

Comments of Powerex Corp. on Energy Imbalance Market Year 1 Enhancements

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Powerex appreciates the opportunity to comment on CAISO's Energy Imbalance Market ("EIM") Year 1 Enhancements. Powerex's comments are focused on three specific topics discussed during the January 8, 2015 stakeholder meeting in Portland, Oregon:

- 1. The PacifiCorp EIM Implementation is resulting in the premature expiry, and confiscation, of Firm OATT rights at T-57. This must be corrected, and should not be expanded to Nevada's EIM implementation.** There are critical interactions between the real-time EIM and the existing OATT framework of transmission rights in the service territories of entities participating in the EIM. As implemented in PacifiCorp's BAAs, it has recently become clear that those interactions are undermining the firm transmission rights of transmission customers, effectively causing those rights to "expire" prematurely (at T-57). This exposes Firm OATT transmission customers to the very re-dispatch (*i.e.*, congestion) costs that investment in Firm OATT rights is intended to protect against. Under PacifiCorp's current T-57 practice, this problem is compounded by PacifiCorp's application of the per MWh cost of re-dispatch to *all* post T-57 transmission usage quantities, which often greatly exceed the quantities of re-dispatch required and performed.
- 2. CAISO's proposed use of ATC for EIM Transfers provides the potential for significant benefits over the "donation approach" used by PacifiCorp, but as proposed it will result in the premature expiry and confiscation of Firm OATT rights, treating such rights as a social good for EIM dispatch after T-40.** The use of otherwise-unused transmission capacity instead of set asides for EIM transfers provides significant opportunity to increase the efficient use of transmission rights, by eliminating the stranding of transmission capacity (and associated reduction in economic efficiency) that has occurred since the PacifiCorp EIM went live. However, the CAISO proposed implementation will effectively expire all Firm OATT rights at T-40, treating them thereafter as a social good (*i.e.* as EIM ATC) for least cost dispatch. This approach is highly confiscatory, reduces the incentives for Firm OATT customers to make efficient decisions about the use of their rights and, ultimately, undermines the incentives for long-term investment in OATT transmission.

The problematic outcomes described above can be addressed through financial settlements that ensure that the real-time value of transmission is appropriately returned to the Firm OATT customer, while enabling least-cost economic dispatch of resources in the EIM.

3. **CAISO's "average" approach to resource sufficiency is increasing reliability risk, while undermining investment in flexible capacity resources.** CAISO further clarified its view that it seeks only to ensure resource sufficiency *on average* rather than ensuring EIM resources are sufficient to cover the full range of expected operating conditions. If and when actual conditions exceed the “average” conditions, as they often do, CAISO appears to promote relying purely on voluntary resource participation in the EIM to meet each BAA's capacity and flexibility needs. In other words, CAISO's EIM implementation can be viewed as an opportunity for participating BAs to deliberately "go short" capacity and flexibility, thereby transforming the *Energy Imbalance Market* into a real-time *Capacity* and *Flexibility Imbalance* market. As has been fully evident in the first months of EIM implementation with PacifiCorp, this approach makes the EIM uniquely vulnerable to a lack of voluntary participation by additional resources, resulting in frequent price spikes and emergency actions to maintain reliability. But rather than strengthening the resource sufficiency requirements, CAISO's immediate focus is on facilitating *voluntary* participation, while simultaneously suppressing market prices when imbalance energy shortages inevitably arise.

I. EIM ENCROACHMENT ON OATT TRANSMISSION RIGHTS

A key expected benefit of a real-time organized market such as the CAISO EIM is achieving least-cost economic dispatch of available generation resources, subject to transmission and other constraints. Powerex strongly supports the objective of making the most efficient use of available generation and transmission. Where intra-hour organized markets are implemented as a complement to bilateral transactions using physical transmission rights under the OATT priority-based framework, the interaction between these two frameworks must be carefully designed. Initial experience with implementation of the CAISO EIM in PacifiCorp's BAAs demonstrates adverse impacts on OATT transmission customers. Critically, the market design choices resulting in these adverse outcomes is not necessary for successful implementation of an intra-hour energy market with centralized dispatch, such as the CAISO EIM. By ensuring that corrective action is taken in PacifiCorp and that future implementations avoid these and other adverse impacts on existing transmission rights,¹ CAISO and EIM participating BAs can help increase the acceptance of voluntary imbalance energy markets in the West and eliminate existing disincentives (and introduce positive incentives) to participation in those markets by resources with Firm OATT transmission rights.

A. Firm OATT Customers Are Improperly Charged for Re-Dispatch

Under the EIM implementation in PacifiCorp's BAAs, any interchange or intrachange transactions that are submitted or modified after the deadline for submitting “base schedules” (*i.e.*, after T-57 minutes) are considered “imbalances” and are charged for any congestion between point of delivery (POD) and point of receipt (POR) based on the difference in LMPs. This financial settlement applies to *all* schedules that are not included in “base schedules,” regardless of the priority of OATT transmission service associated with the schedule.

¹ Powerex also strongly urges PacifiCorp to amend its tariff and business practices consistent with the comments herein.

An integral and well-established attribute of Firm transmission rights under the *pro forma* OATT is that Firm customers are *not* charged any additional costs associated with providing transmission service on the reserved path. Instead, under the OATT framework, *network loads* bear the cost of any re-dispatch, including re-dispatch necessary to prevent curtailments to both Firm Network and Firm Point-to-Point service.² This fundamental attribute of firm transmission rights in PacifiCorp's BAAs has been effectively eliminated by the PacifiCorp EIM implementation.

Consider, for example, a transmission customer that has invested in a 100 MW Long-Term Firm Point-to-Point reservation. The customer submits an interchange transaction for 20 MW prior to T-57 (*i.e.*, its base schedule is 20 MW). After T-57, it increases this transaction to the full 100 MW of its reserved transmission capacity. Due to a de-rate, however, the transmission path can only accommodate a total of 95 MW of schedules, not the full rating of 100 MW. To accommodate the transaction, 5 MW of generation will need to be re-dispatched, with 5 MW of generation reduced ("DECed") at the POR or equivalent, and 5 MW of generation increased ("INCed") at the POD. Under the OATT framework, this 5 MW re-dispatch cost would be spread across all network load. Under, the EIM, the LMP at the POD will be set by the accepted INC offer of, say, \$50/MWh, while the LMP at the POR will be set by the accepted DEC offer of, say, \$10/MWh.³ In this scenario, under PacifiCorp's implementation, the transmission customer would be charged the LMP difference of \$40/MWh on the 80 MW that were scheduled after T-57, for a total charge of \$3,200.

The above example illustrates several important adverse consequences of EIM implementation for customers who have invested in Firm transmission rights in PacifiCorp's BAAs:

First, treating schedule changes after T-57 as "imbalances" results in directly charging Firm transmission customers the cost of re-dispatch, which is contrary to the OATT framework. Had this same example occurred prior to EIM implementation in PacifiCorp's BAAs, the Firm transmission customer would have incurred no re-dispatch-related charges, and the re-dispatch costs would have been spread across PacifiCorp's network loads.

Second, the implementation of the EIM introduces a temporal "break" at T-57. Had the additional 80 MW been submitted at T-58, the transmission customer would have avoided all re-dispatch-related charges. Re-dispatch would still be necessary, but its cost would be allocated to PacifiCorp network loads. Instead, by submitting the schedule just a few minutes later, the same re-dispatch occurs but the Firm transmission customer, and not PacifiCorp's network load, pays the re-dispatch-related charges. Transmission customers that invested in Firm OATT transmission rights in order to be able to deliver energy on congested paths must now schedule on those rights prior to T-57; after that time, the Firm rights are effectively worthless.

² For Non-Firm service, the transmission provider may curtail schedules instead of incurring a re-dispatch cost, but for Firm PTP service the transmission provider cannot choose to curtail service instead of re-dispatching unless it is willing to also curtail Firm Network service on an equal basis with Firm PTP service

³ For purposes of illustration, this example ignores marginal losses.

Third, the financial settlement goes well beyond merely recouping the cost of re-dispatch, and in fact over-collects these costs. As shown above, the transmission customer is charged the \$40/MWh LMP price difference on the *entire* 80 MW schedule submitted after T-57, even though only 5 MW of re-dispatch was actually needed to accommodate the schedule. The actual re-dispatch cost in this example is just \$200, not the \$3,200 charged to the Firm customer.⁴ The difference between the \$3,200 charged to the Firm transmission customer and the \$200 of actual net re-dispatch cost will be received by PacifiCorp as “Real Time Congestion Imbalance Offset” and, under PacifiCorp’s revised tariff, distributed to PacifiCorp’s “measured demand.” Instead of PacifiCorp network loads incurring the *cost* of re-dispatch, under the EIM they will reap a windfall by over-collecting actual re-dispatch costs from customers that use their Firm OATT rights after T-57.

In this example, the transmission customer will have already paid to reserve transmission capacity on a Firm basis, but will nevertheless be charged again when it actually schedules on that reserved capacity, and the charge will be *sixteen times higher* than the actual re-dispatch cost necessary to accommodate that use. These outcomes are particularly damaging to transmission customers whose interchange or intrachange transaction volumes may not be known until shortly before the applicable scheduling deadlines for hourly and/or sub-hourly transactions. This includes transmission customers that invested in Firm transmission rights in order to serve load obligations (including self-supplying generation or load imbalances after T-57); to schedule the output of Variable Energy Resources; or to participate at CAISO interties in its Fifteen Minute Market and/or Five Minute Dispatch. The EIM, as implemented by PacifiCorp, effectively deprives customers investing in Firm OATT priority rights from being able to use them for 15-minute scheduling or dynamic scheduling, and even static hourly schedules must now be finalized well before the WECC scheduling deadline of T-20 minutes to avoid these additional charges.

The long-term ramifications of continuing with this approach in the PacifiCorp BAAs, and expanding it to other BAAs, such as Nevada, will be profound:

First, Firm OATT customers are undeniably directly and materially harmed, through the premature expiration and confiscation of their pre-existing Long Term Firm transmission investments. This will not only create significant resistance to the expansion of the CAISO/PAC specific implementation of an EIM in other regions, but it will also reduce dispatch efficiency, as Firm OATT customers seek to use all of their OATT rights prior to T-57 to avoid re-dispatch costs, even if the most efficient use of such rights may be after T-57.

Second, the effective expiry of OATT rights after T-57 will undermine the incentives to invest in Long Term Firm OATT transmission rights in the first place. In regions where the CAISO/PAC version of the EIM is implemented, customers must now weight the

⁴ Actual re-dispatch cost are 5 MW * \$50/MWh (the INC offer) minus 5 MW * \$10/MWh (the DEC offer), for a net re-dispatch cost of \$200.

benefits of restricted Firm OATT rights that effectively expire after T-57 against the costs of those potential investments.

Third, the expiry of OATT rights after T-57 directly undermines the policy objectives of FERC's recent Orders, including Order No. 764 promoting 15-minute scheduling and Order 784 promoting competitive ancillary service markets. Customers who seek to utilize 15-minute schedules and/or to sell or self-provide ancillary services such as generation and load imbalance services will face significant economic barriers to doing so, since these activities will no longer be appropriately treated as use of pre-existing transmission rights (that have already been paid for) but rather will be settled as imbalance energy injections and withdrawals, resulting in EIM re-dispatch related costs being applied.

Powerex strongly urges CAISO, PacifiCorp and Nevada to revise this critical aspect of the EIM implementation. As explained below, a framework for financial settlement of Firm OATT rights used in the EIM presents an effective, workable and reasonable solution.

B. CAISO's Proposal to Use ATC instead of PacifiCorp's Donation Approach for EIM Transfers Has the Potential to be Effective, But As Designed, is Confiscatory to Firm OATT Rights

As Powerex explained during the most recent EIM stakeholder meeting, the PacifiCorp's EIM implementation using a donation of its merchant's transmission rights to facilitate *potential* EIM Transfers has stranded scarce transmission capacity on the COI that would otherwise be released for use by all transmission customers, *reducing* economic efficiency. This reduction in economic efficiency is the result of PacifiCorp setting aside scarce dynamic transmission capability on the COI for the *exclusive use* of potential EIM Transfers to or from CAISO. PacifiCorp's set-aside makes scarce transmission capacity on the COI unavailable for transactions other than EIM Transfers, and *without* PacifiCorp dedicating resources for dynamic deliveries to the CAISO. In other words, EIM Transfers from PacifiCorp West to CAISO will make use of the set-aside capacity only when (1) prices in the CAISO BAA are higher than the offer price of resources in the PacifiCorp West BAA; *and* (2) there are unused PacifiCorp resources beyond what is needed to meet imbalance needs in the PacifiCorp West BAA. In contrast, dynamically scheduled resources to the CAISO (outside of the EIM) are dedicated to the CAISO real-time market for the respective hour—they will be dispatched if CAISO prices are above the offer price of the respective resource(s); they will *not* be "called back" to meet intra-hour needs in the source BAA, which is the practical effect of the second condition for EIM Transfers from PacifiCorp West to CAISO. The end result is that the efficient utilization of scarce transmission capacity and scarce dynamic transfer capability on the COI has been materially reduced through PacifiCorp's donation arrangement, resulting in an overall **loss** in economic efficiency.

As a part of its Year 1 EIM Enhancements, CAISO has proposed the use of residual Available Transfer Capability (ATC) instead of donated or set-aside transmission capacity to manage EIM Transfers. This approach offers much promise for EIM transfers to actually improve efficient utilization of transmission. Specifically, through centralized visibility and coordination, EIM Transfers could be facilitated on transmission capacity that would otherwise be unused,

preventing the need to set aside any transmission capacity for exclusive EIM use at all. EIM Transfers could also potentially utilize transmission capacity held by Firm OATT customers in a more efficient manner than today, if appropriate and efficient financial settlement mechanisms are established to promote efficient use and compensation for the use of Firm OATT rights by the EIM. Powerex strongly supports such an approach, and believes that the use of ATC for EIM Transfers should not only be pursued in future implementations such as Nevada's, but it should replace the highly inefficient donation approach to EIM Transfers currently implemented by PacifiCorp.

However, as further described below, the specific ATC implementation approach proposed by CAISO will prematurely expire Firm OATT transmission rights at T-40 in an effort to "create" unencumbered ATC for EIM Transfers. Without appropriate compensation measures, which have not yet been developed or proposed by CAISO, such an approach is confiscatory, with many of the same serious ramifications described in the previous section.

EIM use of Transmission Must Compensate OATT Firm Customers that Reserved it

A key challenge in implementing an EIM "on top of" an existing OATT framework is to ensure that existing and future long-term transmission investments made within the OATT framework are respected, not ignored or undermined, in the EIM timeframe. CAISO has currently chosen a decidedly different direction. In its January 8 presentation to stakeholders, CAISO explained how it has chosen to implement a design that successfully nullifies the priority of external Firm OATT rights as it relates to hourly and fifteen-minute deliveries in CAISO markets, and how it intends to extend this approach to the EIM. While Powerex recognizes that the CAISO's overarching objective is to achieve efficient dispatch, such disregard for existing investments in OATT transmission rights and the priority-based framework only serves to create disincentives to join or participate in the EIM, not only among OATT transmission customers but also among OATT transmission providers as they increasingly realize that CAISO's EIM implementation threatens their core business: the funding of current and future transmission investments through the sale of Long Term Firm transmission service.

Fortunately, there are solutions available that both enable the efficient use of transmission in the EIM while also ensuring the economic value of, and incentives to continue to invest in, Firm OATT transmission service. Powerex urges CAISO to work with stakeholders to develop solutions that achieve both of these objectives.

A critical question that needs to be addressed is therefore how to compensate customers that own Firm OATT rights when the EIM least-cost economic dispatch utilizes the transmission capacity that Firm OATT rights holders have reserved and paid for. Under the current EIM rules, all net congestion revenue collected from real-time EIM dispatch is paid by CAISO to the EIM Entity BAA (*i.e.*, PacifiCorp) as Real Time Congestion Imbalance Offset (RTCIO), and PacifiCorp allocates these amounts—positive or negative—on the basis of measured demand. In other words, *none* of the congestion revenue realized as a result of the use of OATT-subscribed transmission facilities in the EIM is returned directly to transmission customers that invested in the Firm OATT rights associated with a given path. The transmission is available for EIM use to the extent the OATT transmission customers have not used it, raising two important questions:

1. Do EIM rules provide the right incentives for a transmission customer to make efficient decisions regarding whether to schedule on their reservations or to leave the transmission available for EIM use?
2. Do EIM rules *prevent* the Firm OATT transmission customers from using their reserved priority transmission rights in the EIM timeframe, with EIM dispatch of other resources "stepping ahead" of use by the Firm OATT rights holder?

The implementation of the EIM in a BAA that sells and allocates transmission service under the OATT framework results in two alternative and mutually exclusive uses of the same transmission capacity: it can either be used to support a bilateral transaction according to the OATT priority-based framework, or it can be used to support least-cost centralized dispatch under the EIM. To the extent the transmission is used to support a bilateral schedule, there is a social opportunity cost to not having that transmission available to support EIM dispatch. And similarly, the transmission will only be available to support EIM dispatch if transmission customers that have paid for priority service on that transmission choose not to use it to support bilateral transactions. It would be socially optimal for the transmission to be used for its highest value purpose, but at present there are no incentives in place to encourage such socially optimal decisions. But whatever the *socially* optimal use of transmission may be, a transmission customer with OATT rights will determine whether or not to use those rights based solely on its own *private* incentives. Absent a framework that permits the transmission customer to realize the value of making the transmission available in the EIM (*i.e.*, the value of *not* using the OATT rights to support a bilateral transaction), a rational transmission customer would seek to utilize their OATT rights for bilateral transactions whenever possible.⁵

Dynamic use of Firm OATT Rights under CAISO's ATC Proposal

The above discussion highlights the lack of incentives for Firm OATT transmission customers to choose to leave their transmission rights available for potential EIM use whenever it is economically efficient to do so. This discussion assumes that the efficiency problem is limited to a lack of affirmative *incentives* to leave transmission for EIM use, and that the transmission customer's ability to utilize its Firm OATT transmission rights is not also *impaired* by introduction of the EIM itself. In at least two circumstances, this is not the case. First, as previously discussed, the current implementation of the EIM by PacifiCorp effectively eliminates the value of Firm OATT reservations after the base scheduling deadline of T-57. Transmission customers that invested in those rights to facilitate transactions closer to real-time will be unable to use those rights for their intended purpose. Instead, the opportunities to receive the economic benefits of Firm OATT rights will be limited to transactions that can be arranged prior to the

⁵ Consider, for example, a transmission customer that has invested in Long Term Firm OATT rights across the service territory of a BAA that participates in the CAISO EIM. For instance, the transmission customer may have an opportunity to use those rights to physically wheel energy across the BAA to make a bilateral sale to a participant outside the EIM footprint, and realize a transaction margin of \$2/MWh. But if that transmission were not used, the available capacity could be utilized for EIM dispatch where it realized a value of \$5/MWh.⁵ Under the current EIM implementation, however, that \$5/MWh would not be returned directly to the transmission customer with the Firm OATT rights, but socialized to all PacifiCorp measured demand. Those incentives ensure the Firm OATT customer will always elect to use the transmission for the lower-value bilateral schedule from which it *does* benefit than leave it available for the higher-value EIM use, from which it does not.

base schedule deadline. The value of Firm OATT rights after that time is effectively confiscated by the EIM Entity BAA, in direct violation of FERC's recognition that OATT rights extend through the operating hour for which the rights were awarded. This will further encourage participants to seek to utilize their rights ahead of the T-57 timeline.

A second form of confiscation of OATT rights after T-57 can occur if, as proposed by CAISO, EIM participation changes the way that dynamic schedules on Firm OATT rights are treated by the participating BAA. Specifically, the CAISO appears to support confiscating Firm OATT rights that are scheduled dynamically prior to T-57, to the extent the energy profile at T-57 is less than the transmission profile on the associated dynamic e-Tags, in order to create additional EIM ATC.⁶ It would achieve this by requiring that EIM participating BAAs modify their transmission procedures such that all ATC calculations are based on the e-Tag energy profile, even for dynamic schedules. This would allow Firm OATT transmission that is currently set aside for the respective Firm OATT customer's dynamic flows to instead be used by the CAISO to support EIM dispatch from a different participant's resource, including in circumstances where the Firm OATT transmission customer's offer was otherwise economic. Such an approach would be highly problematic, and would again shift the value of transmission investments away from the entities that pay for them (*i.e.*, the Firm OATT rights holders) and socialize that value.⁷

Such an outcome is not only inequitable, as it effectively prevents the transmission customer investing in Firm OATT service from using its priority rights, it is ultimately harmful to the

⁶ At the January 8 stakeholder meeting, CAISO explained its view that dynamic schedules encumber transmission based on the energy profile. A Bonneville representative corrected CAISO's description of how a dynamic schedule affects the calculation of transmission commitments, which Bonneville (and other OATT transmission providers) perform based on the transmission allocation profile (*i.e.*, the maximum quantity offered to CAISO) and *not* on the energy profile.

⁷ Consider, for example, a market participant that has invested in 100 MW of Firm OATT transmission from a generator's POR to a CAISO intertie, and it uses those Firm rights to participate dynamically in CAISO's real-time markets, including the 5-minute market. Assume that the resource is offered at \$40/MWh, and in a given 5-minute interval the value of energy inside the CAISO is \$50/MWh. The CAISO will dispatch the dynamic resource up to the 100 MW offered, and it will receive the intertie LMP of \$50/MWh, as the intertie is not congested in the 5-minute market. This example describes how dynamic scheduling is used to offer external resources in CAISO's real-time market at present.

Now consider that the BAA where the external generator is located participates in the EIM, and changes its transmission allocation procedures according to CAISO's proposal. That is, it no longer sets aside the maximum amount of energy that can be delivered on a dynamic schedule (*i.e.*, based on the transmission allocation), but instead it sets aside transmission only for the energy profile, which is equal to the HASP advisory award, issued prior to T-57. The HASP advisory award is not based simply on comparing the dynamically-scheduled generators offer (\$40/MWh) against the value of energy inside the CAISO (\$50/MWh), but also against the offers of EIM participating resources. If EIM participating resources are available at, say, \$35/MWh, then the HASP advisory award of the dynamically-scheduled resource, offered by the transmission customer with Firm OATT rights, will be *zero*. And, under CAISO's proposal, the EIM BAA will not set aside *any* transmission capacity to be able to deliver the dynamic resource to the CAISO intertie. Thus, even though the dynamic resource was economic relative to the value of energy inside the CAISO, and even though the Scheduling Coordinator offering that resource had invested in Firm OATT service to be able to deliver that energy to CAISO dynamically, the generator will not be dispatched. Instead, EIM resources will be dispatched, and will flow as EIM Transfers to CAISO on the transmission that had been reserved under the OATT framework *by a different customer*. Critically, the transmission customer that reserved and paid for Firm OATT service will not receive any value from its investment in transmission rights, and instead that value will be collected as congestion rents and socialized among the EIM BAA's loads.

CAISO as well. Firm OATT transmission customers will soon realize that they will not receive any value from using their Firm OATT rights to participate in the CAISO markets as a dynamic resource. Instead, Firm OATT transmission customers will have a greater incentive to seek to use their rights to support other transactions that do provide some value to the transmission customer, such as bilateral transactions to other participants in the Western Interconnection. This will result in the loss of dynamic participation in the CAISO markets as well as the transmission not being available to facilitate EIM Transfers. Such a result would clearly be a step backwards in terms of efficient use of transmission and in terms of CAISO real-time market liquidity.

C. CAISO and EIM Participating BAAs Should Develop a Framework for Financial Settlement of Firm OATT Rights used in the EIM

The above discussion lays out multiple ways in which the current implementation of the EIM has created an abrupt discontinuity between the physical transmission rights under the OATT framework and the treatment of transmission in the EIM. Certain of these examples reflect an unjustified encroachment or confiscation of transmission value, whereas others reflect the lack of incentives to encourage efficient use of transmission. And while the examples are varied, all can be effectively addressed through the same solution, which is to credit transmission customers for any positive difference in the congestion component of EIM LMPs for the quantity of Firm OATT rights that they did not utilize. Such credit will address each of the problematic conditions identified above:

1. A credit for unused Firm OATT rights (as of the base schedule deadline) provides a direct hedge against the congestion component of imbalance charges on schedules submitted or adjusted after the base scheduling deadline, thus preserving the core OATT principle that the cost of any re-dispatch necessary to accommodate the use of Firm OATT rights is not allocated to the Firm PTP customer.
2. A credit for unused Firm OATT rights provides an appropriate financial incentive for transmission customers to choose between using those rights to support a bilateral transaction and leaving the transmission unused, in which case it would be available to support EIM dispatch. This promotes the efficient use of transmission by making scarce transmission capability available for its highest-value use.
3. A credit for unused Firm OATT rights provides appropriate compensation to customers whose transmission is effectively re-allocated by the CAISO's market awards to resources that do not have transmission rights. Appropriate compensation ensures that customers with Firm OATT rights continue to receive the economic value of the underlying facilities that their Firm OATT investments fund, and that they do not have an incentive to attempt to protect themselves against confiscation by simply avoiding the CAISO and EIM markets altogether.

A financial credit framework will help ensure that implementation of the EIM does not abrogate the rights of transmission customers that have made long-term investments in the transmission system of the participating BAA.⁸ This will avoid undermining sales of transmission service

⁸ Powerex recognizes that developing a framework to allocate real-time congestion revenues based on Firm OATT reservations that were not used in the base schedules is primarily the responsibility of transmission providers of

under the OATT framework, upon which participating transmission provider will continue to rely for recovery of the embedded cost of their transmission assets and to fund capital upgrades and expansion of those facilities. A properly designed mechanism for recognizing and returning the value of Firm OATT rights to the transmission customers that invested in them can reduce opposition to BAAs joining the EIM, and can encourage active participation in that market.

II. RESOURCE SUFFICIENCY

In the January 8 stakeholder meeting, CAISO described experience in the EIM with imports or exports included in EIM base schedules that failed to be e-Tagged and hence did not flow according to those schedules. Untagged imports require the dispatch of incremental resources, whereas untagged exports require the dispatch of decremental resources. CAISO described a proposed “enhanced capacity test” that would include in an EIM Entity BAA’s flexible ramping requirement additional offer range to cover the risk of untagged imports and exports.

Powerex supports CAISO taking steps to more fully consider the root causes driving the need for real-time imbalance energy and, consequently, the quantity of flexible capacity necessary to ensure that the EIM can meet those needs. This is, in Powerex’s view, the core principle of resource sufficiency: that there be sufficient resources committed to be available in real time to meet imbalance energy needs *under a wide range of possible conditions*. But the specifics of CAISO’s proposal, and CAISO’s discussion of that proposal during the January 8 stakeholder meeting, reveal CAISO’s fundamentally different view of resource sufficiency as merely requiring sufficient resources to provide the *average* quantity of imbalance energy needs.

A. Resource Sufficiency Requirements must ensure EIM Offers Can Meet a Broad Range of Possible Conditions, not Just “Average” Needs

Experience from the PacifiCorp EIM implementation has demonstrated that implementing a resource sufficiency framework based on the flexibility and capacity needs under average conditions leads to an increased reliance on voluntary energy offers to meet imbalances every time that the actual conditions are more stressed than “average”. This approach transforms the EIM from an *energy* imbalance market to a *capacity and flexibility* imbalance market, with numerous ramifications. It will undoubtedly be pointed out that CAISO’s more permissive approach to resource sufficiency can save the cost of investing in, and setting aside, flexible capacity reserves ahead of time. Powerex does not dispute that carrying fewer reserves can save money. But simply choosing to carry fewer reserves is not an efficiency improvement, since any cost savings associated with carrying insufficient flexible capacity reserves to meet all expected operating conditions is obtained in exchange for:

- increased reliability risk through speculation on the availability of voluntary energy offers that may not materialize;

BAAs that choose to implement the EIM. Nevertheless, CAISO has considerable influence in shaping the manner and mechanisms adopted by participating BAAs to implement the EIM. Moreover, CAISO has explicitly required certain provisions to be adopted (or avoided) by EIM Entity BAAs, and is currently considering requiring that participating BAAs permit bidding at their inerties.

- reliance on out-of-market procurement, “emergency” actions and operator interventions when EIM offers are insufficient, which distorts EIM market operations and prices; and
- the higher EIM prices that occur when voluntary offers are exhausted; this leads to pressure to “protect” transmission customers exposed to these prices through explicit suppression of EIM prices, such that they do not reflect the actual scarcity of EIM offers at all.

The CAISO EIM design appears to be chasing a free lunch - it has loosened the requirement to carry flexible capacity reserves in the first place and then it is actively attempting to prevent EIM prices from reflecting this lack of reserves. The net effect of this approach is to undermine investment in flexible capacity, first by limiting the amount of capacity that must be acquired on a forward basis and then by suppressing the compensation received by the flexible resources that voluntarily participate in the EIM.

CAISO’s refusal to require that BAAs participating in the EIM ensure sufficient resources are made available to meet imbalance needs under a wide range of probable conditions cannot be seen as anything other than undermining the value of the investments made in flexible generation assets by ratepayers in the western region, which the CAISO EIM seeks to rely upon without appropriate compensation.

B. The “Enhanced Capacity Test” does not Adequately Address Untagged Interchange and Failed Interchange

The “enhanced capacity test” that CAISO described in the January 8 meeting will not result in sufficient additional EIM flexible capacity to cover imports or exports included in base schedules that fail to submit e-Tags consistent with those base schedules. Instead, CAISO proposes to increase the flexible capacity required based on the prior-month *average* level of interchange transactions that fail to show up with a valid e-Tag in a given hour of the day. This will be woefully below the actual imbalance needs resulting from interchange transaction failures in a given hour.

CAISO provided a hypothetical example of how the enhanced capacity test would work. The example assumed that “5% of import MWs didn’t tag in HE08[.]” In that case, the EIM Entity BAA “must have sufficient upward bid range to cover 5% of import in current HE08 base schedule.” The defect in CAISO’s proposal is that there are several different ways to arrive at the same prior-month *average* performance of “5% of import MWs didn’t tag in HE08.” Assume that the prior month had 20 weekdays, and in HE8 of those 20 weekdays, the performance of base scheduled imports was as follows

1. **Scenario 1:** 500 MW of imports were included in HE08 base schedules in all 20 days. In all 20 days, 475 MW of valid e-Tags were successfully submitted.
2. **Scenario 2:** 500 MW of imports were included in HE08 base schedules in all 20 days, as in Scenario 1. In 18 of the 20 days, all 500 MW were tagged, but in 2 of the 20 days, only 250 MW of the imports were tagged.

CAISO's proposed "enhanced capacity test" would require 25 MW of additional upward flexible capacity under both scenarios. While this would fully cover all of the untagged imports under Scenario 1, it would not fully mitigate the untagged imports under Scenario 2: in 10% of the hours, the EIM would experience 225 MW of additional imbalance energy demand over and beyond the 25 MW of additional flexible capacity required under CAISO's proposal.

After Powerex raised these concerns during the January 8 stakeholder meeting, CAISO sought to characterize them as extreme, and seeking to create tests that simply cannot be satisfied. This is entirely not the case. Scenario 2 is hardly an example of an extreme "outlier" event; in Powerex's extensive experience of importing and exporting physical power throughout the Western Interconnection, failures to perform on interchange schedules often occur in a non-uniform manner, with little or no interchange performance failures during most hours and days, and numerous failures in the same hour, largely driven by certain market conditions (*e.g.*, high load periods, wind fall-off events, ... *etc.*). Moreover, CAISO's "average failure" approach results in the *minimum possible increase in flexible ramping requirement*. To the extent actual import failures are anything other than perfectly uniform across the month, the additional flexible capacity required will consistently fall short of the actual quantity of untagged imports in certain hours. And the less uniform that import failures are, the less effective CAISO's proposed "enhanced capacity test" will be. Thus the CAISO's proposal is not vulnerable only to "outlier" events, but to any outcomes that are even just a little "worse than average."

If an EIM Entity BAA regularly experiences large interchange failures, even in just a few hours of every month, then it is both appropriate and efficient to require the EIM Entity BAA to ensure there is sufficient flexible capacity available through the EIM to supply the shortfall when it occurs again. This will provide the EIM Entity BAA with the appropriate incentives either to incur the cost of carrying additional reserves to cover interchange failures, or to take steps to reduce the risk of large interchange failures in the first place (such as requiring that its interchange transactions represent "firm" energy only, and/or interchange transactions that may be curtailed at the seller's discretion be identified each hour and incorporated into the flexible capacity requirement).

Additionally, CAISO has not presented any compelling reason to limit the required additional bid range only to the specific hours in which the prior month's import failures were observed. In the above hypothetical example, requiring increased flexible capacity during HE08 only for import failures observed in HE08 in the prior month would leave the market highly vulnerable to interchange failures in the current month that occur an hour earlier or an hour later. While the time of day is one potential factor that might be associated with the risk of untagged interchange, considerably more analysis is necessary before CAISO limits the applicability of the increased flexible capacity requirement in the manner proposed.

CAISO should revise the proposed enhanced capacity test to, at the very least, require sufficient additional flexible capacity to cover the largest untagged interchange event experienced in the prior month. More significant improvements to the resource sufficiency framework could be achieved by requiring greater transparency regarding the generation and transmission arrangements underlying interchange transactions in base schedules. This would permit an evaluation of the non-performance risk of the specific elements of the base schedules in a particular hour, rather than relying on past historic patterns to repeat themselves.