

**Energy Imbalance Market Design Issue Paper & Straw Proposal Comments**

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Company	Date	Submitted By
Arizona Public Service Company (“APS”)	April 19, 2013	
<b>Carbon Allowance Calculations</b>		
<p><b>Challenge:</b> Ensuring the proper price signals are used to dispatch resources will be essential in the new market. Power sold into California is subject to Carbon Cap and Trade rules and the cost of that energy must include the cost of California Carbon Allowance (“CCA”) purchases for compliance. In order to recover these carbon related costs, EIM participants could include an adder in their unit dispatch price. However, this dispatch price would end up being the wrong price signal for energy that does not end up in California.</p> <p>Suggested solutions included looking at e-tags after the fact and allocating carbon allocations based energy flowing into California. There are a couple of problems with that approach. Currently, e-Tags do not adequately track sources and sinks of power when that power is transferred through the CAISO. This means that all power sold to the CAISO would include a cost adder for California Carbon Allowance (“CCA”) purchases whether or not the power is ultimately delivered to California. Likewise, for power purchased from the CAISO, the original generation source is unknown. It could be coming from out of state. The other problem is that the price signal for economic dispatch would be wrong because the carbon cost would not be included.</p> <p><b>Recommendation:</b> APS recommends separate technical conferences that would include representatives from CAISO, California Air Resources Board, load serving entities (“LSEs”), generation providing entities (“GPEs”), and electricity importers. This issue is complex enough that all affected parties should have a voice in providing solutions to this challenge.</p>		
<b>ISO Response</b>		
<p>The ISO has included discussion of the Greenhouse Gas accounting in section 3.12 of the revised straw proposal and will continue to discuss the issue with stakeholders through this initiative.</p>		
<b>Grid Management and ISO Exit Fees</b>		
<p><b>Challenge:</b> Current CAISO Grid Management and related fees for exports amount to nearly \$6/MWh, which from our understanding is based upon a fully imbedded cost of providing transmission and ancillary services. When energy is priced out of a resource it is usually based upon the incremental cost of producing the energy plus an adder to cover uncertainty and for fixed cost recovery. It is not typically priced based upon the fully imbedded cost of service. If they were very few energy sales would occur.</p> <p>Any future grid management or exit fees associated with EIM transactions should be very minimal and reflect only incremental costs. Otherwise few transactions will occur and the benefits of an EIM will not be realized.</p> <p><b>Recommendation:</b> Eliminate or minimize grid management charges for EIM transactions and make sure that any charges are adequately reflected in the LMPs such that the SCED reacts to true price signals.</p>		

## ISO Response

The EIM administrative fee proposed for EIM transactions is \$0.19 per MWh, as discussed in section 3.7.10 of the revised straw proposal. EIM transactions are subject to the EIM administrative fee and not the ISO GMC.

As discussed in section 3.10 of the revised straw proposal, the ISO proposes that initially there would be no transmission access charge for supply resources within the ISO's BAA (as is now the case), and no transmission access charge for EIM usage across the ISO's BAA boundary and across EIM Entity Area boundaries. Ongoing discussions may determine that this arrangement would continue in future years, or be replaced with an alternative structure.

## Market Rule Oversight & Structure

**Challenge:** As proposed, the CAISO Board would administer the market rules and oversight procedures for EIM Participants and Entities. Since joining the EIM is not equivalent to joining the ISO, this is cause for concern. By definition, the potential for the range of participants is much broader than the CAISO footprint and potential participants will likely want a broader oversight committee than the current California Governor-appointed CAISO Board.

**Recommendation:** Despite the potential impact to cost structures, APS believes that an independent body from the current CAISO Board would be necessary in order to gain maximum EIM participation, and therefore, maximum benefits to all participants.

## ISO Response

The ISO appreciates stakeholder comments on governance and is establishing a parallel stakeholder initiative to discuss governance. The ISO will consider these comments as part of that engagement.

## Existing Information Systems ("IS") and Upgrades

**Challenge:** The Straw Proposal mentions several CAISO-specific information systems, such as the Scheduling and Logging system for the CAISO, Outage Management System, and Scheduling Infrastructure and Business Rules system. The CAISO startup and administrative fees help potential EIM participants assess one portion of EIM costs. Information regarding specific IS requirements is not readily accessible for those that would like to estimate compatibility/upgrade costs. In order to evaluate true cost of entry, potential EIM participants need to know IS requirements and this is not addressed in the existing Straw Proposal.

**Recommendation:** Post IS requirement estimates on the EIM Stakeholder website.

## ISO Response

The information systems to be used for EIM are the same as are otherwise used in the ISO's markets, and for the ISO's interactions with other BAAs. Market participants who currently participate in ISO markets may see little difference in cost for beginning to also participate in EIM.

The current application specifications are available at:  
<http://www.caiso.com/participate/Pages/ApplicationAccess/Default.aspx>

**Ease of Exiting an EIM**

**Challenge:** CAISO representatives have made statements regarding the ease of exit of an EIM should it not produce the anticipated benefits that are currently prescribed.

**Recommendation:** Include specific language regarding how an EIM Participant can exit the EIM after joining.

**ISO Response**

Bidding by an EIM Participating Resource is voluntary, and it can elect to simply not submit economic bids. To avoid having imbalances settled through EIM, an EIM entity can exit the EIM by terminating its EIM service agreements. The ISO has proposed that there would be no exit fee.

**Scenario illustrations**

**Challenge:** The various scenarios regarding the minimum administrative rate (5% Load and 5% Generation), GHG adders, instructed and uninstructed deviations, mechanics of communicating adjusted base schedule, etc. are difficult to visualize with the current information that has been provided.

**Conclusion:** Please include more descriptive examples of the life cycle of a set of transactions. Perhaps provide a running story board with relative timestamps, which entity does which function on what system, how items are communicated, etc.

**ISO Response**

The revised straw proposal presentation at the upcoming stakeholder meeting will provide an example.

Company	Date	Submitted By
California Department of Water Resources State Water Project	April 19, 2013	
<b>Will any costs be allocated to existing CAISO participants due to the implementation of the EIM and/or the entry of a new EIM Participants/Entities?</b>		
<b>ISO Response</b>		
The EIM Entity will pay an initial fee to cover the capital and O&M costs associated with modeling and other setup activities for including the EIM Entity in the EIM, which has been developed as discussed in section 3.7.10 of the revised straw proposal. The initial fee will be approved by FERC though individual		



implementation agreements, consistent with the proceeding underway in FERC Docket ER13-1372-000. Section 3.7.10 also describes the development of the EIM administrative fee for ongoing EIM operations, based on the same cost study as the existing ISO GMC.

**Will any existing CAISO participant costs be reduced due to the implementation of the EIM and/or the entry of a new EIM Participants/Entities?**

**ISO Response**

Since the EIM is leveraging the ISO real-time market, the revenue collected from the EIM administrative rate will be used to reduce the revenue requirement recovered through the ISO GMC. Assuming that the ISO revenue requirement is flat, increases in the volume of EIM transactions will increase revenue from the EIM, which reduces the ISO GMC rates.

**How will the CAISO minimize or eliminate real-time uplift costs from comingling? Can CAISO provide an example?**

Day-ahead uplift costs can easily be separated between existing CAISO participants and EIM participants because the EIM will not be initiated until the real-time market starts. However, it may be difficult to distinguish real-time uplift costs caused by CAISO participants versus EIM participants

**ISO Response**

The ISO proposes to initially allocate real-time uplifts based upon the use of the real-time market for each BAA. The allocation of uplift costs seeks to assign uplifts based on cost causation and other principles, and is discussed in section 3.7.8 of the revised straw proposal. Each BAA will develop their cost allocation methodology for their percentage of the total costs, which would be applied pursuant to their tariff.

<b>Company</b>	<b>Date</b>	<b>Submitted By</b>
<b>Grant County PUD (Grant)</b>	April 22, 2013	Mike McClenahan (509) 754-5037

**Transmission**

The straw proposal leaves transmission costs as an open issue. Grant supports the CAISO’s proposal that there be no charge for as-available transmission used in the EIM market. However, this proposal is for “initial EIM implementation” and further recognizes that non-CAISO TO’s may adopt transmission rates for transmission used in an EIM, “subject to certain agreed upon limits established by the EIM design”. The uncertainty created by potential, unknown transmission charges is a major consideration for Grant, which is not directly interconnected with the CAISO. The value of participation in an EIM could be greatly diminished – or completely eliminated – if transmission charges were adopted for as-available EIM uses. This threshold issue will need to be better defined prior to major resources being committed by Grant in the EIM effort.

**ISO Response**

The ISO has proposed an initial period with no transmission costs for the dynamic schedule between ISO and PacifiCorp. The revised straw proposal does consider this issue and lists longer term options for

settlement of transmission costs when the number of EIM Entities increases, in section 3.10.

### **Incorporation of EIM Entities**

In the straw proposal, the CAISO will undertake a comprehensive redispatch of loads and resources within an EIM entity's Balancing Area. Given the small size of Grant's Balancing Area, the benefits of five minute redispatch within our system would appear to be small. Further, incorporation of an Entity into the optimization and settlements processes of the EIM are driven in part by meter reads within each Entity's BA. Such a construct may not be compatible with how Grant (and other Mid-C resources) operates as part of Mid-C Hourly Coordination (MCHC). In MCHC, the Columbia River hydro generation assets of Grant PUD, Chelan PUD and Douglas PUD (and to a certain extent BPA upstream powerhouses) are pooled and generation requirements are allocated across those resources in order to optimize hydro operations. This makes it difficult to produce meter reads to be used as envisioned in the EIM workflow, although it may be possible to use Mid-C allocated generation in place of meters.

### **ISO Response**

The EIM settlement mechanism includes a dynamic schedule between the Market Operator and each EIM Entity. The ISO understands that MCHC already includes the use of dynamic transfers, and the same mechanism should be workable as an input to EIM settlements.

### **Imports**

The Straw Proposal does not provide a great deal of clarity around the treatment of imports/exports with the EIM. Given the difficulties of incorporating MCHC into the EIM optimization process, it may make more sense for Grant, and similarly situated entities, to participate as interchange imports/exports with deemed delivered dynamic schedules in lieu of meter reads. Such an arrangement seems to be contemplated in section 3.6.2 of the straw proposal. This may raise issues around BAs "leaning" on an EIM. Grant firmly believes in a requirement for capacity sufficiency and feels that any concerns could be resolved through robust Resource Sufficiency showings. Grant suggests that it may be necessary to establish a third type of entity "EIM Border Participant", and that a set of rules should be considered to define this type of participation in the proposed CAISO EIM.

### **ISO Response**

The establishment of dynamic schedules is the responsibility of the resource and the connecting BAA, thus the ISO does not believe a separate term is necessary within the EIM design. Dynamic schedules can be dispatched through the EIM.

### **Stakeholder process**

The operation of the proposed EIM is very well defined as it makes use of current CAISO systems. However, for prospective participants, which are not current CAISO participants, the process may not be well understood. A series of educational sessions to more fully explain the EIM should be considered in the regions into which the CAISO hopes to expand. During these sessions, the CAISO would also become aware of the unique challenges that confront parties in other regions as they consider participation in the CAISO EIM.

### **ISO Response**

The ISO continues its efforts to develop training materials and has enhanced its schedule to include additional training sessions about EIM.

Company	Date	Submitted By
PACIFICORP	April 19, 2013	
<b>Distinctions between the responsibilities between an EIM Entity, an EIM Participant, and Transmission Service Providers</b>		
<p>PacifiCorp supports use of the new defined terms "EIM Entity" and "EIM Participant." However, use of these terms in the Straw Proposal is occasionally inconsistent and should be clarified. In addition, and consistent with CAISO's proposal that the EIM market rules shall be contained in a discrete part of CAISO Tariff to clearly define the rights and responsibilities of EIM Participants, PacifiCorp suggests the creation of a new defined term, "EIM Coordinator", and a new service agreement for "EIM Coordinators." A "Scheduling Coordinator" is a defined term under CAISO Tariff that implicates responsibilities far beyond the EIM. While a Scheduling Coordinator could also participate in the EIM, an EIM Coordinator would represent a party that desires to limit its participation to the EIM.</p>		
<b>ISO Response</b>		
<p>In the revised straw proposal, the ISO has introduced two terms: EIM Entity Scheduling Coordinator and EIM Participating Resource Scheduling Coordinator. The role of each is outlined in the revised straw proposal. The ISO believes this addressed the concern raised in this comment.</p>		
<b>Data Requirements</b>		
<p>PacifiCorp appreciates the significant effort CAISO has made to identify the data requirements and communication protocols associated with the EIM. In this context, additional clarity with respect to data requirements, data transfers, and communications should ultimately be outlined in the Straw Proposal.</p> <p>PacifiCorp requests that CAISO clarify and specify minimum data requirements separately for: (1) resources that elect not to bid into the EIM, and; (2) resources that elect to bid into the EIM. PacifiCorp notes that it has multiple roles: (1) EIM Entity; (2) Balancing Authority; (3) Transmission Service Provider (implementing a FERC-approved Open Access Transmission Tariff); (4) EIM Participant (bidding its own generation); and (5) load serving entity. As a Transmission Service Provider, PacifiCorp will have (i) network transmission customers who choose to participate and not participate in the EIM, and (ii) point-to-point transmission customers who choose to participate and not participate in the EIM. Accordingly, the Straw Proposal, and market participants, would benefit from a robust description of the specific data requirements of PacifiCorp and other participants, which entity is responsible for producing the information, what timeframe by which the data or protocols must be produced, and what defaults will be used if the data or protocols are not produced. There should also be specific communication protocols regarding what dispatch instructions will be given, to what entity, and to how those instructions will work with the overall Balancing Authority reliability requirements.</p>		
<b>ISO Response</b>		
<p>The revised straw proposal has sought to clarify communications and data requirements through the</p>		

introduction of the two new terms outline above. The ISO believes the use of these additional terms addresses these comments. The ISO will continue to work with stakeholders to further clarify any outstanding questions concerning roles, responsibilities and requirements.

### **Transmission Service Provisions**

In Section 4.3 of the Straw Proposal, CAISO raises the issue of transmission service necessary to support the EIM. CAISO proposes that there be no charge for EIM use of as available transmission for initial EIM implementation noting that further consideration of transmission service could be informed by actual EIM operational experience or if additional EIM Entities participate in the EIM. PacifiCorp supports this proposal.

Section 4.3 also states:

EIM Entities and EIM Participants who are not CAISO participating transmission owners may adopt transmission rates for EIM transfers within their region, subject to certain agreed upon limits established by the EIM design (which may be zero) and separate from the EIM rule oversight and approval processes.

PacifiCorp requests that CAISO clarify this statement and explain the meaning of the reference to "certain agreed upon limits" in the context of transmission rates.

PacifiCorp recognizes that much work needs to be done in a short time to coordinate its transmission service provider and Balancing Authority responsibilities with the EIM. PacifiCorp is committed to working with its existing customers, CAISO, and other interested stakeholders to facilitate the transition. Among other things, these issues include the need for PacifiCorp to modify terms and conditions of service provided pursuant to the Open Access Transmission Tariff ("OATT"). For example, to implement the EIM, PacifiCorp may need to modify OA TT provisions governing the settlement of energy imbalance under Schedule 4 and generator imbalance under Schedule 9 of the OATT to be compatible with imbalance pricing established through the EIM. In addition, the OATT may need to be modified to provide for a new schedule or protocol regarding bidding and EIM participation, including provisions for the exchange of information or data required for the EIM.

Relating to OATT compliance, as a practical matter, PacifiCorp would propose that OATT customers not be required to undesignate network resources to bid into the EIM the way they would to make firm off-system sales. First, the customer would not know that its resource is definitely going to be used off system. Second, the customer would be engaged in a constant administrative burden that would discourage EIM participation. Finally, a primary reason for the designation / undesignation rule is so the Balancing Authority knows what resources it has available to meet reliability requirements. This is not a concern in the EIM because reliability requirements will already be met separate from participation in the EIM.

### **ISO Response**

The ISO has proposed that EIM transfers between ISO and PacifiCorp be initially exempt from transmission charges. The result is that the EIM Entity remains responsible for the transmission service rules and costs under their tariff.

### **Uplift allocations, including bid cost recovery and neutrality charges**

In Section 4.5 of the Straw Proposal, CAISO raises the important issue of uplift charges. For the EIM to

succeed and expand, it is vital that participants have confidence that they are only being allocated specific charges in accordance with cost causation.

Toward that goal and as a first step, it is important for CAISO to identify each and every uplift charge associated with the real-time market. The Straw Proposal discusses certain charges, including bid cost recovery, exceptional dispatch, and neutrality. However, there may be others, such as the flexible ramping constraints that are not identified. It will be important for interested stakeholders to have a comprehensive list of all potential charges.

Once the list is prepared, CAISO, PacifiCorp, and other interested stakeholders can evaluate the appropriateness of allocating all or a portion of these costs to the EIM. This will involve applying the seven criteria identified by CAISO in its Straw Proposal: (1) causation, (2) comparable treatment, (3) accurate price signals, (4) incentivize behavior, (5) manageable, (6) synchronized, and (7) rational. In evaluating the reasonableness of including a specific charge in the EIM, CAISO should look at certain factors in addition to the seven criteria identified by CAISO, including:

1. The origin of the cost. Is the cost related to a generally-applicable requirement or incurred to meet a specific state public policy objective.
2. The nature of the cost. For example, if the cost for a product that is predominately an additional ancillary service it should not be allocated to the EIM.
3. Eligibility. If a product can only be met by resources within CAISO footprint (or conversely only resources outside CAISO footprint), it may be inappropriate to allocate the costs to the EIM as a whole.
4. Fairness. Balancing Authorities in the EIM should be treated equally. For example, if the costs related to extraordinary dispatch within the EIM Entity are outside of the market, then costs related to extraordinary dispatches within CAISO should be outside the market.

If there is a determination that all or a portion of a specific uplift cost should be allocated to EIM Entities or EIM Participants, there needs to be a determination of the appropriate billing determinant. The starting point for any determination should be deviations from the balanced schedules for that hour (net deviations). There should be an extremely limited set of charges, if any, allocated to gross metered demand.

### **ISO Response**

The ISO separates uplifts into day-ahead and real-time uplift. Only real-time uplifts are relevant to the EIM. The ISO proposes to initially allocate uplift costs based upon the use of the real-time market by BAA. A BAA's share of the total costs is then allocated within its BAA based upon the rules of that BAA. Please refer to section 3.7.8 of the revised straw proposal.

### **Termination Provisions**

PacifiCorp requests that CAISO incorporate termination provisions into the Straw Proposal. The ability to exit the EIM expeditiously if the market does not produce the expected benefits or if the market design is altered in a manner that conflicts with PacifiCorp's core principles is essential. The exit provisions are also a key component of PacifiCorp's acceptance of the proposed, initial governance structure.

The termination process must have three key elements. First, there must be a limited notice period. Second, consistent with CAISO's representation in its January 29, 2013 proposal to the PUC EIM group, there would be no exit charge or fee. This is consistent with the up-front initial fee charged by CAISO and the pay-as-you-go administrative charges utilized thereafter. Third, the end of the notice period should terminate the EIM Entity or the EIM Participant's incurrence of additional financial obligations.

### **ISO Response**

An EIM entity can end its participation in the EIM by terminating the service agreements associated with the EIM. The ISO will propose service agreement termination notice provisions for an EIM entity to exit completely as part of the draft ISO tariff, and will take these comments into consideration. As discussed in relation to administrative fees, there will be no exit charge for termination of EIM services. The ISO will clarify the associated resource notice requirements in the second revised straw proposal for needed notification similar to the ISO Master File change process which requires 7-10 days lead time before the changes become effective. An EIM Participating Resource can elect not to participate by not submitting an economic bid.

### **Greenhouse Gas Proposal**

Energy imports from resources with greenhouse gas emissions into California need to acquire greenhouse gas emission credits to cover California Air Resources Board ("CARB") regulations. On page 49 of the Straw Proposal, CAISO appropriately recognizes that:

In CAISO's existing day-ahead and real-time markets, import resources include the cost for acquiring these compliance instruments in their submitted energy bids. However, this practice is not appropriate for EIM Participants because a portion of the imbalance energy dispatched by the EIM from these resources will not be imported into California as it will serve demand outside California. Thus, only the imbalance energy portion that is imported into California would be subject to a Greenhouse Gas Cap compliance obligation.

PacifiCorp agrees with this statement. It is important that the EIM comply with CARB regulations, but over-compliance would inappropriately inflate the price of energy imbalances outside of California and raise jurisdictional concerns. In this regard, PacifiCorp expects that the current version of Section 11.29 of CAISO Tariff that deems all transactions settled by CAISO to be deemed to have taken place in California will not apply to the EIM other than those that result in energy transfers into California.

To properly account for costs of Greenhouse Gas Cap compliance instruments, CAISO proposes that a portion of the net export imbalance deviation of an EIM Entity's resources that will be imported into California would be assigned a greenhouse gas emission cost. This approach may be feasible. PacifiCorp will continue to work with CAISO and stakeholders to resolve this issue. One additional question is whether functionality could be added to the EIM so that a resource external to California that had credits to cover its emissions could bid into the EIM without being subject to an adder for greenhouse gas emissions. This ability would permit resources external to CAISO to bid into the EIM in a manner similar to resources within CAISO.

### **ISO Response**



The ISO has included a proposal for GHG accounting and compliance in section 3.12 of the revised straw proposal.

### **Enforcement Protocol**

In the Straw Proposal, CAISO states that EIM Participants would be subject to CAISO's existing Enforcement Protocol. PacifiCorp recognizes that there is the need for oversight and enforcement of the EIM. However, the Enforcement Protocol, Section 37 of CAISO Tariff, contains numerous provisions that do not apply to the EIM, EIM Entities or EIM Participants. For example, Section 37.2.1.1 requires compliance with operating orders issued by CAISO directing a Market Participant to undertake a single, clearly specified action (e.g., the operation of a specific device, or change in status of a particular Generating Unit) that is intended by CAISO to resolve a specific operating condition. This provision does not apply to EIM Entities that operate as distinct Balancing Authorities. Other provisions of the Enforcement Protocol appear equally inapplicable.

CAISO should work with PacifiCorp and other interested stakeholders to develop appropriate EIM-specific enforcement protocols. These would be intended to cover all aspects of EIM participation, including scheduling, reporting, and metering.

### **ISO Response**

The EIM tariff provisions will reference the relevant portions of the enforcement protocol applicable to EIM participation. This will be included in the draft tariff provisions to be developed in relation to this stakeholder process.

### **Governance and Market Oversight**

PacifiCorp appreciates CAISO's efforts to consider alternate governance approaches. Most importantly, PacifiCorp agrees that the issue of governance or market oversight should not be viewed as a static, one-time opportunity, but rather a process that can evolve over time as the scope of market participation increases. As CAISO states in the Straw Proposal, "this oversight role should have the objective of preserving for EIM participants - both at the outset and in the future - the significant and tangible benefits of EIM." *See Straw Proposal at 45.*

While the EIM governance may evolve, it is necessary to establish a framework to get the market up and running. Accordingly, the only timely initial approach is the market administrator model. Within that framework, PacifiCorp supports CAISO's proposal to establish an EIM Advisory Committee that would focus on issues related to participation in and operation of the EIM.

In recognition that expanded participation in CAISO EIM or the results of other ongoing initiatives in the west may warrant a reexamination of the EIM oversight structure, PacifiCorp suggests that CAISO consider a commitment to produce a report, as part of the Stakeholder Process, that examines the reasonableness of the EIM oversight structure and the extent to which that structure can serve as an incentive or an impediment to broader participation.<sup>1</sup>

Related to the question of overall oversight of the EIM, is the issue of how Federal Power Act Section 205 filing rights should be divided between CAISO and PERC-jurisdictional EIM Entities, such as PacifiCorp. For example, in the Straw Proposal, CAISO states that the "EIM Entity has the responsibility to define L[oad] A[ggregation] P[oints], and the definition should depend on its needs." *See Straw Proposal at 28.* The EIM structure would reserve to PacifiCorp the right to file and

support the proposed LAPs in its Balancing Authorities as part of its EIM OATT implementation filing. Accordingly, there may be other instances in which the responsibility and choice of alternatives should be left to the EIM Entity.

<sup>1</sup>Indeed, the intent of the California State Legislature as expressed in Section 359 of the California Public Utilities Code is to promote development of voluntary regional markets in the West through a regional compact, including an equitable process for governance and oversight of the regional market

**ISO Response**

The ISO appreciates these comments and is commencing a parallel stakeholder initiative to discuss governance. The exercise of rights and responsibilities under the Federal Power Act will be a subject discussion in this parallel stakeholder engagement effort.

Company	Date	Submitted By
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**PG&E supports adjusting base schedules to eliminate transmission constraint violations within an EIM Entity before commencing the real-time market.**

PG&E supports adjusting base schedules to eliminate transmission constraint violations within an EIM entity before commencing the real time market (i.e., the EIM). If schedules are adjusted from the base schedules within the EIM to eliminate constraint violations, uplifts may be needed to cover some of the costs. Adjusting the base schedules to eliminate constraint violations before the EIM will eliminate uplifts from this source.

**ISO Response**

The adjusted base schedule serves as the baseline for settling imbalances.

**The proposed Minimum Shift Optimization (MSO) approach to adjust base schedules within an EIM Entity may reduce incentives for EIM participation and PG&E believes further exploration of alternatives is warranted.**

PG&E believes the proposed Minimum Shift Optimization (MSO) approach has several flaws and alternatives should be further explored.

Based on PG&E’s understanding of the proposal, each EIM Participant in an EIM Entity will submit a balanced schedule using its resources (owned or under contract) to serve its load and estimated losses. These participants could also submit EIM offers to sell or buy back energy. The Market Operator would then evaluate whether the combined base schedules violated transmission constraints within an EIM Entity. Should a violation exist, the Market Operator would re-dispatch participating resources – those that submitted economic offers for use in EIM – to produce feasible, adjusted base schedules that are balanced in total for the EIM Entity. The adjusted base schedules may no longer be balanced for each EIM Participant within the EIM Entity.

This re-dispatch would use a MSO formulation, whose objective is to minimize the total MW of



adjustments from the base schedules of participating resources within an EIM Entity. It would not consider the offer prices in the economic bids submitted by EIM Participants, only the dispatch range and the MW of movement. Resources will be charged or paid in the EIM for their deviations from the adjusted base schedules at real time market prices.

*[Flaw #1] As designed, the proposal does not provide a mechanism to adequately compensate or charge a resource for the amount of adjustment from its base schedule made to produce the adjusted base schedule.*

For example, a resource dispatched upwards from its base schedule to its adjusted base schedule has no way to recover the additional costs incurred. PG&E believes that such an approach based on MSO can provide the wrong incentives and may reduce participation in an EIM.

To further illustrate this problem, consider an independent power producer that owns a resource (G) that has a base schedule of zero MW (since it has not sold energy to another party prior to EIM). It participates in the EIM by submitting an energy bid into the market. Just before the real time market runs, the Market Operator determines that the base schedules violate a limit on a transmission facility in the EIM Entity. Results of the MSO indicate that dispatching 10 MW of energy from resource G and cutting 10 MW of energy from another resource owned by another EIM Participant can alleviate this violation with the fewest MW adjustments. The Market Operator increases the schedule for resource G by 10 MW to produce its adjusted base schedule. At the same time, it also reduces the schedule for the other resource by 10 MW. If, as proposed, EIM only pays for dispatches from its advisory base schedule, it will only pay resource G for any deviations in real time above its 10 MW adjusted base schedule. As PG&E understands it, the proposal does not explain how resource G will be compensated for the 10 MW of energy that it is required to supply in its adjusted base schedule. Without proper compensation, the EIM Participant that owns resource G may choose not to participate in the EIM.

One potential approach to address this issue would be to compensate or charge participating resources for adjusting their base schedule using the offer price in their energy bids. Such an approach, however, still has drawbacks.

Consider a resource incremented to produce the Advisory Base Schedule. Such a resource would only receive its offer price under a pay as bid approach for adjustments before EIM. This outcome could encourage participants to increase offer prices, particularly if a participant anticipates that the prices in the EIM will be higher than its offer price. Such a resource could seek to increase its offer price hoping to capture the opportunity cost of an advisory base schedule adjustment rather than a “normal” adjustment per EIM dispatch later. Forecasting this opportunity cost could be difficult, and the inclusion of a potentially inaccurate estimate of the opportunity cost into the offer cost could undermine the price discovery that normally results from a real time market, thus distorting prices in EIM.

Moreover, because the MSO ignores offer prices in deciding which schedules to adjust, it could potentially increase the schedule for a very expensive resource. If this cost were to be recovered from other EIM Participants with resources that were adjusted downward, these participants may be exposed to costs that are higher than those they would pay if adjustments were made in the EIM. This could give participating resources with non-zero base schedules an incentive to withdraw submission of dispatch range below their base schedules to avoid the potentially high costs of having their schedules adjusted downward by the MSO.

Instead of relying on the MSO with or without a pay as bid mechanism for flows between EIM Participants caused by the adjusted base schedules, the CAISO should explore other more efficient

solutions. One approach would be to curtail or cut schedules that contribute to violated transmission constraints (without incrementing the schedule for any resource) while maintaining a balanced adjusted base schedule for each EIM Participant. That is, curtail supply and demand in EIM Participants' base schedules to bring flows under transmission limits. Any curtailed supply or load would be balanced in the real time market and be paid or charged the EIM price.

To prevent the adjustments from causing uncompensated energy flows from one EIM Participant's adjusted schedule to that of another EIM Participant, the schedule cuts should also maintain balance in each EIM Participant's adjusted schedule. Furthermore, any curtailment would need to be distributed fairly (e.g., no single participant should bear the brunt of the cut).

***[Flaw #2] Applying a MSO-based approach to curtail base schedules while maintaining balanced adjusted schedules for each EIM Participant may result in curtailments that are unfair.***

Consider a scenario with two EIM Participants (A and B) who submit balanced schedules. EIM Participant A submits a balanced base schedule with one supply, GA, and one load, LA. EIM Participant B submits a balanced schedule with one supply, GB, and one load, LB. Both base schedules contribute to power flow that violates the limit on a transmission path prior to the EIM. The base schedule from EIM Participant A contributes more flow on the violated transmission line per MW of schedule than does the base schedule for EIM Participant B. The MSO analysis would indicate the most effective way (in terms of requiring the minimum MW adjustment) to address this violation would be to curtail the base schedule between resource GA and load LA.

The base schedule between resource GB and load LB would be unaffected even though it also contributed to flow on the violated path. As a result, load LA would be exposed to the real time prices to buy back the curtailed amount while LB would not be exposed to those prices if it gave an accurate forecast. In addition, EIM Participant A and EIM Participant B may both have purchased firm transmission from the EIM Entity to meet their individual balanced schedules. Market Participant A may object to having its use of the firm transmission curtailed given that Market Participant B's use is not affected even though they both contributed to the violation of the transmission constraint. EIM Participant A may decide to withdraw its dispatch range on GA to avoid having its schedule cut by the MSO methodology. A pro-rata curtailment of all components of the base schedules that contributed to the constraint violation may be a more equitable approach. However, this is not possible under an MSO mechanism.

Ultimately, should the proposed MSO discourage participation in the EIM market, participants could exit the market, lower the amount of capacity available for dispatch, and would reduce the full benefits of an EIM. Alternative options warrant consideration.

### **ISO Response**

The ISO has clarified that the EIM Entity Scheduling Coordinator will submit the total demand (or use the ISO forecast) to be used to establish the adjusted base schedule for the EIM Entity BAA. The EIM Entity Scheduling Coordinator will also submit the base schedules for all resources in the EIM Entity BAA. The EIM Entity Scheduling Coordinator should work with the EIM Participating Scheduling Coordinators and the owners of non-participating resources within the EIM Entity BAA to establish a process for information exchange that would enable the EIM Entity Scheduling Coordinator to compile base schedules. For example, this information may include preferred schedules and the MW range of the energy bids that would be submitted in the EIM. The design for this process is left to the individual EIM Entity and its participants and it is not part of the EIM straw proposal.

An energy schedule in the base schedule submitted by the EIM Entity Scheduling Coordinator that is

changed as a result of the MSO to create the adjusted base schedule will be settled based upon the EIM Entities OATT.

The ISO has included additional information on the MSO in the revised straw proposal. The minimum shift optimization does not require or keep each EIM Participating Scheduling Coordinator separately in balance since there are no individual base load schedules; all resource base schedules are kept in balance with the EIM Entity demand forecast. If the base schedules are already balanced and feasible upon submission as expected, the base schedule adjustments from the minimum shift optimization would be minimal, just to allocate transmission loss deviation due to loop flows from external schedules.

**BCR costs incurred in the CAISO Balancing Area (BA) to serve EIM entities must be allocated based on cost causation.**

PG&E requests clarification whether resources within the CAISO balancing area may be committed in the 15 minute market to address imbalance or transmission constraint enforcement needs in an EIM entity. Even with the schedule modifications made via MOC, it seems possible that CAISO units may be committed to address needs in an EIM entity. If CAISO resources are committed to serve those needs, any Bid Cost Recovery (BCR) charges should be allocated to the benefiting EIM entities.

**ISO Response**

A resource within the ISO BAA could be committed to curtail a higher cost unit in the EIM Entity BAA, as bids are considered in the 15-minute RTUC process established in compliance with FERC Order 764. Real-time BCR will be allocated to EIM Entity Scheduling Coordinators.

**The Market Operator should advise EIM Entities if commitment of additional resources in their areas would help address balancing and transmission issues in their areas.**

The CAISO should consider how committing additional resources in EIM Entities (through RTUC) would help the Market Operator to both maintain system balance and manage transmission constraints. Even though the Market Operator cannot commit resources in EIM Entities under the current design, it can provide advisory information to EIM Participants prior to adjusting their schedule, potentially allowing participants to voluntarily bring additional resources on-line and revise their base schedules. These additional commitments could also provide added flexibility in the EIM, as well as reduce the need for the Market Operator to commit resources in the CAISO BA to address issues in other EIM Entities.

**ISO Response**

The Market Operator will provide advisory information to the EIM Entity Scheduling Coordinator so that the EIM Entity can resolve issues prior to submission of the base schedule. This advisory information should reduce the differences between the submitted base schedule and the adjusted base schedule.

**Activation of convergence bidding at the interties should be postponed until the new EIM market is stabilized.**

CAISO should delay reactivation of virtual bidding at the interties and also establish a separate stakeholder process to assess the benefits and cost allocation of all convergence bidding. PG&E recommends the CAISO delay reactivation by a minimum of 12 months following the implementation of Order 764 and EIM to allow participants to review the impact of EIM and 764 together across all seasons

to ensure the markets are functioning efficiently.

Until the volatility and consistency of the new 15 real-time market is established and the effects of the new EIM market are known, it is inappropriate for the CAISO to exacerbate the potential for virtual bids to take advantage of market imperfections and distort market results by expanding the number of nodes available for virtual bids to include the interties. Premature implementation of virtual bidding at the interties has the potential to mask modeling problems within the markets that would be better discovered and corrected absent virtual bidding at the interties. Also, some functionalities enabled by virtual bids are unreasonable in so far as they create unavoidable uplifts borne by load and fail to lead to the goal of price convergence and more efficient commitment and dispatch.<sup>1</sup>

If the effects were small, perhaps arguments for the existence of virtual bidding (e.g. claims they improve dispatches or market efficiency in excess of the unavoidable costs) could hold merit, but the effects, unfortunately for load, have been very large. In 2011, \$53 million in uplift charges were directly attributed to virtual bidding on the interties. In 2012, \$60 million in uplift was paid to convergence bidders even without virtual bids at the interties.<sup>2</sup>

Moreover, the Department of Market Monitoring (DMM) anticipates an increase in Real-Time Congestion Offset (RTCO) costs resulting from the reintroduction of virtual bids at the interties and recommends the CAISO “reduce the biasing down of real-time limits of constraints for which intertie schedules have a strong impact on flows” prior to re-implementing virtual bids at the interties.<sup>3</sup> Based on these reasons, decisions on reactivating virtual bidding on the interties should emerge through a separate stakeholder process and only following a stabilization period. Such a process should also consider cost allocation based on cost causation for uplifts derived from virtual bids in order to ensure the correct parties pay for virtual bidding profits. A separate stakeholder process will also allow for better consideration of the role of virtual bids in the proposed EIM. PG&E believes no market participant benefits if virtual bidding is reinstated too soon and later must be suspended again to address flaws which could have been caught if the market were allowed to function and be assessed as implemented.

<sup>1</sup> The CAISO’s Department of Market Monitoring also has found that in practice convergence demand at internal scheduling points (which in theory could result in additional capacity being committed and available in the real-time market to help alleviate these issues) has in practice not materialized. The Department of Market Monitoring’s Q4 2012 Report on Market Issues and Performance in fact found that “In practice, the impact of internal virtual demand on real-time price spikes appears to have been limited by the fact that any additional capacity available to convergence bidding may not be enough to resolve congestion or the short-term ramping limitations. This is further exacerbated by the hour-ahead market, which often does not reflect the same system conditions as in the real-time market and frequently reduces net imports, decreasing the benefits of additional capacity added in the day-ahead market. Price spikes associated with upward ramp insufficiencies are typically associated with brief shortages of ramping capacity and congestion.” (Page 36)

<sup>2</sup> Department of Market Monitoring Reports, Quarter s 1, 2, 3 and 4 of 2012,

<http://www.caiso.com/market/Pages/MarketMonitoring/MarketIssuesPerformanceReports/Default.aspx>

<sup>3</sup> Comments on FERC Order 764 Market Changes Revised Straw Proposal by the Department of Market Monitoring, p4-5. [http://www.caiso.com/Documents/DMM-Comments-FERC\\_Order764MarketChangesRevisedStrawProposal.pdf](http://www.caiso.com/Documents/DMM-Comments-FERC_Order764MarketChangesRevisedStrawProposal.pdf)

At the May Board meeting, the FERC Order No. 764 Market Design Changes were approved. The design included a zero percent position limit for intertie convergence bidding for one year. The ISO will consider the application of virtual bidding under the EIM in proposing any change to the position limits.

The ISO is seeking to address the causes of the real-time congestion offset due to modeling differences and may consider additional measures through a stakeholder initiative if needed.

#### **Rules for Flexible Ramping Requirements in EIM Entities need clarification**

Little detail is provided in the Proposal regarding procurement of flexible ramping. The CAISO should clarify the role of the CAISO in procuring flexible ramping capacity for the EIM entity and the ability of EIM participants to provide capacity to meet the CAISO's flexible ramping constraint.

- i) The EIM entity should satisfy a flexible ramping constraint requirement similar to the constraint enforced in the CAISO. EIM rules should require sufficient non-Regulation ADS-accessible intra-hour balancing capacity as part of a feasible schedule. Per the planned Flexible Ramping Product (FRP) design, the CAISO's market system will procure and dispatch flexible capacity routinely such that a sufficiency of "real ramp" capacity becomes a normal component of a "feasible" CAISO schedule. There should be a similar flexible ramping constraint for the EIM entity with rules that ensure that the EIM entity regulation capacity is not double counted as flexible ramping reserves.
- ii) The CAISO should develop safeguards to prevent the price impact of insufficient flexible ramping in an EIM entity from spilling over into CAISO energy prices or creating uplifts to California customers through convergence bidding. For example, if an EIM entity routinely provides insufficient real-time ramp capacity in its base schedule, the CAISO's real-time optimization may seek to procure that capacity. The persistent need for more upward ramping capacity in real-time could lead to price increases in the CAISO. Beyond the possible direct energy price impact, insufficient EIM entity flexible ramping would likely create systematic RT and DA price differences which could be exploited by convergence bidders leading to CAISO uplifts. Therefore, the CAISO should consider requiring comparable ADS-accessible real-ramp capacity from all EIM entities as part of their feasible base schedules.
- iii) The CAISO should assess the performance of a non-regionalized procurement approach (i.e., incremental flexibility ramping needed in Real-time is procured by the CAISO for the entire EIM footprint). "Caged" flexibility or, conversely, inaccessible regions with high ramping needs could drive price-spikes. Assessment of this problem should be part of the EIM initiative. For any solution, cost-causation based cost-allocation at the Scheduling Coordinator (SC) level should be strongly considered so that price signals for flexibility solutions are meaningful.

#### **ISO Response**

The ISO has included additional discussion on the flexible ramping constraint and future product in section 3.4.3 of the revised straw proposal.

The ISO will enforce the flexible ramping constraint in EIM. EIM Participating Resources that resolve the constraint will be compensated based upon the current ISO design. The cost allocation of FRC will be split between ISO and EIM Entities based upon usage of the real-time market. The EIM Entity will then allocate the costs based upon the rules of its OATT. The ISO share of costs will be allocated as they are today.

**It is unclear that the EIM's GHG design complies with California GHG rules or is optimal in the market solution.**

It is unclear whether the Proposal will satisfy California's GHG regulations in a fair and economically efficient manner. In line with the Alignment Principle, PG&E urges the CAISO to work with the California Air Resources Board (CARB) now to ensure clarity that the EIM proposal fully complies with California's GHG cap regulations, including CARB's resource shuffling rules, and that the proposed methodology for compliance will be achieved within an efficient, economic electricity market structure (as discussed further below). PG&E's recommends additional work and examples be developed by CARB and CAISO to detail how:

PacifiCorp might bid its GHG producing resources into the CAISO market;  
How then the EIM market would dispatch those and CA resources to meet PacifiCorp load and CAISO BA load;  
How GHG compliance is achieved (and who the complying entity will be); and  
How economic dispatch for all BAs in a least cost manner is achieved.

- i) GHG costs associated with imports into California should be reflected in the real time LMP

Based on our understanding of the current Proposal, a participating resource outside of California will not include GHG allowance costs in its energy bids<sup>4</sup>. Instead, the Market Operator will insert a GHG cost adder, for any net intertie flows into California, in the objective function that is used to dispatch the system.

More detail and examples are needed to ensure participants understand the mechanics of the price formation. GHG costs associated with imports into California must be reflected in the real time LMP prices. Otherwise, prices in the CAISO may no longer be based on the marginal cost of serving energy at nodes in the CAISO area, leading to unnecessary uplift costs.

A simple example will illustrate PG&E's understanding of the implications of the intertie-cost-adder approach. Assume there are two generators serving loads in the CAISO and an EIM entity. Generator GA is located in California and has a bid price of \$60/MWh (all the prices in the example are per MWh). Generator GB is located in an EIM Entity outside of California and has a bid price of \$55. The anticipated cost of GHG allowances for importing energy from the EIM Entity into CAISO is \$10. Thus the total cost of energy imported from the EIM Entity into California to serve California loads is \$65 (\$55 for the energy from GB and \$10 for the GHG costs assigned for flow on the intertie into California).

To serve loads in California, the solution will assume that, because the cheaper energy is available from generator GA, it will be dispatched to its maximum offer limit, and that power must be imported into



California from generator GB, which has excess capacity<sup>5</sup>. In this case, the appropriate LMP for California would be \$65, which represents generator GB's bid price plus the cost of GHG allowances for the flow on the tie into California. This is the cost of serving the next MW of load in California. The LMP in the EIM Entity would be \$55. The intertie-cost-adder approach results in two different LMPs: \$65 for California and \$55 in the EIM entity (this is due to a fourth LMP component reflecting the GHG cost for power imported into the CAISO).

Including the GHG costs for the net EIM flows into California, as proposed by the CAISO, appears to produce accurate LMPs, does not distort pricing signals in the market, and reduces potential uplifts. In addition, it provides a market mechanism to collect the revenue needed to pay for GHG allowances required for the imports into California.

If we attempted to exclude the GHG costs from the LMP in California, the so called "LMP" in California would be \$55. This is not consistent with the meaning of marginal cost. Furthermore, the \$55 "LMP" for California is insufficient to cover generator GA's \$60 bid price. CAISO would have to make an additional payment of \$5 beyond "LMP" to generator GA. This will result in uplift costs, which will be allocated to the CAISO loads.

- ii) The GHG design has an apparent drawback of not allowing for head-to-head resource competition to provide power into California based on full-in costs

Although the proposed intertie-cost-adder approach seems to produce appropriate LMPs, it does have the apparent drawback of not allowing for head-to-head resource competition to provide power into California based on full-in costs. This is because GHG compliance costs are not included in the bids of the EIM participants, and GHG cost is only included in aggregated form in the objective function (it doesn't distinguish between high and low GHG emitters). The outcome may be incorrect market signals to resources located within the EIM entity by over-awarding high GHG emitters and under-awarding low GHG emitters. PG&E recommends that the CAISO and stakeholders consider solutions to this apparent design drawback.

<sup>4</sup> Since at the time of bid submission it is unknown whether the resources will be providing power to serve load in an EIM Entity or in California.

<sup>5</sup> For simplicity, let's assume there is enough transmission capacity within CAISO and the EIM Entity and there is absolutely no congestion in the system. We will also assume a lossless system.

#### **ISO Response**

The ISO has included a proposal for the accounting and compliance for GHG obligations in the revised straw proposal that accounts for PG&E's suggestions.

#### **At this early stage of the EIM, only minimal changes in governance should be considered**

Given that only one Balancing Authority Area (PacifiCorp) has expressed its intent on joining the EIM and the low threshold for PacifiCorp to exit the EIM, the CAISO should only consider minimal changes to its governance structure. This issue can be revisited after the EIM becomes operational and other Balancing Authority Areas make a formal commitment to join.

#### **ISO Response**

The ISO appreciates stakeholder comments on governance and is establishing a parallel stakeholder initiative to discuss governance. The ISO will consider these comments as part of that engagement.

#### **Allocation of Administrative Costs**

It is unclear whether the CAISO's proposed initial and annual administrative fees for new EIM entities are fair. Issues dealing with the accounting and allocation of these administrative fees should be included as part of the stakeholder process. PG&E has four recommendations regarding this issue:

- i. The CAISO should develop estimates of the total costs to develop and operate the EIM.
- ii. The CAISO should develop accounting mechanisms to track costs related to develop and operate the EIM. This includes the salary and overhead of CAISO personnel working on the EIM.
- iii. Services provided by the CAISO for the EIM should be priced as arms-length transactions. This will recognize the value of the investments made by California customers over the past decade and help prevent subsidization of costs for EIM participants by CAISO participants.
- iv. The cost allocation methodology of EIM administrative costs should be decided as part of the stakeholder process.

#### **ISO Response**

The initial start-up fee is based upon the capital and O&M costs and is approved by FERC through an implementation agreement with each EIM Entity, as considered in FERC Docket No. ER13-1372-000.

The \$0.19 administrative rate was established using the same activity-based cost accounting approach as the ISO's GMC. This administrative rate will be filed as part of the EIM tariff provisions. The rate will be in effect from October 2014 through December 2014 when the ISO's existing GMC rates expire. The ISO will commence a stakeholder process next year to extend the existing GMC structure and determine the EIM administrative rate for the period of the GMC extension.

#### **EIM Exit Fees**

While the proposed no-exit-fee approach may be attractive to potential EIM entrants, it may have unfavorable consequences for CAISO participants and should be the subject of further discussion in the stakeholder process.

First, the CAISO and market participants are making significant investments in the EIM over the next several years. Without costs estimates from the CAISO, PG&E assumes the CAISO's labor and out-of-pockets costs will significantly exceed the \$2.1 million initial charge to PacifiCorp. Without any exit fee, PacifiCorp can walk away from the EIM and leave California customers with no recovery of any of the costs expended by the CAISO and CAISO participants.

Second, the no-exit-fee construct effectively creates two classes of EIM participants. One class of participants has limited barriers to walk away from the market and another class of participants is locked into the market. This creates a situation in which the CAISO may be motivated to treat the two classes of participants differently in regards to design preferences and cost allocation issues.

#### **ISO Response**



The \$2.1M covers the set-up costs of the EIM Entity, as further described in FERC Docket No. ER13-1372-000. The ISO does not expect any additional costs will be created if participants in EIM decide to no longer participate.

**Losses**

The CAISO proposal references transmission losses in various sections. However, the discussion on losses is limited to mentioning of the term in the context of base schedules that must balance supply against load and losses. More details are needed to address how losses are calculated, compensated and paid for. The CAISO should include a separate section on transmission losses in the next revision.<sup>6</sup>

<sup>6</sup> For example, the topic of Loss Compensation involved lengthy stakeholder discussions from 2005 to 2007 when a real-time energy imbalance service market was being setup by the Southwest Power Pool (SPP).

**ISO Response**

In producing balanced base schedules, EIM Entities will use demand forecasts at a system level including losses (i.e., equal to generation and net interchange). Compensation for losses uses the same mechanism as the existing ISO market, i.e., through the marginal loss component of LMPs.

**Local Market Power Mitigation**

Questions such as what constitutes physical or economic withholding in this new market should be addressed. Modifications for Local Market Power Mitigation (LMPM) may need to be defined for an EIM. The Proposal provides a brief description of its Department of Market Monitoring (DMM) but does not provide any discussion on the potential for new market power mitigation needs introduced by an EIM.

**ISO Response**

The ISO has included a LMPM proposal in section 3.2.5 of the revised straw proposal.

<b>Company</b>	<b>Date</b>	<b>Submitted By</b>
<b>Powerex, Corp</b>	April 22, 2013	Gifford Jung - 604-891-6040

**Governance**

Powerex is of the view that any EIM should operate under a governance framework that is independent from the CAISO’s current governance structure. For this reason, Powerex would prefer the “Market Operator Model” as it understands this is an independent body from the current CAISO board.

Powerex understands that the Market Operator Model will require additional costs but believes these costs are well justified to ensure that the interests of all regions, and interests of all parties, in the WECC are equally represented.

**ISO Response**

The ISO appreciates stakeholder comments on governance and is establishing a parallel stakeholder initiative to discuss governance. The ISO will consider these comments as part of that engagement.

### **Resource Sufficiency**

Powerex strongly supports the CAISO in its inclusion of a Day Ahead and Hour Ahead resource sufficiency requirement for all EIM participants. Powerex has several comments on this requirement.

First, in contrast to eastern ISOs/ RTOs, the western interconnect currently has a significant gap in its reliability framework that enables participants to be resource insufficient in the Day Ahead and/or Hour Ahead timeframe. There simply is no robust framework in the WECC that ensures that each participant has sufficient incremental and decremental capacity in the Day Ahead and Hour Ahead timeframes to meet their potential range of net load obligations, including firm exports. An EIM should not exacerbate this reliability gap, by enabling participants to “lean” on an EIM for incremental or decremental capacity; the CAISO/PAC EIM, as currently defined, is an energy-only market.

Second, in Powerex’s view, this existing reliability gap is becoming more concerning, as:

- (i) Source balancing authorities and/or transmission providers develop business practices that curtail firm exports as an economic alternative to being resource sufficient;
- (ii) Sink balancing authorities, including CAISO, continue to contemplate what reliability steps are necessary to address economic curtailments to firm energy imports, hoping in the meantime that such curtailments will continue to be manageable in size and will largely be uncorrelated to other curtailments;
- (iii) Market participants increasingly sell firm energy Day Ahead without sufficient capacity to support such schedules, hoping to fulfill the obligation at a later time; and
- (iv) New balancing authorities are contemplated across the interconnect to capture the economic opportunity of selling firm energy Day Ahead, supported only by prospective real-time imports/generation and/or relaxed balancing standards.

Third, this reliability gap is also an efficiency gap. Given the lack of transparency into the curtailment risk of each individual import schedule, some sink balancing authorities will carry a conservative level of resource sufficiency in an effort to protect firm load. This inevitably results in:

- i) Excess capacity being committed in the western interconnect Day Ahead and Hour Ahead most hours, by many sink BAs with firm load commitments; and
- ii) A remaining risk of insufficient capacity being committed in any one hour across the western interconnect.

A properly designed resource sufficiency requirement in the EIM needs to ensure that both sufficient and efficient levels of dispatchable capacity are carried in the EIM footprint to reliably meet firm load and firm exports each hour.

Fourth, it is important that the resource sufficiency requirement in the EIM be both in the incremental and decremental direction, as increasingly, over-generation is becoming a potential reliability concern. The CAISO’s proposal appears to appropriately require participants to meet their own over-generation conditions.

Finally, Powerex looks forward to significantly more details, including examples, on the calculation of resource sufficiency, including the level of confidence that is required in minimum and maximum load forecasts, variable resource forecasts, etc. Will it be based on P90, P95 confidence, etc.? How will the

CAISO treat firm versus non-firm imports and exports?

### ISO Response

The process of determining the adjusted base schedule prior to initiating the EIM market optimization seeks to address leaning on the EIM by EIM Entities. The adjusted base schedule will resolve transmission constraint violations, include losses within the EIM Entity and ensure sufficient resources have been committed to meet real-time demand. The settlement of EIM deviations will use the adjusted base schedule as the baseline. The ISO will continue to evaluate whether additional measures are appropriate to mitigate these concerns.

### Transmission Services and Compensation

Powerex believes the treatment of transmission, both for transactions within the EIM footprint (i.e. generators and load within PacifiCorp's region) and between the EIM entities and the CAISO, must be carefully designed to:

- i. Ensure reliable and efficient dispatch outcomes;
- ii. Recognize the key differences between the OATT framework (that will continue to exist in the PacifiCorp region) and the CAISO's RTO/ISO framework;
- iii. Provide appropriate price signals to ensure continued investment in PacifiCorp OATT transmission, by generators, loads, and wheel-through;
- iv. Provide appropriate price signals to ensure deliveries hourly and longer continue to occur ahead of the EIM market; and
- v. Respect existing PacifiCorp OATT transmission investments, including the principal that the congestion value of transmission paths should continue to flow to firm transmission rights holders on the PacifiCorp system.

With these key principles in mind, Powerex recommends the following approach for further discussion. First, Powerex recommends that all transmission paths in the PacifiCorp grid be set with a floor congestion shadow price equal to PacifiCorp hourly non-firm OATT rate. Unlike in an RTO/ISO such as CAISO, uncongested transmission paths in an OATT framework attract non-zero tariff costs and it is critical that this key difference between the CAISO and the OATT be respected in the EIM design. This ensures that EIM users (generators, load and wheel-through, including the CAISO) of the PacifiCorp transmission system pay the same rate as those participants that utilize the grid on an hourly basis under the OATT. The hourly non-firm rate is the most appropriate rate for the floor as it best reflects short-term transmission usage on a subordinated basis to higher priority OATT transmission rights.

Powerex believes this congestion shadow price floor is essential to ensuring that participants do not shift their forward, daily and hourly trading and scheduling activities into the EIM. This floor is also necessary to prevent EIM participants from uniquely avoiding funding of the PacifiCorp transmission system by shifting their activities into the EIM, increasing the funding obligations of the remaining PacifiCorp transmission rights holders. This floor would also ensure that PacifiCorp does not grant transmission service to its merchant, under the EIM, on a non-comparable basis to other market participants who continue to utilize and pay for PacifiCorp transmission under PacifiCorp's OATT.

Second, Powerex recommends a "sheltering credit" against such EIM transmission charges, at the same hourly non-firm OATT rate, for market participants with:

- i. Unused firm transmission – such transmission rights can generally be used on any uncongested PacifiCorp transmission path via redirect service under the OATT, normally conducted on OASIS, and hence an automatic redirect of unused firm transmission rights should be "presumed" in the EIM via the existence of a sheltering credit.

- ii. Network loads – transmission rights can generally be purchased at no incremental cost for PacifiCorp network load customers under the OATT, and hence an automatic network transmission request should be “presumed” for network loads in the EIM via a sheltering credit applicable to any change in a participant’s network load(s), subject to any contractual limitations.

Note that sheltering credits may have to be reduced to less than on a one-for-one credit for each MW of EIM flow to accommodate the situation where both a load and a generator are eligible for a sheltering credit.

Third, Powerex recommends substantial further discussion occur on the disbursement of congestion revenues above the floor described above. Powerex believes there are potential alternative as follows:

- i. EIM congestion revenues from increased use of transmission in the EIM are allocated back to firm rights holders on the respective PacifiCorp transmission path, consistent with the underlying principle of CRRs. Under this scenario, users of congested transmission lines on the PacifiCorp system, essential pay PacificCorp transmission customers with unused firm transmission rights on the respective path the market value for using the transmission in real-time, as determined by the EIM.
- ii. Costs of relieving real-time congestion associated with Day Ahead and Hour Ahead schedules (i.e. due to loop flow and /or transmission derates) are charged to PacifiCorp’s transmission customers more broadly, consistent with the re-dispatch framework under the OATT.

Powerex looks forward to further discussions and details as the CAISO’s develops its EIM Design into a Final Proposal.

**ISO Response**

The ISO has proposed that for EIM transfers between CAISO and PacifiCorp to be initially exempt from transmission charges. The remainder of transmission rules and costs are the responsibility of the EIM Entity under their OATT. The revised straw proposal discusses alternatives for a longer term market design for transmission in section 3.10 of the revised straw proposal. Alternative 3 reflects Powerex’s recommendation.

<b>Company</b>	<b>Date</b>	<b>Submitted By</b>
<b>PUC EIM Group</b>	April 23, 2013	Commissioner Travis Kavulla, Chair

**Interplay between RTUC and RTD**

While the straw proposal explains how each of the 15-minute Real-Time Unit Commitment (RTUC) and 5-minute Real-Time Dispatch (EIM) markets will work, the interplay between them and the practical implications of reducing EIM benefits to smaller intervals, remains unclear.

This leads to a number of unanswered questions. For example:

- o For outside-of-California participants, is the functional impact of the RTUC merely a submission of 15-minute, as opposed to hourly, schedules?
- o Is interchange between CAISO and other BAs expected to be considerably more fluid in a 15-minute world than an hourly one?
- o How will either the RTUC or EIM make use of transmission rights of outside-of-California BAs?
- o What impacts will an efficient RTUC have on the amount of energy that clears in an EIM?

**ISO Response**

EIM Entities must submit base schedules in 15-minute granularity. The base schedule must be submitted hourly, but may be revised by T-40 minutes prior to the start of the binding RTUC.

The ISO believes that FERC Order No. 764 will lead to a liquid 15-minute market between BAAs. The ISO's market design changes approved by the Board of Governors in May, continue to support hourly intertie transactions, but provide incentives for 15-minute intertie transactions. The ISO believes that transmission reservations external to the ISO will remain an hourly product for the next few years. The market design changes that will be implemented in Spring 2014, will ensure that 15-minute schedules awarded through RTUC do not exceed the transmission profiles of the e-Tag.

Transactions between the EIM Entities and the ISO will make use of transmission rights outside the EIM Entities and ISO. The EIM can result in RTUC schedule changes and RTD changes which will be tagged as a dynamic schedule. In RTUC, intertie transactions that occur between non-EIM BAA and the EIM footprint will follow the FERC Order No. 764 market design changes approved in May.

The ISO believes that the majority of deviations from hourly schedules will be settled in RTUC. RTD will provide the dispatch which resolves changes in system conditions between RTUC and RTD. The three RTD optimizations for a given RTUC interval will commence 30 minutes, 35 minutes, and 40 minutes after the RTUC optimization commenced.

#### **Penalization of outside-of-California participants relying on their own load scheduling**

Additional explanation is needed on the CAISO proposal regarding the penalization of outside-of-California participants who experience errors when relying on their own load scheduling, but who otherwise would not be penalized had they relied on CAISO's scheduling services. Because those operators will still remain accountable on a BA-level for reliability penalties (the risk of which is exacerbated when loads are scheduled inaccurately), there would appear to be not only a strong existing incentive to schedule accurately, but also an institutional proclivity on the part of any given participant to self-schedule. The reasoning for this provision of the straw proposal should therefore be more fully explained.

#### **ISO Response**

The use of the ISO forecast reduces the potential for leaning on the EIM or potentially gaming. The ISO has similar rules that allow entities to avoid penalty provisions if the entity elects to use the ISO forecast. For example, in the FERC Order No. 764 market design changes variable energy resources that are importing to the ISO are exempt from the Hour Ahead Schedules Decline Charge.

#### **Transmission rights**

It is unclear how the utilization of transmission rights that tie together EIM entities across potentially non-participating BAs will, in practice, work. This is especially true given the reality that most, if not all, centrally dispatching markets in the United States are flow-based in nature.

#### **CAISO Response**

The ISO currently enforces intertie schedule limits between the ISO and neighboring BAAs, based on capacity placed under the ISO’s “operational control” for scheduling on transmission that is not within the ISO’s BAA. Similarly, EIM dispatches will be limited by the transmission rights through non-participating BAAs that are made available to EIM by participants in EIM. The ISO is commencing a stakeholder initiative to discuss expanding the ISO’s full network model. The initial concept was introduced at the April 10 Market Performance and Planning Forum. See page 40 of the meeting’s presentation. [http://www.caiso.com/Documents/Agenda-Presentation-MarketPerformance-PlanningForumApr10\\_2013.pdf](http://www.caiso.com/Documents/Agenda-Presentation-MarketPerformance-PlanningForumApr10_2013.pdf)

Company	Date	Submitted By
Southern California Edison	April 19, 2013	Paul Nelson – (626) 302-4814 Jeff Nelson – (626) 302-4834

**Compliance with California GHG Regulations**

The EIM process needs to comply with California GHG regulations and appropriately assign the compliance costs in market settlements. At the stakeholder meeting the CAISO mentioned they are working with California Air Resources Board (CARB) to make sure the proposal is compliant. This coordination with CARB should continue. Based on the limited details that have been shared so far, SCE has a set of initial questions with regards to GHG treatment within the EIM.

**a. Market Optimization / Modeling**

SCE would like more detail on how GHG will be accounted for in the Market Operator’s modeling. The CAISO states that there will be a GHG emission cost adder within the RTUC and RTD objective function to account for compliance costs. SCE would appreciate more specific detail on how exactly this adder will be included in the CAISO’s market models.

- i. For example, how would it treat resources located in California but within an EIM entity (outside CAISO BAA): would they be assumed to already include a GHG adder in their bid, or would they be treated same as any other generator within that EIM entity?
- ii. How will shift factors/flows to CA be incorporated?

**b. Market Signals / Prices**

- i. How will the GHG cost be included in bids, prices, and market signals? Will there be two different marginal costs of energy (MCE) components, one for California (CAISO and PacifiCorp area within CA) and one for non-California areas (PacifiCorp area outside of CA)?

In the straw proposal, the CAISO mentions that in order to ensure recovery of GHG emissions costs by EIM resources and imports that clear RTUC and RTD they would likely charge uplift to metered load in the CAISO.<sup>2</sup> While it makes sense that the EIM related GHG costs need to be recouped, SCE does not understand why there would be a need for uplifts to load. If the GHG cost is included in the optimization, then the CAISO’s LMPs will already reflect this cost and any load or generation deviations from 15-minute market would be exposed to these 5-minute RT prices. Therefore, there would be no GHG specific under-collection and no need for any new uplifts to load. Furthermore, it is not clear why this uplift would be paid by load only. Any deviation, generation or load, could cause a change in the EIM imports or exports. Thus, any such uplifts should be charged to all 5-min negative deviators, since they all cause and/or benefit from EIM imports.



### **c. Operational Details**

The identity of the purchasing-selling entity (PSE) is important as the PSE is responsible for procuring GHG allowances.

- i. Who will be the purchasing-selling entity (PSE) on the EIM related e-Tags?
- ii. Can the CAISO be the PSE on the EIM eTags?
- iii. Who will be responsible for submitting these e-Tags?
- iv. Where will be the sink and source locations on these E-tags?<sup>3</sup>
- v. What role will the CASIO have in determining the flow from a PacifiCorp generator into California, and in turn, tagging the transaction for GHG compliance?

### **d. Settlement Details**

The EIM will have to ensure that whoever is responsible for procuring the incremental GHG allowances for import to CA is properly compensated, and that the parties causing and/or benefitting from these imports are paying their share based on cost-causation principles.

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<sup>2</sup> [http://www.caiso.com/Documents/DesignStrawProposal-IssuePaper-EnergyImbalanceMarket\\_040413.pdf](http://www.caiso.com/Documents/DesignStrawProposal-IssuePaper-EnergyImbalanceMarket_040413.pdf), Page

49.

<sup>3</sup> The sink and source is important given that is how CARB determines if electricity was imported or exported from California, which in turn determines the owner of the GHG obligation.

## **ISO Response**

The ISO has included a proposal for GHC compliance and accounting in section 3.1.2 of the revised straw proposal that considers and addresses these comments.

## **Details of the Adjusted and Final Awarded 15 minute Schedule**

- a. What is modeled in the minimum shift optimization (MSO)?<sup>4</sup> Is it just PacifiCorp or a combined PacifiCorp and CAISO?
  - i. What is allowed to change in the MSO process and what is constant?
  - ii. Can the CAISO deny a generation outage in PacifiCorp? Can the CAISO deny a transmission outage in PacifiCorp?
  - iii. Under what circumstances can the CAISO alter an economic PacifiCorp generation base schedule to resolve a problem? Under what circumstances can the CAISO alter a non-economic (self-schedule) PacifiCorp generation base schedule to resolve a problem?
  - iv. What if an adjusted base schedule cannot be found to solve the problem of feasibility? What is the next step and what are the consequences?
  - v. How often does the MSO process run, every 15 minutes, hourly, or something else?
- b. Does the optimization process creating the EIM 15 minute schedule include only PacifiCorp or it is a combined PacifiCorp and CAISO?
  - i. Is it a joint or local BA optimization?
  - ii. Does the EIM process run with the CAISO 15-minute process? If the same software process is used, will the CAISO produce 15-minute nonbinding prices for the EIM 15-

- minute schedules? If so, will the CAISO publish these non-binding prices?
- iii. Assume the following: A quick start peaker submits a Base Schedule showing 0 MW output (i.e. the peaker is off). After the MSO it still has an Adjusted Base Schedule of 0 MW (it is still off). The unit then enters the EIM 15-minute Interval process. Question: Can the peaker receive a 15-minute schedule that is **not** 0 MW?
  - iv. Please explain what an EIM “advisory commitment” is? What process is used to create this (e.g. the 5-hour RTUC look-ahead process, the 15- minute EIM, other process)? How will the CAISO know if the “advisory commitment” is either accepted or rejected by PacifiCorp? How will the
  - v. CAISO pass the accepted/rejected state into the optimization process to ensure the optimization properly models the commitment status, starttimes, ramp-time in to other forward looking aspects of the optimization? What happens if, for example, PacifiCorp indicates they “accept” the commitment and instead do not commit the unit? How will PacifiCorp communicate commitment decisions it makes independent of the CAISO so that the CAISO can accurately model such actions in the optimization?
- c. Please confirm that the 5 minute EIM is a combined integrated process that includes all aspects of the CAISO and PacifiCorp transmission and generation system (rather than two separate local optimizations).
  - d. Will units in PacifiCorp be allowed to sell Ancillary Services to the CAISO as part of the 15-minute process?

### ISO Response

Question A: Only PacifiCorp is modeled in the MSO.

Resources that have submitted economic bids can be used to resolve congestion within the EIM Entity. The transfer capability between EIM Entities is zero during the MSO.

No. The EIM Entity Scheduling Coordinator must notify the market operator of transmission and generation outages that have been approved by the EIM Entity.

To ensure the submitted base schedule is balanced and feasible.

If the base schedules are not balanced, the distributed base load net of transmission losses would be relaxed. If the base schedules are not feasible, transmission constraints would be relaxed for any remaining violations after all possible adjustments are made and the ISO will notify the EIM Entity. The relaxed transmission constraints would be subsequently enforced in RTUC and RTD.

MSO runs every 15 minutes.

Questions B and C: EIM includes both RTUC and RTD for the combined EIM Entity-ISO footprint.

RTUC and RTD are joint optimizations across the footprint.

RTUC schedules will be financially bidding for EIM Participating Resources.

Yes. If the resource has submitted an economic bid is assumed to be on-line.

The ISO will provide advisory schedules using our existing forward looking processes. The EIM Entity



will reflect any changes they have made as a result of the advisory information in the base schedule.

**Question D:** EIM Participating Resources are not currently allowed to sell ancillary services in EIM. Other market mechanisms prior to EIM remain available.

### Settlements

- a. Please provide a more detailed explanation of how uplifts could be created if PacifiCorp over/underschedules relative to its Adjusted Base Schedules.
- b. How are the deviations of non-economic (self-schedules) scheduled generation settled? Are the settlements for deviations from all PacifiCorp generation treated the same (irrespective of if they are economically bid or self-scheduled?)
- c. Does the EIM allow any load or generation in PacifiCorp to avoid the 5 minute LMP settlement? If yes, how can the CAISO be assured of revenue sufficiency?
- d. What role does PacifiCorp play in determining real-time prices for Load and Generation within its area?
- e. Slide 10 on the process handout. Why is Adjusted Base Schedule an input into the EIM settlement?
- f. Can an EIM participant switch when they submit a self-schedule or EIM bid?

### ISO Response

If schedule changes are made to the submitted base schedule to develop the adjusted base schedule, these changes would be settled based upon the rules of the EIM Entity.

Load and generation of EIM Entities will be settled in the same manner as Load and generation within the ISO. The settlement will be based upon the market design changes approved for FERC Order No. 764.

For EIM Participating Resources, deviations will be settled at the EIM price with the EIM Participating Resource Scheduling Coordinator. For non-participating resources, the EIM Entity Scheduling Coordinators will be settled at the EIM price, which will then settle with these resources under the rules of the EIM Entity.

### Initial Fee and Operating Cost Charges

- a. What functions are included in the operating charge (\$0.19/MWh)?
- b. Are overheads allocated in the operating cost charge? If so how?
- c. How will under collections be handled (for both initial fee and operating cost)?
- d. Will the EIM increase the CAISO's grid management charge?

### ISO Response

The ISO used the same activity-based costing analysis as used for the GMC. The ISO identified costs that were only relevant to the real-time market. Cost relevant to the day-ahead market, CRRs, and balancing services were not included. These costs do include overhead and are calculated using the same methodology of the GMC.

The initial fee will be approved by FERC through individual implementation agreements, consistent with the proceeding underway in FERC Docket ER13-1372-000. Section 3.7.10 describes the development of the EIM administrative fee for ongoing EIM operations, based on the same cost study as the existing ISO GMC.

Collections made via the EIM administrative fee will be treated as revenue and will be used to offset the revenue requirement that is recovered through the GMC.

### **Unit Commitment**

- a. Why is the CAISO limiting commitment in the 15-minute process to units within the CAISO within the 15 minute optimization?
- b. Will the design allow the CAISO to commit CAISO units in order to serve PacifiCorp load? If yes, can this commitment happen simply based on forward forecasts (e.g. the CAISO's load forecast for PacifiCorp three hours forward) or will it be limited to simply addressing 15 minute issues resulting from the Adjusted Base Schedule? How will PacifiCorp share in any potential bid cost recovery uplift for such commitments?

### **ISO Response**

The initial PUC-EIM proposal excluded unit commitment within EIM Entities. The RTUC could support committing EIM Entity resources if desired in the future.

Yes. ISO resources can be committed to curtail higher cost units in the EIM Entity. Real-time bid cost recovery uplifts will be allocated to EIM Entities based upon their usage of the real-time market.

### **EIM Transmission Costs**

SCE is concerned that the current plan of free transmission creates improper incentives between 15 minute market participation and EIM participation.

- a. Does the current plan of free transmission create bad incentives between 15 minute and EIM participation?
- b. If "free transmission" is simply a pilot/transition mechanism, what is the plan/process to develop a durable solution?

### **CAISO Response**

The ISO initially plans to have no transmission cost for the dynamic schedule between the ISO and PacifiCorp. In section 3.10 of the revised straw proposal, the ISO has introduced alternatives to a long term market design for transmission, including continuing the reciprocity of no transmission cost between EIM Entity Balancing Areas.

### **Network Model Detail**

- a. What level of detail will the CAISO model for a joining EIM entity? Is it the same standard used for the CAISO balance area or is it different?
- b. What if there is a disconnect between the result of the CAISO's and the EIM Entity's representation of the network? (i.g. The CAISO model shows a line overload, yet PacifiCorp sees no problem.)
- c. What will the CAISO do if the optimization cannot "solve" for PacifiCorp?
- d. Besides adjusting EIM participants, what can the CAISO model adjust?

### **ISO Response**

The ISO is commencing a stakeholder initiative to discuss expanding the ISO's full network model. The initial concept was introduced at the April 10 Market Performance and Planning Forum. See page 40 of the meeting's presentation. [http://www.caiso.com/Documents/Agenda-Presentation-MarketPerformance-PlanningForumApr10\\_2013.pdf](http://www.caiso.com/Documents/Agenda-Presentation-MarketPerformance-PlanningForumApr10_2013.pdf)

The EIM entity will be included in the full network model with similar standards to the ISO current model.

### **Virtual Bidding**

- a. If EIM contributes to, or causes, any virtual bidding uplifts, how are they allocated to EIM participants?
- b. How can Convergence Bids on the interties "converge prices" if, due to the EIM market, the Day-ahead Market model (absent PacifiCorp) is structurally different from the 15-minute markets (that includes PacifiCorp)?

### **ISO Response**

The FERC Order No. 764 market design allows convergence bidding on the interties, but has a one year period with a zero positions limit to allow market participants to observe operation of the EIM. The Order 764 market design does not include settlement of virtual bids using the 5-minute real-time interval dispatches that are the core of the EIM design.

The ISO is improving modeling consistency between the DA and RT markets and will commence a stakeholder initiative if other measures are needed to address real-time congestion uplifts.

### **Generators and Schedule Coordinators**

- a. Must every generator (i.e. those not submitting economic EIM bids) in the EIM Entity be represented by a scheduling coordinator?
- b. Will the CAISO send a single invoice to PacifiCorp, or will the ISO invoice each schedule

coordinator in PacifiCorp separately?

**CAISO Response**

The role of the EIM Entity Scheduling Coordinator is discussed in section 3.1.4 of the revised straw proposal.

**EIM Participant Credit Requirement**

- a. Currently the CAISO Market Participants have credit requirements, will the new EIM Participants outside of the CAISO be subject to the same requirement?
- b. The CAISO Market Participants share in the CAISO market default, will there be separate market default tracked for the CAISO versus EIM and will the current market default allocation methodology be impacted?
- c. Will the Estimated Aggregate Liability and Collateral requirements apply to EIM Participants and will there be any change to existing processes or timelines?

**ISO Response**

EIM Entity Scheduling Coordinators and EIM Participating Scheduling Coordinators will be subject to ISO credit requirements, processes and timelines.

The ISO will address the market default question in the second revised straw proposal and welcomes stakeholder input in this area.

**Unaccounted For Energy (URE)**

If UFE is measured at the UDC level, would it require that all resources within an UFE-defined service area participate in the EIM Market scheduling and metering for the EIM Entity?

**ISO Response**

No. The EIM Entity Scheduling Coordinator is the interface of non-participating resources to the EIM.

<b>Company</b>	<b>Date</b>	<b>Submitted By</b>
Six Cities	April 19, 2013	Bonnie Blair (202) 585-6905 bblair@thompsoncoburn.com
<b>The Six Cities are particularly concerned with the potential for increased uplifts that may be spread to ISO load.</b>		
There does not appear to be any reason to assume that the benefits of re-dispatch under an EIM will accrue generally to load across the ISO's BAA. Accordingly, spreading uplift costs resulting from implementation of the EIM to ISO load on a "peanut butter" basis will result in cross-subsidization of the EIM activities. At various points throughout the Straw Proposal, there are references to potential costs that the ISO apparently does not contemplate charging to the entities that cause the costs. For example, at page 19 the Straw Proposal indicates that EIM Participants that choose to submit resource plans to match the Market Operator's forecast would not be subject to charges for under- or over-scheduling. To the		

extent deviations from the Market Operator’s forecast give rise to costs, who will bear them? At page 27 the Straw Proposal states that the ISO does not anticipate major topology or system changes between the execution of the 15-minute process and the 5-minute process for the same binding time interval. To the extent topology or system changes occur and result in increased costs under the EIM, who will bear them? Page 31 of the Straw Proposal suggests allocation of net “marginal congestion revenue from the imbalance energy settlement” through the Real Time Congestion Offset, while noting the possibility of modifying the allocation determinant. Page 36 of the Straw Proposal discusses the potential for an imbalance energy scarcity due to either insufficient energy bids or inadequate ramp capability. It is not clear that the costs associated with addressing the energy scarcity will be allocated in accordance with the cost causation principle. At pages 37-38 the Straw Proposal suggests allocation of neutrality charges associated with load forecast deviations based on the metered demand of the LAP. At pages 38-39 the Straw Proposal suggests that resource deviations from dispatch instructions would not be subject to uninstructed deviation charges. To the extent such deviations result in increased costs, who bears them? Page 40 of the Straw Proposal indicates that “the EIM Entity’s LMP differences will be allocated to the EIM Entity’s measured demand.” The Six Cities question whether this approach is consistent with the cost causation principle. It seems unlikely that the examples identified above include all potential sources of neutrality type costs associated with the EIM, but they are sufficient to raise significant concerns regarding the balance and distribution of EIM costs versus EIM benefits.

Although the ISO characterizes the EIM as a voluntary market at page 6 of the Straw Proposal, it is not clear to the Six Cities that LSEs within the ISO BAA have the ability to opt out of the EIM or to avoid uplift costs that may be created by the EIM. The Cities urge the ISO to devote more attention to ensuring that responsibility for EIM costs will align with the enjoyment of EIM benefits. In the absence of such alignment of the costs and benefits of the EIM in accordance with the cost causation principle, the EIM will impair, rather than improve, efficiency.

**ISO Response**

The ISO has considered these comments and included in Section 3.7.8 of the revised straw proposal an approach to allocate real-time market uplifts between EIM Entity BAAs and the ISO.

<b>Company</b>	<b>Date</b>	<b>Submitted By</b>
SMUD	April 19, 2013	Gary Lawson <a href="mailto:Gary.Lawson@smud.org">Gary.Lawson@smud.org</a> (916) 732-5802

**Non-CAISO Balancing Authorities (BA)**

The Straw Proposal generally discusses non-CAISO Balancing Authority (BA) responsibilities and portrays other BAs as “trying to manage imbalances in real-time with manual dispatches and extra power reserves.” Straw Proposal at 1. This statement, and others of this sort are self serving, and discounts the fact that a BA is *required* to manage imbalances in real-time. For instance, SMUD, as the operator of the Balancing Authority of Northern California (BANC) BA, manages imbalances under the North American Electric Reliability Corporation (NERC) mandatory reliability standards. BANC is responsible for compliance with both Control Performance Standards (CPS) 1 and CPS 2, which require the BA to maintain interconnection steady-state frequency within defined limits by balancing real power demand

and supply in realtime. Further, SMUD operates a state-of-the-art control room for BANC operations, which automates dispatch, except under certain exceptional circumstances – not dissimilar to the CAISO.

#### ISO Response

The ISO recognizes that all BAs are subject to NERC and other standards and have systems to ensure compliance. SMUD’s comment does not appear to impact the EIM market design.

#### Reliability and EIM

The CAISO states that the CAISO EIM model “[e]nhances reliability through real-time visibility and situational awareness of resources and transmission across the CAISO and EIM footprint.” *Id.* at 2. EIM is primarily an economic, not a reliability, tool. EIM bids, both for resources and loads, are voluntary and any deliveries are transacted over non-firm transmission. Indeed, should participants fail to come to the market fully resourced (lean on the market), the results could be quite the opposite. Additionally, real-time visibility and situational awareness of resources and transmission already exist between the CAISO and BANC BAs, where SMUD resides, independent of an EIM. Besides our long-standing exchange with the CAISO of realtime operational information (over 830 data points), which began when SMUD was the BA and continues with SMUD operating the BANC BA, our obligations to do so are clearly spelled out in the applicable NERC reliability standards. Thus, the CAISO and SMUD have a robust exchange of data and there is nearly full visibility across both of our systems with or without an EIM.

#### ISO Response

The ISO recognizes the value of the reciprocal, reliability-based interactions between the ISO, SMUD and other entities within BANC. SMUD’s comment does not appear to impact the EIM market design.

#### Load Forecast

The Straw Proposal strongly favors that the EIM Participant and/or non-CAISO EIM Entity utilize the CAISO for its load forecast to avoid what might amount to significant under-and overscheduling charges. *Id.* at 20. It is a question, however, as to which entity, the CAISO or the entity participating in the EIM, are best-suited to provide such a forecast. At this stage, due to the complexity of an EIM participant’s Load Schedule, a BA’s reliability required Load Forecast and the EIM Operator’s Load Forecast process should not be unduly incented in one direction or another in a voluntary market. Under some circumstances, it might very well be that the EIM Participant or non-CAISO EIM Entity is better able to provide an accurate forecast. SMUD recognizes that there needs to be accountability levied towards those that choose to provide their own forecast, however, it merely observes that the proposed structure may only leave one choice, and that choice might not be the most accurate or provide the best optimization of an EIM.

#### ISO Response

The use of the ISO forecast reduces the potential for leaning on the EIM or potentially gaming. The ISO has similar rules that allow entities to avoid penalty provisions if the entity elects to use the ISO forecast. For example, in the FERC Order No. 764 market design changes variable energy resources that are importing to the ISO are exempt from the hour-ahead schedules decline charge.

The use of the ISO does not preclude the EIM Entity from using its own forecast, or from working with the Market Operator to improve the accuracy of the EIM Entity's forecast.

### **Transmission Service**

While the Straw Proposal proposes no charge for EIM use of as-available transmission (*id.* At 47), SMUD believes that it is important to establish some form of transmission service charge for EIM use of transmission.

During the April 11th stakeholder meeting, the CAISO indicated that it based its decision to defer consideration of a transmission charge on the assumption that there would only be limited (100 MW) EIM transactions between itself and PacifiCorp. The CAISO proposed that its address this issue later if additional participants sign up. SMUD has a couple of concerns with this approach. First, if the CAISO has any indication that other entities may in fact join, the CAISO is only delaying the inevitable – and this is no minor issue. Entities that may consider joining the EIM need a level of price certainty that extends beyond just the initial entry into the market. If prices will inevitably include a transmission service charge, and therefore increase, perhaps substantially, this needs to be part of the program design and cost projection from the beginning.

Second, the March 13, 2013, “PacifiCorp-ISO Energy Imbalance Market Benefits” document provided to stakeholders uses a range of assumptions, including 100 MW, 400 MW and 800 MW, with respect to EIM transfers between the CAISO and PacifiCorp. It would appear therefore that higher levels of transfers have at least been anticipated. If so, some methodology and rate should be considered during this process. Failure to address this mechanism up front will make it harder to address once EIM is implemented.

### **ISO Response**

The ISO has proposed that EIM transfers between CAISO and PacifiCorp initially be exempt from transmission charges. Section 3.10 of the revised straw proposal discusses alternatives for a longer term market design for transmission, including continuing the reciprocity of no transmission cost between EIM Entity areas. The remainder of transmission rules and costs are the responsibility of the EIM Entity under their tariff.

### **Governance**

SMUD recognizes that market rule oversight and structure are open issues that still need development. However, there are a couple of overriding principles that SMUD encourages the CAISO to consider during development. First, it is important that the governance structure be sustainable if the EIM grows and more participants join. If there is a possibility that the governance model may evolve over time, the CAISO should make clear up front what this evolution would look like. Second, it is equally important that EIM participant entities have an influential role in EIM oversight and decision-making.



### ISO Response

The ISO appreciates stakeholder comments on governance and is establishing a parallel stakeholder initiative to discuss governance. The ISO will consider these comments as part of that engagement.

### Metrics

Opinions abound as to the value and/or accuracy of the previous EIM benefits studies. Stakeholders may now have the opportunity of either observing or participating in an operating EIM. Therefore, the CAISO, along with stakeholders, should develop transparent metrics to determine the actual benefit of EIM participation. Underlying these metrics should be a detailed modeling of participant transmission paths. To this end, with PacifiCorp in line as the first participant in an EIM, it would benefit other stakeholders to see a modeling of PacifiCorp's entire network of transmission in the northwest to truly see the effects of congestion and other constraints.

In addition, Reliability Metrics should be established and made public for participants to evaluate. Currently the CAISO reports regularly on Exceptional Dispatch and Transmission Limit Conforming activities. While the EIM Entities and Participants will be required to perform this important function within their areas of authority, the Market Operator should collect and report on these metrics to provide stakeholder visibility to model performance. As is done within the Southwest Power Pool (SPP) footprint and reported in the SPP Monthly State of the Market Report, aggregated and flow gate congestion by interval should be tracked. An additional metric for consideration would track the use of TRM's (Transmission Reliability Margins) or CBM's (Capacity Benefit Margins) by participants over time.

SMUD recognizes this is not a simple task, however, such development will assist in the future decision-making process with respect to other BAs evaluating their participation in an EIM.

### ISO Response

The ISO currently reports on a wide variety of metrics on daily, weekly, monthly, quarterly, and annual reports. The ISO will extend these reports to cover EIM operations as appropriate, and will consider stakeholder suggestions for specific additions to the scope of reporting.

### Impacts on COI

SMUD reiterates the concerns raised by the Transmission Agency of Northern California (TANC) in its March 15, 2013 letter and in its comments in this stakeholder process that matters pertaining to potential impacts to the California-Oregon Intertie (COI) are fully considered and discussed with those parties potentially impacted, as required by the COI-related agreements among the CAISO, PacifiCorp, Pacific Gas and Electric Company, the Western Area Power Administration and TANC.<sup>1</sup> While SMUD takes no position or ventures to speculate as to what impacts this proposal might have, it does note that there is a process under the COI agreements to address this.

<sup>1</sup> SMUD is a member of TANC, which manages SMUD's share of entitlements to the 500 kV California-Oregon Transmission Project.

### CAISO Response



EIM dispatches will be limited to capacity that has been placed under the ISO’s operational control by transmission owners and rights holders (including PACI and specific shares of COTP), and capacity that is made available to EIM by participants in EIM. The ISO appreciates SMUD’s participation in the EIM stakeholder process, and will consider additional discussions with SMUD. If SMUD identifies specific concerns about the interaction of EIM with SMUD or BANC, this would facilitate identification of needs for additional discussions with SMUD.

**Greenhouse Gas (GHG) Emissions Impacts**

SMUD has had a general concern that many of the EIM benefits potentially derive from increased dispatches of coal and other higher carbon resources. While the CAISO has addressed GHG issues to some extent, it admits that more discussion with the California Air Resources Board is required. SMUD believes this issue, which will have a direct impact on EIM pricing and resource tagging, and thus, EIM benefits, should be fully addressed prior to any final proposal being submitted.

**ISO Response**

The ISO has included a proposal for GHG accounting and compliance in section 3.12 of the revised straw proposal, and has ongoing discussions with the California Air Resources Board.

**Start-up Costs and Settlement**

While it is helpful for the CAISO to provide cost estimates for participation in EIM, SMUD believes the CAISO underestimates the start-up costs necessary to participate in the proposed EIM.

In addition, SMUD believes it is too early in the development of EIM to know with certainty how much it is going to cost participants. The CAISO has identified an administrative rate of \$0.19 per MWh volume effective October-December 2014. This rate, however, is based on an EIM cost of \$96M divided by an allocated volume of 500 TWh. SMUD cannot see how this rate can work under the existing participation level, particularly if we assume limited transfer capability between the CAISO and PacifiCorp of 100 MW. This needs further explanation. At bottom, without detailed modeling of transmission paths, specific metrics analysis, actual participation volume, or assessment of GHG impacts, the true cost of participating cannot be accurately determined.

**ISO Response**

The administrative rate is calculated using the same activity-based cost accounting method used to determine the ISO GMC. The ISO will commence a stakeholder process to extend the GMC rate structure which will also include the EIM administrative rate.

<b>Company</b>	<b>Date</b>	<b>Submitted By</b>
Salt River Project “SRP”	April 4, 2013	
<b>Transmission Service and Usage</b>		
SRP encourages the CAISO to address how transmission service will work if additional EIM Entities join		

the CAISO/PacifiCorp arrangement. This includes potential methodology for collecting EIM Transmission Service and allocating revenue to Transmission Providers/Owners who may not be EIM Entities. In addition, please describe the process for remediation if Transmission Providers/Owners are adversely impacted by the CAISO/PacifiCorp arrangement.

#### **ISO Response**

The ISO has proposed that EIM transfers between CAISO and PacifiCorp initially be exempt from transmission charges. Section 3.10 of the revised straw proposal discusses alternatives for a longer term market design for transmission, including continuing the reciprocity of no transmission cost between EIM Entity areas. The remainder of transmission rules and costs are the responsibility of the EIM Entity under their tariff.

#### **Greenhouse Gas Emission Costs**

SRP believes this is a significant issue and similar to comments submitted by APS, recommends that further discussion and stakeholder involvement is needed.

#### **ISO Response**

The ISO has included a proposal for GHG accounting and compliance in section 3.12 of the revised straw proposal.

#### **Independent Market Oversight**

SRP recommends that CAISO explore the possibility of an independent body to administer the market rules and oversight procedures.

#### **ISO Response**

The ISO appreciates stakeholder comments on governance and is establishing a parallel stakeholder initiative to discuss governance. The ISO will consider these comments as part of that engagement.

#### **LMP's and Settlement Locations**

SRP recommends a discussion on how resource and load settlement locations are established for areas outside of the current CAISO Balancing Authority Area.

#### **ISO Response**

Resource settlement locations will be established at resources' physical locations, using the same approach as in the ISO's BAA. EIM Entities will determine load settlement locations within their EIM Entity Areas.

#### **Information System Upgrades**

Similar to APS' recommendation, please post Information System requirements.

#### **ISO Response**

The information systems to be used for EIM are the same as are otherwise used in the ISO's markets, and for the ISO's interactions with other BAAs. Market participants who currently participate in ISO markets may see little difference in cost for beginning to also participate in EIM.

The current application specifications are available at:  
<http://www.caiso.com/participate/Pages/ApplicationAccess/Default.aspx>

**Examples and Scenarios**

SRP is interested in viewing an example of how SRP's BA operation would coordinate with CAISO on a minute to minute basis. Also, similar to APS' recommendation, please provide examples regarding the minimum administrative rate, how the GHG adder would work, instructed and uninstructed deviations, and the mechanics of communicating adjusted base schedule.

**ISO Response**

This information is included in the revised straw proposal.

Company	Date	Submitted By
Silicon Valley Power (SVP)	April 19, 2013	

**Not charging EIM imports or exports the**

SVP generally questions the not charging EIM imports or exports the same WAC/TAC rates, and/or applicable existing third-party transmission rates and charges that ordinarily apply to imports and exports to and from the subject balancing authority areas.

**ISO Response**

The ISO has proposed that EIM transfers between CAISO and PacifiCorp initially be exempt from transmission charges. Section 3.10 of the revised straw proposal discusses alternatives for a longer term market design for transmission, including continuing the reciprocity of no transmission cost between EIM Entity areas. The remainder of transmission rules and costs are the responsibility of the EIM Entity under their tariff.

**How would inclusion of a charge for transmission service affect the results of the benefits study?**

Are the benefits calculated by the EIM benefits study overstated due to the absence of a charge for transmission service?

**ISO Response**

No. The EIM benefits are not overstated, because a charge between EIM Entities would simply transfer revenues between the EIM Entities, and would not directly change the total benefits. Instead, a transmission service charge between EIM Entities could reduce market efficiency by distorting the desired impartiality of dispatching the least cost resources within the EIM footprint.

The study methodology has attempted to quantify the benefits of EIM by comparing an hourly case with and without hurdle rates as a proxy for representing the efficiency of dispatch that could be achieved

within the hour using the same imbalance conditions for the whole hour. It is expected that this study method is a conservative representation of the actual benefits that could be achieved to efficiently balance intra-hour changes to demand and supply that EIM would be able to achieve. Other studies that have attempted to quantify intra-hour dispatch benefits have modeled intra-hour dispatch while maintaining hurdle rates and observed material inter-regional/intra-hour dispatch benefits.

**Does the proposal to not charge for transmission within the EIM create an incentive for parties to attempt to take advantage of the free (of transmission cost) service?**

SVP understands CAISO's statement that this should not be an issue because base schedules are linked to forecasted demand and, therefore, EIM volumes should be limited. However, that appears to address the magnitude of the potential problem, and presumes a best-case outcome, with all parties acting as expected.

**ISO Response**

The ISO has proposed that EIM transfers between CAISO and PacifiCorp initially be exempt from transmission charges. Section 3.10 of the revised straw proposal discusses alternatives for a longer term market design for transmission, including continuing the reciprocity of no transmission cost between EIM Entity areas. The remainder of transmission rules and costs are the responsibility of the EIM Entity under their tariff.

**Does the proposal to not charge for transmission within the EIM create a disincentive for third parties to make transmission capacity available to support the EIM?**

If a third party offers OATT service, transfer capability that is un-subscribed becomes available as non-firm in real-time, but parties scheduling that non-firm service must still pay a transmission rate, providing some compensation to the transmission owner in return for the service provided. Why would a transmission service provider abandon that opportunity in order to make its facilities available to support an EIM? Given that transfer capability is a limiting factor on the amount of benefits estimated in the benefits study, wouldn't the EIM benefit from creating incentives to transmission providers to make transfer capability available to support the EIM?

**ISO Response**

A transmission provider is not foregoing an opportunity that it currently has by making its transmission available to EIM, because EIM primarily focuses on dispatch by 5-minute intervals for which the transmission provider does not currently offer service. In contrast, EIM offers an opportunity for resources within the BAA where the transmission provider operates to benefit from optimized re-dispatch and balancing of load and resource deviations.

<b>Company</b>	<b>Date</b>	<b>Submitted By</b>
<b>Transmission Agency of Northern California</b>	April 19, 2013	
<b>TANC Comment on Path Operator Performance Responsibilities</b>		
On March 15, 2013, in response to the ISO's announcement of a Memorandum of Understanding		

(“MOU”) between the ISO and PacifiCorp to begin development of an EIM, TANC submitted a letter to the ISO regarding the ISO’s responsibilities to its contractual role as the Path Operator for the California-Oregon Intertie (“COI”) pursuant to agreements to which TANC and PacifiCorp are among the Parties. These agreements govern the coordinated operations of the Pacific AC Intertie (“PACI”) and the California-Oregon Transmission Project (“COTP”). In particular, under the California-Oregon Intertie Path Operating Agreement (“COI-POA”), the ISO is contracted to be the Path Operator and is obliged to conduct its operation of the COI in accordance with its terms.

In that letter, TANC asserted that to conduct itself in accordance with the spirit of the COI-POA, the ISO-PacifiCorp EIM proposal should be vetted with the other Parties to the COI-POA in advance of any formalization of any such proposal. TANC also stated that until there is some clarity regarding how the Proposal would be implemented, TANC cannot know whether the Proposal has the potential to negatively impact the COI and the transmission facilities of non-EIM participants, and thus seeks such information. Most importantly, TANC further requested, consistent with the intent of the COI-POA, that the ISO develop its associated operating procedures to ensure that any adverse impacts occur only on the ISO controlled grid and coordinate with the parties to the Owners Coordinated Operation Agreement to obtain that outcome. In the event that adverse impacts are unavoidable, mitigation or compensation arrangements will be required.

In its March 25, 2013 response to TANC, the CAISO indicated that it shared TANC’s interest in ensuring that the implementation of an energy imbalance market did not negatively impact the transmission facilities of non-participants, particularly those that comprise the COI. The CAISO also indicated that it will work with TANC and the other COI owners to consider what, if any, operating procedures or revisions may be appropriate to implement the energy imbalance market.

#### **ISO Response**

Please refer to the March 25, 2013, response from the ISO to TANC. The ISO will post this correspondence and continue to engage with TANC and other interested COI parties in an effort to address these comments.

#### **TANC Comment on the Straw Proposal**

In the April 4, 2013 Straw Proposal, the ISO indicated that the PacifiCorp EIM implementation would occur “in parallel with” the ISO’s stakeholder process (Straw Proposal at 1). The ISO should provide adequate information and opportunity to review details pertaining to the ISO-PacifiCorp EIM implementation that will allow the Owners to assess the impacts of the ISO-PacifiCorp EIM effort on the operation of the combined three-line system. Indeed, any new procedure or change to the existing operating procedures requested by the Path Operator for COI would need to be brought before the Engineering and Operations Committee as set forth in the Owners Coordinated Operation Agreement, as referenced in TANC’s March 15, 2013 Letter. The ISO process should incorporate additional time and certainty for obtaining such approvals.

Consistent with its comments provided in its March 14, 2013 letter, TANC requests the ISO confirm that non-participating transmission systems (e.g. the COTP) will not be adversely impacted or that the ISO will enter into a mitigation agreement to resolve all impacts with adversely affected Parties to the COI-POA. To assure that the adopted Proposal performs as anticipated, TANC requests the ISO to conduct appropriate studies and testing of the EIM before the EIM go-live to ensure that no adverse impacts occur on non-participating transmission systems or that the mitigation measures or compensation perform as

anticipated to resolve impacts. Such studies should be coordinated with all transmission owners and operators that might be affected by the implementation of the EIM.

#### **ISO Response**

Please refer to the March 25, 2013, response from the ISO to TANC. The ISO will post this correspondence and continue to engage with TANC and other interested COI parties in an effort to address these comments.

#### **TANC also seeks further details regarding real-time market processes**

The expectation incorporated into the ISO's proposal that its real-time market processes will enforce network constraints in "any external transmission corridor where CAISO or the EIM Entity have contractual rights." (Straw Proposal at 31);

#### **ISO Response**

The revised straw proposal adds to the detail on the overall proposal, and the ISO will continue to respond to specific input from all stakeholders.

#### **TANC also seeks further details regarding whether the ISO proposes to control EIM Entity transmission**

Whether the ISO proposes to control EIM Entity transmission used for EIM schedules during the real-time process and how that control will be coordinated with the EIM Entity and other affected entities;

#### **ISO Response**

Transmission providers within EIM Entities will continue to manage their transmission systems, determine their applicable system operating limits, and communicate these limits to the market operator. The ISO will not have operational control of transmission facilities within the EIM Entity BAA.

#### **TANC also seeks further details regarding how the COI may be de-rated**

How the COI may be de-rated due to the magnitude of dynamic schedules and how contractual rights of other COI participants will not be adversely affected;

#### **ISO Response**

EIM operations will be limited to transmission capacity that participants in EIM Entity Areas make available. The ISO does not anticipate changes to procedures for COI derates due to EIM.

#### **TANC also seeks further details regarding the ISO's proposal to negotiate**

- a. Coordination agreements with external resources, which may participate in the EIM as dynamic transfers, and for which information will be included in the ISO's network model (*Id.* at 34-35); and
- b. Third party agreements, including modification of existing agreements, to implement the approved terms and conditions of the EIM (*Id.* at 43).

**ISO Response**

Please see the revised straw proposal. Implementation agreements with individual EIM Entities will be filed with FERC and available for comment by stakeholders.

<b>Company</b>	<b>Date</b>	<b>Submitted By</b>
WECC		Michelle Mizumori (801) 819-7624 mmizumori@wecc.biz

**Page 4: The definition of an EIM Entity is based on a “balancing authority area.”**

WECC would clarify that the balancing authority area is a footprint, not an entity. Furthermore, page 7 references impacts to an EIM Entity’s Open Access Transmission Tariff (OATT), however as a Balancing Authority (BA), the entity does not necessarily have an OATT. CAISO should consider the appropriate entity for participation in the case that the Transmission Provider and the Balancing Authority may not be the same entity or may have different footprints.

**ISO Response**

In the revised straw proposal, the ISO has added the term EIM Entity and clarified the difference between the EIM Entity and the EIM Entity Balancing Authority Area.

**Page 4 – The definition of EIM Participant identifies an entity that voluntarily submits an economic bid into the EIM.**

For clarity, it may be useful to define a term for the entities that must settle imbalance using the EIM market, even if they do not submit a bid. This may include loads and non-participating resources, but it seems they will still need to meet some of the requirements for data and communication.

**ISO Response**

The ISO has added the terms EIM Entity Scheduling Coordinator and EIM Participating Resource Scheduling Coordinator in the revised straw proposal to clarify these roles.

**Page 6 – The titles of sections 3.1.1 and 3.1.3**

The titles of sections 3.1.1 and 3.1.3 refer to roles as Balancing Authorities, but the text references all functional entities, so the section titles should be re-considered to avoid confusion.

**ISO Response**



Although the text references functional entities beyond balancing authority, the content is describing the functions that are performed by the company that serves as balancing authority. The balancing authority function is the key role for the load-following activity of EIM, hence the title for these sections.

**Page 6 – Although it appears that the list of functional entities in section 3.1.1 is meant to be illustrative of the concept in general, it could cause confusion.**

The entities listed do not line up with the functions that CAISO is registered for. In addition, for clarity it may be useful to add to section 3.1.1 sub-bullets similar to those under 3.1.3 to be clear on CAISO’s role within its footprint as well

**ISO Response**

The illustration of functional roles performed by the ISO has been reduced in the revised straw proposal. Section 3.1.1 does not contain an itemized listing like section 3.1.3 because implementing EIM does not change the ISO’s roles within its existing footprint.

**Page 7 – There is a statement about “Submitting and maintaining their system operating limits (inter-ties and internal constraints) as needed for the market.**

This includes adjusting/conforming limits as required due to differences between actual flow as measured by actual telemetry or state estimator and the flows calculated by the market model (market flow). Note that small differences in actual and market flows can arise due to differences in the model and actual conditions such as load distribution factors, unscheduled flow, network topology and impedances.” System Operating Limits, as defined by NERC, should be set in accordance with the WECC RC SOL Methodology. Please clarify whether this refers to a different type of limit that should be adjusted for market flows.

**ISO Response**

The modeling of any transmission constraint may be subject to adjustments in real-time so that the market enforces the physical limit as closely as possible. This does not affect the physical limit to which actual flows would be compared.

**Page 10 – The section on RTUC**

Says that “no unit commitment decisions are made by market optimization in the EIM Entity, nor is unit commitment made in the CAISO area...” but also discusses schedules for EIM Entities from RTUC. This should be clarified.

**ISO Response**

The revised straw proposal has clarified the interaction between unit commitment and 5-minute energy dispatch.

**Page 13 – It would be helpful to clarify whether the Market Operator will send a complete NSI for each EIM Entity or just the NSI between EIM Entity and CAISO.**

For the example of PacifiCorp, will there be one NSI for PACE and one NSI for PACW? Will this be the total NSI, or just the changing NSI between the EIM Entity and CAISO?

**ISO Response**

As EIM dispatches resources within an EIM Entity Area, the market operator will communicate the resulting NSI for each EIM Entity Area to the EIM Entity, so the EIM Entity can include its updated NSI in its AGC.

**Page 23 – There is a need to clarify the use of Dynamic Schedules.**

Will they be per EIM Entity, per EIM Participant or per resource? If per entity will there be separate dynamic schedules for PACE and PACW?

**ISO Response**

There will be a dynamic schedule with each EIM Entity BAA, thus one with PACW and another one with PACE.

**Page 23 – Why is the base value of the Dynamic Schedule zero?**

Even with RTUC considering the 15 minute schedules, this is done sufficiently before the operating interval, that it will not be the most up-to-date value. Also, there are requirements in INT-004-2 R2 that require updates to the dynamic schedule for the next available scheduling hour when certain conditions are met.

**ISO Response**

The initial values may be 0 MW at the beginning of an operating hour if the dynamic e-Tags represent only imbalance energy dispatched in 5-minute intervals and separate e-Tags for schedules by 15-minute interval have reflected the interchange that can be expected prior to dispatches within the 15-minute intervals, or may be non-zero if they also include schedules for hourly or 15-minute intervals. In either case, updates after the operating hour will reflect EIM dispatches for purposes of inadvertent energy accounting and tracking greenhouse gas obligations.

**Page 23 –Dynamic Schedules**

If Dynamic Schedules are updated at the end of the hour, is there a mechanism to inform the Reliability Coordinator of the current value of the schedule?

**ISO Response**

As the Reliability Coordinator implements the Enhanced Curtailment Calculator (ECC), the ISO anticipates there will be needs for revisions to WECC’s Unscheduled Flow Mitigation Procedure (UFMP) and/or regional business practices. The ISO will work with the Reliability Coordinator through the processes that will be developed for these revisions, to ensure the Reliability Coordinator receives the information that it needs.

**Page 26 – Will adjusted base schedules be sent to the EIM Entity, the EIM Participant or both?**

Who has responsibility for adjusting tags to make sure that they correctly represent the adjusted base schedules, and NSI values are correctly calculated?

**ISO Response**

Adjustments to base schedules will occur as re-dispatch within each EIM Entity Area, and might not be schedule changes that require e-Tag adjustments. Management of base schedules is the responsibility of the EIM Entity, which would thus be responsible for any e-Tag adjustments that become necessary.

**Page 26 – From the stakeholder meeting it sounds as though adjusted based schedules will account for infeasibility due to congestion as well as resource insufficiency. Is the only penalty the LMP?**

It seems that if an entity is insufficient in its base schedules, but finds that it can generally lean on the market to fill the gap, the only penalty is LMP, which may not be sufficient to incent better behavior. This could lead to a reliability issue if too many entities come to rely on leaning on the market.

**ISO Response**

Section 3.3.9 of the revised straw proposal describes the adjustment of base schedules to ensure that congestion is resolved before the start of the EIM’s 15-minute scheduling and 5-minute dispatch process. EIM settlements will be based on instructed and uninstructed deviations from the adjusted base schedules, not from the unadjusted base schedules. Thus, LMPs reflect the value of the real-time deviations, and there is no need for “penalties” for infeasible base schedules after the adjustment process.

Section 3.3.5 of the revised straw proposal describes under- and over-scheduling charges that would apply if an EIM Entity’s base schedule has not matched actual demand. If these measures would not adequately address issues of “leaning”, the ISO will consider suggestions for additional mechanisms.

**Page 27 – Is there any validation of intertie schedules with other BAs?**

If not, it seems the CAISO-supplied NSI may not align with the tagged schedules, which could cause errors in interchange accounting.

**ISO Response**

The ISO believes that existing NERC, NAESB, and WECC standards require each EIM Entity’s NSI to align with its e-Tags, as of the time of check-outs between BAAs. The market operator’s updates to NSI for 5-minute intervals reflect changes to the initial NSI values.

**Page 33 – Section 3.6.2 needs to be clarified.**

There appear to be references to both the CAISO congestion management and the WECC UFMP that are confusing. Some clarifications were made at the stakeholder meeting on 4/11 that references were not all to UFMP. Also, there seems to be discussion of UFMP use by EIM Entities, which appear to relate to paths between EIM Entities and non-EIM entities. Are there any special considerations that need to be made for the COI, as a path between CAISO and an EIM entity? Since UFMP is next-hour (not current-

hour), will the dynamic schedule be forced to zero for North-South flows, even if congestion ends up being relieved?

#### ISO Response

This section of the revised straw proposal (now 3.6.4) contains clarifications. The discussion of UFMP is not based on whether the affected path is inside or outside the EIM footprint, or crosses the boundary of the EIM footprint. Many market participants schedule across COI (one of the six Qualified Paths to which UFMP currently applies), no proposals would treat tagged schedules between the ISO and an EIM Entity differently from other tagged schedules.

#### Page 35 – The ECC is not yet approved and may not be implemented by the go-live data of EIM.

The reference to ECC tied with the UFMP may be confusing

#### ISO Response

As the Reliability Coordinator implements the Enhanced Curtailment Calculator (ECC), the ISO anticipates there will be needs for revisions to WECC’s Unscheduled Flow Mitigation Procedure (UFMP) and/or regional business practices.

#### Page 35 – what does this mean

“Dynamic e-Tags for EIM flows will not be updated for EIM dispatch until the end of the operating hour and *thus be explicitly managed by the UFMP*”

#### ISO Response

Dynamic e-Tags may have different issues for management by UFMP than e-Tags that represent static hourly schedules. However, there is little apparent reason why UFMP’s management of dynamic e-Tags within the EIM footprint would need to be managed differently from e-Tags for other dynamic transfers, which are common in the western interconnection for schedules that are variable within operating hours. These dynamic e-Tags are not updated until the end of an operating hour.

#### Page 40 – “The Market Operator will use the WIT to receive e-tag information related to the EIM Entity’s interchange points with other BAAs that are not CAISO.”

Currently, tag information is limited to the entities on the tag, how will CAISO gain access to these other tags? Is this statement inconsistent with the one on page 27 that says that the EIM Entity must submit intertie schedules with other BAAs?

#### ISO Response

The specific data flows will be confirmed as EIM implementation proceeds. E-Tag information is available to entities that are identified to receive copies. The references statement on page 27 pertains to the submission of base schedules, which is different from the supporting e-Tags.

Company	Date	Submitted By
Western Power Trading Forum	April 19, 2013	Ellen Wolfe 916-791-4533 ewolfe@resero.com
<b>WPTF supports the ISO's proposal for T-75 bids and base schedules</b>		
<p>The CAISO's proposal that EIM entities submit bids and base schedules at t-75 seems to offer a relatively smooth mechanism for folding EIM resources into the RT market. The CAISO has proposed to adjust the EIM base schedules to ensure feasibility. It is unclear how efficient these adjustments will be if performed to minimize the MW schedule movements the ISO makes. It is also unclear the extent to which EIM participants will actually follow the CAISO's adjusted base schedules and what will happen if unbalanced schedules are provided. We seek the CAISO's clarification regarding what – if anything – the ISO would do in these circumstances. More consideration of these aspects may be warranted.</p>		
<b>ISO Response</b>		
<p>Additional description has been included in section 3.3.9 of the revised straw proposal.</p>		
<b>WPTF seeks more information about the intended PacifiCorp topography</b>		
<p>WPTF would find it helpful if the CAISO could provide generally the high-level topography associated with the PacifiCorp EIM, including the boundaries of the two PacifiCorp BAAs and the paths over which there would be transfer capacity available for EIM/ISO transfers. Based on information from the ISO, WPTF understands there to be about 100 MWs of transfer capacity. It would be helpful in judging the tradeoffs of accuracy versus simplicity on some of the outstanding policy issues to know on which paths the capacity resides and what other capacity on which paths might become available on what schedule. In addition, further information about the anticipated Load Aggregation Price areas (LAPs) and the possibility of any additional trading hub prices for the PacifiCorp area would be helpful.</p>		
<b>ISO Response</b>		
<p>The 100 MW value is a conservative estimate of capacity across COI that can be available for real-time dispatch. Ongoing analyses are evaluating other potential transfer paths. Additional information will become available as EIM implementation proceeds.</p>		
<b>WPTF seeks further information about how resources at the non-ISO EIM ties will be treated</b>		
<p>WPTF finds the ISO's proposal regarding treatment of the imports into the CAISO through the EIM somewhat ambiguous and incomplete. WPTF understood the ISO to indicate at the stakeholder meeting that the EIM/ISO seam would not be considered an intertie boundary in the traditional sense of CAISO interties. This raises questions related to where the interties would be located and how the transactions at those interties would be treated in the expanded market footprint. WPTF asks the ISO to provide further information about what the new intertie points would be with the PacifiCorp EIM and to explain generally how transactions at these ties would work. For example, would a market participant outside of the EIM and CAISO foot print be able to bid to sell into or out of the EIM/ISO RT market? If not, what options are available for participants on the other side of the traditional intertie but not located within the EIM boundary.</p>		
<b>ISO Response</b>		

All interties with the ISO and PacifiCorp BAAs remain available for forward scheduling. Dynamic transfers to the ISO or to an EIM Entity may participate through the ISO or EIM Entity's otherwise-applicable procedures. However, EIM does not create new opportunities for resources that are not within an EIM Entity Area to schedule or be dispatched by 5-minute interval, other than through dynamic transfers with an EIM Entity.

#### **Further refinements are needed to the ISO's treatment of GHG at the EIM seam(s)**

The CAISO has proposed to determine a blended EIM emissions rate and reflect emissions costs in the CAISO as bid adders in the CAISO's markets based on the CAISO's expected net flows into the CAISO from the EIM resources. Whereas it seems workable to rely upon net flows as a basis to determine the fraction of a generator's output imported into California, WPTF believes it will be important to otherwise address adders and import schedules on a resource-specific basis. While this may warrant individual dynamic transfer tags it will provide for information for GHG compliance that is entirely resource specific other than that used to allocate the resource's output to California versus non-California load.

WPTF also encourages the CAISO to further develop the design process for determining the net import flow and assigning bid adders. For example, it is unclear how the timing will work – how the CAISO will assess net flows in advance of the bidding process and what the implications will be of mismatches between forward estimated net imports and actual net imports. WPTF also requests additional information about how the CAISO intends to determine the appropriate GHG emissions rates for the bid adders and ultimately requests that the CAISO coordinate with CARB to ensure the design will comply with AB-32 requirements.

#### **ISO Response**

Additional detail about greenhouse gas emission costs for imports into California has been added to section 3.12 of the revised straw proposal.

#### **Consideration should be given to allocating reliability and RT market costs to exports to EIM areas and/or EIM measured demand**

WPTF strongly encourages the CAISO to develop cost allocation policies for the EIM that reflect cost causation. For example, costs of managing the RT market seem reasonably borne by all users of the RT market. Additionally, if the CAISO is to make available certain services such as flexiramp for ramping needs and RT energy WPTF suggests consideration of whether it is appropriate to allocate these certain forward market costs to all EIM participants. Lastly, WPTF encourages discussion of capacity-like services such as DA RUC, CPM, etc. CAISO participants have an obligation for bringing capacity to the ISO markets, whereas the EIM participants may not be obligated to ensure their RT energy is backed by forward capacity. Given that disparity and given the CAISO's intention to extend its RT market to cover the EIM RT needs, it would be useful to further discuss how to ensure there is no shift in costs or burden to those entities in the CAISO that back energy with RA or would otherwise be required to bear costs if the ISO is short of resources.

#### **ISO Response**

Additional information about uplift cost allocations have been added to section 3.7.8 of the revised straw proposal, and additional discussion of flexible ramping constraint and future product in section 3.4.3. Regional discussions of EIM proposals have not extended the EIM timeframe to day-ahead, except for submission of resource plans for which EIM Entities are responsible, and have not extended the scope of EIM to include resource adequacy. Instead, resource sufficiency has been addressed through load scheduling requirements (e.g., section 3.3.5 of the revised straw proposal) and requirements for balanced, feasible base schedules (e.g., sections 3.3.6, 3.3.7, and 3.3.9).

**The process would benefit from additional information regarding the extent to which the ISO can rely on EIM resources for RT deliveries and the extent to which such resources may serve adjacent markets' RA needs.**

At the stakeholder meeting, CAISO staff noted that they had not yet considered the interaction of the EIM real-time energy and the forward market and flexibility needs required of CAISO participants. For example, if the CAISO hopes to rely upon the exchange of ramping and balancing energy between the EIM and the ISO traditional footprint, how does this extend to the forward capacity requirements? Will LSEs be able to procure RA and flexible RA capacity from the expanded footprint in – for example – PacifiCorp's service area? If not, then a significant portion of the purported benefits of the EIM would seem to be unavailable to California LSEs, and resources in PacifiCorp would similarly be deprived of those potential benefits. (Of course local capacity requirements are expected to continue to exist in local areas and would not be serviceable from distant EIM resources.)

**ISO Response**

Additional information about flexible ramping capacity has been added to section 3.4.3 of the revised straw proposal. Regional discussions of EIM proposals have not extended the EIM timeframe to day-ahead, except for submission of resource plans for which EIM Entities are responsible, and have not extended the scope of EIM to include resource adequacy. Instead, resource sufficiency has been addressed through load scheduling requirements (e.g., section 3.3.5 of the revised straw proposal) and requirements for balanced, feasible base schedules (e.g., sections 3.3.6, 3.3.7, and 3.3.9).

Existing resource adequacy requirements in California allow procurement of resource adequacy capacity from resources in BAAs outside the ISO, and EIM does not change those provisions.

**The CAISO should work expeditiously to develop a process for transmission cost recovery**

Whereas the ISO indicated that it feels given the low level of transfer capability it is not important to fully resolve the issue of transmission access fees before the start of the EIM, WPTF believes that this is nevertheless a key issue in the broader EIM market design and requests that the ISO aggressively work this issue. WPTF supports a practical solution. However, we also advocate for a solution that offers comparable treatment between ISO and EIM participants and an outcome that provides regulatory certainty especially in light of trying to make the EIM appealing for other WECC entities.

**ISO Response**

The ISO has proposed that for EIM transfers between ISO and PacifiCorp to be initially exempt from transmission charges. The remainder of transmission rules and costs are the responsibility of the EIM Entity under their OATT. The revised straw proposal discusses alternatives for a longer term market



design for transmission in section 3.10 of the revised straw proposal.

**WPTF strongly encourages discussions with other potential EIM participants to ensure the proposed EIM design is scalable and workable beyond just the PacifiCorp EIM entity.**

Whereas the CAISO’s straw proposal seems to go a long way toward a preliminary design that addresses the needs of PacifiCorp EIM, it is unclear how well the design would work for other potential EIM participants. To ensure this generic design is scalable to other BAAs we encourage the ISO to give strong consideration to other potential EIM entities’ perspectives.

**ISO Response**

It is the ISO’s intent in this EIM stakeholder process to ensure that the EIM design will be scalable and workable for all potential EIM participants. The ISO appreciates WPTF’s and other stakeholders’ inputs in how to reach this goal.

<b>Company</b>	<b>Date</b>	<b>Submitted By</b>
<b>Xcel Energy</b>		
<b>General Comments</b>		
<p>Throughout the paper, the straw proposal appears to confuse which entity, the EIM Entity or EIM Participant, has an obligation to perform certain duties. In general, the EIM Entity should not have any obligation to commit generation, provide load forecasts at the load settlement location or provide any data related to base schedules. The straw proposal needs to be refined to clearly identify what is needed from the different participants, preferably with an attachment listing the expected deliverables for each type of entity. As Xcel Energy understands the proposal, the EIM Participant will be responsible for any financially binding numbers, while the EIM Entity will only be responsible for validation of compliance with the reliability requirements. Therefore, the majority of all data required by the CAISO should be coming from the EIM Participant.</p> <p>Xcel Energy would also suggests a detailed project plan showing dates related to additional entities joining the initial EIM and major deliverables and other important milestones, such as market trials.</p>		
<b>ISO Response</b>		
<p>In the revised straw proposal, the ISO has sought to clarify items that will be included in the EIM tariff and items which are left to the EIM Entity and its tariff, as well as specific roles to be performed by each entity. Section 3.11 of the revised straw proposal outlines the process for additional EIM Entities to join. As individual BAAs express an interest in joining the EIM, the ISO will work with the potential participant to establish its implementation schedule.</p>		
<b>Section 3.1.2</b>		
<p>In the first paragraph, the document states that the CAISO will only dispatch resources that are on-line. In the second paragraph, the document states that if the CAISO identifies congestion, the CAISO will issue dispatch instructions for future time intervals to units that have bid into the EIM. Since units such as a gas turbine may offer into the market but not be on line at the time future congestion is identified, these</p>		

statements need more detail, either through reference to later sections or clarification added in this section. Xcel Energy supports providing the owners or operators of these units dispatch instructions to ensure that the units assist in addressing the congestion.

### **ISO Response**

This principle is stated more clearly elsewhere in the document, i.e., EIM Participating Resources are considered self-committed in a particular hour if they have a base schedule or they submit an energy bid and/or energy self-schedule greater than zero. The proposal does not require that the market operator must observe a non-zero telemetered output for a bid to be valid, if a resource is capable of responding to dispatches. By treating quick-start resources as self-committed, the proposal does not provide for including start-up and minimum-load costs separately from energy bids.

### **Section 3.2.1**

In the Operating Hour timeline, in the By T-20 minutes section, the straw proposal states that the Market Operator will approve tags. As worded, it is unclear what tags the Market Operator will approve. Please clarify in the document that the Market Operator is only approving tags that source or sink in the CAISO and not all tags that source or sink in the EIM Entity BAs. Other tags that impact the EIM footprint must be known to the CAISO Market Operator but will not be approved by the CAISO. Alternatively, perhaps the approval indicated is not with respect to implementing interchange schedules, but is intended for purposes of establishing scheduled delivery with respect to energy imbalance calculations, if so this should be clarified.

### **ISO Response**

The comment is correct that the market operator only has an approval role for e-Tags that source or sink in the ISO, or that use transmission under ISO operational control. The market operator will receive e-Tags that affect EIM Entities, to validate the underlying schedules and establish a basis for tracking changes within the operating hour (e.g., reserve sharing, or reliability adjustments), but not be responsible for approving them. Overall energy imbalance calculations will rely on EIM Entities' base schedules, and updates and adjustments to them.

### **Section 3.3.2**

Near the end of the section, the sentence reads "If submitted in day-ahead, the Market Operator will use the submitted demand forecast as a starting point for the balancing the base schedules with transmission losses in day-ahead and to calculate the base flows and loop flows in the network before starting the CAISO day-ahead market." This sentence has an extra word, "the" before the word "balancing". Next, it appears that this language allows for some option related to the day-ahead forecast submittal when the first sentence of Section 3.3.4 would require that all entities provide a day-ahead forecast to the CAISO. The timeline provided under Section 3.2.1 discusses postings of load forecast for the next seven operating days. This section should state that the CAISO requires a seven day forecast for each market participant's loads in the EIM market. This language can be clarified to address the potential for confusion by changing the referenced sentence to start "The Market Operator will use....".

The final sentence of this section is an example of utilizing the EIM Entity as responsible for submitting something that should come from the EIM Participant. The EIM uses base schedules for financial settlement. Therefore, the EIM Entity should not be submitting this information

### ISO Response

The revised straw proposal has resolved the wording issues in question. For clarity, EIM Entity Scheduling Coordinators and EIM Participating Resource Scheduling Coordinators may submit demand forecasts with other resource plan data up to 7 days before the operating day. As the ISO runs its day-ahead market, the ISO (as market operator) will also use base schedule information available at that time, with monitoring but not enforcement of transmission constraints in EIM Entity Areas, and provide advisory data concerning potential congestion. Base schedules and other resource plan data must be submitted by 75 minutes before the operating hour, and base schedules may be subsequently updated for each 15-minute interval, by 40 minutes before the interval. Each market run will use the most recent base schedule.

It is the EIM Entity, not an EIM Participating Resource Scheduling Coordinator that is able to prepare a balanced, feasible schedule for its EIM Entity Area. Each EIM Participating Resource Scheduling Coordinator would only know its own resources and loads, which in many cases would not be required to be balanced. (For example, there could be a merchant who owns generation but does not serve load.)

### Section 3.3.4

In the last paragraph of this section, the document states that the Market Operator will use forecasts made by EIM Participants to determine that the EIM Entity has committed sufficient resources. This appears to put an obligation on the BA to commit resources rather than the EIM Participants. This language needs clarification such that the obligation is on the EIM Participants to commit sufficient resources by BA, including interchange commitments, to serve their loads. The BA should have backstop authority to direct additional commitments but should not be making the commitment decisions at this point in the process. Also any process for recourse to the RC for compliance with sufficiency requirements should be described.

This paragraph also suggests that there will be three levels of load forecast, CAISO, EIM Entity and EIM Participant. Or is the EIM Entity forecast just a summation of the EIM Participants within the BA? This needs clarification so all parties know what is expected.

### ISO Response

Clarifications in the revised straw proposal have resolved the issues in question.

### Section 3.3.6

Xcel Energy is concerned with the proposal that anyone using the CAISO forecast will avoid the over and under-scheduling charges. The CAISO needs to show an example of how this methodology will not result in uplift charges to other EIM participants in the next draft of the straw proposal. If there is potential to cause uplift to other parties, the CAISO must address the issue in a more equitable manner.

### ISO Response

Section 3.7.8 of the revised straw proposal addresses uplift cost allocation issues. The potential for the market operator's demand forecast error is minimal since the forecast is updated every 5 minutes based on observed system conditions and current meteorological forecasts.

### **Sections 3.3.7 and 3.3.8**

In these sections, there is no discussion related to the capability of variable generation resources to provide supply adequacy for loads. It is Xcel Energy's position that the near-term forecast for variable generation serves loads one for one. The straw proposal document needs more details related to treatment of variable generation.

Section 3.3.8 also discussed the intent to use dynamic schedules utilizing e-Tags to show flows between the CAISO and the EIM. Xcel Energy recognizes that CARB has adopted rules related to imports for the purpose of the carbon tax. However, the CAISO should investigate the potential for CARB to treat the EIM transfers differently based on the different process. Since the energy will not be coming from a specific resource but from the pool of resources, CARB should be able to treat this transfer differently. If CAISO and CARB can reach agreement, the CAISO and EIM participants would be able to request a variance from the NERC, NAESB and WECC standards and criteria requiring tags for the energy flows associated with the EIM. This would allow a better process than currently envisioned. Finally, with respect to the dynamic tag, Xcel Energy believes that as proposed, the zero MW energy profile will violate NERC Reliability Standard INT-001-3 Requirement R1. The CAISO should be able to populate this tag with a value based on the day-ahead process envisioned with revisions based on subsequent reliability or market evaluations.

### **ISO Response**

The referenced discussion treats the expected output of all generation equally regardless of generation technology. Section 3.3.14 of the revised straw proposal describes the forecasting of variable energy resource output.

Section 3.12 of the revised straw proposal expands the discussion of the Greenhouse Gas accounting. The ISO will continue to discuss the issue with stakeholders through this initiative, and has ongoing discussions with CARB.

The initial values for dynamic e-Tags may be 0 MW at the beginning of an operating hour if the dynamic e-Tags represent only imbalance energy dispatched in 5-minute intervals and separate e-Tags for schedules by 15-minute interval have reflected the interchange that can be expected prior to dispatches within the 15-minute intervals, or may be non-zero if they also include schedules for hourly or 15-minute intervals. In either case, updates after the operating hour will reflect EIM dispatches for purposes of inadvertent energy accounting and tracking greenhouse gas obligations.

### **Section 3.3.10**

The Base Schedule Adjustment process needs further details. This section also appears to confuse the EIM Entity with the EIM Participant. The CAISO should notify all entities participating in the EIM of issues in each of the separate runs.

### **ISO Response**

The base schedule adjustment is discussed in additional detail in section 3.3.9 of the revised straw proposal.

### **Section 3.3.16**

This section needs corrected to clarify that the EIM Participant, not EIM Entity is entering generator outage information. Transmission outages should be input by the Transmission Provider, not the EIM Entity.

### **ISO Response**

The revised straw proposal, particularly section 3.3.15, has clarified the discussion of outage reporting.

### **Section 3.4.2**

The CAISO needs to provide further detail related to administrative price substitution during congestion, including the process used when congestion occurs without available redispatch resources to permit the market dispatch software to solve.

### **ISO Response**

Under normal conditions, EIM will dispatch its available bids to provide appropriate reductions in flows as needed to manage the constraints, to the extent that the resources can be effective in managing the constraints, by decrementing resources that contribute to congestion and incrementing resources that can provide counter-flow. The EIM will not automatically initiate the WECC Unscheduled Flow Mitigation Procedure (UFMP), but will alert EIM Entities to conditions that EIM cannot resolve, which may require the EIM Entity to initiate the procedures under WECC regulations. If EIM has exhausted its available bids without being able to resolve congestion, EIM will not necessarily produce extreme congestion prices through high administrative prices. The ISO's market software addresses infeasible transmission constraints through separate "scheduling" and "pricing" runs. Needs for constraint relaxation are determined through an initial "scheduling" run with high administrative prices on constraint relaxation to ensure that all effective bids are utilized. The amount of constraint relaxation would be reported to the EIM Entity. The "pricing" run then uses the relaxed transmission constraint plus a small increment to ensure a feasible economic solution, and may apply a smaller relaxation price such as the bid cap to the capacity beyond the original transmission constraint. This process is described in the ISO's Business Practice Manual for Market Operations, particularly in section 6.6.5.

### **Section 3.6.2**

This section requires re-writing, as it does not make sense in relation to the tools used and what the tools actually do. As an example, the UFMP does not adjust a constraint's limit. Instead, it adjusts the level of flows expected across a constraint through the curtailment of energy transactions that impact the constraint. Xcel Energy supports the intent of this section, but as written, it raises more questions than it addresses.

Additional information required in this section include how the CAISO might differentiate congestion management related schedules that source and sink within the EIM footprint compared to those that pass through and source and sink outside the EIM. As the path operator of one of the qualified paths, it is

unclear as to what steps will be taken to address the UFMP process versus the EIM/CAISO. As the UFMP moves forward with identifying curtailment requirements based on transmission priority, the CAISO needs to define the transmission priority for the EIM flows also. Finally, the timing of UFMP versus EIM dispatch needs to be explained in this section, specifically to what extent the EIM dispatch will be restricted due to UFMP events.

### **ISO Response**

Section 3.6.4 of the revised straw proposal addresses the wording issues. EIM dispatches only bids for resources within the EIM footprint, and treats forward schedules that utilize transmission within the EIM footprint as fixed. (Their supporting resources may have bids available to EIM, but EIM would not change the tagged schedules.) The ISO's management of COI (Path 66, a qualified path under UFMP) through UFMP will remain reliability-based, just as transmission providers within the EIM footprint will retain the authority they would otherwise have to use UFMP for their reliability-based congestion management. Transmission providers' use of UFMP is determined through their own processes, although EIM can provide advisory information on transmission conditions. EIM uses economic dispatch with as-available transmission capacity, which in regional EIM-related discussions has been described as priority level zero (i.e., less firm than tagged non-firm schedules). EIM is capable of providing physical counterflow that may be able to reduce the needs to use UFMP, but will not displace tagged schedules. EIM will be able to receive base schedule updates that may result from UFMP, and transmission providers may revise transmission limits for EIM's dispatch based on information from the reliability coordinator.

### **Section 3.6.7**

This section requires further detail, such as assumptions made by the EIM Entity related to interchange if the EIM Entity or CAISO has lost communications. Xcel Energy recommends CAISO draft a detailed operating practice in support of this section.

### **ISO Response**

The ISO will consider this comment while preparing operating procedures for EIM operations.

### **Section 3.7.6.1.1.**

The tagging process described in this section will become very cumbersome if more BAs join the EIM. The CAISO must work with CARB to address this issue. An ATF number would be available regardless of the use of an e-Tag. Additionally, the CAISO needs to provide more detail as to how the party ultimately responsible for CARB certificates is determined. Within one BA, there will be multiple generator-owning EIM Participants. One cannot assume that only the resource setting the LMP is selling into the CAISO. Since the entity delivering energy into the CAISO will be responsible for carbon certificates, the straw proposal requires more detail on this issue.

### **ISO Response**

The ISO will develop more information about required tagging processes as procedures for tracking greenhouse gas obligations are defined. The revised straw proposal updates and expands the discussion of greenhouse gas requirements in section 3.12.

**Section 3.7.9**

The discussion related to revenue neutrality in this section should be expanded. It clearly states that if there are no transfers between the two footprints, there will be no transfer of these costs. However, it does not state specific impacts during periods where transfers are occurring. This issue needs additional detail.

**ISO Response**

Issues of revenue neutrality have been further developed in the revised straw proposal.

**Section 3.7.10**

From the language in this section, it appears that the CAISO intends to use different EIM settlement charge types than those currently used in the CAISO. Assuming this is correct, is it CAISO's intent to use only the three charge types discussed in the straw proposal? Or will there be multiple charge types that add up to the totals discussed in the straw proposal.

**ISO Response**

Section 3.7.10 concerns the EIM administrative costs, which are similar to the grid management charge that apply within the ISO's existing footprint. Other sections discuss other types of settlements.

**Section 3.8.1**

The market monitoring information needs further definition, including the interaction with congestion issues identified in these comments under Section 3.4.2. The market monitoring section also needs to address any disgorgement process that the CAISO envisions for the EIM footprint and reference price calculations for mitigated offers.

**ISO Response**

Additional discussion of market power mitigation is in section 3.2.5 of the revised straw proposal. The proposed EIM design is intended to minimize other needs for disgorgement processes through appropriate scheduling processes, including the load scheduling requirements in section 3.3.5 of the revised straw proposal, and base schedule adjustment in section 3.3.9, as well as the market monitoring, compliance, and enforcement provisions in section 3.13.