analysis of operational needs. Capacity products that are not clearly defined to address individual specific concerns are likely to be ineffective. Capacity products having multiple objectives create difficulties in designing appropriate penalties for non-performance. Alternatively, multiple capacity products that are each designed for a separate purpose create difficulties in assigning priority between products and are administratively difficult for LSEs to

[4] PG&E has seen a common approach RTOs use to manage intermittency is to use a maximum ramp rate that is based on a percentage of nameplate capacity per minute. PG&E is not recommending this approach, but is using it instead as a point of reference for initial discussions of assessing the value of maximum ramp rates.

[5] The nine products could be the existing three hour product as well as products to address Day-ahead to real-time variability, Day-ahead to real-time uncertainty, One-hour variability, One-hour uncertainty, 15-minute variability, 15-minute uncertainty, 5-minute variability, and 5-minute uncertainty.

comply with. Ongoing Resource Adequacy Availability Incentive Mechanism (RAAIM) implementation challenges exemplify both of these types of concerns.
PG&E highlights the policy discussion when the original flexible RA requirements were developed. Originally, the CAISO requested three different flexible products, but acknowledged that it was prudent to limit the number due to the complexity of specifying the need and administrative burden places on LSEs and generators. The CAISO has not yet shown an effective approach to address either of these concerns. The CAISO should instead use its existing and planned tools to manage its operational needs. For example, it is not clear how effectively the CAISO is using the current flexible ramping products and regulation, and how effective an IFM with a Flexible Ramping Product (FRP) and 15 minute granularity would be. The effectiveness of these solutions should mitigate the need for new capacity products. PG&E asks the CAISO to provide these insights and further requests the CAISO account for the assistance the Energy Imbalance Market (EIM) provides (and will provide with planned expansions) to adjust the CAISO's expected flexible needs.

PG&E advocates for simplified RA products that are easy to understand and procure. For example, an RA product tied to expected forecast error of variable energy resource output is clear, and easy to understand. Addressing uncertainty with surplus procurement in the form of reserves is well understood. The similarity between this type of product and ancillary services makes the translation between capacity product and energy product simpler. Further, the implementation of this form of an RA requirement will be less likely to be bogged down by the unnecessary complexity associated with the current Flexible RA product.

<u>The CAISO should provide more details on its proposed RA assessment methodology</u>

The CAISO describes a need to ensure there is sufficient capacity and energy all hours of the year. This assessment is distinctly different from the current RA paradigm, which focuses only on the periods when the CAISO system is most stressed, either due to peak load or ramping needs. CAISO's existing study tools, such as power flow models, are "snapshot" assessments. These point-in-time analyses limit the ability to assess multiple conditions needed to determine whether the system is reliable in all hours of the year. PG&E would appreciate the CAISO further describing how this new assessment will alter, enhance, or supplant the existing reliability study tools. Additionally, the CAISO should understand a change in the assessment methodology will only be successful insofar as the generator requirements are also changed to ensure consistency with the assessment assumptions. As a result, an assessment that looks at all hours of the year will likely not be meaningful unless RA assessment hours also cover all hours of the year.

The CAISO also stated use-limitations will be properly accounted in the new RA assessment methodology. PG&E would like the CAISO to provide more details on how it intends to assess use-limitations in a RA assessment methodology and implement them in the RA program. Attempts to incorporate use-limitations into the RAAIM assessment by shifting from an outage-based metric to a bid-based metric have created challenges for LSE compliance and CAISO assessments of compliance with RA requirements. These challenges emphasize the importance of taking the time to understand all the implications of use-limitations on CAISO market participation before incorporating use-limitations in RA assessments.