

Energy Imbalance Market Design Revised Straw Proposal

Submitted by	Company	Date Submitted
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Summary

Powerex is pleased to have this opportunity to provide these comments in response to the Energy Imbalance Market (EIM) Design Revised Straw Proposal (“Revised Straw Proposal”) published on May 30, 2013 and CAISO presentation provided at a stakeholder meeting on June 6, 2013.

CAISO is moving too fast

Powerex supports the development of an EIM in western bilateral markets. However, Powerex believes that the successful design of an EIM, particularly one that is layered on top of an existing OATT framework and well-established bilateral markets, requires careful consideration and thorough vetting with stakeholders and industry experts. Both the complexity of the issues and potential for significant unintended consequences to western wholesale power markets necessitates such an approach. In this context, Powerex is increasingly concerned that the CAISO’s stakeholder process timelines are overly aggressive, potentially subverting the robust stakeholder process that this initiative clearly requires. It is far more important to design and execute a just and reasonable EIM than to have a quickly implemented EIM that did not consider important issues and potential side effects.

For example, the CAISO’s Revised Straw Proposal is a lengthy, comprehensive document, with numerous complex issues contained therein, which was followed by a high level presentation at a stakeholder meeting one week later. Stakeholders are requested to formulate and submit comments on this comprehensive proposal just a mere week after this stakeholder meeting – a meeting where there was also insufficient time allocated to have a thorough discussion on any individual design element.

The CAISO’s aggressiveness on timelines is further illustrated by the lack of stakeholder involvement in the development of EIM “guiding principles.” For example, guiding principles were bilaterally negotiated between PacifiCorp and the CAISO in its MOU without any stakeholder involvement, and the CAISO introduced additional new transmission cost guiding principles in its Revised Proposal. Powerex strongly believes such guiding principles should be developed and debated as part of this stakeholder process and these stakeholder discussions should take place prior to moving forward with proposed design solutions. Failure to follow this approach risks undermining stakeholder involvement in the core design of the EIM and creating

the impression that “guiding principles” are being unilaterally declared by the CAISO to “fit” prematurely developed design solutions.

Powerex understands and supports the CAISO efforts to continue to move forward with this initiative in a timely manner. However, the pace of all stakeholder processes must be commensurate with the complexity and importance of each of the topics and issues addressed. Accordingly, this stakeholder process must include very substantive opportunities for stakeholder involvement, preferably ahead of the comment process that ensues at FERC. This is particularly important, considering many of the stakeholders do not necessarily have years of experience and knowledge of CAISO markets and the complex technical issues raised in the Revised Straw Proposal. Powerex urges the CAISO to slow down to a reasonable pace whereby stakeholders are afforded the full opportunity to contribute to the CAISO’s EIM design.

Powerex’s remaining comments are focused on areas where Powerex has the greatest initial concerns with the Revised Straw Proposal. There are several other items of the Revised Straw Proposal where Powerex is supportive, as well as several other items where Powerex has more questions, which have not been addressed given the limited time available to draft comments. Powerex hopes to have additional opportunities to ask more questions and submit additional comments in the coming weeks and months.

EIM Transmission Service should be consistent with CAISO’s current transmission rate design

Powerex believes it is important to decide upon the guiding principles for transmission design in an EIM framework prior to setting forth alternative design solutions. In addition, Powerex believes it is important to set out the scope and objectives of EIM transmission service design, which are separate and distinct, from the guiding principles.

Transmission Service Guiding Principles

Powerex believes there are at least four Transmission Service Guiding Principles that the CAISO must adhere to in any transmission design in its markets:

1. Non-discriminatory open access to transmission for all market participants
2. Transmission costs must be fully recovered (revenue - cost neutrality)
3. Transmission costs must be allocated consistent with cost causation
4. Transmission rates should not be *structurally* different across different energy market timeframes for the same delivery period

Each of the first three principles are well established transmission access and/or transmission rate design principles set forth, and repeatedly confirmed, by the Federal Energy Regulatory Commission.

The fourth principle is a foundational market design principle of all wholesale energy markets. Structurally different transmission rates across different energy market timeframes (i.e. Day Ahead versus real-time versus EIM) for the same delivery period (i.e. Hour Ending 11, on June 15, 2013) must be avoided to prevent *shifting* of market activity into the market timeframe with

the lower transmission rate driving significant undesirable market inefficiency and reliability outcomes.

Both the CAISO's current transmission rate design and PacifiCorp's current OATT adhere to all four of these principles, as evident by their approval at FERC.

EIM Transmission Service Rates

In contrast to the transmission discussion in the Revised Straw Proposal, Powerex believes the scope and objectives of the EIM transmission service rates design should be limited to simply applying the CAISO's existing transmission rate design framework effectively to an EIM. In other words, the goal should be to effectively apply the existing CAISO transmission rates applicable to imports, exports and wheel through transactions to the EIM framework in a consistent manner. The CAISO should not seek to change its current transmission rate design as part of this EIM initiative, and should simply apply the existing transmission rate design, just as it has done as part of its Order 764 15-minute scheduling initiative. Any significant changes to the CAISO's current transmission rate design framework itself should be pursued strictly outside the scope of this EIM initiative.

The CAISO's existing transmission rate design framework was established with broad stakeholder involvement under the multi-year MRTU stakeholder initiative. Any material changes to this transmission rate design framework, including rate changes to accommodate an EIM, will undoubtedly have cost implications for other transmission customers. For example, reducing or waiving the transmission rate charged to any individual transmission customer or group of customers, such as the rate charged to all EIM activity, will be offset by increases in transmission costs for other transmission customers (due to the transmission revenue-cost neutrality principle inherent in the CAISO's current tariff). Moreover, piecemeal changes to the CAISO's current transmission rate design, such as those described in Alternative 1 (Free EIM Transmission) and Alternative 2 (CAISO/PAC EIM-specific Transmission Access Charge), can have far reaching consequences to wholesale energy markets, including unintended market efficiency and reliability consequences. For these reasons, as well as due process concerns, transmission rate design changes should only result from a robust and holistic transmission rate design stakeholder process.

Powerex's comments should not be misinterpreted as Powerex being opposed to the CAISO potentially revising its transmission rate design. To the contrary, Powerex would be supportive of the CAISO conducting a separate transmission rate design stakeholder process whereby transmission design objectives such as reduced, or eliminated, pancaking for CAISO transmission service can be pursued in an effort to improve market efficiency in the western grid.

For example, the CAISO could pursue a new transmission rate design that encompasses a broader geographical transmission footprint to include PacifiCorp's transmission system, thereby replacing the entire PacifiCorp OATT with a CAISO/PAC *blended* transmission access charge. Such a design may improve market efficiency, but would have to be applied across all market timeframes (Day Ahead, Real Time, EIM), to avoid participants shifting day ahead, real-

time and EIM market activity from a market timeframe with a higher transmission rate (i.e. Day Ahead) to a lower one (i.e. EIM). Under this approach, transmission pancaking could be removed across a broader footprint, while importantly, continuing to charge PacifiCorp customers for their use of the CAISO transmission system, and vice versa, consistent with cost causation and non-discriminatory access to transmission.

Alternatively, the CAISO could reduce or eliminate its existing transmission access charge for all exports out of, and wheels through, the CAISO transmission footprint in all market timeframes for all transmission customers, thereby eliminating all transmission pancaking involving all CAISO markets. Such a rate design would improve generation dispatch efficiency in the western grid but may be difficult to achieve, as there would likely be challenges with this approach associated with the cost causation principle.

These two alternatives help illustrate that the current CAISO transmission rate design includes rate pancaking for *all* export and wheel-through schedules in the day ahead, hour ahead and real-time markets for *all* participants. The CAISO's proposed 15-minute market design will function similarly - the CAISO, appropriately, has not pursued any changes to its rate design as part of the scope of the Order 764 initiative. It simply intends to apply its existing rate structure to all 15-minute schedules.

In short, an alternative transmission rate design in CAISO markets may well be worthy of pursuit, but attempting to do so piecemeal, and in a rushed manner, as a part of this EIM initiative, is neither wise nor just and reasonable. An alternative transmission rate design should only result from a robust, holistic, transmission rate design stakeholder process, with the final design consistent with the four well-established principles set forth above.

CAISO's Transmission Service Cost Recovery Principles are misguided

In the Revised Straw Proposal, the CAISO sets forth five transmission cost recovery principles. Powerex provides the following comments on each of these principles.

Principle 1: There should be no pancaking for transmission service.

Powerex believes the elimination of transmission rate pancaking is an appropriate *objective of transmission rate design*. However, it is not a transmission rate design principle, in the same vein as the four principles that Powerex sets forth, which *must* be adhered to. Elimination of transmission rate pancaking is also not an appropriate objective of an EIM, but rather an appropriate objective of holistic transmission rate design.

Non-discriminatory open access to transmission, neutrality of transmission costs for the transmission provider, allocating costs consistent with cost causation, and applying structurally similar costs across all market timeframes are all foundational principles which cannot be violated. In contrast, transmission rate pancaking is regularly "tolerated" in transmission rate design. In fact, it is widespread today in the day ahead, real-time and sub-hourly western energy markets, including exports out of, and wheels through, the CAISO, as part of western transmission providers' FERC approved tariffs.

Nonetheless, Powerex does agree with the CAISO that the elimination of rate pancaking is an objective worthy of pursuit. Powerex strongly believes, however, that this objective should be pursued as part of a holistic transmission rate design process, not as part of an EIM initiative.

As the CAISO correctly points out, rate pancaking acts as a hurdle rate which can reduce the efficiency of dispatch. However, this effect occurs in all CAISO market timeframes, including the CAISO's proposed 15-minute market, and hence has little nexus specifically to an EIM. In fact, removing this hurdle rate uniquely for EIM Participants, and uniquely for EIM transactions only, would not only be unduly discriminatory and violate cost causation, but has the potential for significant unintended efficiency and reliability consequences, as EIM entities respond to this powerful price signal.

Principle 2: Each transmission owner should meet its transmission revenue requirement.

Powerex agrees with this principle as a transmission rate design principle, and has described this principle as: Transmission costs must be fully funded (cost neutrality).

Principle 3: Resource owners should not have to estimate or attempt to incorporate where their production is going, as part of their supply bids.

Powerex agrees with the concept behind this CAISO principle, but as an objective of both the EIM and transmission rate design, subordinated to the four principles previously described. It is important to note, however, that estimating transmission costs as part of physical bids is nothing new in CAISO markets. In today's CAISO market, market participants who submit export or wheel through bids, in the day ahead, hour ahead, and 5-minute markets, must estimate the total transmission, uplift and GMC charges that the CAISO will apply, which fluctuate materially hour to hour. Nonetheless, Powerex agrees with the CAISO that requiring participants to embed estimates of these charges into their energy bids is inefficient and that this challenge is further complicated in an EIM, since participants will not necessarily know when their bids are submitted whether they will be utilizing the CAISO's grid or not. Accordingly, requiring EIM participants to embed estimates of these charges as part of their EIM bids is not an efficient application of the CAISO's current transmission rate design to an EIM. It is for this primary reason that Powerex has proposed that the CAISO include the CAISO current transmission rate structure directly into EIM LMPs, as discussed in Alternative 3.

Principle 4: The implementation cost of a transmission access charge approach should be consistent with the magnitude of the total transmission costs expected to be incurred through EIM operations and recovered in EIM-related rates.

Powerex fundamentally disagrees with this principle. While on the surface, this principle appears to be pragmatic, it is flawed in several aspects. First, it is unlikely that estimates today of future EIM transmission usage will be accurate, particularly considering the CAISO's aspirations to rapidly expand its EIM footprint, and the impacts that some of the CAISO's proposed EIM rate design alternatives would have on the volume of day ahead and real time activity that shifts into the EIM. Second, this principle could be interpreted to suggest that it may be acceptable to violate foundational transmission and market design principles such as non-

discriminatory open access to transmission or cost causation, if violating such principles leads to a lower implementation cost for the EIM. Clearly, this should not be permitted. Third, lower implementation costs is an objective of an EIM, not a transmission design principle.

Nonetheless, Powerex does agree that the CAISO should seek, as an EIM objective, to apply its existing transmission rate design framework to an EIM in a cost effective manner. Pursuit of this objective may include utilizing a less efficient approach to transmission cost recovery (such as requiring EIM participants to estimate CAISO transmission costs into their bids), to achieve lower implementation costs at the outset, if more efficient solutions (such as embedding the CAISO's current transmission rate design into EIM LMPs) proves costly, or excessively time consuming to implement.

Principle 5: The transmission charge should be consistent regardless of whether the EIM Participating Resource is operated by an EIM Entity. In other words, transmission cost recovery should not be affected by whether or not a load is the native load of the business entity that also is the transmission provider.

This principle appears to be a subset of the principle:

Non-discriminatory open access to transmission for all market participants

Effectively, the CAISO is setting forth that transmission costs must be the same for EIM participants that are affiliated with an EIM Entity and those that are not. Powerex agrees. However, this principle does not go far enough. The CAISO is required to provide non-discriminatory open access to transmission for all market participants, not just those participating in an EIM.

For example, just as it would be inappropriate to provide a transmission cost advantage to EIM Participants affiliated with an EIM entity, thereby affording them a competitive advantage in purchasing 15-minute or 5-minute CAISO energy, it is similarly inappropriate to provide all EIM participants with a competitive advantage in purchasing 15-minute CAISO energy ahead of non-EIM participants engaged in 15-minute scheduling under the CAISO's Order 764 initiative.

CAISO's Transmission Service Cost Alternative 1 violates several principles:

- (i) non-discriminatory access to transmission
- (ii) cost allocation consistent with cost causation
- (iii) consistent transmission rates across all market timeframes

Under Alternative 1, the CAISO proposes to offer "As-Available" Transmission at "no charge" to EIM participants. Powerex believes there are numerous serious flaws with this approach that will directly result in:

- 1) Discriminatory access to CAISO transmission, contrary to the CAISO's "As-Available" description
- 2) Discriminatory transmission cost advantages for EIM participants in procuring 5-minute, 15-minute, real-time hourly, and day ahead CAISO energy.

- 3) Inefficient dispatch outcomes outside of the CAISO, including the EIM footprint.
- 4) Increased transmission costs for non-EIM transmission customers, inconsistent with cost causation
- 5) Shifting of EIM Participants' Day Ahead, Hour Ahead and 15-minute CAISO export and CAISO wheel through activities into the EIM

Under the CAISO's proposed 15-minute market design, all EIM energy bids and non-EIM energy bids for 5-minute, 15-minute, or hourly energy will be submitted at the same time. These bids will then be co-optimized, producing the most efficient dispatch solution based on these co-mingled bids. From absolutely no perspective can one accurately describe EIM bids as subordinated in this transmission and energy optimization process – i.e. to only access “as-available” or “residual” transmission rights after dispatch to non-EIM real-time bids.

In other words, under this alternative, all non-EIM participants seeking to export energy or wheel energy through the CAISO will be required to continue to include upwards of \$9 per MWh of CAISO transmission costs in their energy bids, while EIM Participants will not. In effect, this will enable EIM participants that are similarly situated with non-EIM participants, to out-compete for CAISO transmission, and hence for combined energy and transmission dispatch out of the CAISO real-time markets.

Consider the following example:

- EIM Participant A has a resource that it can reduce by 100MW at an opportunity cost of \$35 per MWh.
- Facing no CAISO transmission access costs whatsoever, EIM Participant A submits a purchase bid for \$35 per MWh into the CAISO real-time market.
- Non-EIM participant B has a resource that it can reduce by 100MW at an opportunity cost of \$40 per MWh.
- Facing approximately \$9 per MWh in CAISO transmission access charges, Non-EIM Participant B submits a purchase bid for \$31 per MWh into the CAISO real-time market.

The CAISO's real-time market optimization process will select EIM Participant A's bid ahead of Non-EIM Participant B's bid.

To the extent the CAISO has less than 200MW of export transmission on a respective transmission path required to serve both EIM Participant A and Non-EIM Participant B economically (and both energy bids are economic relative to CAISO energy prices), EIM Participant A will receive preferential access to the limited CAISO transmission via its dispatch ahead of Non-EIM Participant B.

To the extent the CAISO is not transmission constrained, but has insufficient economic energy to supply both EIM Participant A and Non-EIM Participant B, EIM Participant A will also be given preferential access to the CAISO limited quantity of economic energy.

This example illustrates several important aspects of the CAISO's “free transmission” proposal.

First, the transmission that is awarded is not “as-available” but rather competed for, with EIM Participants receiving a substantial, unduly discriminatory, transmission cost advantage.

Second, this “free transmission” also provides EIM Participants with a substantial, unduly discriminatory, cost advantage for access to CAISO’s real-time *energy*.

Third, these advantages are applicable for 5-minute, 15-minute and hourly energy dispatches. In other words, EIM Participant A’s 5-minute energy bid competes with Non-EIM Participant B’s energy bid which may be for 15-minute or hourly energy.

Fourth, the dispatch outside the CAISO is inefficient. In contrast to efficient outcomes in today’s markets outside the CAISO, the EIM participant’s generator with a \$35 per MWh opportunity cost will reduce its output, while the Non-EIM participant’s generator with a \$40 per MWh opportunity cost will maintain its output level. In other words, any dispatch efficiency gains attributed to CAISO-EIM transfers, may be offset by dispatch efficiency losses outside the CAISO-EIM footprint.

Fifth, the CAISO has now lost the transmission access charge revenue associated with EIM Participant A’s export being dispatched ahead of Non-EIM Participant B, resulting in eventual transmission cost increases for other transmission customers on the CAISO grid. It is indisputable that under the CAISO’s proposed free transmission, EIM Participant A is utilizing the CAISO grid yet paying nothing, and that the cost neutrality principle will require other transmission customers to pay more as a result.

Finally, EIM Participant A will quickly realize that while its own Day Ahead, Hourly and 15-minute intertie exports continue to attract a CAISO Transmission Access Charge, its EIM exports do not. It should not be expected to take long for EIM Participant A to shift all of its real-time purchase activity from the CAISO into the EIM, following this powerful price signal. In fact, Participant A could even utilize virtual demand bids to lock-in a day ahead price for future multi-hour block EIM-exports.

Powerex recognizes that some stakeholders may argue that it is appropriate, and common, for generators within an amalgamated transmission footprint to face a different dispatch cost than participants outside the footprint. Powerex believes this argument is misguided, as it is not applicable to the CAISO’s “free transmission” proposal for two key reasons.

First, under a broader RTO footprint, transmission pancaking is eliminated, just as it is when two OATT transmission providers merge their footprint, but, importantly, the new rate is a blended transmission charge which reflects usage on, and cost recovery of, the broader transmission footprint. No such design that Powerex is aware of, allows for “free transmission”, for select participants on a neighboring transmission grid.

Second, such broader RTO transmission rate designs apply across all market timeframes, like the CAISO’s current transmission rate design. No such design that Powerex is aware of, allows for structurally different transmission costs across different market timeframes. Quite simply, one cannot equate “free transmission” for EIM participants to blended transmission rates applied across all market timeframes on a wider regional footprint.

The CAISO’s argument that its transmission revenue recovery will be fully funded by existing transmission rates rendering charging for EIM transmission usage unnecessary, is also clearly

flawed for several reasons. First, as demonstrated in the example above, export dispatches out of the CAISO in the EIM market can be expected to displace competing non-EIM real-time export bids, which currently pay the transmission access charge and help fund the CAISO's transmission system. Second, EIM Participants can be expected to shift their existing export activities out of the CAISO's day ahead, real-time hourly and 15-minute markets into the EIM, further reducing transmission revenue associated with these existing exports. Third, it is well established that the principle of cost causation applied to transmission rate design means all users (i.e. beneficiaries) of the transmission grid fund the transmission grid. It is indisputable that exports out of the CAISO in the EIM market will utilize the transmission grid, and the users associated with such transactions are beneficiaries of the costs incurred to build and maintain the CAISO's transmission system. Fourth, if one were to carry the CAISO's argument forward to its Order 764 initiative, why wouldn't the CAISO exempt all 15-minute export schedules under its new design from transmission access charges, since it already achieves transmission revenue recovery under its existing design, which does not permit 15-minute scheduling?

The CAISO's proposal to offer "free transmission" service to EIM Participants for EIM transactions is inconsistent with CAISO current transmission rate design, and more importantly, runs directly counter to several foundational transmission and market design principles. It is inappropriate and unnecessary, including on an interim basis, and should be discarded.

CAISO's Transmission Service Cost Alternative 2 violates several principles

- (i) non-discriminatory access to transmission
- (ii) cost allocation consistent with cost causation
- (iii) consistent transmission rates across all market timeframes

The CAISO's second alternative, to have a unique EIM-specific CAISO TAC charge to exports is also problematic. For all of the reasons described above for free transmission, having a *different* transmission rate for EIM-specific transactions relative to non-EIM transmission Participants' transactions in the same co-optimized market (i.e. real-time) is problematic. Similarly, for all the reasons described above, having a *different* transmission rate for EIM-participants' EIM-specific transactions relative to the EIM Participants' day ahead and real-time non-EIM transactions is also problematic.

Again, the CAISO's proposal to offer "different priced transmission" service to EIM Participants' EIM transactions is inconsistent with CAISO's current transmission rate design, and also runs directly counter to the same foundational transmission and market design principles as the free transmission proposal discussed above.

CAISO's Alternative 3 is Consistent with the Existing CAISO Transmission Rate Design

Powerex recommends that the scope of the EIM Transmission Service design should be to efficiently apply the existing CAISO transmission rate design to all EIM transactions. In this regard, a review of current transmission access charges' applicability may be helpful.

In today's CAISO markets, market participants that export day ahead energy from the CAISO (including wheel-throughs) pay a per MWh transmission access charge of approximately \$9. Similarly, participants that receive delivery of a new or increased real-time export from the CAISO pay this exact same per MWh transmission access charge. This CAISO TAC applies whether an export is for a five-minute increment, hourly increment, or multi-hour increment and also applies regardless of the market window in which the dispatch is awarded (i.e. day ahead or real-time). Powerex believes this existing design is consistent with foundational market design and transmission principles previously described, as evident by its approval at FERC, resulting from the multi-year MRTU stakeholder process.

In contrast, a real-time purchase of CAISO energy (i.e. hourly, fifteen minute or five minute purchase) that results in a *reduction* to a previously awarded import schedule (i.e. an existing Day Ahead, or real-time schedule) does not incur this CAISO TAC. This differing transmission cost treatment of purchases between a real-time reduction to an existing import transaction relative to a new or increased export transaction exists largely due to the well-established principle of cost causation.

More specifically, in the case of a new or increased export, loads outside of the CAISO are consuming energy delivered across the CAISO transmission grid, and hence must contribute to the funding of the CAISO's transmission system – the charge is applied to the exporting scheduling coordinator. In the case of a reduced import, loads outside the CAISO are not consuming any CAISO energy (neither before or after the import reduction) and hence loads in California that are consuming the imported power transmitted across the CAISO transmission grid pay the CAISO TAC, also consistent with cost causation. To be clear, no TAC charges apply to the importing participant, including to its reduction to its import. These charges are currently calculated independently, on each intertie.

Applying this existing CAISO transmission rate design to an EIM, new or increased exports from the CAISO on a respective intertie should be allocated the CAISO TAC. Reductions to imports from the EIM area to the CAISO grid should not be allocated the CAISO TAC. Because it will be difficult for EIM Participants to know whether their purchases will result in energy being sourced from the CAISO and also whether they will result in increasing the export flow across a given intertie, Powerex recommends that the CAISO embed this export TAC into the LMP on each intertie. In this manner, EIM Participants do not need to factor these costs into their bids, rather their EIM dispatch and prices will include the CAISO TAC, if applicable.

This approach applies the existing transmission rate design consistently with all other import and export transactions in CAISO markets, and importantly, consistent with the four foundational principles previously described. Under this approach: EIM transactions are not provided discriminatory access to transmission; CAISO transmission costs will continue to be fully funded (since EIM transmission costs will be identical to existing 5-minute dynamic exports under both the current and proposed Order 764 market design); EIM users of the CAISO grid will be charged CAISO transmission costs consistent with cost causation; and there will be no incentives for EIM Participants to shift existing day ahead or real-time export activity into the EIM.

It should be pointed out that this approach is very similar to elements of the CAISO's carbon proposal, whereby the CAISO proposes to include carbon costs into the LMP optimization and dispatch process, which will also act as a dispatch hurdle rate. It should therefore be expected that the CAISO can similarly apply this approach without excessive implementation costs.

Powerex looks forward to further discussion on this topic.

Additional Transmission Considerations Must Be Resolved in the EIM Entity(s) transmission service area

While outside the scope of the CAISO's stakeholder process, Powerex would like to highlight that there are several issues yet to be addressed related to the PacifiCorp transmission system and costs.

Two key issues are the allocation of costs on the PacifiCorp transmission system for generators and loads utilizing the PacifiCorp transmission grid in the EIM and the allocation of EIM congestion revenues collected on the PacifiCorp grid. Powerex looks forward to a robust stakeholder discussion on these two key issues in PacifiCorp's stakeholder process.

EIM Resource Sufficiency Framework Must Be Designed to Prevent Leaning

Powerex strongly supports the CAISO in its inclusion of a day ahead and hour ahead resource sufficiency requirement for all EIM participants. However, it is critically important from a reliability perspective that the CAISO define this sufficiency requirement from a “capacity” perspective, not an “energy” perspective.

Put another way, it is entirely consistent with efficient market outcomes and reliability objectives for participants to “lean” on the EIM to access more economic resources from an energy perspective, provided the participant is not “leaning” on the EIM from a balancing capacity perspective to meet their firm load obligations (including firm exports). An EIM should provide participants with access to more efficient balancing energy. It should not afford participants with the ability to “go short” sufficient capacity commitments in either the day ahead or hour ahead timeframes, merely “hoping” that somewhere in the CAISO-EIM footprint there will be sufficient resources online and available to maintain reliable service to the EIM Participant’s firm load obligations (including its firm exports). Designing an EIM which permits such activity would undermine both the efficient and sufficient commitment of capacity resources in the western interconnect, with serious reliability consequences.

FERC raised a similar concern regarding SPP’s initial design of its EIM. FERC rejected that design, stating:

SPP proposes a voluntary sellers’ market and a mandatory buyers’ market, but no way to bridge the gap if the offers are insufficient, short of implementing emergency procedures. SPP implies a requirement that each market participant supply energy, through self-dispatched resources or energy bids, to meet its load’s needs, but does not include provisions in its tariff to specifically address the situation if this does not occur. The lack of clear tariff provisions that would set forth such a requirement raises concerns that there might not be adequate local generation, thus creating a situation in which market participants may lean on the system creating reliability concerns.

In today’s western markets, it is clear that both the potential for, and commercial benefit of, “leaning” on an improperly designed EIM for balancing capacity, are profound. The installation of substantial VERs on the western grid has significantly increased the need for the commitment of dispatchable resources capable of providing balancing capacity to ensure that reliable service to firm load can be maintained. Both the price charged by transmission providers under their respective OATTs, and the allocation of associated costs, of these necessary capacity commitments is a source of significant tension in the western region.

Outside the CAISO, participants with generation and/or load serving obligations which are variable in nature, have two primary options for acquiring sufficient balancing capacity to continually meet their firm load obligations:

1. Procure sufficient balancing capacity from the host transmission provider, paying a capacity commitment charge at fixed tariff rates
2. Self-supply or procure sufficient balancing reserve capacity from third parties

It is important to note that the costs allocated for these generation capacity commitments is in addition to settlement of imbalance energy.

In addition, participants with variable generation output also may choose not to acquire sufficient balancing capacity within (or delivered to) the source balancing authority, choosing to transfer some, or all of, the balancing reserve requirement to the purchaser of the variable generation via delivery of changing energy quantities. Of course, this approach results in a savings in direct balancing reserve costs for the participant, but generally results in a reduction in the value of the energy sold in the market as the consuming entity must now carry additional balancing reserves to maintain reliability of service to its firm load.

Inside the CAISO, sufficient balancing reserve capacity to meet the CAISO's firm load obligations (including firm exports) is procured and charged very differently, through a variety of processes. First, California has a resource adequacy program which helps ensure sufficient capacity is installed (or contracted for) on a forward basis to meet the forecasted firm load obligations of load-serving entities. Discussions are underway to potentially expand this resource adequacy program to incorporate the growing need for flexible capacity resources necessary to balance a changing CAISO generation fleet.

Second, the CAISO has a day ahead residual unit commitment (RUC) process, whereby it commits additional dispatchable generation day ahead to meet potential shortfalls between day ahead supply awards and the CAISO's forecast of real-time demand. Importantly, additional RUC capacity may be procured as a result of (i) CAISO forecasts of higher demand in real-time than cleared in the day ahead market; and/or (ii) potentially insufficient supply as a result of virtual supply awards or VERs comprising a portion of the supply awarded in the day ahead market.

Third, the CAISO will procure additional intra-hour capacity reserves in both the day ahead and real-time markets through market mechanisms such as operating reserves, the flexi-ramp constraint, and the proposed flexi-ramp product.

Fourth, the CAISO will receive some balancing capacity, at no *direct* additional cost, from generators already online as a result of their day-ahead energy awards, that have remaining dispatch flexibility. It is important to recognize, however, that the CAISO's bid cost recovery mechanism for start-up costs, carbon, etc., does contribute to the funding of this voluntary balancing capacity.

Without going into details of the specific cost allocation of each of these CAISO capacity commitment mechanisms, Powerex believes it is fair to characterize the CAISO's current cost allocation framework as one which largely allocates these capacity commitment costs to California load serving entities. It is important to note, however, that there is increasing discussion occurring in various CAISO stakeholder processes on the CAISO's cost allocation for these capacity mechanisms, in the context of a changing generation fleet and the principle of cost causation.

Clearly, there exists very different frameworks between the CAISO and external western markets for the commitment and cost allocation of balancing capacity. Nonetheless, Powerex believes it is feasible, and worthy of pursuit, to develop a co-optimized flexible capacity commitment process between the CAISO and the external western markets. Such a framework would better enable VERs and/or load customers outside the CAISO to access available flexible capacity capability located within the CAISO footprint (both day ahead and hour ahead) if it was the most cost effective flexible capacity commitment available. This could be achieved, for example, through allowing EIM Participants expanded ability to procure RUC, Flexi-ramp product, Operating reserves, etc. from the CAISO markets.

Similarly, the CAISO could expand its ability to procure additional capacity commitments from external markets through expansion of its RUC process and proposed Flexi-ramp product to the interties.

Not only would a co-optimized capacity commitment process result in more efficient generation commitment decisions, some reductions in capacity commitment across the combined footprint could be achieved through geographical diversity, under a transparent and well-modeled framework. However, a co-optimization of capacity commitment must be done carefully to ensure that:

- i) Sufficient balancing reserves are carried at all times, in the necessary locations, to maintain reliable service to firm load.
- ii) Costs are allocated in a manner which is just and reasonable, not unduly discriminatory, follows the principle of cost causation, and sends appropriate price signals.

Given the complexity of both the reliability and cost allocation issues involved in such an initiative, and the CAISO's intent not to pursue the ability to commit/start-up units outside its own footprint under the EIM, Powerex recommends this co-optimization of capacity commitment be pursued at a later time, as a separate initiative. An EIM should appropriately be focused on the efficient dispatch of imbalance energy on the grid.

Independent of the development of a co-optimized capacity commitment process, it remains imperative that the CAISO ensure that all EIM Participants be required to be balanced from a capacity perspective both day and hour ahead – i.e. require resource sufficiency. Failure to do so could lead to insufficient dispatchable energy resources being online and available to maintain reliable service to firm load. Powerex understands this risk to be precisely the concern raised by FERC in SPP's initial EIM proposal.

Beyond reliability concerns, a capacity-based resource sufficiency requirement is also important from both a market efficiency perspective and cost allocation perspective. Failure to have a robust resource sufficiency requirement, will undoubtedly lead to some EIM Participants opting out of capacity commitment processes and costs in their source balancing authority, in order to consume capacity at no charge, provided by the broader EIM footprint including the CAISO (which is largely funded by CAISO load as described above).

In other words, if the EIM allows participants to meet their existing firm load obligations, including firm exports, via leaning on the EIM for participants' own balancing capacity shortfall, either the CAISO will procure additional capacity commitments within its markets to meet this requirement, with the costs allocated largely to CAISO load inconsistent with cost causation, or it will not, with increased risk to reliability. Neither outcome is acceptable.

An example based on the CAISO's presentation on June 6, 2013 helps illustrate the issue.

The CAISO presentation provided the following numeric example:

Load Forecast	1000 MW	=	Gen A	500 MW
Export A	100 MW		Gen B*	400 MW
Export B**	200 MW		Gen C*	150 MW
Total	1300 MW		Import A*	100 MW
			Import B**	150 MW
			Total	1300 MW

In the above example for “base schedules”, if an EIM Participant had a shortfall in capacity provided by its resources (on the right side above) relative to its capacity obligations (on the left side above), it should be required to commit sufficient capacity ahead of the EIM. Failure to have such a capacity-based resource sufficiency requirement would either expose the grid to a balancing capacity shortfall, or result in the CAISO having to commit additional flexible capacity through its processes, with costs allocated to CAISO load serving entities inconsistent with cost causation.

For example, what if the Load Forecast, Export A and Export B represented firm energy obligations, but Import A or Import B represented non-firm energy supply? Either the CAISO would have to procure additional operating reserves in its markets to make up this capacity shortfall, or the grid would be exposed to reliability ramifications if and when Import A or Import B were curtailed.

Similarly, what if the Load Forecast, Export A and Export B were firm obligations, but Gen A was a VER resource forecast? Either the CAISO would have to procure additional RUC and/or Flexi-ramp Constraint/Product quantities in its markets to make up the shortfall in capacity or the grid would be exposed to reliability ramifications if and when Gen A produced less energy than forecast.

In short, the CAISO should not allow EIM Participants to lean on the CAISO grid by allowing participants to enter the EIM market with insufficient capacity supply to meet its obligations.

Such an opportunity presents a powerful price signal that will be followed, with adverse reliability and economic efficiency consequences.

Requiring EIM Participants to be resource sufficient

Powerex recommends the CAISO implement a robust capacity-based resource sufficiency test, that requires either all EIM Participants, or alternatively all EIM Entities, to submit a resource plan day ahead and 75 minutes prior to each hour that sets forth a feasible plan, including:

1. Expected and maximum firm load service obligations and firm exports
2. Expected and minimum generation output levels
3. Transmission plan for delivering generation to load

In essence, an EIM Participant would submit a demand-resource plan whereby it demonstrates it has sufficient generation capacity committed to meet its firm load service obligations, including firm energy exports. After passing this resource sufficiency test, the EIM Participant would then be able to receive the benefits of efficient energy dispatch resulting from the EIM, displacing its own generation resources with the lowest cost dispatch from the EIM process.

The CAISO should also monitor the values submitted in these plans, taking both prospective action (i.e. requiring a participant to balance itself prior to the EIM market timelines) and consequential action (i.e. potential penalties if the participants deliberately submit systemically understated maximum load forecasts and/or overstated minimum generation forecasts thereby undermining the resource sufficiency framework).

Powerex looks forward to further discussion on this topic.

CAISO's Carbon Proposal Requires More Details and Discussion

In the Revised Straw Proposal, the CAISO provides a new proposal for addressing carbon obligations associated with generators that are dispatched to serve load in the broader CAISO-PAC combined EIM footprint. Powerex finds the CAISO's proposal very interesting, and potentially promising, but requires additional details on the proposal and has numerous questions.

Powerex understands the CAISO's proposal as described below.

- The CAISO will add estimated carbon costs to all incremental EIM generation offers when evaluating offers to serve CAISO load, and not add any carbon costs to incremental EIM generation offers when evaluating offers to serve non-CAISO load.
- As part of this optimization process, the CAISO lowest cost dispatch solution for the combined CAISO-EIM footprint will effectively "allocate" the lower-intensity generation selected to CAISO load and "allocate" the higher intensity generation selected to non-CAISO load.
- The CAISO will then settle with EIM participants in a manner which assumes that the EIM participant continues to be responsible to submit carbon allowances under the CARB program (for generation that was dispatched in the EIM and "deemed" by the CAISO to have served CAISO load).
- The dispatch outcome will, in effect, have the CAISO "perfectly resource shuffle" amongst selected EIM energy offers, consistent with the CAISO's interpretation of CARB's safe harbors.

Powerex would appreciate it if the CAISO would confirm if this understanding is correct.

The CAISO carbon proposal also raises several obvious questions:

- Has CARB reviewed the CAISO proposal and provided any feedback?
- If so, does CARB view the CAISO's proposal as consistent with CARB's rules and regulations?
- The current CARB regulatory framework relies on e-tags to determine carbon allowance obligations for imports, yet there will be no e-tags for any EIM energy deliveries. Does the CAISO have any thoughts on how to address this gap?
- Has the CAISO considered whether this proposal would create incentives for EIM Participants to modify their base schedules, in an effort to lower the carbon obligations of its subsequent EIM dispatches?
- Has the CAISO considered how this proposal would apply to EIM Participants that do not submit to CARB's jurisdiction for generation resources located outside of California – resources that may be dispatched by the CAISO in the EIM and be deemed to have delivered energy into California?
- Would all EIM participants be required to submit to CARB's jurisdiction for generation resources that are located outside of California, as a prerequisite to joining the CAISO EIM?
- How does the CAISO's proposal apply to asset controlling suppliers?

Powerex looks forward to more discussion on the CAISO's carbon proposal.

CAISO Should Not Apply Market Power Mitigation Outside CAISO Footprint

The CAISO proposes to apply local market power mitigation to generation offers in the EIM. Powerex has several concerns with this proposal. First, it is important to recognize that, unlike internal CAISO generating resources, EIM Participants have numerous options to sell their available energy in the forward, day ahead and real-time markets outside of the CAISO and its applicable rules and regulations. Accordingly, any mitigation by the CAISO of EIM Participants' energy offers in these external markets, below prevailing FERC price caps, risks deterring EIM Participants from submitting incremental energy offers into the EIM, particularly during any periods when the mitigated price level is below prevailing external market prices.

Second, the CAISO does not intend to include in its EIM design, the ability for the CAISO to commit/start-up generation resources outside of the CAISO footprint itself, nor does it include the ability for the CAISO to compel EIM Participants to submit offers into the EIM. Applying local market power mitigation to resources that have the unilateral ability to choose not to start-up and/or choose not to submit offers for any particular hour in the EIM, is unlikely to be successful in increasing the supply of offers below the mitigated price level.

Third, the CAISO's market power mitigation framework was designed in the context of its broader MRTU market design, taking into consideration the CAISO's broader settlement framework, including its resource adequacy program, bid cost recovery mechanisms, start-up cost bid submission framework, etc. Simply applying the CAISO's existing local market power mitigation outside this broader MRTU framework may lead to unintended consequences and may deter broader participation in the EIM.

Powerex appreciates this opportunity to comment on the CAISO's Revised Straw Proposal and looks forward to additional stakeholder meetings and opportunities to comment on the CAISO's comprehensive Revised Straw Proposal and the broader EIM initiative.