



Comments of Pacific Gas and Electric Company
Flexible Resource Adequacy Criteria and Must-Offer Obligation
Second Revised Straw Proposal

Submitted by	Company	Date Submitted
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Pacific Gas and Electric Company (PG&E) offers the following comments in the stakeholder process for the California Independent System Operator’s (CAISO) Flexible Resource Adequacy Criteria and Must-Offer Obligation (FRAC-MOO) Initiative June 13, 2013 revised straw proposal (Proposal).

In our comments, PG&E provides both recommendations and requests for clarification. PG&E notes that many of the design elements have not been adequately fleshed out and require more discussion than is currently planned for in the stakeholder process prior to presentation to the Board of Governors.

The CAISO plans to post the Draft Final Proposal (DFP) on September 18 with only one more round of stakeholder input on October 8. Then there is a two-month gap between the last round of comments and presentation to the Board on December 18. Typically, initiatives at the DFP stage should be close to complete with only some fine tuning remaining. That is clearly not the case for the FRAC-MOO design. Much detail is missing from the Proposal; numerous items are not ready to be included in the DFP. In particular, the following elements of the Proposal lack clarity or are not fully developed:

- Yearly timeline for determining flexibility requirement – requires further clarity and the addition of when the error term will be identified;
- Calculation of flexibility requirement – elements included in the error term have not been defined;
- Allocation of flexibility requirement – evidence of CAISO’s analysis is required, jurisdiction of requirement is unclear;
- Replacement of flexible RA capacity – unclear if intra-day substitution is allowed;

- Must-Offer Obligation for Energy Storage resources has not been sufficiently developed, encourages resources to provide less flexibility than is needed by the system;
- Must-Offer Obligation for flexible VERs has not been developed;
- Backstop Procurement – requires additional clarity, problems with other elements may lead to unnecessary backstop;
- Incentive Mechanism – requires considerable additional development including discussing the relationship of FSCP and SCP, impact of data limitations.

PG&E also notes that the two-month gap before Board consideration allows for at least one more paper with stakeholder comments before posting the DFP. PG&E strongly recommends that the CAISO take advantage of that time cushion and post a third straw proposal.

Though there are numerous elements that require additional analysis and stakeholder discussion, the following three points are of greatest concern to PG&E:

1. More analysis and discussion of implications of the granular allocation methodology is needed.
2. More clarity is needed on the incentive mechanism.
3. The calculation to determine the effective flexible capacity of variable energy resources is undefined at this time. This element of the proposal is too significant to lack clarity.

Comments

1. *The ISO has proposed a process by which an annual flexible capacity requirement assessment would be conducted. Please provide any comments or questions your organization has regarding this proposed process.*

Updating of renewable information from LSEs

The yearly timeline identified on page 11 of the proposal appears to provide a reasonable framework for the flexible capacity requirement calculation and procurement process.

Request for Clarification: Please clarify that the September option for revised RA and flexible capacity obligation will be an opportunity for entities to update the timelines for renewable projects coming online.

Five-years of contractual information made available to the CAISO

The CAISO indicated an intention to collect contractual information from load serving entities (LSEs) extending as far as five years into the future.¹

Recommendation: PG&E asks the CAISO commit to reporting out to local reliability authorities (LRAs) and LSEs a non-binding requirement for years two through five to correspond to the contract data collected and analyzed. If the CAISO does not generate a forecast for these out years, then there is no reason the contractual information is needed by the CAISO for the later years.

2. *The ISO has outlined a methodology to allocate flexible capacity requirements to LRAs. It is based on one possible measurement of the proportion of the system flexible capacity requirement to each LRA and calculated as the cumulative contribution of the LRA's jurisdictional LSE's contribution to the ISO's largest 3-hour net load ramp each month. Please provide comments regarding the equity and efficiency of the ISO proposed allocation. Please provide specific alternative allocation formulas when possible. The ISO will give greater consideration to specific allocation proposals than conceptual/theoretical ones. Also, please provide information regarding any data the ISO would need to collect to utilize a proposed allocation methodology. Specifically,*
 - a. *Over the course of a day or month, any of the identified contributors to the change in the net load curve may be positive or negative. How should the ISO account for the overall variability of a contributor over the month (i.e. how to account for the fact that some resources reduce the net load ramp at one time, but increase it at others)?*
 - b. *What measurement or allocation factor should the ISO use to determine an LRA's contribution to the change in load component of the flexible capacity requirement?*
 - c. *Does your organization have any additional comments or recommendations regarding the allocation of flexible capacity requirements?*

The implications of the granular allocation as proposed by the CAISO is not well understood

¹ Flexible Resource Adequacy Criteria and Must-Offer Obligation Second Revised Straw Proposal ("Proposal"), page 12. <http://www.caiso.com/Documents/SecondRevisedStrawProposal-FlexibleResourceAdequacyCriteria-MustOfferObligations.pdf>

The implications of the current granular allocation proposal are not well understood. This is especially true of the contribution of the intermittent categories which may result in substantial reductions in an LSE's flexibility requirements in some months. More analysis and discussion is needed to fully understand the impact and fairness of this approach. Moreover, the CAISO should provide information to LSEs on forecasted allocation of the peak load ratio share and the more granular method presented in the Proposal.

Recommendation: More discussion of the granular proposal does not need delay the initiative. PG&E suggests the CAISO revert to the simpler peak load ratio share as the basis of allocation for the 2015 requirement. The allocation methodology can be updated at a later time if the CAISO demonstrates an alternative that is materially superior.

Clarification: Does the CAISO plan to reduce the total system flexibility requirement to account for the impact of flexible VERs? If so, how would the impact be quantified?

Clarification: The granular allocation methodology relies on calculating each LSE's percentage of the total contracted capacity for three intermittent categories: 1) wind, 2) solar PV and 3) solar thermal. When calculating these totals, no reduction appears to be made to account for flexible intermittents. How does the CAISO propose to account for an LSE's flexible variable energy resources in developing the LSE's allocation of the requirement?

The proposed treatment of load-following metered subsystems appears to be flawed

The proposed methodology for load-following metered subsystems (MSS) is likely to lead to system-wide insufficiency of flexible capacity. As written in the Proposal, "While MSS load-following LSEs will receive an allocation from the ISO, they will not be required to provide a flexible capacity showing to the ISO."² This translates to the CAISO intending to allocate a portion of the requirement for flexibility to an entity that the CAISO will not require to submit to the showing of the requirement. The likely result of this discrepancy between calculated allocation and requirement is the need for backstop procurement.

Since load-following MSS are responsible for their load, it is unclear to PG&E why MSS are included in the calculation of the requirement. In many ways load-

² Proposal, page 17.

following MSS should be treated as a stand-alone Balancing Area Authority. Just as the CAISO does not include the requirements of neighboring BAAs, the CAISO should not include the requirements for load-following MSS.

Recommendation: PG&E requests that MSS load-following LSEs be removed from the calculation of the flexibility requirement and their load not included in the calculation of system peak, as used for the calculation of system flexibility requirement. Including the requirement overstates the requirement (since the MSS should be load following). Moreover, inclusion would result in a foreseeable need for backstop procurement, the costs of which would be unfairly borne by the remaining CAISO LSEs' load.

Authority of LRA to set the Flexibility Requirement

Clarification: PG&E asks the CAISO to clarify that the LRAs have authority to set the flexibility requirement in the same way they set the Local Capacity Requirements. Our understanding is that the CAISO will make a flexibility requirement recommendation to the LRAs. But it is the LRAs prerogative to adopt or modify the recommendation.

Clarification: If an LRA adopts a requirement that is lower than that recommended by the CAISO, would the CAISO backstop the difference between the CAISO recommendation and the LRA-approved requirement? If backstopped, how would the cost be allocated among LSEs?

3. *The ISO has proposed must-offer obligations for various types of resources. Please provide comments and recommendations regarding the ISO's proposed must-offer obligations for the following resources types:*

PGE's comments are focused on demand response, variable energy resources and energy storage. Please refer to the appropriate sections, below.

a. *Resources not identified as use-limited*

b. *Use-limited resources*

1. *Please provide specific comments regarding the ISO's four step proposal that would allow resources with start limitations to include the opportunity costs in the resource's start-up cost.*

2. *Please provide information on any use-limitations that have not been addressed and how the ISO could account for them.*

c. *Hydro Resources*

d. *Specialized must-offer obligations (please also include any recommended changes for the duration or timing of the proposed must-offer obligation):*

PG&E supports the use of specialized must-offer requirements for preferred resources as long as the CAISO makes sure that the resulting qualifying EFC is usable by the system. The CAISO should avoid creating situations where the resulting qualifying capacity does not avoid the need for additional EFC, and CAISO ends up buying or requiring additional EFC.

1. *Demand response resources*

Treatment of demand response is potentially insufficient

The CAISO's proposed treatment of demand response (DR) resources appears to be a good start but potentially does not capture the full capability of DR to address the CAISO's most significant periods of requirement. Pending further analysis of the requirement for maximum ramping, it may be appropriate to extend the current five day schedule (Monday through Friday) to a seven day schedule if analysis shows that weekends also have a high ramping need.

Clarification: PG&E requests that the CAISO clarify the relationship between the use-limitations of a DR resource that are specified in the CAISO's master file and a DR resource's bidding requirements.

Recommendation: Consider a seven day must-offer obligation if needed to meet days with very significant ramps.

2. *Storage resources*

CAISO should develop further the requirements proposed for energy storage

PG&E does not support the CAISO's proposal to qualify energy storage that provides regulation energy management as flexible resources. This proposal gives disproportionate credit to energy storage resources with short durations when compared to long duration storage and non-storage resources that provide flexible capacity. The CAISO's proposal essentially encourages the installation of regulation energy management energy storage resources that provide fewer benefits to the

CAISO, yet receive equal credit to storage and non-storage that provide 3 or more hours of continuous energy.

The latest straw proposal needs to be updated to reflect the presentation at the latest stakeholder meeting. In particular, it seems that only storage with three or more hours of energy would be able to qualify.

3. *Variable energy resources*

Clarify how to calculate the effective flexible capacity (EFC) of flexible variable energy resources (VERs)

The proposed hours of availability and corresponding must-offer obligation for flexible VERs appears to be reasonable, however the CAISO has not provided any detail into the methodology it proposes to calculate the EFC of VERs. PG&E requests that this element be specifically addressed in the next proposal.

PG&E also notes that the must-offer obligation proposed for flexible VERs (as well as other resources) addresses the daytime ramping needs of the system, but does not address the potential over-generation that may occur in the early morning hours of low system demand. How does the CAISO plan to provide incentives for flexibility in VERs in such cases?

PG&E requests further clarity as to whether the CAISO will update the requirement and allocation methodologies to reflect VERs that provide flexibility. Three questions in particular:

- 1) Will the CAISO include flexible VERs in the calculation of the system flexibility requirement?
- 2) Will an LSE's allocation of the requirement be reduced to reflect the amount of flexibility provided by that LSE's VER fleet?
- 3) Will flexible VERs be eligible to count toward an LSE's flexibility allocation?

4. *The ISO has proposed to include a backstop procurement provision that would allow the ISO to procure flexible capacity resources to cure deficiencies in LSE SC flexible capacity showings. Please provide comments regarding the ISO's flexible capacity backstop procurement proposal.*

The proposed backstop procurement suggests flaws in initiative design

As explained in the Proposal, “the ISO will only seek authority to issue a backstop designation if there is a cumulative deficiency.” While PG&E appreciates the CAISO’s attempts to minimize costs for LSEs, the matter of greater significance is that the CAISO has formulated an equation for allocating the flexibility requirement that it anticipates may contain errors. If the flexibility requirement calculation is correct, it is unclear how a situation could arise where the system would have sufficient flexibility when a contributing LSE is insufficient.

Recommendation: Re-evaluating the allocation requirement may be necessary if a single LSE is insufficient, but the system as a whole has sufficient flexibility. This scenario suggests that the remaining LSEs are, by default, over-procuring flexibility.

5. The ISO is not proposing to use bid validation rules to enforce must-offer obligations. Instead, the ISO is proposing a flexible capacity availability incentive mechanism. Please provide comments on the following aspects of the flexible capacity availability incentive mechanism:

a. The proposed evaluation mechanism/formula

- 1. The formula used to calculate compliance*
- 2. How to account for the potential interaction between the flexible capacity availability incentive mechanism and the existing availability incentive mechanism (Standard Capacity Product)*

Address functional concerns associated with use of the existing SCP for FSCP

PG&E requests that the CAISO include information on three potential problems that exist in the plan to mirror the SCP model for FSCP. First, please address the plan to apply FSCP to DR and any other resources that are currently not required to meet SCP standards. Second, please explain why the current FSCP charges exclude weekends and holidays. Third, additional clarification is necessary on the CAISO’s proposal to “avoid double counting”³ of SCP and FSCP charges.

Recommendation: PG&E requests discussion and examples of the interaction between the two mechanisms be included in the next proposal. Please confirm that resources under FSCP would be capped at a level of payments received for over-performance, in keeping with the practice under SCP.

b. The use of a monthly target flexible capacity availability value

³ Proposal, page 33.

1. *Is the 2.5% dead band appropriate?*

FSCP dead band should be greater than 2.5 percent above and below the target

PG&E is concerned that applying the 2.5 percent dead band from the SCP to FSCP may be overly punishing for resources that are operating dramatically differently from the historical operations. For this reason, PG&E suggests the CAISO apply a higher dead band to FSCP for the first three years the incentive mechanism is operational. After that time, lowering the dead band to correspond with SCP would be appropriate.

Recommendations:

- Utilize a dead band between four and five percent (above and below target) for the first year and decrease the dead band to correspond with SCP over time.
- The dead band, as described by the CAISO in the Proposal is a “five percent dead-band” (2.5% on either side of the target)⁴. Referring to the dead band in this space as a “2.5% dead band” is comparable to its definition in the SCP tariff development. In the interest of clarity, PG&E requests the CAISO define the dead band in a consistent manner through this initiative.

2. *Is the prevailing flexible capacity backstop price the appropriate charge for those resource that fall below 2.5% of monthly target flexible capacity availability value? If not, what is the appropriate charge? Why?*

Leave SCP and FSCP tied at the same price

At this time, PG&E supports the CAISO’s proposal to tie flexible standard capacity product (FSCP) charges to the existing standard capacity product (SCP) charges, which in turn are tied to the effective capacity procurement mechanism (CPM) rate. Setting an equal or comparable price mitigates potential gaming opportunities that could arise in relation to managing resource outages. Flexibility needs to be a premium charge and be tied to the backstop rate. And FSCP must be sufficient to incent parties to meet their obligations and only submit resources as flexible that are, in fact, able to fulfill the obligation of the flexibility they offer into the market.

Recommendation: Leave FSCP, SCP and CPM at the same price.

⁴ Proposal, page 36

- c. *Please also include comments regarding issues the ISO must consider as part of the evaluation mechanism that are not discussed in this proposal.*

Substitution impact on SCP

The CAISO has not yet addressed the issue of flexible resource substitution. If a flexible RA resource must be unavailable – either as a result of a planned or forced outage – the CAISO must allow LSEs the option to substitute a flexible RA resource of the same MW capability for the resource on outage.

Recommendation: Allow substitution of flexible resources in the day-ahead and real-time without penalty, provided that the total number of flexible MWs bid into the system meets the allocated requirement.

Address impact of data limitations

PG&E understands existing data limitations as the basis of using historical SCP data, however PG&E stresses the importance of updating FSCP to include all flexible days and hours when such data becomes available. A potential alternative to the current proposed methodology would be for the CAISO to only include resources in the 2010 – 2012 timeframe that currently have an effective flexible capacity (EFC), as opposed to all resources, in the calculation of the FSCP until data is available from actual flexible RA resources.

6. *Are there any additional comments your organization wishes to make at this time?*

Address the impact of FRAC-MOO on the flexible ramping constraint

PG&E requests the CAISO discuss the relationships between forward flexibility obligation and spot products, including flexibility products. The impact of FRAC-MOO on the Flexible Ramping Constraint and future Flexible Ramping Product is unclear, thus discussion and analysis will be valuable to avoid any potential redundancies.

The error term (ϵ) requires definition

The timing and methodology for calculating the annually adjustable error term to account for load forecast error and variability has not been identified in the timeline laid out by CAISO as represented on page 11 of the Proposal. The error term calculation should be consistent with the Step 1 calculation in CAISO's renewable integration studies. Results of the epsilon (ϵ) calculation must be provided in a

consistent timeframe each year and must include the opportunity for stakeholders to study the CAISO's underlying assumptions, ask questions and provide feedback.

Further the CAISO has not discussed what factors will be considered in the determination of this epsilon error term.

Recommendations:

- PG&E requests the CAISO indicate the process by which the error term will be defined as well as the criteria and methodology for calculating ϵ on an annual basis. The definition of the error term should be addressed in this stakeholder process.
- PG&E notes that this matter is being addressed in the current phase of the CPUC RA proceeding and suggests that the ϵ be treated consistently in both forums.
- PG&E recommends the CAISO engage a robust discussion regarding the determination of the error term and principles that should be used in its determination.

The CAISO should anticipate needing to extend the capacity procurement mechanism tariff beyond 2016 in the event that a replacement is not ready

The capacity procurement mechanism (CPM) expires in 2016. The CAISO has indicated its expectation that a replacement will have been developed in advance of its expiration. PG&E requests the CAISO consider the possibility that a replacement may not be available prior to CPM's expiration. The CAISO should prepare to extend the tariff on CPM for one to two years, if needed.

Clarify the incorporation of opportunity cost into default energy bids

PG&E requests greater detail in the CAISO's proposal to incorporate opportunity cost into default energy bid (DEB). In particular, is the CAISO suggesting that the calculated opportunity cost become a resource's DEB or would it be a factor that is added to the existing DEB? PG&E sees the possibility that if opportunity cost were used as the sole element of DEB there could be instances of that value being lower than the actual cost to operate a resource. Demand Response and Energy Storage resources would be especially vulnerable to this approach.

Additional remaining questions in relation to the incorporation of opportunity cost in DEB include:

- Will the CAISO allow market participants to modify DEB on a more frequent basis given that opportunity costs will be based on forecasted models?

- Are all DEBs to be calculated based on the same methodology or do market participants have the ability to work with the CAISO or Potomac Economics to develop the appropriate methodology on a case by case basis?
- Confirm that the use of economic bids and the incorporation of opportunity cost into DEB be used only to optimize a resource's run and that use-limited resources' daily energy limits will be the respected, regardless of bids. As described on page 5 of the Proposal, this point is unclear.⁵

Recommendation: The CAISO should make clear in the next proposal the process by which use-limited resources' daily and *monthly* limits will be respected as "hard limits" (as indicated by the CAISO) and are relied upon as the primary method of limiting runs of these resources.

⁵ Proposal, page 5, "The ISO anticipates that the majority of use-limitations for (sic) can be managed through constraints modeled in the ISO market or through appropriate energy bid prices and/or start-up costs that reflect these limitations..."