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

Submitted by	Company	Date Submitted
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Powerex appreciates the opportunity to comment on the April 30, 2018 Energy Imbalance Market ("EIM") Offer Rules Technical Workshop ("April 30 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

Powerex believes CAISO action in this EIM Offer Rules stakeholder initiative is both important and timely. As Powerex explained at the April 30 Technical Workshop, the application of CAISO's LMPM framework to Powerex's EIM participating resource, together with the current options for calculating a resource's default energy bids ("DEB"), is leading to ***frequent and erroneous mitigation of Powerex's EIM bids and offers***. Both Powerex's purchase bid prices and sale offer prices are frequently being overridden by an administrative pricing formula that does not, and cannot, represent the dynamic marginal opportunity costs of the capability of the hydroelectric system supporting Powerex's EIM participation. The result has been economic harm to Powerex and inefficient deployment of its energy-limited EIM participating resource, including during intervals and hours when it has been economic for Powerex to purchase surplus energy from the EIM. At the same time, the application of mitigation to Powerex's EIM participating resource has not provided any protection to any customer from the exercise of potential market power. This reflects that the constrained area where mitigation has been generally applied has consisted of precisely one customer exposed to EIM prices—Powerex itself—and Powerex's bid and offer prices have reflected its estimate of the marginal opportunity costs of its EIM participating resource.

Powerex sincerely appreciates the significant efforts made by CAISO staff to identify and implement near-term measures in an attempt to prospectively prevent the adverse consequences that Powerex has experienced. Powerex also appreciates the engagement by CAISO staff at the April 30 Technical Workshop, and the open and constructive dialogue that appeared to reflect CAISO staff's recognition of the importance of this issue to Powerex and to northwest hydro entities. In particular, Powerex believes that the closing comments by Mark Rothleder accurately identified a "negotiation gap"

between the flexibility that northwest hydro entities have indicated they need in order to accurately price their output in the EIM, and the existing mechanisms that are intended to protect purchasers against the potential exercise of local market power. Powerex agrees with Mr. Rothleder's characterization of this "gap," and appreciates the commitment of CAISO staff to find workable long-term solutions to address it.

While the challenges of the current LMPM and DEB frameworks have primarily impacted Powerex thus far, Powerex also greatly appreciates the engagement by other stakeholders, including other EIM entities with hydro resources and several northwest entities. Each of these parties expressed their own concerns with the use of formulaic DEBs to price and dispatch their resources. Powerex believes the continued engagement by all northwest hydro entities is critical to identifying solutions that have the potential to make participation in the EIM beneficial for all resource types and support a competitive and liquid market for imbalance energy.

II. A Stakeholder Process Is Needed To Develop Bid Mitigation Options That Enable External Energy-Limited Resources To Participate In the EIM

The EIM is capable of providing broad benefits to all participants by extending CAISO's real-time market platform across a larger geographic footprint. This expanded market territory unlocks the benefits of diversity and allows the net imbalance needs of the market footprint to be met using the least-cost available resources. Additionally, the EIM promotes efficient trading by eliminating hurdle rates and other frictions that have the potential to discourage otherwise economic transactions through transmission reciprocity and automation.

Notwithstanding these broader types of benefits, however, it is important to recognize that the existing LMPM and DEB frameworks have the potential to significantly limit the benefits of EIM participation in comparison to other options that are available to northwest hydro entities. Notably, northwest hydro entities are not exposed to the potential harm associated with the application of LMPM and the DEB when they participate in the CAISO markets through the intertie bidding framework—under which suppliers are not subject to LMPM. Through this framework northwest hydro entities with transmission rights to a CAISO intertie can offer their supply into the CAISO real-time markets using the same generation resources that they would otherwise use to participate in the EIM, but without any risk that their offer prices will be overridden by a an inaccurate DEB. ***Thus, there may be currently little or no benefit for northwest hydro entities to sell their surplus energy through the EIM, instead of selling their energy in CAISO's real-time markets through the intertie bidding framework***.

Powerex believes that changes to the design and application of the LMPM and DEB frameworks to the EIM are necessary to eliminate barriers to greater participation by

existing EIM entities with hydro resources, and to support expanded participation in the EIM by the flexible, clean, storage hydro resources that characterize the Pacific Northwest. Powerex notes that, from an operational perspective, these resources appear ideally suited to helping balance intra-hour variations in load and generation in the EIM.

Powerex believes that there are several aspects of the current design and application of the LMPM and DEB frameworks that have the potential to deter the participation of northwest hydro entities in the EIM:

- First, and most critically, the existing application of the DEB framework fails to take into account the nature and circumstances of energy-limited resources located outside of the CAISO balancing authority area ("BAA"). In particular, the existing DEB framework is being applied in a manner that requires energy-limited resources to boil down their opportunity costs to a formula that can be applied by the CAISO on a daily basis to produce a DEB for the resource at issue. The problem is that the opportunity costs of energy-limited resources located outside of the CAISO BAA are driven by a range of objective and subjective factors that cannot be reduced to a single formula. Thus, any formulaic estimate of marginal costs for such resources will be subject to far more uncertainty and potential error than estimates of marginal costs for thermal units located within the CAISO BAA.
- Second, the current LMPM and DEB framework lacks a reasonable basis for determining whether an EIM participant's offer prices actually reflect an attempt to exercise potential market power, as opposed to simply reflecting a seller's legitimate evaluation of its own dynamic marginal costs.
- Third, under the current LMPM design, bid mitigation of EIM participating resources can be ***triggered excessively*** and in instances where there is ***clearly no potential*** for the exercise of local market power.

In the following sections, Powerex provides further detail regarding these shortcomings of the existing LMPM and DEB frameworks. Powerex believes that the most urgent priority is to develop a DEB option that is workable for energy-limited EIM participating resources, as this step on its own can significantly reduce the adverse outcomes and harm that discourage participation in the EIM by such resources. However, even with a more workable DEB framework, the current LMPM and DEB framework will continue to result in over-mitigation, and appropriate enhancements will also need to be identified and developed.

A. The Current DEB Framework Does Not Accommodate The Significant Uncertainty Inherent In Any Formulaic Estimate Of Marginal Costs For Energy-Limited EIM Participating Resources Located Outside The CAISO BAA

As noted at the April 30 Technical Workshop,[1] Powerex believes that the participation of external, energy-limited hydro resources with significant storage in the EIM is posing new challenges to the existing framework for the calculation of DEBs. In particular, Powerex believes that there is growing evidence that the existing DEB framework—which was generally designed to accommodate the circumstances of resources located within the CAISO BAA with quantifiable variable costs—is ill-suited to accommodating the unique facts and circumstances of EIM entities participating in the EIM with the residual capability of external, energy-limited hydroelectric facilities with significant storage capabilities. Powerex discussed two specific challenges at the April 30 Technical Workshop:

- Unlike resources located within the CAISO BAA, which typically have little alternative to offering into the CAISO markets, generation resources that are located outside of the CAISO BAA face multiple alternative market opportunities for the sale of their output. This means that the marginal cost of external resources must recognize the opportunity cost of selling that output to the EIM rather than supporting numerous alternative market transactions, both in the current hour and in future hours. Powerex presented extensive transaction data demonstrating the unpredictable and volatile nature of these real-time bilateral opportunities, which frequently had a limited relationship to day-ahead market prices.
- Estimating opportunity costs is particularly difficult for complex, multi-facility coordinated hydro systems with substantial storage. Producing energy in a current interval necessarily reduces the ability of such resources to produce energy in a future interval, meaning that estimating the opportunity cost for such resources requires estimating the costs associated with foregoing sales in future hours. As a practical matter, the timeframe over which this tradeoff occurs depends on many factors, including available storage, future hourly inflows, future hourly demand, and future hourly market conditions (in various geographic locations) as well as a variety of environmental and operational constraints that are unique to each hydro system and can vary over time. An additional source of uncertainty and complexity is current and future native load obligations, which are a key determinant of the amount of residual capability available to support commercial transactions.

[1] Powerex's presentation concerning the shortcomings of the DEB framework is available at: http://www.caiso.com/Documents/PowerexDefaultEnergyBidPresentation-EnergyImbalanceMarketofferRulesTechnicalWorkshop.pdf.

Collectively, the considerations set out above render any formulaic approach to estimating marginal opportunity costs subject to a high degree of uncertainty for any given hour or any given day. A DEB based on any such formula would therefore reflect only a day-ahead, highly simplified, "expected value," but, as currently applied, could not account for the large range of potential error in that forecast. A DEB that fails to account for the substantial uncertainty and error inherent in any formulaic estimate of marginal opportunity costs makes the use of a standard formulaic DEB highly unworkable for external, energy-limited hydro resources participating in the EIM.

This conclusion has been confirmed by the comments expressed by numerous other hydro entities at the April 30 Technical Workshop. For example, PacifiCorp explained that, notwithstanding the efforts and engagement by DMM staff, they were unable to negotiate a formulaic DEB that accurately reflected the marginal cost of a PacifiCorp hydro resource. The challenges of capturing the hourly decision-making process of hydro facilities in a simple formula were also described in the presentation by Seattle City Light. Other hydro entities, including Idaho Power Company, Chelan Public Utility District and Public Generating Pool (which represents ten separate northwest public power utilities) all expressed concern that a formula would be unable to replicate the decision-making process and the range of considerations faced in attempting to optimally manage their storage hydro resources throughout each day.

B. Current LMPM Procedures Lack A Reasonable Basis To Conclude That An Offer Is An Attempt To Exercise Market Power

The starting point for CAISO's current LMPM procedures is a "structural test" intended to assess whether there are offers from a sufficient number of unaffiliated participants to ensure competitive market conditions and outcomes. Transmission congestion can limit the ability of resources in one location to be dispatched to meet load in a different location, and can thus reduce the number of suppliers that can effectively compete to serve load in a constrained area.

A structural test, even if accurately and properly applied, only indicates the *potential* for one or more sellers to raise prices. Even under such conditions, bid mitigation is necessary only if a seller *actually* attempts to raise prices by submitting offers at prices that can be identified to be materially above its marginal costs. In other words, if sellers bid competitively, there is neither a need nor any benefit from applying bid mitigation.

The current LMPM procedures subject an offer to bid mitigation only based on the results of the structural test, however. There is no explicit, separate test to determine whether an offer reflects competitive behavior or an attempt to exercise local market power.

As explained at the April 30 Technical Workshop, other organized markets do apply an explicit test of participant conduct, which is separate from a test for whether sellers could

exercise market power and raise prices. These conduct tests evaluate whether a resource offer is sufficiently above a "reference price" to indicate the potential that the offer may represent an attempt to exercise market power. In MISO, ISO-NE and NYISO, resources in areas that experience infrequent congestion, the conduct test applies a threshold above the resource's reference price of $100/MWh or 300% of the resource's reference price, whichever is lower. Resource offer prices at or below this threshold—as well as all offers below $25/MWh—"pass" the conduct test and are deemed to not require mitigation.

It is important to note that the conduct test is independent of the "impact test," which is used to determine whether offers that fail the conduct test would have a material impact on market prices. For instance, in the aforementioned markets, an offer that exceeds the conduct threshold will only be mitigated if they result in an increase in market prices of 200% or $100/MWh (whichever is lower). In other words, even where the impact test would indicate that there is the *ability* for elevated offer prices to materially raise market clearing prices—that is, if it would indicate the potential to exercise market power—bid mitigation is *not* applied to resource offers that do not *also* fail the conduct test. Similarly, when application of the impact test shows that offer prices that exceed the conduct threshold nevertheless would not result in a substantial increase in market clearing prices—that is, when it identifies that there is no potential to exercise market power—then no offers are mitigated, regardless of offer price. ***Importantly, the conduct and impact thresholds apply in all hours, including hours when transmission constraints bind and there is the potential for the exercise of local market power (i.e. under conditions when CAISO's LMPM procedures would be triggered).***

Importantly, The Federal Energy Regulatory Commission ("FERC") has specifically recognized that an explicit conduct threshold can reduce the potential for "over-mitigation," which inappropriately penalizes suppliers and impedes the development of a competitive and reliable market:

> mitigation is counterproductive to the extent it penalizes suppliers trying to resolve constraints, and when their higher offers reflect higher costs, not manipulation. Over-mitigation can inadvertently cause reliability problems to the extent that it keeps capacity out of the market over the longer term. Thus a range of pricing needs to be accepted that ensures suppliers can offer and mitigation does not hinder that bidding.[2]

It was suggested at the April 30 Technical Workshop that CAISO's current LMPM procedures are somehow less restrictive to sellers than the conduct-and-impact tests. It was also suggested that comparisons between the two approaches are not valid, or that

[2] *Midwest Indep. Transmission Sys. Operator, Inc.,* 108 FERC ¶ 61,163 at P 315 (2004).

it would be an "apples to oranges" comparison. Powerex believes both of these characterizations are simply wrong. While there are important differences in the design of these two approaches, both of them include a test to determine whether supplier behavior has the potential to raise market clearing prices. This is determined through the structural test under the CAISO LMPM, and is determined through the price impact test in several eastern ISO/RTO markets. Both of these approaches also define the conditions under which a specific offer price will be mitigated. The eastern markets apply explicit thresholds well above a reference price estimate of marginal costs, whereas the current LMPM compares the offer price to the resource's DEB, *without any explicit threshold at all.*[3] Under the CAISO's current LMPM, the DEB essentially functions as an infallible benchmark of competitive behavior, and any offer that exceeds the DEB—whether by $500 or by ten cents—is treated as an attempt to exercise market power that warrants mitigation.

For these reasons, Powerex believes it is entirely appropriate to compare the two frameworks in terms of how aggressive or conservative the "triggers" for bid mitigation are under each approach. Powerex also believes it is clear that the eastern markets' use of a conduct-and-impact test defines a much more stringent set of criteria that must be satisfied prior to overriding a seller's offer price.

C. Mitigation Of EIM Participating Resources Is Being Triggered Excessively

The harmful consequences of inaccurate DEBs are compounded by the application of the current LMPM structural test to the EIM, which results in the application of LMPM when there is no potential for the exercise of market power, including:

- **Constrained areas where the only "customer" that is exposed to EIM prices is the entity submitting the offers that are being mitigated.** This is the case for Powerex, and could also be the case for any EIM entity that does not elect to modify its transmission tariff to use EIM prices to settle energy imbalances of its transmission customers. In such cases, there is no potential, even for a single supplier, to profitably raise prices, since they would be the only entity with transactions that are settled at those prices.
- **Areas that are constrained as a result of economic offers to *purchase* energy in the EIM (*i.e.,* to reduce output and conserve resources).** This is distinct from situations in which imbalances within an area are so large as to require the incumbent supplier, or a limited number of sellers, to *produce and sell additional*

[3] The current LMPM also compares offer prices to a "competitive proxy price," which, in the case of EIM participants, is the aggregate price of supply in the CAISO BAA, and can often be very low such as during periods of high solar generation. In any event, the use of a competitive proxy price cannot be characterized as a test of sellers' conduct.

energy. When the EIM entity seeks to purchase energy in the EIM and reduce output, it incurs a cost, and does not profit, from higher EIM prices.

- **Mitigation is automatically extended to future intervals or subsequent markets.** The current LMPM procedures extend mitigation in one FMM interval to all subsequent FMM intervals in that hour. Similarly, LMPM extends mitigation in one RTD interval to all subsequent RTD intervals within the same 15-minute period. And mitigation in a given FMM interval automatically results in mitigation in all three of the associated RTD intervals. In each of these cases, bid mitigation is applied *without any assessment of the competitiveness* of market conditions in that specific interval.
- **Areas that can be served by multiple competing sellers outside of the CAISO BAA.** The structural test used to determine whether EIM transfers are deemed competitive examines only whether demand in an EIM entity area can be served by incremental supply from the CAISO BAA (where supply is deemed to be competitive). This may have been an appropriate simplification initially, when the number of EIM entities was very limited, but it is clearly no longer appropriate. The EIM now consists of six unaffiliated entities located outside the CAISO BAA, with multiple and redundant scheduling paths for EIM transfers between them. It is simply not tenable to automatically deem the EIM area outside the CAISO BAA as non-competitive in every instance.
- **LMPM applies mitigation to EIM activity that is <u>identical</u> to activity that is not mitigated when conducted outside the EIM framework.** As noted above, an external supplier with transmission to a CAISO intertie scheduling point can avoid the application of LMPM through the intertie bidding framework. This is the case even if the resources and transmission at issue are the same resources and transmission that the supplier would otherwise use to participate in the EIM. This reflects that the CAISO BAA has been deemed competitive and, as a result, LMPM is not applied to imports into the CAISO markets. It is patently inconsistent to treat the same activity and circumstances that have not raised market power concerns under one participation framework as somehow raising such concerns, and requiring administrative pricing, when that activity occurs in the EIM.

As noted at the April 30 Technical Workshop, Powerex recognizes the importance of local market power mitigation to ensuring markets are competitive. When appropriately applied, local market power mitigation measures play a critical role in ensuring just and reasonable prices by protecting customers in situations where transmission constraints or other factors raise potential local market power concerns. Powerex fully supports the objective of protecting customers from the potential exercise of market power.

But a bid mitigation framework must carefully and accurately define the specific circumstances in which market power concerns arise, where sale offers likely reflect an attempt to exercise market power, and there is thus a need to mitigate participant behavior. Powerex agrees that protections need to be in place to protect purchasers where conditions arise where there is a potential for the exercise of market power. But the current LMPM procedures clearly fail to limit the application of bid mitigation to only those conditions that constitute the exercise of local market power.

III. CAISO Should Pursue Development Of A Workable DEB Option For Energy-Limited EIM Participating Resources

Based on its experience in the EIM to date, Powerex believes that the continued application of the existing LMPM and DEB framework to external, energy-limited hydroelectric resources will have a number of harmful consequences, both for individual suppliers and the market as a whole. This harm is the result of the combination of *excessively frequent and inaccurate mitigation*—due to an inaccurate and overbroad structural test and the lack of a conduct test—together with the application of a formula-based DEB that will be inaccurate in virtually every hour, as marginal costs change from hour-to-hour and day-to-day. The continued application of the existing LMPM and DEB framework to energy-limited EIM participating resources will have a number of adverse consequences, including the following:

- It can impose significant economic harm on the supplier by forcing the supplier to make sales below its marginal costs.
- It can have the effect of putting a hydro system on "autopilot." While the owner of a hydroelectric resource typically will adjust its bids and offers on an hour-to-hour basis as market conditions change, application of a fixed, formulaic DEB to such a resource has the potential to override these offers with a DEB that is highly unlikely to reflect these conditions. The result may be that the resource is consistently dispatched to supply energy in the EIM, and quickly encounters a fundamental operational constraint that would have been avoided had the supplier been able to reflect its estimate of its marginal opportunity costs in its bids and offers.

Powerex believes that the issues discussed above can be addressed by modifying the existing DEB framework to provide external, energy-limited hydro resources with the flexibility necessary to bid in a manner consistent with their estimate of their marginal opportunity costs while protecting against the potential exercise of market power. More specifically, a workable DEB framework for energy-limited EIM participating resources will need to satisfy at least four core criteria:

1. Provide sellers sufficient flexibility to reflect their own estimates of the marginal cost of their resources without triggering mitigation;
2. Provide purchasers protection against the exercise of local market power;
3. Be acceptable to FERC; and
4. Capable of implementation without undue burden to CAISO or participants.

At the April 30 Technical Workshop, Powerex outlined a proposal for a "Fourth DEB Option" that it believes meets all four criteria. More specifically, Powerex proposed that energy-limited EIM participating resources would be eligible for select a DEB equal to the greater of:

- $25/MWh; or
- A reference price plus a margin equal to the lesser of $100 or 300% of the reference price.

For the purpose of the Fourth DEB option, Powerex proposes that the reference price would be set equal to an index price at a liquid and competitive trading point within the region of the supplier. For instance, in the case of resources located within the Northwest, the reference price could be set based on the ICE Day-Ahead On-Peak Mid-C index price. In the case of resources in the Southwest region, use of an ICE Day Ahead On-Peak Palo Verde Index may be more appropriate. Powerex believes the use of these indices is appropriate and workable, as they generally represent one of the many alternative markets for suppliers in the corresponding region, and are available prior to each operating day.

As noted at the April 30 Technical Workshop, the framework above is directly based on the conduct portion of the conduct and impact test that has been approved by FERC for use in areas that are infrequently constrained of the markets operated by MISO, NYISO, and ISO-NE. In approving these thresholds, FERC repeatedly has found that exempting suppliers' bids from mitigation so long as they do not exceed the applicable thresholds strikes an appropriate balance between avoiding over-mitigation while protecting customers against the potential exercise of market power. FERC has observed, for instance, that the use of conduct and impact tests "both protects consumers from market power, while also avoiding over-mitigation that can cause reliability problems to the extent that it keeps capacity out of the market over the longer term."[4] Moreover, FERC has explained that, "when higher offers reflect higher costs, over-mitigation may penalize suppliers that try to resolve constraints."[5]

[4] *Midwest Indep. Transmission Sys. Operator, Inc.*, 122 FERC ¶ 61,172 at P 121 (2008).
[5] *Id.*

Powerex believes that this Fourth DEB Option proposal would satisfy the four criteria for a workable solution identified above. First, it would generally provide suppliers with the flexibility necessary to submit offers that reflect the supplier's assessment of its marginal opportunity costs. This conclusion is supported by Powerex's analysis comparing the proposed Fourth DEB Option to Powerex's daily and hourly transaction prices from the past two years. The Fourth DEB Option would generally—but not always—provide sufficient latitude for Powerex to reflect the value of alternative market transactions without being mitigated. Powerex estimates that approximately 2% of its historical alternative market opportunities still exceeded this Fourth DEB Option, and comprised significant volumes. This analysis excludes additional market opportunities in the forward markets as well as sales opportunities to the Alberta market. Powerex believes this confirms that the flexibility provided by this proposal is not extreme or excessive.

In satisfaction of the second criteria, Powerex's proposal would provide extensive protection to consumers against the potential exercise of market power. Notably, the organized markets that employ the conduct and impact tests that form the basis for Powerex's proposal perform very competitively, as reported by their external market monitors, providing a strong basis to expect that providing a similar degree of offer price flexibility would protect against market power in the EIM, as well. Notably, the proposed Fourth DEB Option is actually more restrictive—and more protective of purchasers—than the conduct and impact tests currently applied in the MISO, NYISO, and ISO-NE markets. As explained previously, these markets also apply a price impact test, which must also be failed for any resource offers to be mitigated. In the case of the EIM, however, a supplier would be mitigated to its DEB, regardless of whether the supplier's offer had an impact on market prices or not.

As further discussed at the April 30 Technical Workshop, Powerex's proposed fourth DEB option would result in a DEB well below the offer cap of $1,000/MWh that applies to external suppliers under the CAISO's intertie bidding framework. Based on Powerex's review of historical prices from calendar years 2013-2017, the proposed Fourth DEB Option would result in a DEB below $150/MWh in 95.8% of hours and a DEB below $250/MWh in 99.8% of hours.

Powerex notes that LMPM does not provide the only protection for EIM consumers. Indeed, there are additional components in the EIM design that reduce the ability of, and incentives for, suppliers to exercise local market power.

- All EIM entities must pass the EIM Resource Sufficiency tests ahead of each hour or EIM Transfers into the applicable BAA will be restricted. As a result, no EIM entity should frequently be in a position where it relies upon EIM transfers from other entities in order to meet imbalance demand within their area. This ensures

that an EIM entity is not in a "must purchase" situation, and can effectively decline energy offers without compromising reliability.

- The EIM has proven to be highly competitive, and hence any decision by a supplier to offer above its estimate of its marginal opportunity costs would create a substantial risk that the supplier would forego economic transactions. For instance, if a seller estimates that its marginal opportunity cost is $32, but submits an offer at $60, the seller would face a substantial risk that it would not be dispatched to provide energy, even though it would be economic to do so. Given that EIM entities typically set aside transmission rights to support their EIM transactions, such a strategy is likely to be highly uneconomic.

- An EIM entity that elected to offer its supply into the EIM at a price above its estimated marginal opportunity costs would be exposing itself to the risk that it may be required to meet its own imbalances from the EIM uneconomically. Take the example above of an EIM entity that estimates that the marginal opportunity cost of its resource in a given hour is $32, but decides to price its supply at $60. If EIM prices are $45 and the EIM entity has a positive load imbalance (e.g., actual load exceeds base schedules) or a negative generation imbalance (e.g., wind output is lower than expected), then the EIM entity will be required to purchase this imbalance energy from other EIM participants at prevailing EIM prices, even though it would have been more economic to deploy its participating resource (at an estimated cost of $32) instead.

In addition to the above, Powerex's proposed Fourth DEB Option is consistent with FERC precedent approving the use of similar thresholds in other markets. This, coupled with the strong protections against market power offered by the proposal and conditions in the EIM, should provide a sound foundation for acceptance by FERC and thus satisfies the third broad criterion.

Finally, since the proposed Fourth DEB requires only the adoption of a particular formula for calculating the DEB for energy-limited EIM participating resources, Powerex believes it can be implemented with minimal effort or delay.

Given the factors above, it is difficult to discern a valid reason why Powerex's proposal would not be acceptable for use in the EIM. Nevertheless, Powerex is willing and committed to considering any other proposals that satisfy the core criteria. This could include alternative formulations or variations for a DEB, or it could include more comprehensive changes to both DEB values and LMPM procedures. Stakeholders and CAISO may even wish to explore a fundamental re-design of market power mitigation in the CAISO markets, such as adopting the use of the full conduct-and-impact test. Powerex does not propose any of these specific options at this time, and does not pre-

judge the merits of any alternative, but it welcomes the consideration of a range of solutions that satisfy the core objectives.

What Powerex does not believe will lead to a workable solution is continued insistence that the concerns raised by Powerex and by numerous other entities with hydro resources can be addressed simply through further non-public DEB negotiations. All EIM participants have had that opportunity, and yet multiple EIM entities with hydro resources have voiced concerns that their own DEB negotiation process has failed to achieve a workable DEB that accurately reflects their estimate of the marginal cost of their hydro resources as it changes day to day and hour to hour.

Powerex believes that new options must be explored in order to make the EIM workable and attractive for northwest hydro entities, and hence for the EIM to yield greater benefits to all participants and regions. These options will inevitably be different from how CAISO has approached local market power mitigation in the past for its own BAA, but this is both appropriate and necessary given the unique circumstances of storage hydro entities participating in a voluntary market with resources located outside of the CAISO BAA.