

**Comments of Powerex Corp. on
July 19 Energy Imbalance Market Offer Rules Technical Workshop**

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Powerex appreciates the opportunity to comment on the July 19, 2018 Energy Imbalance Market (“EIM”) Offer Rules Technical Workshop (“July 19 Technical Workshop”). These comments address issues related to the application of CAISO’s local market power mitigation (“LMPM”) framework to EIM participants. Powerex is separately filing post-workshop comments regarding the EIM resource sufficiency framework.

I. Introduction

The July 19 Technical Workshop advanced the dialogue between the CAISO and stakeholders regarding the design and application of local market power mitigation measures in the EIM, particularly to energy-limited hydro resources. Powerex appreciates the time and effort CAISO staff are dedicating to this issue, and believes that some progress is being made on understanding the issues and challenges with the CAISO’s current LMPM approach and the current options for determining default energy bids (“DEBs”). Powerex also appreciates CAISO’s recent decision to commit to a stakeholder process on this issue and its willingness to consider alternative approaches to LMPM and to new potential approaches for the determination of DEBs. Furthermore, Powerex reiterates that it understands and supports the need for CAISO, as the operator of a FERC-jurisdictional organized market, to work with stakeholders to develop market rules that protect CAISO-operated markets from the exercise of local market power.

Despite the collaborative dialogue at the July 19 Technical Workshop between CAISO and stakeholders on this important issue, it is clear that a significant gap remains between CAISO staff, DMM, and stakeholders on identifying acceptable and workable solutions.

Powerex believes this gap reflects a difference among the parties regarding two fundamental propositions, which have been repeatedly raised by Powerex and other entities managing the residual capability of energy-limited hydro resources:

1. No DEB formula or model can accurately forecast the dynamic and subjective marginal opportunity costs of hydro-based supply participating in the EIM from hour-to-hour and day-to-day.
2. It is unacceptable, from both an economic and operational perspective, for the EIM software to override voluntarily submitted offer prices based on such a formula, resulting in the dispatch of resources in a manner inconsistent with submitted offer prices and quantities.

Simply put, entities managing the residual capability of energy-limited hydro resources require a framework whereby the quantity and price of energy voluntarily offered into the EIM is consistently respected, with their participating resources only being dispatched in accordance with those submitted quantities and prices. The existing LMPM/DEB framework were developed for the California balancing authority area (“BAA”) and extended to the design of the EIM. While this may have been a logical starting point for the initial design of a new market, actual experience with these rules has revealed that the current design is inconsistent with the needs of external voluntary sellers. As has been revealed by the EIM experience of Powerex, and echoed by multiple other hydro-based entities, it is unworkable for the EIM software to override a seller’s voluntarily-submitted prices and dispatch the resource anyway. This has the effect of confiscating limited energy supply and forcing hydro-based sellers to sell energy at prices below their offer price.

Numerous stakeholders have explained how this undermines the complex and careful process through which hydro entities manage their energy-limited supply. Voluntary offer prices and quantities are the means through which hydro-based suppliers attempt to allocate a limited and uncertain amount of energy sales in the markets and hours of greatest value, while continuing to ensure that current and future operational constraints, as well as a myriad of complex risks, are appropriately managed. If these voluntary offer prices are simply cast aside, the result is forced production in the wrong hours, causing harm to the seller and undermining market efficiency by preventing the seller from saving energy to serve native load or make sales in future higher-value hours. In addition, repeated forced depletion of limited energy during the wrong hours can quickly give rise to operational challenges, as a seller’s ability to manage sales and output in the context of multiple dynamic operational constraints and complex risks is undermined.

The current EIM LMPM/DEB framework effectively replaces the local control and judgment of entities with decades of experience in the management of their hydro resources with a necessarily simplistic formula, or a model acceptable to CAISO, that determines how a participating hydro-based resource is dispatched when local market power mitigation is triggered. This is highly problematic, as submitting a voluntary offer

into the EIM should not render external hydro resources and systems as effectively “must run” supply for the benefit of consumers in other regions under a formulaic or modeled price. To the extent entities in one region wish to ensure the availability of supply from northwest hydro entities, this is properly achieved through mutually agreeable forward arrangements that provide for such “must offer” commitments, not through the imposition of confiscatory market rules in a voluntary market. The supply that hydro entities voluntarily make available to the EIM should either be accepted in the EIM under the terms it is offered, or the offer should be rejected; but it is not acceptable for the EIM software to replace the offered price with a lower value and simply take the limited energy anyway.

At this point in the stakeholder process, Powerex believes it is important for CAISO, DMM and stakeholders to clearly and unequivocally recognize that the current EIM LMPM/DEB framework is not workable for northwest storage hydro resources. Retaining this framework will significantly reduce the value of making energy sales in the EIM for hydro resources relative to other market opportunities in the west and is likely to deter other northwest hydro entities from joining the EIM. Powerex believes that the failure of the existing LMPM framework to take into account the facts and circumstances of northwest storage hydro resources will also likely prove to be a roadblock to extending a day-ahead organized market to the northwest.

II. Designing LMPM Measures Appropriate For A Voluntary Market

Powerex believes that progress on this issue requires the recognition of two key EIM market design requirements:

1. CAISO requires market rules that protect against the exercise of local market power; and
2. Sellers of energy-limited hydro resources require that their voluntarily-submitted offer prices and quantities will be respected.

The CAISO’s current LMPM/DEB approach achieves the first requirement by directly violating the second requirement. That is, when the current LMPM/DEB provisions determine that the potential for local market power exists, energy that was offered into the EIM remains available to be dispatched, but the offer price is reduced to levels that the current EIM DEB framework has deemed to be acceptable (even if the seller views such levels as below their own current estimate of marginal costs). This approach avoids sales at prices that CAISO views as “too high” by re-pricing those sales; in Powerex’s view, this is the antithesis of a market that respects the offer prices of voluntary sellers.

Powerex believes that improvements can be made to the LMPM/DEB framework that achieve both of the above objectives, and would therefore be appropriate for a voluntary

market such as the EIM. Specifically, Powerex believes the following improvements are necessary:

1. **LMPM measures must only be applied when there is the potential for the exercise of local market power.** Discussions in the workshops have identified numerous circumstances under which the current LMPM process is triggered when there is no potential for the exercise of local market power.
2. **LMPM measures must only be applied when a seller's offer prices are at levels *significantly* above the reference price or default energy bid for the resource,** indicating that the offer price does not simply reflect that the seller's own estimate of its marginal opportunity cost differs from a CAISO-administered formulaic estimate. This "upper threshold" approach has been used in multiple eastern organized markets, through the application of a conduct and impact test.
3. **When mitigation is applied, it should not override a seller's voluntary offer prices and dispatch the resource anyway.** Instead, it should prevent the mitigated resource from being dispatched to make sales to FERC-jurisdictional third parties in the EIM. This approach eliminates the potential to exercise local market power through the submission of excessively high offer prices, but does so without involuntarily dispatching the resource at prices below the seller's offer prices.

As mentioned above, common ground on some of these concepts appears to have emerged over the course of the technical workshops. But improvements in all three areas will be necessary in order to make the EIM workable for northwest hydro participants. For example, while reducing the number of times that LMPM is triggered when there is no *potential* for market power is a needed improvement, it will still be problematic if LMPM continues to apply—and bids are overridden—in circumstances when there is no *attempt* to exercise market power. Similarly, adopting an upper-threshold DEB or a "conduct exemption" would provide important flexibility to hydro-based sellers, but it does not, on its own, address the problems associated with over-application of mitigation to intervals in which no mitigation should be applied at all. And a framework in which mitigation results in all of a seller's offers being "skipped" (instead of voluntary offer prices being replaced), while likely workable in most situations, is unlikely to be workable in other situations, such as for EIM hydro resources that voluntarily enter into "must-offer" obligations in the future (perhaps through resource adequacy arrangements). Such resources will still require a reference price or DEB—or a "conduct threshold exemption"—that provides sufficient flexibility to respect offer prices that reasonably reflect the seller's estimates of opportunity costs.

Each of the three areas of necessary improvements is discussed in more detail below.

1. *LMPM measures must only be applied when there is the potential for the exercise of local market power*

Through the technical workshop discussions it has become abundantly clear that the EIM is frequently mitigating offer prices even in circumstances where there is unambiguously no potential for the exercise of local market power. For example, DMM has highlighted that nearly 75% of the FMM intervals in which LMPM has been applied to Powerex were triggered only by congestion into BC.¹ This is clearly inappropriate and unnecessary as (1) BC is entirely outside of the EIM area and not under FERC's jurisdiction; and (2) there are no customers exposed to EIM prices in BC. In other words, LMPM has primarily been triggered when the *only* purchases affected by Powerex's offer price would have been *purchases by Powerex itself*.

In the remaining 25% of Powerex's mitigated FMM intervals, EIM transfer paths to multiple northwest EIM BAAs were constrained, effectively creating a northwest "bubble" or sub-region. Even in this case, however, any EIM transfers from Powerex to EIM Entity BAAs within the constrained sub-region can only occur if the importing EIM Entity BAA passes the EIM resource sufficiency tests. Any potential for local market power is therefore very limited—or nonexistent—given that, by design, the importing EIM Entity BAA has demonstrated that it has sufficient participating supply in its BAA to meet its own load and imbalances with 95% confidence. Thus the EIM Entity BAA will only import power from Powerex and other suppliers within the constrained sub-region if doing so is more economic than deploying participating resources in its own BAA; but it would not be in a "must buy" situation where such imports were required to meet its energy, capacity or flexibility needs.

Accordingly, Powerex believes that the LMPM procedures should be refined as follows:

- LMPM should not be triggered by constrained import paths into BAAs (or groups of BAAs) without any third party, FERC-jurisdictional customers exposed to EIM prices (*i.e.*, EIM participants do not need to be "protected" against their own market activity).
- LMPM should not be triggered by constraints on EIM paths between BAAs where there is no affiliation between the sellers in the source BAA and potential customers in the receiving BAA. This is because all EIM entities are required to demonstrate resource sufficiency in order to import energy from external suppliers, thus ensuring, with 95% confidence, that unaffiliated external supply will not be "pivotal" to serve load in an EIM entity area.

¹ DMM presentation at July 19 Technical Workshop, at 5 (explaining that mitigation was triggered in 35% of FMM intervals, of which 26% were "due to congestion into Powerex only").

- Supply within a constrained multi-BAA “bubble” or sub-region should be explicitly evaluated—consistent with the structural assessments performed for constraints within each BAA—rather than merely being presumed to be non-competitive.
- LMPM should not be extended from one interval to another for resources that are not ramp-limited. LMPM conditions in a previous interval may not reflect—and should not dictate—the assessment of LMPM conditions in the current interval.

2. *LMPM measures must only be applied when a seller's offer prices are at levels significantly above the reference price or default energy bid for the resource*

When conditions exist that indicate the potential for local market power, as more carefully delineated above, it then becomes necessary to evaluate the offer prices of resources in the indicated locations. Under the current framework, this evaluation is driven by the DEB of the resource. As has been discussed extensively at the technical workshops and elsewhere, estimates of the opportunity costs for an energy-limited storage hydro resource are subject to significant uncertainty, complexity, and can change substantially from hour-to-hour and day-to-day. Therefore, any evaluation of whether such a resource is offered in a manner consistent with competitive behavior must recognize the very significant limitations on any formulaic or modeled estimate of opportunity costs for energy-limited hydro resources. The application of mitigation measures should be limited to instances in which a resource's offer price differs so substantially from a “reference price” that there is only a very low probability that the offer price reflects a seller's estimate of its opportunity costs.

The technical workshops have included discussion of numerous potential approaches to achieve this objective:

1. A DEB based on an “upper threshold” approach, such as the two proposals outlined by Powerex at the technical workshops:
 - a. A DEB based on the parameters of the conduct threshold used in MISO, ISO-NE and NYISO for generally unconstrained areas; and
 - b. A DEB based on historical pricing data to approximate values of short-term and long-term energy constraints, with a timeframe and location appropriate to each specific resource.
2. Retain existing DEB options, but also apply a “conduct exemption” that permits offer prices to exceed this level by a defined amount without triggering application of price mitigation.
3. Replace the current LMPM framework with a conduct-and-impact approach.

Powerex understands the first two of these approaches would be relatively simple solutions for the CAISO to implement, whereas implementing the third approach, the full conduct-and-impact test, would require a more significant implementation effort.

3. When mitigation is applied, it should not override a seller's voluntary offer prices and result in the resource being dispatched anyway

Finally, it will be necessary to define the actions taken by the market software when (1) conditions exist that indicate the potential for local market power; and (2) a seller has offered a resource at a price that is substantially above the reference price for the resource. Consistent with the voluntary nature of the EIM, and recognizing the tremendous potential inaccuracy in any given hour of a formulaic reference price for energy-limited hydro resources in the EIM, the primary means of protecting against the potential exercise of market power in such situations should not simply be for the market software to change the offer price of the resource to a lower value, resulting in a forced sale below the seller's offer price. Instead, mitigation should consist of the mitigated supply being excluded from the market. This approach should not raise material concerns, for two reasons. First, the outcome is not different than if the supply had not been offered in the first instance, which is fully consistent with a voluntary market. Second, by ensuring that supply will not be forced to sell at a price below its offer price, this approach actually encourages voluntary participation by energy-limited resources, whereas such participation is currently discouraged by the risk of inefficient resource depletion.

Powerex believes this mitigation approach could appropriately be limited to energy-limited resources, in recognition of:

1. The inevitable inaccuracy of any external estimates of the dynamic and subjective marginal opportunity costs for such resources; and
2. The significant operational inefficiencies and harm that result from dispatching an energy-limited resource based on an inaccurate price.

Both the likelihood of "getting the dispatch wrong" as well as the consequences of doing so are far higher for energy-limited resources than for resources that do not face energy limits.

Finally, Powerex notes that there may be instances in which a resource may be voluntarily committed to being available for dispatch in the EIM, such as resources under a forward resource adequacy contract. Sellers should therefore have the ability to elect, perhaps through a designation in the master file, that in the event of mitigation the resource should not be "skipped," but rather should be subject to mitigation of its bid price. As discussed above, this requires that a workable DEB or "conduct exemption" be developed.

III. Finding A Workable Solution Requires A Genuine “Blank Slate” Consideration Of Alternatives To The Approach Developed For California

Powerex notes that several of the improvements discussed above would be straightforward to implement, and would not require a significant change to CAISO systems or software. Nevertheless, when these or other potential solutions have been discussed in the technical workshop, it appears to Powerex that there continues to be some reluctance to fully explore the merits of these approaches. Much of this reluctance appears to be based on little more than a predisposition to maintain CAISO’s current practices. But these practices should only be presumed to be acceptable and workable for the circumstances they were designed to address: California resources that are wholly integrated into California’s full organized market footprint. In Powerex’s view, solutions that were designed for the circumstances of California resources and California’s organized market, and approved through California’s decision-making process, should not continue to be presumed to be the right approach for resources outside of California or for meeting the diverse interests of other regions.

Powerex notes that the EIM’s current LMPM approach is not the only instance in which the CAISO real-time market rules have failed to respect the voluntary offer prices associated with supply located outside the CAISO BAA. For example, in May 2014 the CAISO implemented new market rules associated with the implementation of its Order 764 market enhancements. Under the new rules, CAISO’s software would dispatch economic offers for hourly intertie supply based on the CAISO’ non-binding *forecast* of 15-minute price, but sellers would be compensated based on the actual 15-minute prices, which could be less than the submitted offer price. These new market rules had an immediate, substantial and enduring effect in deterring external supply resources from submitting economic bids in the CAISO’s hourly real-time market. This example highlights that market rules that do not respect the offer prices submitted by suppliers act as a strong disincentive to voluntary participation. Such outcomes are harmful to sellers and to the overall efficiency of the market.

Developing measures that protect against the exercise of market power while remaining consistent with the voluntary nature of the EIM is of critical importance to the future participation in and expansion of the EIM—as well as to any potential regional day-ahead organized market. But finding workable solutions requires a genuine “blank slate” approach to market design. Powerex urges CAISO to examine all potential solutions, even if they represent a significant departure from the choices that were previously made for the CAISO BAA.