

**Comments of Powerex Corp. on
Flexible Ramping Product Refinements
Revised Straw Proposal**

Submitted by	Company	Date Submitted
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Powerex appreciates the opportunity to submit comments respecting the CAISO’s March 16, 2020 Flexible Ramping Product Refinements Revised Straw Proposal (“Revised Straw proposal”) and related stakeholder presentation.

The Revised Straw Proposal includes several near- and medium-term improvements to the current FRP framework. The Revised Straw Proposal also appears to recognize that additional, and perhaps more extensive, changes to FRP will be needed in concert with the implementation of a day-ahead Imbalance Reserve Product being developed in the concurrent Day-Ahead Market Enhancements initiative. Powerex supports the CAISO’s general approach of identifying interim refinements that realize important improvements in the near term, and with modest effort.

As discussed more fully below:

- Powerex supports a simplified interim approach to ensure that a minimum level of FRP is carried on resources located within each balancing authority area (“BAA”), thus reducing the risk that FRP capacity cannot be feasibly deployed if and when needed for energy. Powerex believes further clarification, and perhaps simplification, of the proposed approach would be beneficial.
- Powerex supports measures that ensure resources awarded FRP are capable of performing. The proposed adoption of a default 60-minute attribute for Proxy Demand Response resources is an important first step, but more broadly-applicable measures to prevent FRP awards to resources that do not perform and/or are not economically available should be considered.
- Powerex supports steps to improve the accuracy of the determination of the FRP requirement.

I. Powerex Supports An Interim Requirement For Local FRP Procurement To Reduce Deliverability Risk

As has been recognized in multiple contexts, as well as in the Revised Straw Proposal, the current FRP implementation does not ensure that resources selected to carry FRP are actually deliverable when needed for energy. In fact, since resources are selected to carry FRP on the

basis of the implied opportunity cost, the current implementation can unintentionally make resources upstream of a binding constraint more likely to be awarded FRP.

Powerex agrees with the Revised Straw Proposal that nodal procurement of FRP, which ensures that deployment of the FRP capacity is feasible, is likely needed to fully address this concern in a fully efficient manner. At the same time, developing the computational tools to achieve nodal procurement of FRP will take time, and must be balanced with the pursuit of other resource-intensive initiatives. Moreover, the real-time FRP design will need to be aligned with the development of an anticipated day-ahead Imbalance Reserve Product, as is contemplated in the Day Ahead Market Enhancements initiative. While security-constrained nodal procurement of FRP may indeed be the right long-term solution, it is undoubtedly multiple years away. Powerex therefore supports exploring near-term ways to reduce the risk of non-deliverable FRP through measures that can be implemented more quickly and with a lower burden on CAISO and stakeholder resources.

The Revised Straw Proposal describes a method to calculate a “floor” on the FRP requirement for “pivotal” BAAs. Powerex understands that, at a high level, the proposal would apply to any BAA with a stand-alone FRP requirement (*i.e.*, the FRP requirement without any credit for diversity benefit) greater than 60% of the total FRP requirement for the EIM Area (*i.e.*, reflecting application of full diversity benefit). The Revised Straw Proposal labels such BAAs as “pivotal.” The proposed methodology appears to have the practical effect of ensuring that the final FRP requirement for a pivotal BAA is between 50% and 100% of its initial stand-alone FRP requirement. Moreover, the Revised Straw Proposal appears to require that the full amount of the final FRP requirement for a pivotal BAA be procured from resources located within that BAA. That is, the proposal does not merely increase the total quantity of FRP to be procured for the entire EIM Area, but also requires local procurement of the FRP requirement for each pivotal BAA.

Powerex generally supports the interim use of a defined local procurement requirement for FRP as a way to reduce the risk that FRP will not be deliverable if needed to be deployed for energy in real-time. Powerex notes, however, that the calculation of whether or not a BAA will be “pivotal” in a given hour depends not only on the FRP requirement for its own BAA, but also on the EIM Area FRP requirement. This may exacerbate existing challenges that EIM Entities face in accurately anticipating how much supply will be necessary to pass the resource sufficiency test. And while it appears that only the CAISO BAA would be potentially pivotal under the proposal’s 60% threshold, this may not be the case in all circumstances, or if the threshold changes over time. Powerex therefore believes further discussion may be beneficial, including consideration of potentially simpler approaches (*e.g.*, a standard minimum FRP local procurement level).

Powerex also believes it would be beneficial for CAISO and stakeholders to explore steps to improve scarcity pricing related to relaxation of the FRP procurement constraint prior to implementation of nodal FRP procurement. The Revised Straw Proposal explains that scarcity pricing does not work currently as intended since the FRP procurement constraint rarely needs to be relaxed, which in turn is due to the ability of the current implementation to notionally procure FRP from resources located upstream of a transmission constraint (*i.e.*, the current implementation gives the appearance of abundant FRP, even when there is insufficient FRP

available from feasible and deliverable resources). Given that the minimum BAA procurement constrain is intended to reduce the potential for FRP to be allocated to constrained-down resources, Powerex would be interested in exploring whether this interim enhancement may also enable somewhat more meaningful scarcity pricing to be achieved in the near term.

II. Powerex Supports Measures To Ensure FRP Is Only Awarded To Resources That Reliably Perform

The Revised Straw Proposal seeks to ensure that FRP is not awarded to resources that are not technically capable of performing. Powerex agrees that this is a crucial measure. In particular, Powerex supports the proposal to change the default response time for Proxy Demand Resources (“PDRs”) in the Master File to 60 minutes. In this manner, a resource must affirmatively represent 5-minute dispatch capability in order to be eligible to be awarded FRP.

Powerex believes that the principle of ensuring FRP is only awarded to resources that are able to meaningfully perform should be applied more broadly, however. In particular, there have been reported instances of PDRs submitting offers in excess of their metered load.¹ It would appear self-evident that a demand resource cannot provide response (*i.e.*, reduce consumption) beyond its current pre-deployment level of consumption. More generally, however, any resources that consistently fail to provide an actual response when deployed cannot be viewed as meaningfully providing the FRP service it is awarded and paid for. For this reason, Powerex suggests that all resources that receive a substantial quantity of FRP awards be required to demonstrate an ability to actually respond to a CAISO deployment for energy. CAISO could explore with stakeholders the following:

- How to define “a substantial quantity of FRP awards”—for example, defined as receiving an FRP award in perhaps at least 100 hours in the past 90 days;
- Whether and how CAISO should issue “test” deployments to verify whether resources are capable of responding, to the extent actual real-time deployment has been frequently and materially limited and/or not representative; and
- What the consequences of unsatisfactory performance should be (*e.g.*, a loss of going-forward eligibility to be awarded FRP until the resource can demonstrate acceptable capability to respond to energy dispatches)

Related concerns may also arise in the context of carrying FRP on resources that have submitted energy offers at very high prices. It is unclear that positioning a resource to provide FRP but that costs \$999/MWh to be deployed for energy provides materially greater benefit than not procuring that FRP at all. It is Powerex’s understanding that the selection of resources to provide FRP is currently based only on the imputed opportunity cost of not dispatching a given resource for energy. But this could leave the optimization with no meaningful way to distinguish between two resources that have no opportunity cost (*i.e.*, both are extra-marginal) but with very different energy offer prices. For example, in an interval in which the energy LMP is \$40/MWh, resources

¹ See, *e.g.*, CAISO Department of Market Monitoring Q3 Report on Market Issues and Performance (December 5, 2019), at 90-92 and Fig. 3.10.

with an energy offer price above \$40/MWh would have an implied opportunity cost of \$0/MWh. But a resource with an energy offer at \$50/MWh would have a much lower total cost, on an expected value basis, than a resource with an energy offer at \$750/MWh. It is Powerex's understanding that the current optimization does not have a way to ensure FRP is carried on the former resource rather than the latter.

Conceptually, a future enhancement of the FRP framework might consider a "scoring rule" based on an aggregate of each resource's opportunity cost to be positioned for FRP *and* the resource's energy offer price if it is deployed. As a workable near-term enhancement, however, CAISO may wish to consider limiting the pool of resources that are eligible to be awarded FRP to those with an energy offer price below a certain threshold level that is established and communicated in advance. This threshold may be expressed as a nominal price, in \$/MWh, or perhaps as a maximum increment above the energy price in the current dispatch interval (*e.g.*, the current energy LMP plus \$247/MWh, which is the maximum shadow price of relaxing the FRP demand constraint). This may offer a simplified way to shift FRP procurement toward resources with lower energy costs, and to help ensure that the deployment costs do not negate the value of carrying FRP in the first place.

III. Powerex Supports Refinements To Improve The Accuracy Of The FRP Requirement Calculation

The Revised Straw Proposal notes that the current methodology for setting the FRP requirement is based on historical net forecast error between RTPD and RTD. While simple to implement, the histogram-based approach does not take into account information that can make the current day differ from historical patterns. In particular, the Revised Straw Proposal notes that the current load forecast and the forecast of wind and solar output have been found to be strong predictors of the net forecast error.

Conceptually, Powerex supports exploring improvements that can yield more accurate estimates of the range of potential net forecast error. Improved accuracy is beneficial because it can avoid carrying excess FRP when the current methodology overstates potential net forecast error; it can also identify the specific circumstances when additional FRP is needed in order to support reliable operation of the grid.

Powerex looks forward to further information regarding specific proposed methodologies, and empirical analysis that enables stakeholders to assess the relative accuracy of the proposed methods.