Energy Imbalance Market Revised Straw Proposal Comments

Company	Date	Submitted By
Arizona Public Service (APS)	6/17/2013	

Kudos

The changes called out in Section 2.2 were very helpful in furthering APS' understanding of EIM functionality and in demonstrating the CAISO's willingness to address stakeholders' concerns and comments.

APS is appreciative of the CAISO's parallel stakeholder initiative to discuss market rule oversight and looks forward to participating in that initiative.

APS agrees with the guiding principles defined in Section 3.10 and requests that whatever alternative is selected as a solution for Transmission Service, that solution would apply a uniform transmission rate to all EIM energy. From the examples and the text it reads as though entities inside the CAISO and outside the CAISO are being treated differently. APS believes that the system needs to be equal for all parties.

The GHG Emission Cost Examples were helpful in illustrating various cost allocation categories that APS had previously been unaware of.

APS looks forward to the upcoming EIM Training Opportunities and would like to suggest the following as part of the training:

ISO Response

Thank you for the feedback.

Additional Educational Opportunities

Because the EIM proposal attempts to reach entities that are not as familiar with CAISO standard practices as ISO participants, APS offers up the following suggestions to assist entities that have less familiarity with non EIM-specific business practices that will impact EIM participation:

Flexible ramping constraint and planned flexible ramping product: APS suggests a separate partial day workshop be held to explain the flexible ramping constraint and planned flexible ramping product that are planned to be in place prior to the EIM. APS staff is grateful of the opportunity to attend the ISO's comprehensive training programs and have attended several; however, more detailed training related to specific new programs that will be settled within the EIM will be helpful for those that are evaluating the benefits of joining the EIM.

Greenhouse gas ("GHG") emissions proposal: APS appreciates the acknowledgement and progress toward defining GFG costs and allocations. The examples, however, appear incomplete and overly complex. The audience on June 6th tried to clarify these examples and were unable to do so. We suggest holding a separate workshop dedicating time specifically to these scenarios and others than stake holders are bringing forward. The results of this workshop could be incorporated into the next version of the draft.

ISO Response

The 2nd Revised Straw Proposal contains additional detail on both the flexible ramping constraint and the GHG emissions proposal, and a portion of the July 9 stakeholder meeting will cover these topics.

Revision Requests

Section 3.7.10.3 provides a summary of costs to transact in the EIM. APS requests review of this section for a comprehensive list of all costs and how they are assessed – including Variable Energy Resource ("VER") forecast fees, uplift charges, potential transmission usage fees and any other fees not listed in this section. Also, please provide clarification for the fees currently described in this section – i.e., please define a bid segment fee. It would be helpful to illustrate the application of these fees with examples, such as was performed in the GHG emissions section

ISO Response

Section 3.7.10.3 of the 2nd Revised Straw Proposal adds some detail to the discussion of the EIM administrative rate, other subsections within section 3.7 address other settlement charges, and section 3.10 discusses transmission usage fees.

The bid segment fee of $0.005 per bid segment applies to each segment of submitted bids to supply or purchase energy or ancillary services, including virtual bids.

Terminology

APS finds the terminology and different market naming to be unnecessarily complex. We suggest the examples use a simple naming and time designation as such:

– H1 for the first hour of the example.
– The four 15 minute intervals would be referred to as H1.1 through H1.4
– Within each of the 15 minute intervals are three 5 minute intervals. We suggest these be referred to as H1.1.1 through H1.1.3

ISO Response

In future documents, the ISO will consider how the terminology and naming conventions can be further explained or clarified.

Unit trip example

Please provide an example of how a unit trip would be managed in an EIM. Please include a step-by-step illustration from pre-schedule to the trip of who makes the adjustments to generation, when and what penalties are involved.

ISO Response

It is assumed that a "unit trip" is an unexpected forced outage of a generator. The generator would have been scheduled at a certain level as part of the EIM Entity's base schedule, and perhaps dispatched to a different level using a bid submitted by an EIM Participating Resource Scheduling Coordinator. The unit trip would result in uninstructed imbalance energy in the interval in which the unit trip occurs, which would continue until the EIM Entity revises its base schedule in a subsequent interval. Base schedule revisions may be submitted up to 40 minutes before the start of a 15-minute interval. Once the EIM Entity's base schedule is updated, there would no longer be uninstructed imbalance energy.

The outage should be reported as discussed in section 3.3.13 of the 2nd Revised Straw Proposal.

Uninstructed imbalance energy would be settled at the LMP for the generator's location. The deviation from the base schedule and EIM dispatch may lead to offset or neutrality charges as discussed in section 3.7 of the 2nd Revised Straw Proposal. However, these are not considered penalties.

What role does an EMS system play when generation drops off unexpectedly?

Figure 1 shows meter and ICCP data in the post-hour section, yet the EIM is to manage items like the trip mentioned above or VER integration. It must have more real-time meter data and ability to make mitigating fixes. Who and how does this happen? What role does an EMS system play when generation drops off unexpectedly?

ISO Response

In the future, Figure 1 will be clarified to show that EMS is a real-time process, as well as post-market in the sense that data received through EMS can affect post-market settlements. Data received through EMS also becomes part of the "EIM Market Inputs" by being reflected in the ISO's state estimator solution, which appears in Figure 1 as network model changes for every dispatch cycle. EMS will reflect the network status change of the unit trip, while VER forecasts are shown separately as an "ongoing" data source as an input to EIM.

GHG Examples

Please identify: (1) how congestion revenues are distributed and (2) how GHG emissions cost is determined. Also – the emissions rate should be communicated as $/metric-ton carbon dioxide equivalent and the emissions factor should be defined as metric-ton carbon dioxide equivalent/MWh so that multiplying the two gets the $/MWh emissions value per generator. That said, ideally, the GHG allowance cost should be determined and entered by each entity that is required to purchase the allowances, which in the examples provided, appears to be a luxury granted only to generators that reside in California. If this idea is discussed and not included, a variable emissions rate should be considered as a GHG input parameter. Emissions rates are not a constant, as indicated by the current GHG plan. Finally, please review the examples for mathematical accuracy. Explanations for how congestion revenues and export allocations are calculated do not appear to be consistent across examples.

ISO Response

Section 3.7.8.2 discusses calculation of the real-time congenstion balancing account for each BAA.

Section 3.12 expands on the GHG proposal from the prior straw proposal and outlines how emission rates are determined for EIM Participating Resources.

Company	Date	Submitted By
Balancing Authority of Northern California	6/17/2013	

Introduction of BANC

The Balancing Authority of Northern California (BANC) appreciates the opportunity to provide its comments to the California Independent System Operator Corporation's May 30, 2013 Energy Imbalance Market (EIM) Revised Straw Proposal.
The BANC Balancing Authority (BA) interconnects with the CAISO BA at multiple locations. The BANC footprint includes the 500 kV California-Oregon Transmission Project (COTP), the 230 kV Western Area Power Administration's Central Valley Project transmission and high voltage transmission systems of its participating members.[1] BANC is examining an EIM and other mechanisms that may bring cost savings or efficiencies to its Members' customers. As such, the rules, governance and operational practices of the EIM will affect BANC and its members. BANC is participating in this stakeholder process to further the stated goal that "EIM is offered by the ISO in a way that is attractive to all new and existing customers." *Revised Straw Proposal at 2.*

BANC appreciates the efforts of the CAISO to flesh out certain of the design attributes of the proposed EIM. BANC's comments are somewhat preliminary, given the limited time we have had to review the 64 page Revised Straw Proposal since its release on May 31 and stakeholder briefing on June 6th, just 6 business days ago. The comments we offer are necessarily high level comments and pose clarifying questions with the purpose of furthering this design process.

At the outset, BANC is cautious and watchful with respect to the numerous overlapping market design initiatives that are ongoing. These initiatives include changes pertaining to FERC Order No. 764, development of flexible capacity requirements and products, full network model enhancements, and contingency analysis changes that may affect available transmission at the interties. It is incumbent on the CAISO to address how each of these initiatives work together to avoid market disruptions that harm consumers. Other design details, including cost allocation of various charge types, are works in progress as the CAISO recognizes. For example, the Unaccounted For Energy (UFE) attribution to Utility Distribution Companies assumes infrastructure and agreements that may not be in place within the BAs of potential EIM Entities. BANC echoes the positions of other parties (for example Powerex), that the truncated timeline to address design components does not appear commensurate with the level, complexity and importance of the EIM design issues presented.

[1] BANC members include the Sacramento Municipal Utility District, the Modesto Irrigation District, City of Roseville, and the City of Redding

ISO Response

Thank you for your participation. The ISO has designed the schedule for this stakeholder process to obtain as much stakeholder input as possible within the available time, and believes the ISO's seven scheduled stakeholder meetings will provide a meaningful forum for EIM design. To the extent that specific ussues require other stakeholder processes, these will be established.

Scope of Participation in EIM

At the Stakeholder Meeting of June 6, 2013, stakeholders inquired about any ongoing discussions between the CAISO and other possible EIM Participants. The CAISO's response (to paraphrase, "about 10 or so other entities are actively speaking with us") must be clarified and specifics made public in this stakeholder process.

A host of design issues change in scope, magnitude, or importance if the potential initial EIM footprint is extended past PacifiCorp and the CAISO. Carbon cost attribution, transmission service, cost allocation, and possible operational impacts may all be affected by the potential size of the EIM, and also the identity of its participants. Specific to BANC, if other entities that are active market participants in the Pacific Northwest become EIM Entities in the first phase, this could have significant impacts on the usage and flows of the California-Oregon Intertie (COI), which would affect BANC and its members. Moreover, the scope of EIM participation could affect BANC's own determination as to whether or not EIM participation is in the interest of its members and their consumers. Given the very short turn-around time to flesh out market design details on a market design change of this magnitude, BANC requests that the CAISO clarify whether or not participants other than PacifiCorp will be in the first phase of EIM implementation. While BANC can understand the normal desire to keep discussion bilateral until they are reasonably mature, that approach just won't work here because this is the formation of a new market, with broad affects on costs, transmission usage, and reliability beyond the EIM footprint.

ISO Response

The process for new entities joining the EIM is discussed in section 3.11 of the 2nd Revised Straw Proposal, which describes this as a 12 to 18 month process. Implementation dates for new EIM Entities would be established in implementation agreements when commitments are made to join the EIM. Until such commitments occur, it would be premature to publicly state the status of discussions.

Transmission Service

BANC believes that it is necessary to establish some form of transmission service charge for EIM use of transmission. Failure to address this mechanism up front will make it harder to address once EIM has been implemented. Based on discussions at the April Stakeholder meeting, it was suggested that this decision was predicated on the assumption that EIM transactions between the CAISO and PacifiCorp would be limited to 100 MW of available intertie transmission entitlements held by PacifiCorp. BANC is unclear about the derivation of that 100 MW number. Does the CAISO intend to have the EIM software limit transactions to some number like 100 MW until the transmission charge mechanisms can be worked out? The CAISO further noted that should additional participants sign up, it would address the transmission service issue. BANC assumes that

other entities may in fact participate, and therefore this issue must be addressed on the front end.

To charge transmission customers that participate in CAISO markets the applicable TAC or WAC, but not to charge transactions in the EIM, is unduly discriminatory. Indeed, BANC members have expressed concerns that, given the sizeable TAC/WAC charges, market behavior could be altered and existing CAISO market transaction volume lowered because market participants can become EIM Entities, and bid in the EIM in lieu of bids into existing CAISO markets.

The TAC and WAC are volumetric charges. It is reasonable to charge market transactions based on usage of the facilities on which those transactions depend. Any other policy deviates from cost causation principles.

ISO Response

The ISO has made no changes to the transmission service proposal outlined in the 2nd Revised Straw Proposal. The ISO is still evaluating potential options and will discuss further in future papers.

The 100 MW number is illustrative at this time. Actual transmission limits will be established for each operating hour, through coordination between the ISO and other transmission providers.

Governance and Market Monitoring

The PUC-EIM leaders have asked that the CAISO consider alternative governance structures, and the CAISO has alluded to a parallel Market Rule Oversight effort in the Revised Straw Proposal. *Revised Straw Proposal at 47.* This level of generality will not suffice. The CAISO appears to be open to broader participation in the initial EIM stage (*Revised Straw Proposal at* 2), but the key issue of market governance is not yet getting started. BANC requests that the CAISO provide greater clarity on what the parameters of the CAISO options on this are early in the process, to enable market participants to make informed decisions on EIM. Along with this effort, the CAISO should consider whether or not the current market monitoring structure, with its focus on existing California markets, is adequate for a market that spans multiple states.

ISO Response

The ISO understands the need for EIM participants to have a voice in policy decisions affecting EIM. As noted in the schedule the ISO plans to issue a white paper discussing EIM governance no later than Aug 13 and will discuss it at the Aug 20 stakeholder meeting in Portland, Oregon. The ISO will request stakeholder comments on the white paper by Aug 27. Revisions to the governance white paper and subsequent discussions will be scheduled to address stakeholder comments received.

Flexible Capacity should be the Priority Issue

The CAISO has spend considerable time and effort studying, enunciated, and arguing for a flexible capacity product that will enable it to follow ramps anticipated due to the increasing penetration of intermittent renewable resources. The CAISO has argued for, then backed off of, proposals for a Flexible Resource Adequacy Capacity Must Offer Obligation for all resources identified as Resource Adequacy resources, for the 2014 Resource Adequacy compliance period. The CAISO now proposes

to move forward with such a proposal for the 2015 Resource Adequacy compliance period, initial compliance dates for which will be upon us in just over one year. Based on observation of public records and filings, and participation in workshops, it appears that the CAISO as spent thousands upon thousands of hours of staff and consultant time examining and arguing for the need to address Flexible Capacity needs soon, in order to be able to maintain system reliability.

The CAISO efforts identify the need to plan for and acquire sufficient flexible capacity to meet system ramping requirements. This need for flexible capacity is the critical issue, not the marginal and debatable production cost savings of an EIM utilizing limited transmission transfer capability. No study considering EIM has yet to produce credible benefit projections that exceed 1-3% of total production costs in the West. Yet, the focus of EIM appears to be detracting from the efforts to address flexible capacity needs.

The Revised Straw Proposal begins to introduce the issue of flexible ramping requirements by applying the flexible ramping constraint in the EIM. *Revised Straw Proposal at 31-33.* EIM will pay resources if they make available capacity to solve flexible ramping needs. Thus, EIM really isn't strictly an energy market anymore, further recognition that capacity is the prime issue associated with renewable integration.

But, solving for flexible capacity needs in a real time optimization is not the same as forward planning and/or must offer obligations in forward time periods. BANC is concerned that as California entities spend greater and greater sums of consumer dollars to ensure system reliability, the EIM design ensures that EIM Entities also be required to make showings that ensure they are not leaning on the capacity planned and paid for by California consumers.

ISO Response

Section 3.4.3 of the 2nd Revised Straw Proposal has expanded the original discussion of the flexible ramping constraint as it applies to EIM, and section 2.3 provides an overview of how EIM design elements promote resource sufficiency, with details being developed in other sections. Other ISO stakeholder processes continue to develop the requirements within the ISO's BAA. We look forward to participation by BANC and entities within BANC in these discussions.

EIM Must Address Resource Sufficiency

As a corollary to the issues raised above, any EIM design must address resource sufficiency. BANC is concerned that capacity sufficiency has not been adequately considered in this design effort focused on energy optimization. Without requirements for capacity sufficiency, EIM Entities can fully be expected to lean on the EIM to access more economic resources from an energy perspective. The EIM should not afford participants with the ability to lean on capacity commitments in the CAISO marketplace that are due to planning obligations and associated operational "must offer" obligations. Designing an EIM which permits such activity would undermine both the efficient and sufficient commitment of capacity resources in the Western Interconnection, with serious potential reliability consequences.

The installation of substantial intermittent renewable resources on the Western grid has significantly increased the need for the commitment of dispatchable resources capable of providing balancing capacity to ensure that reliable service to firm load can be maintained. This is reflected in

the costs paid by transmission customers under applicable transmission provider Open Access Transmission Tariffs. These costs include the costs of necessary capacity commitments.
It is critical that the CAISO ensure that all EIM Entities be required to be balanced from a capacity perspective in a forward operational period. Failure to do so could lead to insufficient dispatchable energy resources being online and available to maintain reliable service to firm load.

ISO Response

Section 2.3 of the 2nd Revised Straw Proposal provides an overview of how EIM design elements promote resource sufficiency, with details being developed in other sections. We look forward to participation by BANC and entities within BANC in discussion of these provisions.

COI Impacts

BANC supports the Comments that have been submitted in this stakeholder process by the Transmission Agency of Northern California. Much additional discussion is needed to ascertain how intertie flows will be affected, and the impact of those modified flows on the rights of non-participants on the Intertie, Intertie operation, and grid reliability. EIM transactions across COI will certainly increase unscheduled flow on paths not under CAISO control thus decreasing the real time flexibility to optimize that transmission asset for the benefit of its owners.

ISO 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 and plans to continue the reciprocal interactions on operational issues between the ISO and entities within BANC. If BANC identifies specific concerns about the interaction of EIM with BANC's system, this would facilitate identification of needs for additional discussions.

GHG

The GHG examples and proposals outlined by the CAISO appear to propose an administrative adder for carbon for resource bids into the EIM. *Revised Straw Proposal at 51.* BANC appreciates the CAISO's initial effort to tackle this problem. It appears to need considerable further discussion and development, which is not a criticism but simply a reflection of the complexity of the matter.

BANC's policy objectives on this issue include: (1) ensuring that EIM dispatch does not result in resources dispatched through EIM that increase the carbon emissions of the resources selected to serve California load in Real Time either directly or via resource shuffling, and (2) the resources of EIM Entities do not have a competitive advantage in CAISO administered markets, including EIM. How these issues will be addressed should be the subject of public workshops that include, and are possibly sponsored by, the California Air Resources Board.

ISO Response

Section 3.12 of the 2nd Revised Straw Proposal contains an expanded discussion of GHG emission costs for imports into California, which will be discussed in the July 9 stakeholder meeting. This

section has been prepared in consultation with the California Air Resources Board (CARB) staff. CARB is in the initial stages of formulating draft amendments to both the Mandatory Reporting and Cap-and-Trade regulations. CARB will propose modifications necessary to facilitate the implementation of the EIM, as needed. There will be an opportunity for stakeholders to review and discuss proposed regulatory changes at CARB's upcoming Cap-and-Trade workshop in July. CARB plans to release proposed regulatory changes before the workshop. Modifications to the Mandatory Reporting Regulation (MRR) will follow and support the proposed modifications to the Cap-and-Trade regulation.

Company	Date	Submitted By
Bonneville Power Administration	6/14/13	Eddie Elizeh egelizeh@bpa.gov

Overview

Bonneville Power Administration (BPA) appreciates the opportunity to provide comments on the CAISO revised straw proposal, posted on 5/30/13, for its proposed Energy Imbalance Market (EIM). BPA believes that the CAISO should address issues and concerns pertaining to intermediate balancing authority area system operations particularly when potential EIM Entities will need to use an intermediate transmission system in order to fully participate in the CAISO EIM market. BPA is interested in understanding: (1) how to effectively deal with potential implications of CAISO market operation dispatch of resources; (2) overall CAISO system operations as it relates to BPA's need for appropriate dispatch visibility and situational awareness to ensure reliability of the BPA system; and (3) gaining an improved understanding of how scheduling and settlement between the CAISO and an EIM Entity may impact BPA as an intermediate balancing authority area.

The BPA Balancing Authority Area, with its vast transmission system, encompasses most of the northwest region. BPA is generally interested in ensuring our ability to maintain reliability, identify and manage potential cost shifts between our customers and address tariff conflicts between EIM Entities and non-participating balancing authority areas.

BPA looks forward to continued collaboration with CAISO to find mutually agreeable solutions to issues raised prior to the EIM implementation date of October 2014.

ISO Response

The ISO appreciates BPA's interest and participation in this stakeholder process. The ISO is also committed to working with intermediate balancing authority areas to gain the needed operational understanding to ensure coordination and situational awareness of EIM.

General Comment #1

The proposed timelines for both the stakeholder process and EIM implementation date are tight given the complexity of the balancing authority area systems and degree of reviews and analyses needed in advance of EIM implementation date. BPA hopes that the CAISO will be open to discussing a longer evaluation period with stakeholders who may need additional time to review the proposal, conduct analysis[1], and provide comments that will help identify potential reliability

impacts to systems in the west.

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[1] Analysis involves modeling of respective EIM Entity's system in relation to intermediate balancing authority area systems; modeling contract rights under tariff service; modeling generation and performance under different dispatch scenarios of potential EIM participants; and analysis of needed coordination for voltage and reactive support systems that are scaled to size and generator frequency under EIM. Additional analysis may be identified and required to fully evaluate the CAISO EIM proposal relative to intermediate balancing authority areas.

ISO Response

The ISO has designed the schedule for this stakeholder process to obtain as much stakeholder input as possible within the available time, and believes the ISO's seven scheduled stakeholder meetings will provide a meaningful forum for EIM design. To the extent that specific issues need to be addressed in other ways, appropriate processes will be established. The ISO has modified the schedule to provide additional review time of the 2nd revised strawproposal and and opporuntity for a 3rd revised straw proposal prior to the draft final proposal.

General Comment #2

A topic that frequently arises as part of BPA's review is the interaction of our respective tariffs. This requires more extensive discussions than we had initially anticipated. CAISO should consider holding stakeholder meetings that deal with potential conflicts that may arise between the CAISO's tariff and an intermediate balancing authority area's tariff as an explicit topic.

ISO Response

The ISO plans to engage in specific stakeholder discussions concerning tariff related matters as part of its overall tariff development effort consistent with the timeline set forth in the proposal. These discussions will largely deal with provisions of the ISO tariff and its relationship with EIM Entity tariffs, not specifically third party tariffs. If a specific potential conflict between the ISO or EIM Entity tariffs is identified, we encourage you to raise questions at that time. In the meantime, we will continue to work with other balancing authorities to consider matters related to EIM implementation as appropriate, including potential operating practices and procedures as mentioned.

General Comment #3

The CAISO proposal should include solutions to avoid unpaid usage of transmission on an intermediate system.

ISO Response

EIM will limit its dispatches to the scheduling paths and capacity that participants in EIM make available for this purpose. The participants in EIM may either own or have contractual rights to their capacity that they make available to EIM. If the transmission right is contractual, it can be presumed that there has already been payment for the capacity.

General Comment #4

The CAISO should clarify whether the proposal assumes that an intermediate balancing authority area has compatible system capabilities like dynamic capabilities with the CAISO, and seek stakeholder input on the potential costs and cost shifts of achieving sufficient system capabilities and data alignment needed for EIM operation.

ISO Response

The ISO proposes to track transfers between and through BAAs through the use of dynamic tag that will conform to all NERC, NAESB, and WECC standards and business practices. The ISO recognizes there may be a need to limit the change in EIM transfer from one interval to the next interval to address constraints on rate of change on some interfaces. To the extent that any BAAs or transmission providers have limitations associated with such rates of change on transfer, the ISO will work with them on these operational issues

General Comment #5

CAISO should more thoroughly describe the proposed resource adequacy and/or sufficiency standard and how it will be applied to the EIM model outside of California.

ISO Response

Resource sufficiency, supply adequacy, scheduling requirements, and related topics are discussed in sections 2.3, 3.3.5, 3.3.7, and elsewhere in the 2nd Revised Straw Proposal.

General Comment #6

The CAISO should plan on more discussion on the type of agreements required and the terms and conditions of commercial operations between CAISO and intermediate balancing areas. Agreements detailing operational, reliability and commercial arrangements should be negotiated and executed before the EIM implementation date. Such agreements will need to be established consistent with current statutes and governance requirements of all stakeholders. Protocols and/or desk procedures will also be needed consistent with current statutes and governance requirements of all stakeholders.

ISO Response

Standard agreements will be developed later in the ISO's stakeholder process, through draft tariff language, stakeholder comments, and stakeholder meetings as listed in section 2.4 of the 2nd Revised Straw Proposal. If needs to amend other agreements are identified, such as between BAAs, these will be developed between the parties to the agreements. The ISO will develop any needed changes to its operating proceedures, and other BAAs may also choose to review their procedures.

General Comment #7

BPA encourages the CAISO to be mindful of potential ratepayer vulnerability for all non-industrial loads in less populous states, including but not limited to Oregon, Idaho, Utah, Nevada and Wyoming, where Variable Energy Resource (VER) development and cost exposure is expected to grow. We note the potential of a Locational Imbalance Price on the local loads, whose demand for balancing energy on 5-minute intervals is considerably less than that from VERs and their ability to pay may be strained.

ISO Response

One purpose of the ISO's stakeholder process is to allow stakeholders to identify specific issues, so they can be addressed in appropriate ways. BPA and other stakeholders are invited to identify specific issues, but general statements of concern may not provide a basis for resolution of specific concern.

Specific Comments - Section 2.2.

"Changes to Straw Proposal and Issue Paper". Please provide a redline of changes from version to version of the developing CAISO EIM Straw Proposal.

ISO Response

At this point of the stakeholder process, the straw proposal has numerous small changes from previous versions that could make comparisons difficult. Instead, sections 2.2 and 2.3 of the 2nd Revised Straw Proposal highlight the substantive changes.

Specific Comments - Section 3.3.1.

"Registration of Market Resources (Master File)" mentions that an "EIM service agreement" is still to be defined. Can the CAISO please give an indication of when the EIM service agreement will be posted for stakeholder review and comment?

ISO Response

As listed in section 2.4 of the 2nd Revised Straw Proposal, the ISO will post a tariff framework on Sept. 10, 2013, and draft tariff language on Nov. 12.

Specific Comments – Section 3.3.3.

"EIM Scheduling Coordinator Demand Forecasting" says "the Scheduling Coordinator may elect the

option to provide their own demand forecast as part of the base schedules or adopt the Market Operator's demand forecast for the EIM Entity BAA". Please explain the election process, criteria to self-provide demand forecasts, the timing of the election, how and when the Scheduling Coordinator will be notified that its request has been approved or denied, and how long the election period is intended to last. Will the Scheduling Coordinator be able to switch between self-provision and adoption of the Market Operator's demand forecast within the specified term?

ISO Response

One possible mechanism for designating an EIM Entity's intent to use the Market Operator's demand forecast or its own forecast may be its EIM Service Agreement. This designation would last until it is changed by the EIM Entity. The ISO does not currently envision that it would approve or deny an EIM Entity's intent to use one forecast or the other. If an EIM Entity had declared its intent to schedule using the Market Operator's forecast, it is still expected to submit resources in its base schedule to match that forecast. In the proposal described in section 3.3.5 of the 2nd Revised Straw Proposal, if the resources in its base schedule do not match the Market Operator's forecast within 1%, the EIM Entity would be deemed to have scheduled using its own forecast, and it would be subject to the under-scheduling penalty if it under-schedules by 4% or more.

Specific Comments – Section 3.3.5.1 & 3.3.5.2.

"Charges for Under-Scheduling and Charges for Over-Scheduling". Please explain what each charge is, how it will be calculated, and how and when it will apply. Also, please clarify what the following statement means: "If the EIM Entity Scheduling Coordinator uses the Market Operator demand forecast and provides sufficient base schedules to meet the Market Operator's demand forecast then under-over charges shall not apply." Please describe what sufficient base schedules mean in this context?

ISO Response

Section 3.3.5 of the 2nd Revised Straw Proposal provides additional detail concerning under- and over-scheduling penalties. These penalties apply only when an EIM Entity does not use the Market Operator's demand forecast, including scheduling resources in its base schedule that match the forecast within 1%.

Specific Comments – Section 3.8

"Market Rule Oversight". BPA thanks the CAISO for making a separate but parallel stakeholder process available for all to give due consideration to developing a governance model that is flexible and will meet the needs of many. Stakeholders should be provided advance notice of meetings and materials.

ISO Response

The document publication dates, meeting dates, and deadlines for comments are in section 2.4 of the 2nd Revised Straw Proposal. As these dates approach, the ISO issues a market notice three weeks before an in-person meeting (one week if it were a conference call), posts documents to the ISO web site one week before the meeting, and posts presentations two days before the meeting.

Specific Comments – Section 3.10

"Transmission Service" states that "Since transfer capability between the CAISO and initial EIM Entities may be limited, the CAISO proposes that in the initial EIM implementation there would be no charge between the CAISO and EIM Entities for EIM's use of as-available transmission." (1) Please clarify what is meant by "as available" transmission. (2) Does the CAISO differentiate between NT and PTP rights of an EIM Entity for modeling and market operation purposes? BPA is asking this question to ensure tariff compliance and avoid potential cost-shifts to BPA customers. (3) Please clarify what is meant by "A question to be addressed is whether there are needs for an EIM Entity or EIM Participating Resource within an EIM Entity to have arranged transmission service agreements (e.g., network service, point-to-point service, or non-firm service) to or through transmission systems in other EIM Entity Areas"? (4) What assumptions about transmission rights and usage will the EIM Market Operator rely on for dispatch and redispatch, when needed? (5) Please explain how the CAISO monetizes transmission usage based on resource availability and energy bids.

ISO Response

1: "As available" transmission means that no transmission is reserved for EIM use in the day-ahead or hourly market processes that are open to all ISO market participants, and that dispatches through EIM only use incremental or decremental transmission capacity that remains available after these day-ahead or hourly market processes.

2: The ISO will evaluate any difference in EIM operations based on network (NT) versus point-to-point (PTP) transmission rights during EIM implementation phases, as transmission limits that EIM needs to enforce, and does not consider this distinction to significantly affect EIM policy development. EIM wil operate within transmission rights that are made available by participants in EIM.

3: It is believed that an EIM Participating Resource will need to have transmission rights within the EIM Entity through which it participates in EIM, while an EIM Entity manages transmission rights within its boundary and only needs to have rights to reach one or more other EIM Entities or the ISO. This is being confirmed through separate discussions.

4: EIM wil operate within transmission rights that are made available by participants in EIM. To the extent that these rights are within BAAs that are not EIM Entities, the ISO and EIM Entities will work with such BAAs to determine any transmission limitations beyond the nature of the transmission rights.

5: EIM usage is based on incremental and decremental dispatch from base schedules that are expected to match forecasted demand with scheduled supply resources, which will have scheduled through otherwise existing market mechanisms. Thus, the existing market mechanisms will have already recovered transmission revenue requirements. Whether any additional transmission usage rates are necessary remains under consideration.

Specific Comments – Section 3.4.2.

"Congestion Management". BPA would like the opportunity for more discussion about congestion management operation protocols and procedures. We suggest these protocols and procedures be put in place prior to use of BPA's transmission system for EIM purposes.

ISO Response

EIM will use only transmission rights that are made available by participants in EIM, and will use congestion management mechanisms similar to the ISO's existing market, as described in the ISO's Business Practice Manual for Market Operations, and in section 3.4.2 of the 2nd Revised Straw Proposal. To the extent there are remaining unresolved questions, the ISO invites more specific comments.

Specific Comments – Section 3.4.4.

"Scarcity" is described in terms of energy imbalance being used to meet demand deviations in the footprint that can manifest because of either insufficient energy bids or inadequate ramp capacity and that the power balances constraint would be relaxed at an "administrative penalty cost" in that situation. Please describe, and provide an example of, what the "administrative penalty cost" is, how

it is calculated, and how and when it would be applied.

ISO Response

Section 3.4.4 of the 2nd Revised Straw Proposal now contains a reference to sections 7.4.2 and 7.4.3 of the ISO's Business Practice Manual for Market Operations.

Specific Comments – Section 3.3.15.

"Generation & Transmission Outages" will require new processes and procedures to be effective. CAISO's "Outage Management Business Practices Manual" is dated Nov 12, 2012. Will this manual be updated to reflect new processes and procedures introduced by the proposed CAISO EIM? BPA would like to participate in the development of the rules and procedures that consider the intermediate balancing authority area.

ISO Response

The ISO's Business Practice Manuals are updated as needed to reflect changes in processes. For example, the current version of the Outage Management BPM is version 9. The ISO will update and/or add any BPM that is affected by EIM implementation. Although historically most BPM updates have been initiated by ISO staff, the ISO's BPM change management process also allows stakeholders to submit a Proposed Revision Request (PRR). The ISO's BPM change management process can be accessed at http://www.caiso.com/rules/Pages/BusinessPracticeManuals/Default.aspx.

Specific Comments – Section 3.3.9.1.

"Minimum Shift Optimization Detail". Please provide more explanation for the purpose of the minimum shift optimization. More specifically, (1) Could the CAISO request EIM Entities to provide a feasible solution that does not violate any transmission or reliability constraints such as voltage stability or transient stability? (2) If minimum shift optimization is unable to resolve the transmission congestion, the current CAISO proposal is to relax the transmission constraint. Can this cause an SOL violation, and if so, how does the CAISO propose to address such a violation? (3) Will the base schedule adjustments cause MVAR reserve issues or RAS arming changes? (4) Is the CAISO planning to model all the WECC reliability constraints in the minimum shift optimization and EIM?

ISO Response

The ISO is considering changes to the process of achieving feasility in base schedules, as discussed in section 3.3.9 of the 2nd Revised Straw Proposal.

The minimum shift optimization discussed in the previous Revised Straw Proposal has been based on congestion management, not voltage or transient stability, which is beyond the capability of existing market optimization software. If the minimum shift optimization could not resolve congestion, the ISO would inform the EIM Entity that it would need to take further action, outside of EIM, to avoid SOL violations. Similarly, EIM Entities remain responsible for MVAR reserve issues and RAS arming changes within their BAAs. The ISO will model the topology of EIM Entities' networks in similar detail as the ISO's BAA, and will enforce transmission constraints for congestion that EIM Entities ask the Market Operator to enforce within their BAAs.

Specific Comments – Section 3.6.4.

"Seams Coordination & Interaction with WECC Congestion Management". BPA is planning to conduct additional studies and analysis to ensure there are no unintended negative impacts from the EIM 5-minute dispatches on its system. In addition, BPA will focus on its Network where BPA has several flowgate constraints (with DTC limits) that will be studied in more detail. Please address what the CAISO would do in the event of limitations on dynamic transfer rights.

ISO Response

The ISO will manage congestion in the EIM footprint within the transmission capacity made available by participants in EIM, using limits identified to the Market Operator by EIM Entities. The ISO is available for discussion with adjacent BAAs to find solutions to specific issues that the adjacent BAAs identify.

Closing

Thank you in advance for consideration and written reply to our inquiries. For the reasons previously stated, BPA respectfully requests that CAISO consider extending the timeline to allow for more extensive stakeholder review and input on CAISO's EIM Straw Proposal. BPA suggests the CAISO work with stakeholders to determine whether or not additional time is needed to accommodate the necessary system improvements, development of operating procedures, and training of operations personnel needed to support the full functioning of an operational EIM. It is important to note for the CAISO that within the established timeframe, BPA intends to hold its own stakeholder process to ensure that we have fully discussed and carefully considered all potential aspects of the proposed EIM on the federal system and its vast customer and constituent base

ISO Response

Thank you for your comments. Concerning the timeframe of this stakeholder process, The ISO believes its seven scheduled stakeholder meetings will provide a meaningful forum for EIM design and can obtain a significant amount of stakeholder input for policy development within the available time. Additional stakeholder involvement will occur during the implementation phase. The ISO will be interested in following BPA's stakeholder process.

Company	Date	Submitted By
Calpine	6/14/2013	

Summary

Calpine contributed to and fully supports the comments of WPTF submitted today.
We remain generally supportive of an EIM that sets market-wide 5-minute LMP prices that are based on non-discriminatory practices. In this document, we take the opportunity to highlight two issues of key concern: the growing number of disparities in pricing between similarly situated generators in the combined market and a request to review the benefits of the EIM in a world of 15-minute scheduling.

ISO Response

FERC Order No. 764 requires jurisdictional entities to offer 15-minute schedule. As the ISO stated in the FERC Order No. 764 stakeholder initiative, as the number of imports and exports that can be economically scheduled in RTUC increases this will improve the meeting real-time load because intertie schedule changes can occure with more granularity than hourly. 15-minute schedule does not reduce the need or benefits of the 5-minute dispatch and locational pricing within a BAA which the EIM provides.

Disparities being recognized and must be addressed

The list of differences in treatment for similarly situated generators is growing. IF a single market is intended by the EIM, some of these structural differences must be resolved:

- Offer obligations are very different in that California RA units are required to offer into the RT markets and EIM Entity (EIME) generators have no obligations. This difference creates the possibility of "capacity leaning." Both sides of this "free call option" coin end up tails for California. RA sellers provide capacity with no compensation to EIME, and RA buyers get less value for the RA they have acquired. Calpine does appreciate the revised straw proposal that would have EIMEs participate in RT capacity costs (like FlexiRamp). It seems that the CAISO must consider either a capacity obligation in the EIME, or a must offer obligation (rather than a voluntary market.)

ISO Response

The EIM Entity Scheduling Coordinator must submit a balanced and feasible schedule. This ensures that for the EIM Entity BAA there is sufficient generation participating in the EIM to meet its load forecast and flexible ramping constraint. As discussed in section 2.3, the ISO has included additional market design features that address "capacity leaning".

GHG kickbacks will create price distortions

The proposal to refund certain generators their GHG costs will create price separations – possibly even for a single generator. That is, if the output of a single generator is split between allocations to the CAISO and to the EIME, they may have two different prices for identical MW. The benefits of the

EIM will be skewed as a result of these differences in price. Certainly, the E3 analysis of benefits did not incorporate the complicated kickbacks proposed by the CAISO.

ISO Response

The GHG proposal calculates the marginal GHG costs for real-time imports to California based upon the EIM Participating Resources' emission rate. The EIM Participating Resource Scheduling Coordinator then has an obligation to secure GHG allowances. The GHG rents collected through the market optimization compensate the EIM Participating Resource Scheduling Coordinator for the cost of securing GHG allowances for its resources output that is imported to California.

Metering differences.

As we understand, (and we may misunderstand) PacifiCorp will not require either its own merchant generation or other EIME participants to install and maintain 5 minute metering. Rather they will disaggregate the 15 minute pulses into 5 minute average output. This averaging will significantly reduce imbalances and may create questions about the need for, and integrity of a 5 minute dispatch.

ISO Response

The metering requirements are the same for the EIM Entity BAA and ISO.

The absence or presence of LMPM in EIME areas must be resolved

On one hand, the absence of LMPM would allow scarcity pricing that is entirely absent in the California market. On the other hand, as Powerex identified, a significant principle supporting LMPM in California is the presence of an RA market. The absence of such a capacity payment in other EIME areas severely limits the justification for LMPM.

ISO Response

The ISO proposes to perform LMPM separately for each BAA in the EIM.

Transmission constraint relaxation

The CAISO proposes to relax any transmission constraint that cannot be resolved in an EIME area through the non-market "Minimum Shift Optimization". This relaxation is in stark contrast to the policies of the CAISO that require parameter pricing in these circumstances.

ISO Response

The minimum shift optimization has been intended to make EIM Entities responsible for maintaining base schedules that are both feasible and balanced, and the constraint relaxation would maintain this responsibility by EIM Entities if participants in their BAAs have not offered sufficient bids. The responsibility for feasible and balanced schedules in EIM Entitty's BAAs is an obligation exceeding those of existing ISO market participants. As discussed in Section 2.3, the introduction of the real-time congestion balancing account for each BAA and the proposed allocation approach may reduce the need for the minimum shift optimization.

Benefits of the EIM

When E3 evaluated the benefits of the EIM, they did not consider the constraints to pricing or differences in treatment that are now apparent. In addition, they used, as a baseline hourly schedules. We now know more facts that could affect the balance of burdens and benefits of the EIM. Specifically, we anticipate that 15 minute scheduling will be in place before the EIM, and this could capture most of the benefits. Indeed, if PacifiCorp does not require 5 minute metering and dispatch, it could capture all of the reported benefits. The ISO should continue to review the balance of burdens and benefits of the evolving proposal.

ISO Response

Studies including the PacifiCorp-EIM Benefits study have recognized that benefits of EIM implementation will take place in multiple ways, such that the use of baseline hourly schedules does not undermine the study conclusions. All participants in EIM will be subject to 5-minute settlement as well as dispatch of submitted bids and metering requirements as stated in the 2nd Revised Straw Proposal.

Company	Date	Submitted By
Morgan Stanley Capital Group Inc. (MSCG)	6/14/2013	Steve Huhman (914) 225-1592 Steven.Huhman@morganstanley.com

Opening Comments

Morgan Stanley Capital Group Inc. (MSCG) has reviewed the May 30 Revised Straw Proposal. This iteration has done a good job of filling in the substantive detail that will need to be developed for an Energy Imbalance Market to be implemented. There are still some areas where those details need to be fleshed out.

At this point in time we are still broadly positive and supportive of the concept. As regards any particular component, we are still absorbing and assessing the implications. Because our degree of understanding is still at such a tentative level, likewise, our views on the many issues at stake are preliminary. Similarly, many of our comments may be more in the spirit of brainstorming or raising issues and concerns, as opposed to constituting definitive positions.
With that preface, we offer the following thoughts on certain key items from the Revised Straw Proposal that particularly captured out attention:

ISO Response

The ISO appreciates MSCG's continued participation in the stakeholder process.

MSCG believes the proposal to run the EIM without assessing transmission charges for the first year is a sound idea.

The collection of experience-based data over that timeframe should provide much useful insight into the best long-term approach. We do not yet have a view on what the theoretically correct approach is, but would observe that one key driver must be the extent to which the EIM impinges (or not) on the rights of firm transmission holders. Similarly, no non-market processes should be used to allocate or "set aside" transmission for EIM use.

ISO Response

The ISO has made no changes to the transmission service proposal outlined in the 2nd Revised Straw Proposal. The ISO is still evaluating potential options and will discuss further in future papers. No transmission is being set aside for EIM. Rather under the proposed design, EIM is only making us of as-available transmission that has been made available by the EIM Entitiy.

Management of GHG obligations for EIM resources "deemed" to have delivered to California

One issue meriting further discussion is the management of GHG obligations for EIM resources "deemed" to have delivered to California, and thereby incurred a compliance obligation under the California cap-and-trade program. In our view, the most efficient approach would simply be for the CAISO to take First Jurisdictional Deliverer responsibility for any such power. We are aware, however, of how adamantly the CAISO is opposed to taking on this obligation. In that context, we would make the following observation, and offer a few "brainstorms" for possible approaches that merit further discussions:

A. One theoretically reasonable approach, suggested by Clare Breidenich, would be to allow EIM bidders to post separate bids for California and non-California dispatches. We do not know what sorts of technical (e.g. software-related) issues this approach might raise, however, for both CAISO and bidders.
B. Another approach would be to have the CAISO purchase the required allowances and re-sell them to the resource at the price used by the CAISO to calculate the LMP. This would hold the resource harmless, financially, for GHG costs. The CAISO would have to periodically reconcile the Allowance Purchase and Sale Account, perhaps quarterly, and the net would create an uplift charge or credit.
C. Under any approach where the CAISO calculates a cost of GHG emissions for a resource, both front and back-end time lags will be crucial. That is, any index used should be the index published closest to the time of the dispatch decision. On the "back" end, notification of the resource that it has been deemed dispatched to California should occur ASAP. Practically speaking, there should be no more than a "next day" lag. For example, publish by 5:00 a.m. the day following, any EIM dispatches that are deemed to be California delivered for the previous calendar day.

ISO Response

The ISO has been working closely with CARB on the GHG proposal for EIM. The discussions between the ISO and CARB are reflected in the updates to Section 3.12.

One more general note on the methodology outlined in the Straw Proposal

Our interpretation of the methodology described is that the intent is to calculate an LMP for a resource that will never be less than its bid plus the (inferred) allowance cost. However, this is never explicitly stated in so many words. If this is an accurate interpretation, MSCG would appreciate it if the next iteration of the Straw Proposal would add verbiage so indicating. Equally, if we are wrong, we would appreciate some up-front statement of the objective, before "diving in" to the technical details of how the objective would be accomplished.

ISO Response

The ISO has included additional examples in Section 3.12. The GHG proposal establishes the marginal cost of GHG for real-time transfers from the EIM Entity BAA into the ISO. This ensures that the total compensation to the resource considers the GHG compliance obligation when dispatching the resource.

In the next iteration of the Straw Proposal, MSCG strongly requests the CAISO to include some technical discussion about how widely integrated it expects the EIM to be

In particular, there is very little transmission that goes directly from PacifiCorp East (PACE) to CAISO. As a practical matter, how often will a resource located in PACE be an option to meet a need in, say, SP15 given that the only transmission connection between CAISO and PACE includes a DC tie segment? It would be very helpful to know, at least in its anticipated initial configuration, to what degree the EIM footprint will become a single, integrated whole, and to what degree it will be two or three mostly separate markets with a bit of interchange at the margins.

ISO Response

EIM is a single, integrated real-time market, and resources in any area within the EIM footprint may meet needs for real-time imbalance energy of congestion management in another area within the footprint, within the available transmission capacity. The transmission between EIM Entities and the ISO will be enforced in the integrated real-time market. If this constraint is binding, then congestion costs will differ between BAA, but the system marginal energy cost will be the same.

Section 3.7.8 on Uplift Allocations gave rise to many significant concerns

At this point in time, we are not prepared to argue that any given approach is "right" or "wrong". However, we do hope that the potential impacts of various approaches are thoroughly analyzed, with regard to which categories of market participants would receive relatively more or less of the uplift. To be clear, allocations methodologies should be designed on principle, not impact, but impacts need to be thoroughly understood to avoid unintended consequences, and prevent misunderstandings by market participants as to what the impact of any given approach would be.

Some of the concerns we will express here probably can‟t be answered via the CAISO stakeholder

process - -they may be within the discretion of the other EIM BAAs. Nevertheless, we believe it is appropriate to identify any and all concerns in any and all fora, in order to ensure maximum recognition and discussion of all concerns. A few examples of questions that came to mind when reading Section 3.7.8:

- Does the EIM methodology inappropriately shift Real-time uplift away from metered load, and particularly CAISO metered load, and instead disperse it to other market participants? We start from the rebuttable presumption that the EIM ultimately exists for the benefit of metered load, and therefore said load should bear the uplift costs. Currently, CAISO bills RT uplift to load, presumably because load is the primary if not only beneficiary of imbalance service in terms of maintaining reliable operations, or because there is no other way to accurately assess the cost to those entities causing the system strain. It appears to us that the EIM proposal intends to add up all schedule deviations, instructed or not, across all participants in the EIM, load and generation, as a way to determine which BA is "using (benefiting from)" the EIM more. So, theoretically, if a large CAISO load spike is served entirely by PAC generators, any market uplift will be split 50/50 between PAC and CAISO, because CAISO considers the PAC generators a beneficiary of the service.

- How will PacifiCorp allocate its share of uplift? Can they rate-base it? Pass it to load? Pass it to participating generation? Much of the uplift driver of late in the CAISO has to do with revenue insufficiencies arising from SP15 congestion differences between DAM and RT. It is not clear how a PacifiCorp-BAA generator in Oregon, ramping up on a 5-minute economic bid, has any causation link to that.

ISO Response

The ISO has updated the proposal allocation of real-time uplifts and neutrality accounts. The proposal isolates accounts to each BAA and in some instances considers real-time transfers between BAAs. As you correctly noted above, once the accounts are calculated for each BAA, the rules of the BAA determine the allocation within that BAA.

The "Base Schedule" concept, and the related "Base Schedule Adjustment," are not entirely clear to us, and potentially raise some concerns

Stated simplistically, this process appears to take the traditional "checkout" process used for day-ahead interchange schedules, and expand it to include the full day-ahead "operating plan" for EIM-participating BAAs. It then further appears that the proposal is to give the CAISO rights to make "adjustments" to these base schedules. It would then be left to the BAAs to figure out how to charge or compensate various resources impacted by such "adjustments". First, we would appreciate confirmation or clarification in the next iteration of the Straw Proposal as to whether or not this is an accurate interpretation of the proposed process. Second, assuming our interpretation is roughly accurate, the process creates several points of anxiety. At the top of the list, the proposal to not use "economic bids" for such adjustments creates wariness about discrimination. For example, is there the potential for generators inside the EIM Entity receiving preferential treatment over others in the out-of-market redispatch order, for economics or perhaps even operational convenience? Could a merchant arm be favored versus independent generators? The proposal also appears to leave it to the BAA to determine how to settle such pre-market adjustments. Until the details of how this will work are fleshed out, MSCG will be concerned that there is systemic risk of discriminatory behavior.

ISO Response

The EIM proposal does not encompass the process of developing the base schedules from which EIM performs optimal dispatch. It provides advisory information in the day-ahead timeframe and for real-time intervals prior to EIM's binding interval, which EIM Entities may consider in submission of their base schedules, but does not alter base schedules if they are balanced and feasible. It is correct that changes between the submitted base schedule and the adjusted base schedule as determined by the minimum shift optimization would need to be settled outside the EIM according to the rules of the EIM Entity.

See Section 2.3 for the ISO discussion on the need for the minimum shift optimization given the proposed real-time congestion balancing account and other design elements.

We assume that any resource choosing to participate in the EIM will need to "register" in some form with the CAISO.

We further presume that part of that registration process will be to provide information on the resource‟s emissions profile, for use in calculating the GHG impact of the dispatch, and any compliance obligation, for resources deemed to be delivered to California. However, this is not explicitly stated in the Straw Proposal. If there is indeed a field for emissions information, would entry be an option, or mandatory (presumably, any resource not providing emissions information would be assigned the ARB „„default" rate)? All of this would be as opposed to the CAISO using some methodology of its own to estimate or calculate a resource‟s emissions profile. It would be appreciated if this is explicitly clarified in the next iteration of the Straw Proposal.

ISO Response

EIM Participating Resources will be registered in the Master File.

See Section 3.12 for additional discussion on how the emissions profile will be determined for GHG.

Company	Date	Submitted By
Pacificorp	6/14/2013	

I. Introduction

Pursuant to the schedule established by the California Independent System Operator ("CAISO") for its Energy Imbalance Market ("EIM") Stakeholder Process, PacifiCorp submits the following comments to CAISO on the first Revised Straw Proposal (dated May 30, 2013) (Revised Straw Proposal). PacifiCorp has been an active participant in CAISO's Stakeholder Process, including having submitted comments on April 19, 2013 to CAISO's Initial Straw Proposal. PacifiCorp appreciates CAISO's consideration of all stakeholder comments to date and these comments are offered in the spirit of further achieving the development of robust and effective EIM market rules and practices. PacifiCorp acknowledges the ongoing nature of the issues addressed herein and reserves the right to supplement, modify, amend, or otherwise present additional comments at a future time, as permitted. In addition, PacifiCorp respectfully requests that CAISO or interested stakeholders not perceive the absence of comments on any particular question, issue or other

matter as a conclusive indication of PacifiCorp's lack of interest, support or opposition with respect thereto.

In Part II of these comments, PacifiCorp presents its summary comments on ten key issues:

A. Definition of responsibilities;
B. Uplift allocations;
C. Greenhouse gas emissions;
D. Locational market power mitigation; E. Transmission charges;
E. Governance and Oversight; G. Membership expansion;
F. Metering;
G. Enforcement Protocol; and
H. Termination Rights.

In Part III, PacifiCorp provides more detailed comments and raises certain clarifying questions.

In Part IV, PacifiCorp identifies additional typographic corrections.

While there are a number of areas where the developing detail of the market design is in alignment with the principles established in the Implementation Agreement, challenging but workable issues remain. For example, PacifiCorp appreciates and supports CAISO's proposal to have no charge for transmission for EIM for the first year of operation, as alternatives are considered further for the long-term. PacifiCorp also supports CAISO's recent response to PacifiCorp's initial comments related to the Enforcement Protocol and termination rights. The Revised Straw Proposal, however, contains at least one area that alignment with these principles, specifically the proposal on cost appears significantly out of allocation of uplift charges.

Under the Revised Straw Proposal, the proposed uplift allocations could potentially delay development and implementation of the EIM and even threaten to render participation in the EIM uneconomic. Specific discussion on each of these topics is presented in the following sections.

In addition, as part of PacifiCorp's overarching comments on the Revised Straw Proposal, CAISO should clarify in its descriptions of the EIM that for each automated five-minute interval during which real-time optimization occurs, the EIM will dispatch resources bid into the EIM to serve the total load for the EIM footprint based upon which available resources are most economic and also taking into account the load that is being served through self-schedules (i.e. not available to be dispatched). EIM settlement is based upon the difference (or imbalance) between financially binding base schedules for the subject interval and the dispatch that actually occurred during the five-minute interval. This clarification will help explain to stakeholders how "imbalance" is functioning in the EIM and what is actually occurring during each automated five-minute dispatch interval.

ISO Response

The ISO has modified the proposed allocation approach in Section 3.7.8.

In the EIM imbalances for generation are determined as follows:

- Differences between the forward bilateral schedule and the 15-minute intervals submitted

in the base schedule are settled outside the EIM according to rules of the EIM Entity.
- Differences between the base schedule and adjusted base schedule are settled outside the EIM according to rules of the EIM Entity.
- Differences between the adjusted base schedule and the 15-minute market schedule are settled in EIM at the 15-minute LMP.
- Differences between the 15-minute market schedule and the 5-minute dispatch are settled in EIM as instructed imbalance energy at the 5-minute LMP.
- Differences between the 5-minute dispatch and the resources meter are settled in EIM as uninstructed imbalance energy and settled at the 5-minute LMP

In the EIM imblances for non-participating load with hourly metering are determine as follows:

- Differences between the adjusted base schedule and the hourly meter is settled as uninstructed imbalance energy at the weighted average price based upon the load forecast used in the 15-minute market and 5-minute market.

    - If the EIM Entity Scheduling Coordinator updates base schedules every 15-minutes then the hourly meter will be shaped based upon the load forecast used in the 15-minute market.

    - If the EIM Entity Scheduling Coordinator updates base schedule hourly, then the hourly meter value will be flat for the hour when calculation uninstructed imbalance energy.

The ISO has posted a spreadsheet with the 2nd revised straw proposal which illustrates the discussion above.

II. COMMENTS ON KEY ISSUES: A. Definition of Responsibilities

In general, PacifiCorp supports the development of defined terms specific to the EIM, rather than using existing defined terms included in CAISO's tariff for its other market functions. This differentiation between the EIM definitions in CAISO's tariff and existing CAISO tariff definitions is critical to clarify responsibilities and to avoid confusion for EIM participants and for CAISO's existing market participants.

However, there remain important areas that require clarification or modification. Most importantly, the definition of EIM Participating Resource Scheduling Coordinator indicates that this could be the EIM Entity Scheduling Coordinator. PacifiCorp's implementation of EIM proposes that the EIM Entity Scheduling Coordinator will not represent any resources that will economically participate in the EIM. It is appropriate for any resources that will economically participate in the EIM to become an EIM Participating Resource Scheduling Coordinator or to obtain those services from a third-party. This will allow PacifiCorp in its function as the EIM Entity Scheduling Coordinator to maintain separation of functions in its EIM operations distinct from those entities which choose to bid their resources into the EIM. Accordingly, PacifiCorp requests that EIM Entities be given the discretion as to whether the EIM Entity Scheduling Coordinator will represent resources that will economically participate in the EIM.

In addition, PacifiCorp requests that CAISO structure the EIM such that: (i) an EIM Entity has the discretion to provide all balanced schedule information to the Market Operator through the EIM

Entity Scheduling Coordinator, including balanced schedule information for all EIM Participating Resources within the Balancing Authority Area ("BAA") of the EIM Entity or (ii) permit a scheduling coordinator that represents both load and generation within the EIM Entity footprint to provide individually balanced schedule information to the Market Operator. Accordingly, CAISO should recognize another type of scheduling coordinator – the EIM Participating Customer Scheduling Coordinator, representing both load and generation within the EIM Entity footprint, - who can submit their own balanced schedule information to the Market Operator. With respect to EIM Entities that elect the option requiring all balanced schedule information be provided through the EIM Entity Scheduling Coordinator, PacifiCorp requests that CAISO work with parties to clarify how the EIM Entity Scheduling Coordinator will interact with EIM Participating Resource Scheduling Coordinator(s) regarding the timing for the responsible EIM Entity Scheduling Coordinator to submit balanced schedules for the entire BAA or BAAs. For example, the timelines for EIM processes set forth in the Revised Straw Proposal do not explain the timing for EIM Participating Resource Scheduling Coordinator(s) to submit information needed by the EIM Entity Scheduling Coordinator for it to provide CAISO with the combined base schedule information by the required deadlines.

ISO Response

The ISO clarified that the EIM Entity Scheduling Coordinator cannot perform the role of EIM Participating Scheduling Coordinator. Only the EIM Entity Scheduling Coordinator can submit base schedules. However the EIM Entity's determination of load aggregation points can achieve the goal outlined in option ii above.

The rules for submission of information to the EIM Entity Scheduling Coordinator are determined based upon the rules of the EIM Entity. These rules are not included in the EIM design.

B. Uplift Allocations

The cost/benefit study commissioned by CAISO and PacifiCorp concluded that an EIM could produce significant benefits for customers of both entities. However, rather than seeking to capture these mutual benefits, the Revised Straw Proposal proposed to shift significant CAISO- only costs to EIM Entities. Unless CAISO reverses course, it is unlikely that EIM Entities will find it economically rational to participate in an EIM that includes CAISO BAA.

ISO Response

The allocation real-time market uplifts and neutrality accounts has been updated. See Section 3.7.8.

Real-time market uplifts and neutrality accounts should not be interpreted as incremental costs to the benefit study. These accounts arise because the LMP is unable to capture all settlements, for example uninstructed imbalance energy from supply or bid cost recovery payments made outside of the market. An overarching goal is to minimize these accounts, because this means that the LMP is able to fully reflect this costs/revenues.

1. Identification of CAISO Real-Time Uplifts

In its initial comments, PacifiCorp stressed the need for CAISO to identify each and every uplift charge associated with the real-time market.[1] The Revised Straw Proposal discusses allocation of real time uplifts in Section 3.7.8. CAISO identifies four real-time uplift charge types as "relevant" to the EIM:

- CC6477 Real Time Imbalance Energy Offset (RTIEO);
- CC6774 Real Time Congestion Offset (RTCO);
- CC6678 Real Time Bid Cost Recovery Allocation (RTBCR); and
- CC7024 Flexible Ramp Up Cost Allocation (FRCA).

The importance of proper allocation of these uplifts between customers of the EIM Entities and other CAISO market participants is magnified by the significant amounts CAISO has experienced for these four categories. These are summarized in Table 1

Table 1

Uplift Costs in Millions

Uplift	Total 2011[2]	Total 2012[3]	Total 1st Quarter 2013[4]
Real Time Imbalance Energy Offset	$137	$ 50	$15
Real Time Congestion Offset	$ 30	$185	$ 5
Real Time Bid Cost Recovery Allocation	$ 120 (includes day ahead and real time)	$ 49	$15 (includes day ahead and real time)
Flexible Ramp Up Cost Allocation	NA[5]	$ 20	$10
Total		$304	

While there are actions underway, such as CAISO's Order No. 764 compliance filing, which may reduce the historic level of uplifts, there is also continuing cause for concern about the potential levels of these costs. For example, in the first page of its filing letter in Docket ER13-550 CAISO stated,

> The influx of large quantities of variable energy resources and distributed generation will increase supply and load variability and unpredictability. The ISO anticipates that the retirement of the once-through-cooling resources will create a capacity gap of more than 3,500 megawatts needed to serve load in the ISO's balancing authority area as early as the end of 2017, and the ISO projects this capacity gap will grow to 4,600 megawatts by 2020. ISO studies have shown that the need for flexible resources and local capacity will increase as large amounts of variable energy resources and distributed generation resources come on-line and once-through-cooling units retire, while the once-through-cooling retirements will reduce the number of existing resources that are available to meet local reliability needs and to provide the flexibility necessary to maintain day-to-day reliability.

PacifiCorp notes that Flexible Ramping Constraint ("FRC") costs, which totaled $20 million for all of 2012, have already cost approximately $10 million for the first quarter of 2013.[6]

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[1]PacifiCorp Comments on CAISO's Initial Straw Proposal at 4

[2]Source CAISO DMM 2011 Annual Report on Market Issues and Performance. . http://www.caiso.com/Documents/2011AnnualReport-MarketIssues-Performance.pdf. See also, "Real-time Revenue Imbalance in CAISO Markets" by Ryan E. Kurlinski, Department of Market Monitoring, California Independent System Operator April 24, 2013. http://www.caiso.com/Documents/DiscussionPaper-Real-timeRevenueImbalance_CaliforniaISO_Markets.pdf.

[3]Source CAISO DMM 2012 Annual Report on Market Issues and Performance. http://www.caiao.com/Documents/2012AnnualReport-MarketIssue-Performance.pdf.

[4]Source CAISO DMM Q1 2013 Report on Market Issues and Performance dated May 29, 2013.http://www.caiso.com/Documents/2013FirstQuarterReport-MarketIssues_Performance-May2013.pdf.

[5]In December 2011, CAISO began enforcing the upward flexible ramping constraint in both the 15-minute real-time pre-dispatch and in the five-minute real-time dispatch markets. The constraint is applied to internal generation resources, as well as to proxy demand response resources, and not to external resources. DMM 2011 Annual Report at 75.

[6]See, the Department of Market Monitoring Q1 2013 Report on Market Issues and Performance dated May 29, 2013 at 48. The report can be found at http://www.ISO.com/Documents/2013FirstQuarterReport-MarketIssues_Performance-May2013.pdf

ISO Response

The ISO has upated Section 3.7.8.

The flexible ramping constraint is a key feature of the real-time market. The constraint ensures that sufficient ramping capability is online and that this ramping capability is managed in the market optimization. In ensuring sufficient ramping capability, generation can incur opportunity costs in the financially binding interval when the resource's energy bid is economic, but the resource is not dispatched for energy in the financially binding interval because the resource is need to meet load later in the market optimization horizon.

Prior to the implementation of the flexible ramping constraint, the ISO observed instances where insuffient ramp resulted in reliability concerns such as leaning on regulation or the interconnection. While there are sufficient resources available, by not managing ramping capability so that it is available in future market opitization runs, the ramp capability would be exhausted resulting in relaxation of the power balance constraint and prices being set by administrative penalty prices.

2. Current Allocation of These Uplift Charges

The $304 million in uplift costs in 2012 identified in Table 1 were allocated to CAISO Measured Demand (metered CAISO Demand plus Real-Time Interchange Export Schedules) with the exception of the FRC, which is allocated 75 percent to Measured Demand and 25 percent to gross negative supply deviations.

Simply stated, these costs exist today without an EIM. The existence of an EIM should not shift these existing costs to EIM participants. If CAISO served as the Market Operator, but the optimization included only external EIM Entities and not CAISO's BAA, presumably these uplift charges would be eliminated or significantly reduced. Accordingly, CAISO must seek to minimize not only uplift costs moving between an EIM Entity and CAISO BAA, but also uplift costs moving between CAISO BAA and an EIM Entity.

Of particular significance to PacifiCorp is the cost proposed for allocation of payments to "virtual" bidders who had neither actual resources nor actual load ($70 million of which were paid in 2012).[7] EIM Entities, such as PacifiCorp, will not expose CAISO customers to (i) costs associated with changes between day-ahead and real-time schedules in the external BAA; (ii) costs associated with procurement of sufficient reserves; or (iii) costs associated with "exceptional" dispatches. In addition, PacifiCorp, for one, does not engage in virtual transactions. CAISO should not impose its costs for these activities on EIM Entities.

The proposal with respect to the FRC is a further example of the inequity associated with CAISO's proposal. Currently, CAISO procures additional "non-contingent" reserves to account for changes between supply and demand in real-time. It is important to note that to implement the FRC, CAISO was required to file for and obtain Federal Energy Regulatory Commission ("FERC") approval to secure these additional reserves. On October 7, 2011, CAISO filed for authorization to impose the FRC in Docket No. ER12-50. FERC accepted the FRC for implementation, subject to hearing and settlement judge proceedings.[8] In its Order, FERC stated, "the difference between the Flexible Ramping Constraint service and non-contingent spinning reserves is not clear...[i]n other words, CAISO has not demonstrated how the two services differ."[9] PacifiCorp

agrees with the Order that CAISO has offered no explanation as to why FRC should be treated differently for purposes of the EIM than other ancillary services, which are excluded from the EIM allocations. Moreover, PacifiCorp is not aware of another BAA in the Western Interconnection that has sought or obtained similar approval from FERC to extend its reserve obligations beyond those FERC specified in Order No. 888.

Furthermore, the EIM has the potential to benefit CAISO's customers by lowering the amount of FRC CAISO needs to purchase and the cost of that procurement by expanding the pool of resources eligible to meet the need. Rather than recognize the benefit created by the EIM, CAISO's proposal transfers a significant percentage of the procurement costs for these California-required reserves to EIM Entities based on their respective percentage of real-time imbalances. In Section 3.4.3 of the Revised Straw Proposal CAISO writes,there is not a requirement for ISO load to have a day-ahead balanced position that includes unloaded capacity necessary to meet the flexible ramping constraint. Likewise, there will not be a requirement for an EIM Entity Scheduling Coordinator to submit a balanced schedule that includes additional unloaded capacity necessary to meet the flexible ramping constraint.

Rather than receiving an allocation of these significant CAISO-related costs, there ***should be*** a requirement that CAISO and EIM Entities bring sufficient ramping to the EIM. Further, if appropriately administered, the currently proposed balanced and feasible schedule requirement fulfills this requirement. CAISO is requested to explain why it believes a 15-minute average energy balanced and feasible schedule requirement, and four percent deviation penalty is not sufficient to prevent CAISO or an EIM Entity from leaning on the EIM.

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[7] *See*, the Department of Market Monitoring 2012 Annual Report on Market Issues and Performance at 75 (real-time bid cost recovery of $49 million), 77 (FRC costs of $20 million), 92 (real-time imbalance energy offset costs of $50 million and real-time congestion offset costs of $185 million), and 97. http://www.caiso.com/Documents/2012AnnualReport-MarketIssue-Performance.pdf.

[8] *California Independent Transmission System Operator Corporation*, 137 FERC ¶ 61,191(2011).

[9] *Id*. At ¶ 28.

ISO Response

The ISO has proposed to exclude real-time congestion settlement on EIM Entity constraints that are impacted by virtual bids. See section 3.7.8.2

See response above in regards to the flexible ramping constraint.

3. Cost Causation – Application of the Seven Factors

While CAISO has developed a set of seven cost allocation principles,[10] the Revised Straw Proposal lacks discussion or analysis of how these principles will be applied to the four real time charge

types for purposes of the EIM. CAISO should provide comprehensive justification for any application of any uplift allocation, including a detailed discussion of how they relate to the seven cost allocation principles and what steps CAISO proposes to take to mitigate any unwarranted cost shifts.

In the limited time available for these comments, PacifiCorp has not attempted to engage in a comprehensive evaluation or application of CAISO's seven cost causation factors. However, Table 2 presents a preliminary examination of this issue as applied to the four potential uplifts. It is readily apparent from the Table that these charges predominately relate to circumstances beyond the scope of the EIM and should not be made a part of the EIM.

Table 2

CAISO Cost Causation Factors

Category	RTIEO	RTCO	RTBCR	FRCA
Causation	Revenue imbalance from the energy and loss components of hour-ahead and five-minute market real-time energy settlement prices.	Revenue imbalance from the congestion component of real-time energy settlement prices.	Units are eligible to receive BCR if total market revenues earned over the course of a day do not cover the sum of all accepted bids. Includes bids for start-up, minimum load, day-ahead energy, ancillary services, residual unit commitment availability and real-time energy.	Address situation in which CAISO has insufficient ramping capability to match real-time supply with real-time demand.
Comparable Treatment	Costs relating to differences between the EIM Entity's day-ahead schedules and real-time schedule are not passed on to CAISO. Balanced schedule requirement for EIM Entities means no transmission constraint violations in the EIM Entity's system prior to the start of the real-time market optimization.		No BCR for external entities; CAISO assumes they are on-line; no payment for external exceptional dispatches.	No flexible ramping constraints exist for EIM Entities; costs of ensuring appropriate mix of resources are not passed on to CAISO; costs of ancillary services are not included in the EIM.[11] EIM Entities should not be paying CAISO-incurred capacity costs.
Accurate Price signals	It is CAISO and CAISO market participants that can take action to reduce these costs. For example in its 1st Quarter 2013 report, DMM noted that CAISO's efforts "to address systematic modeling differences between day-ahead and real time markets contributed to reducing real-time imbalance costs this quarter." Significant portions of these relate to virtual bidding which has no applicability to the EIM. The DMM estimates that about $70 million of real-time congestion revenues were paid to virtual bidders in 2012.[12]		BCR for reasons such as exceptional dispatch in CAISO may be due to a shortage of resources needed for local reliability concerns. As such the procurement signals are appropriately directed at CAISO LSEs. Otherwise CAISO is leaning on EIM Entities to support resource capacity decisions made by CAISO LSEs.	CAISO has been advocating for additional resources with fast ramping capabilities to meet the additional stains imposed by the California renewable portfolio standards and the needs to manage load variability, within CAISO Balancing Authority Area. CAISO can establish a requirement that each Balancing Authority.

Category	RTIEO	RTCO	RTBCR	FRCA
				Area, including CAISO, bring or pay for sufficient ramping reserves, without allocation to the other.
Incentivize Behavior	As a representative of CAISO DMM recently wrote, "[h]igh real-time imbalance offset charges can be an indicator of market inefficiencies. In addition, these uplift charges represent transactions that are not accurately reflected in market prices. Therefore, while some offset charges will inevitably result from uncertainties and fluctuations in real-time conditions, CAISO should work to reduce these out-of-market uplifts." [13]		Bid cost recovery is predominately related to behavior of CAISO and CAISO market participants.	Only the LSEs in CAISO can prevent or minimize this cost by procuring additional ramping capability.
Manageable	These costs are currently allocated 100 percent to CAISO Measured Demand. As they are uplifts, it should be possible to continue the existing allocation without expanding it to new EIM Entities.			
Synchronized	Currently, these costs are allocated to CAISO demand and exports. They reflect procurement decisions by CAISO LSEs, CAISO market rules, such as virtual bidding, and change in conditions between CAISO day-ahead and real time markets. Both parties, CAISO and the EIM Entities, should be insulated from costs related to changes from day-ahead expectations and exceptional dispatches.			
Rational	The rational for the EIM is to better utilize existing resources and existing transmission capability. The EIM should not shift CAISO uplift charges to external entities. Only if the EIM causes an incremental addition to these existing CAISO uplift charges should that incremental addition be allocated to EIM Entities.[14] In the case of the flexible ramping constraint the EIM should reduce the costs CAISO's customers would otherwise incur: (1) by potentially reducing the amount of reserve needed and (2) lowering procurement costs by expanding the pool of resources eligible to supply the ramping. It would be inappropriate for CAISO customers to realize these benefits at the expense of the EIM Entity's customers being burdened with a share of this uplift.			

[10]These principles are: (1) **Causation**: Costs will be charged to resources that benefit from the service CAISO procures through the market or drive procurement decision and resulting costs; (2) **Comparable Treatment**: Similarly situated resources and/or market participants should receive similar allocation of costs and not be unduly discriminated against; (3) **Accurate Price Signals**: The cost allocation design supports the economically efficient achievement of state and federal policy goals by providing accurate price signals from CAISO market; (4) **Incentivize Behavior**: Providing appropriate incentives is key to an economically efficient market; (5) **Manageable**: Market participants should have the ability to manage exposure to the cost allocation; (6) **Synchronized**: The cost drivers of the allocation should align as closely as possible to the selected billing determinant; and (7) **Rational**: Implementation costs/complexity should not exceed the benefits that are intended to be achieved by allocating costs.

See http://www.caiso.com/Documents/DraftFinalProposal-CostAllocationGuidingPrinciples.pdf.

[11]As noted by CAISO's DMM, "[t]he additional flexible ramping capacity is designed to supplement the existing non-contingent spinning reserves in the system in managing these variations." DMM 2012 Annual Report at 85.

[12]DMM 2012 Annual Report at Page 97.

[13]Real-time Revenue Imbalance in CAISO Markets" by Ryan E. Kurlinski, Department of Market Monitoring, California Independent System Operator April 24, 2013, available at http://www.caiso.com/Documents/DiscussionPaper-Real-timeRevenueImbalance_CaliforniaISO_Markets.pdf.

[14]In its comments on the Initial Straw Proposal, PG&E requested clarification as to whether resources within CAISO BAA may be committed in the 15-minute market to address imbalance or transmission constraint enforcement needs in an EIM Entity and noted that if CAISO resources are committed to serve those needs, any bid cost recovery charges should be allocated to the benefiting EIM Entities. PG&E Comments at 5. PacifiCorp agrees that such an allocation would be appropriate. What is not acceptable, however, is for the EIM Entities to be responsible for bid cost recovery for commitments that they did not cause or from which they do not benefit.

ISO Response

The ISO appreciates the discussion above and has incorporated these comments in developing the changes outlined in Section 3.7.8

4. CAISO's Proposed Allocation Methodology Is Unreasonable

With respect to allocation of any potential EIM-related uplift charges, CAISO proposes to use the gross absolute value of the changes from the initial state prior to the start of the EIM and the meter for all supply and demand, regardless of whether the changes are instructed or uninstructed deviations.[15] The Revised Straw Proposal contains the following example:

	DA	Adjusted Baseline	Gross ABS Deviations	%
ISO	31,500 MWh	N/A	1,500 MWh	50%
EIM Entity A	N/A	10,000 MWh	1,000 MWh	33%
EIM Entity B	N/A	2,000 MWh	500 MWh	17%
		Total	3,000 MWh	100%

Modifying the existing cost allocation for these uplift payments from CAISO Measured Demand to one solely based on EIM imbalances would lead to unjust and unreasonable results. An initial evaluation limited to the example from the Revised Straw Proposal would have 50 percent of the uplift costs transferred from CAISO customers to external EIM participants. Even if the actual percentages of imbalances were to be weighted more toward CAISO's changes from the day- ahead schedule, there is no reasonable tie between the amount of imbalances in real-time and cost incurrence for these CAISO uplifts.

Moreover, the problems with CAISO's cost allocation are exacerbated if the allocation occurs during a time in which transfer capability between CAISO and EIM Entities is extremely restricted, or even completely unavailable. PacifiCorp or its transmission customers could have significant imbalances, but during a period where they would not be benefiting from any CAISO resources.

The EIM Entities do not impose charges on CAISO for deviations from the EIM Entity's day- ahead schedules or commitment determinations. Comparability requires that CAISO similarly hold EIM Entities harmless from uplift costs related to changes from its forward markets. Moreover, EIM Entities should not be exposed to payments for virtual transactions that do not provide the actual energy necessary to supply imbalances.

[15]According to CAISO, the usage will be calculated for each 15-minute interval in the hour. The usage for each 15- minute interval will be summed for the hour. An hourly percentage will be calculated for each BAA. For CAISO supply and load, the gross deviations for each resource will be calculated as the absolute value of the difference between the day-ahead schedule and the meter. For EIM Entities, the supply and load gross deviations will be the absolute value of the difference between the adjusted base schedule and the meter.

ISO Response

See section 3.7.8.1. The ISO has proposed to calculate uplifts and neutrality account by each BAA. Then, where appropriate, consider the real-time transfers between BAAs to transfer a only the portion of the BAA cosunt to another BAA based upon the proptional amount of the transfer relative to the total of the tranasfer and the absolute value of uninstructed imbalance energy of supply and demand in the BAA in which the cost was incurred. The ISO has posted a spreadsheet illustrating the approach.

5. The Solution

CAISO must fundamentally reverse course with respect to allocation of these uplift charges if the EIM is to capture the benefits identified in the E3 Study.

First, CAISO must engage in a proper cost causation analysis. CAISO cannot simply assume because these charges relate to the existing CAISO real-time market they should be incorporated into the EIM. CAISO must ensure that comparability exists. If the EIM Entity does not uplift to CAISO costs associated with changes from day-ahead assumptions, neither should CAISO. If the EIM Entity does not impose bid cost recovery charges on CAISO, neither should CAISO. If the EIM Entity does not charge CAISO for exceptional dispatch costs, neither should CAISO. If the external EIM Entity does not lean on CAISO to meet its ramping needs, neither should CAISO. Application of appropriate cost causation principles should lead to the removal of these costs from the EIM.

Second, any uplift charges should be determined at the EIM Entity/ISO level. Only those uplift charges caused by the external EIM Entity to CAISO or by CAISO to the external EIM Entities should be eligible for reimbursement and that reimbursement should come from the EIM Entities who benefitted. The proposed allocation based upon an EIM Entity's/CAISO's use of the real- time market is a socialization and cost-shift of significant dollars and will result in those disadvantaged by that socialization opting out of EIM participation. Uplift incurred in one EIM Entity area should not be paid by another, especially if there is limited or no transfer capability between them.

Third, CAISO has not presented any data or analysis as to how the EIM may affect the level of uplift payments that would otherwise be incurred. If there is a limited incremental effect, PacifiCorp can accept a two stage process in which the uplift costs are first allocated to CAISO Measured Demand and then the incremental component is allocated to EIM Entities based on imbalances occurring in that hour. If, however, CAISO systems cannot identify this incremental effect, CAISO must apply cost causation to determine whether and where the costs are predominately attributable to CAISO markets and reliability needs or related to the EIM Entities.

In summary, CAISO's uplift proposal is fundamentally flawed and inconsistent with the

longstanding cost-causation principles established by FERC. If an EIM that includes CAISO as a participant (rather than simply as an administrator) is to be viable, CAISO must redirect its efforts at capturing the mutual benefits of the EIM.

ISO Response

The allocation of uplift costs has been updated in the 2nd Revised Straw Proposal. See section 3.7.8.

C. Greenhouse Gas Requirements

CAISO is proposing to incorporate greenhouse gas ("GHG") costs into the dispatch and pricing of the real-time EIM transactions. This is proposed to be implemented in such a way that allows for different costs for GHG emissions that take into account the resources' individual emission properties when adding GHG costs to energy produced from those resources selected *for import into California*. Critically, the Revised Straw Proposal notes that EIM Participating Resources whose energy is deemed to serve load outside California would not be assessed GHG costs and that load in EIM Entity BAAs outside California will not be assessed GHG costs. CAISO proposal also assumes that generators outside California that are carbon emitting resources and deemed to import energy into California will be required to procure GHG allowances to cover their emissions and have GHG related costs that are non-zero in the SCED-objective function for the portions of their output that is allocated to import energy into CAISO.

CAISO proposal satisfies a primary objective – it is designed to ensure that GHG costs are borne by California entities; CAISO will collect GHG revenue for the net imbalance energy exports from each EIM Entity BAA at the respective net imbalance energy export allocation constraint shadow price and then distribute this revenue back to the optimal net imbalance energy export allocations in addition to the imbalance energy at the LMP. If designed correctly, this would compensate supply resources in EIM Entity BAAs for their energy and GHG costs. It is understood by PacifiCorp to be designed to ensure that entities that do not participate in the EIM or do not import energy into California are unaffected and that the LMP for resources that do not import energy to California will not reflect any GHG costs.

While PacifiCorp is supportive of this approach and that it conceptually meets this core objective, PacifiCorp requests confirmation of CAISO proposal as follows:

CAISO should confirm that its approach will work if the California Air Resources Board ("ARB") does not change the current method of identifying imports into California. Currently, ARB uses e-tags to identify imported energy. More specifically, the importer is the purchasing- selling entity ("PSE") on the e-tag on the transmission segment crossing the California border. Under the current CAISO tariff rules, the Scheduling Coordinator is required to be the PSE on the e-tag on that transmission segment. Accordingly, under the current regulation PacifiCorp as the Scheduling Coordinator will be the only entity with an obligation to purchase GHG allowances. CAISO should confirm that the Scheduling Coordinator will be fully compensated for its allowance purchases and that the quantity of imports assessed by ARB will not be different from that assessed and reported by CAISO to the EIM Entity for the dynamic e-tag.

CAISO should confirm the EIM Entity will be required to allocate GHG cost obligations to emitting resources importing into California among participating resources within the EIM Entity BAA.

CAISO should confirm the SCED may have non-unique solutions for the export allocation of emitting resources. If confirmed, CAISO should add a requirement for the EIM Entity or CAISO to provide a ranking of bid and emitting resources that will be used to create a unique solution.

ISO Response

As discussed further in Section 3.12, the ISO is working with CARB with regards to the reporting mechanism for EIM transfers into California. The reporting approach will not be based upon resource-specific e-Tags since a single dynamic schedule between the ISO and EIM Entity will be used to document hourly transfers. The EIM does not have unique dynamic schedules between the ISO and EIM Participating Resources. EIM will provide additional information that identifies the resources within the single dynamic schedule whose output has been imported to the ISO in each 5 minute interval. CARB's current proceeding for modifications to its regulations includes provisions to support the GHG reporting approach being developed in the EIM stakeholder intiative.

D. Locational Market Power Mitigation

In Section 3.2.5 of the Revised Straw Proposal, CAISO introduces a proposed approach to mitigating localized market power in the EIM consisting of two parts: (1) mitigation based on LMP decomposition and (2) dynamic competitive path assessment ("DCPA") based on the residual supplier index ("RSI"). According to CAISO, the "LMP decomposition" produces dispatches and prices that are potentially impacted by market power. CAISO's computations depend on the reference bus which states "should be at a location free of local market power impact." The RSI is the ratio of counter flow capacity supply excluding the three largest suppliers and the original counter flow provision to determine if the three largest suppliers are pivotal for a constraint in terms of counter flow. If they are pivotal, which means the residual counter flow capacity supply cannot reach the original counter flow provision, the constraint is deemed non-competitive. Otherwise, the constraint is deemed competitive. EIM Participating Resource Scheduling Coordinators will need to submit information that is necessary to perform DCPA to CAISO, such as tolling agreements. CAISO proposes to use the same DCPA and LMPM methodology to mitigate power for EIM Participating Resources.

While CAISO identifies the process it will undertake to determine if mitigation for locational market power is warranted, CAISO does not identify what the proposed mitigation will be for the EIM. Under CAISO's current mitigation regime in Section 39.7.1 of the tariff, if a resource is subject to local market power mitigation, it means that the unit will be required to utilize a "default energy bid" based on one of four options: (1) Variable Cost Option,16 (2) Negotiated Rate Option,17 (3) LMP Option,18 or (4) Variable Cost Option plus Bid Adder.19 The Scheduling Coordinator for each Generating Unit must rank order the following options starting with its preferred method and provide the data necessary for determining the Variable Costs, unless the Negotiated Rate Option precedes the Variable Cost Option in the rank order, in which case the Scheduling Coordinator must have a negotiated rate established with the Independent Entity charged with calculating the Default Energy Bid.20 CAISO should clarify if it intends to use the same mitigation methodology for the EIM.

Further consideration of this issue would benefit by CAISO providing additional explanation, including specific examples, as to how its proposal would work in the External Entity BAAs. Pending that additional discussion, PacifiCorp can support CAISO's proposal.

[16]For natural gas-fueled units, the Variable Cost Option calculates the Default Energy Bid by adding incremental cost (comprised of incremental fuel cost plus a greenhouse gas cost adder if applicable) with variable operation and maintenance cost, adding ten percent (10%) to the sum, and adding a Bid Adder if applicable. CAISO Tariff Section
39.7.
1.1.

[17]Scheduling Coordinators that elect the Negotiated Rate Option for the Default Energy Bid submit a proposed Default Energy Bid along with supporting information to either CAISO or an Independent Entity selected by CAISO. If the proposal is accepted it becomes effective within three business days. If it is rejected, CAISO or Independent Entity selected by CAISO and the Scheduling Coordinator enter into a period of good faith negotiations that terminates sixty days following the date of submission of a proposed Default Energy Bid by a Scheduling Coordinator. If the issue is still not resolved, the Scheduling Coordinator has the right to file a proposed Default Energy Bid with FERC. During the interim period before FERC's determination, the Scheduling Coordinator has the option of electing to use any of the other options. CAISO Tariff Section 39.7.1.3.

[18]CAISO will calculate the LMP Option for the Default Energy Bid as a weighted average of the lowest quartile of LMPs at the generating unit PNode in periods when the unit was dispatched during the preceding ninety day period for which LMPs that have passed the price validation and correction process set forth in Section 35 are available. CAISO Tariff Section 39.7.1.2.

[19]A Frequently Mitigated Unit is eligible for a Bid Adder. Under CAISO Tariff section 39.8, to receive a Bid Adder, a Generating Unit must: (i) have a Mitigation Frequency that is greater than eighty (80) percent in the previous twelve (12) months; and (ii) must not have a contract to be a Resource Adequacy Resource for its entire Net Qualifying Capacity. The value of the Bid Adder will be either: (i) a unit-specific value determined in consultation with CAISO or an independent entity selected by CAISO, or (ii) a default Bid Adder of $24/MWh. For Generating Units with a portion of their capacity identified as meeting an LSE's Resource Adequacy Requirements, that Generating Unit's Bid Adder value is reduced by the percent of the Generating Unit's capacity that is identified as meeting an LSE's Resource Adequacy Requirements. The reduced Bid Adder is applied to that Generating Unit's entire Default Energy Bid Curve.

[20]If no rank order is specified, then the default rank order of (1) Variable Cost Option, (2) Negotiated Rate Option, (3) LMP Option will be applied. For the first ninety days after changes to resource status and configurations, the Default Energy Bid option for the resource is limited to the Negotiated Rate Option or the Variable Cost Option. CAISO Tariff Section 39.7.1.

ISO Response

LMPM will be performed separately for each BAA. The EIM design will leverage the existing ISO LMPM design including the current mitigation regime.

E. Transmission Charges

PacifiCorp appreciates and supports CAISO's proposal to have no charge for transmission for the EIM for the first year of operation, while alternatives are considered further for the long-term. This approach is consistent with the outlined principles articulated by CAISO in Section 3.10 of the

Revised Straw Proposal[21] and promotes an efficient EIM, but also allows time for evaluation of EIM operations and participant utilization of EIM prior to establishing any charges. Similarly, one of the proposals being considered by PacifiCorp in its stakeholder process is not to impose any additional charges for transmission but to require EIM Participating Resources to also be transmission customers of PacifiCorp. As such, it may be appropriate for an EIM Entity to have discretion to require subscription of transmission service in order to allow participation in the EIM. If charging for transmission is determined to be appropriate based on actual operations, the data resulting from the period of actual utilization will be useful for determining the best method for establishing and imposing charges.

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[21]These principles consist of: (1) there should be no pancaking for transmission service; (2) each transmission owner should meet its transmission revenue requirement; (3) resource owners should not have to estimate or attempt to incorporate where their production is going, as part of their supply bids, (4) the implementation cost of a transmission access charge approach should be consistent with the magnitude of the total transmission costs expected to be incurred through EIM operations and recovered in EIM-related rates, and (5) the transmission charge should be consistent regardless of whether the EIM Participating Resource is operated by an EIM Entity. In other words, transmission cost recovery should not be affected by whether or not a load is the native load of the business entity that also is the transmission provider

ISO Response

The ISO has made no changes to the transmission service proposal outlined in the 2nd Revised Straw Proposal. The ISO is still evaluating potential options and will discuss further in future papers.

F. Governance and Oversight

In Section 3.8 of the Revised Straw Proposal, CAISO states that it will be implementing a parallel stakeholder process regarding governance of the EIM and will be publishing a proposal for stakeholder consideration in August. In its June 4, 2013, response to stakeholder comments, CAISO stated that PacifiCorp's concern with respect to Section 205 filing rights for issues such as the determination of Load Aggregation Points would be "subject to discussion in this parallel stakeholder engagement effort." PacifiCorp supports the development of a parallel stakeholder process to address governance of the EIM and will be an active participant to ensure that appropriate governance and oversight mechanisms are included in the EIM market rules.

There is, however, one oversight issue that need not be a part of the separate determination of the EIM governance structure. In Section 4.1 of the Initial Straw Proposal, CAISO raised the possibility of instituting an EIM Advisory Committee chartered under CAISO bylaws. This committee would directly engage with CAISO Board (or other final form of EIM governance) on issues affecting the EIM, serve as a forum for consideration of EIM market rule changes, and provide regular reports to stakeholders. In its comments, PacifiCorp supported development of the advisory committee.[22] In its June 4, 2013 response to Stakeholder comments, CAISO did not discuss this issue further.

The EIM Advisory Committee is an important forum to ensure timely recognition and correction of issues associated with this new market. CAISO has publicly suggested that an EIM Advisory

Committee is a reasonable option for ensuring that EIM Entities have a venue for discussing EIM market issues and improvements. As a result, at a minimum, PacifiCorp strongly encourages CAISO to affirmatively support this modest request in the next iteration of the Straw Proposal and in the final EIM market design.

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[22]See April 30. 2013 filing letter of CAISO in Docket No. ER13-1372, Attachment B at P 21

ISO Response

The ISO understands the need for EIM participants to have a voice in policy decisions affecting EIM. As noted in the schedule the ISO plans to issue a white paper discussing EIM governance no later than Aug 13 and will discuss it at the Aug 20 stakeholder meeting in Portland, Oregon. The ISO will request stakeholder comments on the white paper by Aug 27. Revisions to the governance white paper and subsequent discussions will be scheduled to address stakeholder comments received.

G. Membership Expansion

PacifiCorp strongly supports establishing a process to facilitate expansion of the EIM to new BAAs.

To establish a transparent and equitable process for new entities, CAISO should set forth in the EIM tariff provisions the information and timing requirements to facilitate participation. The tariff should also specify that the initiation fee will be consistent with the amount reflected in the recently filed Implementation Agreement between CAISO and PacifiCorp. As explained in the Affidavit of Michael Epstein Submitted with CAISO's April 30, 2013 filing in Docket No. ER13-1372, having determined that the total cost of implementing the WECC-wide energy imbalance market would be $18.3 million, CAISO proceeded to develop a rate that could be used for individual participants. To do so, CAISO divided its projected $18.3 million total cost by the 616.0 million MWh of non- CAISO net energy for load in the WECC, for a rate of $0.03/MWh.[23] Use of a consistent rate will assure comparable treatment of participating Balancing Authority Areas.

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[23]See April 30. 2013 filing letter of CAISO in Docket No. ER13-1372, Attachment B at P 21

ISO Response

The initiative fee will be included in the EIM tariff, recognizing that the initial start-up costs will be determined based upon the Implementation Agreement filed with and approved by FERC.

H. Metering

CAISO and PacifiCorp metering teams have discussed metering requirements. PacifiCorp plans to participate in the upcoming EIM on a basis similar to a Scheduling Coordinator Meter Entity ("SCME"). Section 10.3.7 of CAISO tariff, however, identifies metering standards for SCME's established by the Local Regulatory Authority. PacifiCorp does not have a local regulatory authority in relation to an EIM and proposes it uses its Company standards which have been established with

in its BA.

Accordingly, CAISO metering team has recognized the need for a new pro forma agreement for an EIM Scheduling Coordinator Meter Entity which would include requirements specific to the EIM market and would address the case where no Local Regulatory Authority certification requirements exist. The concept is to create requirements similar to the option of SCME but specify certain requirements in the Metering Business Process Manual that the Scheduling Coordinator will have to obtain and maintain. This concept should be incorporated into the next draft of the Straw Proposal. Furthermore, as a result of the new meter entity type and standards, CAISO and PacifiCorp will together to define the expectations for documentation, certification, and standards related to metering.

ISO Response

Thanks

I. Enforcement Protocol

In the Initial Straw Proposal, CAISO stated that EIM participants would be subject to CAISO's existing Enforcement Protocol. In its comments, PacifiCorp recognized that there is the need for oversight and enforcement of the EIM, but noted that Section 37 of CAISO Tariff, contained numerous provisions that do not apply to the EIM, EIM Entities or EIM participants.[24]

In its June 4, 2013 response to Stakeholder comments, CAISO stated, "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." PacifiCorp supports CAISO's proposed resolution of this issue. However, the Revised Straw Proposal indicates that the Enforcement Protocol for the EIM is anticipated to be the same as in CAISO tariff. PacifiCorp requests that CAISO clarify in the next version of the Straw Proposal that only certain portions of CAISO tariff Enforcement Protocol will apply to EIM Entity Scheduling Coordinators and EIM Participating Resource Scheduling Coordinators.

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[24]PacifiCorp Comments on CAISO's Initial Straw Proposal at 6. 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 appear to apply to EIM Entities that operate as distinct BAs. With respect to Sections 37.2.3 and 37.4.2, CAISO is not overseeing outages taken by EIM Participants. Similarly, 37.2.4 concerns activity on the part of CAISO's Resource Adequacy Resources. The EIM does not address resource adequacy and suppliers in the EIM can be committed to serve load in the EIM Entity and not be CAISO Resource Adequacy Resources. Section 37.3.1 covers bids for RUC Capacity and Ancillary Services as well as Energy.

ISO Response

The EIM tariff will reference only the relevant portions of the enforcement protocol .

J. Termination Rights

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 ISO'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 ISO 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.25

In its June 4, 2012 response to Stakeholder comments, CAISO responded:

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.

PacifiCorp appreciates CAISO's attention to this issue as it is a critical element of the EIM design. Potential participants must have a clear understanding of their termination rights and responsibilities. PacifiCorp looks forward to reviewing the discussion in the next iteration of the Straw Proposal.

[25]PacifiCorp Comments on the ISO's Initial Straw Proposal at 5.

ISO Response

Thanks

III. Comments on Key Issues Section 2.1 Ne Terms

Figure 1: The terminology should be reconciled to new terms proposed in section 2.1.

ISO Response

Noted

Section 3.1 Key Roles

In Section 3.1.3 h, "…as soon as they are known" should be replaced with "…within x minutes of the implemented change."

ISO Response

The changes should be reflected in the submitted base schedule. If the changes are communicated prior to the start of the market optimization they can be reflected. If the changes are not known prior to the start of the market optimization, the deviations will be settled in the 15-minute market and/or 5 minute dispatch.

Section 3.2 EIM Process

- With regard to Section 3.2.5, what information needs to be submitted (and how should this information be submitted) by an EIM Participating Resource Scheduling Coordinator for CAISO to conduct the dynamic competitive path assessment? In addition, CAISO should explain why the Market Operator will not be mitigating for scheduling constraints as they are binding from the transmission customer's point of view.

- With regard to Section 3.2.5, PacifiCorp requests CAISO define the terms shift factor, shadow price, dynamic competitive path assessment ("DCPA"), residual supplier index ("RSI"). PacifiCorp also requests CAISO define the term tolling agreements.

ISO Response

Noted

Section 3.3 EIM Input Data

- Section 3.3.2 (and other sections): PacifiCorp recognizes the need for balanced and feasible schedules among all EIM Entities and CAISO for the EIM. The definition of balanced schedules, including but not limited to the time duration evaluated, the evaluation frequency, should be the subject of additional discussion. Enforcement and/or ramifications should also be discussed.
- In the 1st paragraph of Section 3.3.2, CAISO should delete "…at least…". Also, the
- 2 hour horizon appears inconsistent with the 4.5 hour horizon described in 3.3.4. CAISO
- should provide definitive horizons for each forecast submittal requirement.
- In the 3rd paragraph of Section 3.3.2, please provide an explanation as to how disaggregation can occur for system sales (e.g., WSPP Schedule C), where quantities are not allocated to specific resources?
- As to the 2nd paragraph of Section 3.3.6, the three reserve quantities should be combined into two: up regulation and down regulation capacity. The market operator should not be concerned why reserves are held on a resource. Also with respect to Section 3.3.6, please verify there is no minimum resource capacity threshold for modeling/metering/ scheduling. For example, can any size resource be included as an offset to the load forecast?
- With respect to Section 3.3.7, CAISO should describe how the supply adequacy requirement will be enforced. Furthermore, CAISO should confirm that as a Balancing Authority Area it will be subject to the same supply adequacy requirements as the EIM Entities.
- In addition, Section 3.3.7 (Section 3.3.8 of the Initial Straw Proposal) and others refer to " ... dynamic schedules with resources ..., " PacifiCorp requests that CAISO clarify that this does not apply to all bid resources and that this only applies to dynamic schedules on the interties. In addition, Section 3.3.7 and others also state that dynamic e-tags will have an

initial value of zero. This may be inconsistent with NERC Reliability Standards for interchange ("INT"). Rather, the initial value should be the EIM Entity's best estimate, which may be zero.

- Also with respect to Section 3.3.7, how will the Market Operator notify the EIM Entity
- Scheduling Coordinators of the supply adequacy analysis results?
- In Section 3.3.8, Reserve Sharing Schedules, PacifiCorp wants clarification that responses to contingencies are reported to the Market Operator via the outage management system (currently SLIC).
- Also in Section 3.3.8, PacifiCorp requests that CAISO clarify how the EIM Entity Scheduling Coordinator submits updated resource plans after actual resources have been deployed.
- In Section 3.3.8, Reserve Sharing Schedules, PacifiCorp requests that CAISO clarify how energy schedules for deployment of reserves are reflected in base schedules or in exceptional dispatch instructions. CAISO also needs to be clear on "if time permits" statement; what is the timing requirement to reflect deployment of reserves in the base schedules rather than in exceptional dispatch instructions?
- In Section 3.3.9.1, PacifiCorp is concerned that minimum shift of base schedules will result in unexpected imbalance charges, without a clear understanding that a base schedule has been modified and for what reason. How does the EIM participant know a base schedule has been subject to minimum shift optimization? Accordingly, CAISO must describe how the EIM Participating Resource Scheduling Coordinator knows a base schedule has been subject to minimum shift optimization. Also, how is the EIM Entity Scheduling Coordinator informed that the submitted energy bid ranges were not sufficient? Does this come from ADS, CMRI, or some other system? Does CAISO have an estimate of volume and financial impacts that EIM participants could incur as a result of minimum shift optimization? What are the volumes and financial impacts of minimum shift optimization in the current market? It would be helpful for each EIM participant to understand these impacts and how they might change when entering the EIM market.
- In 3.3.9.1 Minimum Shift Optimization: PacifiCorp requests CAISO needs to define how much and where they will "relax" transmission constraints.
- With regard to the 4th paragraph of Section 3.3.11, does SIBR currently have rules built into it that will allow the reservation of capacity from a resource bid? PacifiCorp understands that SIBR does not currently do this for other market participants and requests clarification on how this system will handle this or if it will be a different system receiving bids.
- In Section 3.3.11 Variable Energy Resource Production Forecast: PacifiCorp requests
- CAISO clarify how the revised base schedules will reflect deployed reserves.
- As to the 1st paragraph of Section 3.3.12, please identify which entity is responsible for the initial mapping of loads to nodes in the network model. Also, in its prior comments on this section (3.3.13 of the Initial Straw Proposal), PacifiCorp recommended that CAISO should explain or delete the sentence "The number of LAPs will also determine the effort in managing multiple load forecasts." PacifiCorp's understanding is that the number of LAPs and load forecasts are independent of each other.
- With reference to the 2nd paragraph of Section 3.3.13, what is the definition of a load forecast zone? As to the 3rd paragraph, CAISO should provide definitive horizons for each forecast submittal requirement rather than a range of 6 to 10 hours.
- In Section 3.3.14, CAISO should add an under/over scheduling penalty for inaccurate variable energy resource base schedules, similar for load base schedules. In the

alternative, CAISO should describe why there is no penalty as the ability for gaming is the same for both.

- Also with regard to Section 3.3.14, PacifiCorp appreciates CAISO's clarification that if the EIM Entity has an independent forecast for its variable resources and shares its
- forecast, the $0.10 per MWh service charge is waived. Does CAISO propose to establish minimum requirements for such forecasts and forecast delivery?
- In Section 3.3.15 Generation and Transmission Outages: CAISO needs to remove the term "preferably." PacifiCorp requests that CAISO clearly define the deadline for submission of outage information.
- In Section 3.3.16, aside from registering non-participating resources, why is min, max and ramp rate data required? How is it used by the market operator? CAISO should remove the requirement for non-participating resources to provide this information.
- With reference to Section 3.3.18, please provide clarification on where the limits are coming from and how they need to be communicated. PacifiCorp is working on how to automatically send SCADA/model limits, or are these different limits?

ISO Response

The ISO has focused on key areas of the market design in the two weeks following stakeholder comments and has sought to respond to as many comments as possible, however, the omission of a specific request does not necessarily mean the ISO has rejected the comment. The ISO will develop a 3rd revised straw proposal prior to the draft final proposal.

Section 3.4 EIM Optimization

- PacifiCorp continues to request that CAISO add clarity and a full description for Minimum Shift Optimization, which is the process to ensure a balanced and feasible dispatch prior to the economic dispatch. PacifiCorp also requests that CAISO clarify that the EIM Entity will be required to run a network model in the hourly and/or 15-minute time frame to assure feasibility.
- As to Section 3.4.2, what happens if there are not enough EIM energy bids to manage congestion? Does CAISO re-dispatch non-participating resources to manage the congestion or is it left up to the EIM Entity to resolve?
- Also with regard to section 3.4.3, the flexible ramping constraint and to-be-developed replacement product should be balancing authority functions and not part of the EIM. Removing this function from the EIM reduces uplift charges and inappropriate cost-shifts. An enforced balanced schedule requirement is sufficient. If an EIM Entity/CAISO submits balanced schedules for two successive 15-minute periods, but has insufficient ramping capability between the two, then in fact the entity does not have a balanced schedule for the second 15-minute period.
- Regarding the Section 3.4.4 (Section 3.6.4 from the Initial Straw Proposal) the provision on scarcity, PacifiCorp previously noted that the proposal does not provide details as to how this administrative penalty would be set and that CAISO should clarify that this penalty cost is a model parameter and not a direct cost to the EIM Entity. If, however, the penalty does affect the LMP, an additional issue for discussion should be if the scarcity is attributable to either CAISO BAA or a PacifiCorp BAA whether the other BAA should be subject to the administrative penalty cost. Stated another way, is it possible that as proposed, this is a mechanism whereby one entity's resource insufficiency can adversely impact another entity

financially. If so, why wouldn't the administrative penalty be administered in such a way to prevent this outcome?

ISO Response

See section 2.3 for discussion of the need for the minimum shift optimization given creation of a BAA specific real-time congestion balancing account. The ISO will provide advisory results from the day-ahead market run, and from look-ahead intervals leading up to the binding EIM interval, which the EIM Entity may use to identify ways to resolve congestion. The EIM Entity may choose to run a network model to ensure feasibility, but EIM does not require it to perform its obligation of submitting balanced and feasible base schedules in a specific way.

If there are not enough EIM energy bids to manage congestion, the ISO will relax transmission constraints only for the purpose of achieving a feasible solution to the market optimization, and will inform the EIM Entity that EIM has insufficient bids and that other remedies will be necessary. The ISO will not re-dispatch non-participating resources to manage the congestion. It will be the EIM Entity's responsibility to resolve the remaining congestion, using the alternatives that it would have if it were not participating in EIM.

As discussed above, the flexible ramping constraint and future product are key features of the real-time market to manage ramping capability withing the real-time market optimization. Without this feature,an EIM Entity's base schedule may appear to be balanced in having supply equal its forecasted demand, without being feasible in being able to actually deliver the scheduled resource output.

The term "penalty cost" is used as a mathematical term for a type of model parameter for constraint relaxation for ensuring that the market optimization has a feasible solution. It is not a charge that would appear in settlements to market participants. Relaxation of the power balance constraint due to resource insufficiency can affect overall market prices, but the 2nd Revised Straw Proposal addresses resource sufficiency provisions in sections 2.3 and 3.3. Penalty costs for relaxation of constraints due to scarcity are included in the tariff.

Section 3.5 EIM Output Results

- Regarding Section 3.5.3 Dynamic Imbalance Schedules to Net: This section should clarify that the static schedules will not change every five minutes, and only the dynamic signal portion of the Net Scheduled Interchange (the transfer of energy from CAISO- PAC and vice versa) is all that changes and is sent to PacifiCorp every five minutes. Also, please clarify how this relates to the Net Scheduled Interchange being sent every four seconds, as mentioned in the matrix found in section 3.2.1.

ISO Response

Static schedules on the boundary of the EIM footprint are not changed in the 5-minute market. Imports and exports on the EIM footprint boundary that have economically bid can changed in the 15-minute market. Transfer between the ISO and EIM Entities (both in the 15-minute market and RTD) will be reflected in the net-scheduled interchange sent every five minutes. Updates on 4-second intervals are an automated EMS tracking function, but do not affect settlements.

Section 3.6 EIM System Operations

- Congestion Management - The Revised Straw Proposal notes "EIM includes external sources and sinks in its market network model to accurately model flows between EIM and areas with which it coordinates." See Revised Straw Proposal at 37. PacifiCorp understands the benefits of external entities providing information to CAISO, specifically balancing authority areas and transmission service providers that are not EIM Entities. PacifiCorp recognizes there is additional discussion required to resolve this issue. PacifiCorp recognizes the value of interregional (i.e., Balancing Authority Area to Balancing Authority Area) transfer capability to EIM benefits. However, similar to the voluntary nature of bidding resources, each EIM Entity should have the opportunity to voluntarily commit any amount or no amount of reserved transmission capacity between Balancing Authority Areas for EIM transactions.
- In Section 3.6.4 Seams Coordination and Interaction with WECC Congestion Management:
- a) CAISO either needs to define the terms "Participating market or non-market system operators" or remove them and replace with defined terms from section 2.1.
- b) PacifiCorp currently does not have any qualified paths that are included in the Unscheduled Flow Mitigation Procedure; therefore, PacifiCorp can't initiate any of the UFMP related processes under WECC.
- c) The WECC Enhanced Curtailment Calculator ("ECC") is not currently implemented. PacifiCorp requests CAISO include the current WECC unscheduled flow mitigation tool, webSAS, in the document and how the EIM parties are expected to interface with it as well; or the term ECC needs to be replaced with generic WECC unscheduled flow mitigation language.
- With regard to Section 3.6.6, PacifiCorp requests that CAISO provide additional clarification on how this "decoupling" is going to occur with an example.

ISO Response

The representation of sources and sinks outside the EIM footprint provides benefits for EIM's congestion management, but is being developed through a separate Full Network Model Expansion stakeholder initiative to improve modeling external to the ISO in the day-ahead market as well as for the interaction between the market and real-time operations, as discussed in that stakeholder initiative. The FNM Expansion initiative does not change the manner in which participants in EIM would make transmission capacity available to EIM.

The ISO has sought to reflect as many requested clarification in the 2nd revised straw proposal and will provide additional clarifications in upcoming papers. At this time, there is no apparent need to create defined term for market or non-market system operators other than the EIM Market Operator, but this discussion is important in an overall sense because discussions of market-related initiatives other than the ISO's EIM initiative are ongoing within the WECC region, and the ISO intends to coordinate with any other entities that become established. The discussion of seams coordination, including UFMP, applies in general to development of EIM, and does not depend on whether a specific Entity (e.g., PacifiCorp) has Qualified Paths within its BAA. It is believed that even when a BAA does ot contain a Qualified Path, it would be able to discuss reliability issues with the WECC RC in the event that it faces conditions that it cannot resolve using resources under its control. Although the ECC is not currently implemented, EIM and ECC concepts have developed

through the same original discussions in WECC committees, the WECC RC has stated its intent to implement ECC, and failure to recognize ECC would be a shortcoming in an EIM proposal. WebSAS is among the tools that an EIM Entity may have available if EIM has insufficient bids for congestion management within its BAA, but EIM will not have direct interfaces with the current implementation of webSAS. As part of tracking interchange between and among the ISO and EIM Entities, interfaces their BAAs will be monitored, and in the event that a market disruption or contingency requires EIM to operate without considering an individual EIM Entity, EIM would be able to enforce a zero-MW limit on the transmission interface.

Section 3.7 EIM Settlement and Accounting

- In the first paragraph of section 3.7.3 it states, "Resources with financial settlement based on energy delivered in each dispatch interval, with separate price calculations for instructed and uninstructed energy, may be deemed to be settled using cost-based LMPs, and therefore not subject to uninstructed deviation charges." PacifiCorp recommends that CAISO provide an example on when a "separate price calculation" would be used and "cost-based LMP's" would be derived.
- In the fourth paragraph of section 3.7.3, PacifiCorp is unclear on how the algebraic difference between the hourly meter data and the load forecast that clears the five-minute market is treated. Is it covered in the second to the last sentence as a "load forecast deviation in a five-minute market" or in the last sentence as a "neutrality charge". PacifiCorp recommends additional clarification be added.
- In Section 3.7.9 of the Initial Straw Proposal, CAISO stated that it conducts a revenue neutral market and called for additional discussion to determine if Unaccounted for Energy (which it labels as "MW neutrality") will be calculated based on the EIM Entity as a whole or performed at lower levels of granularity. Additionally, CAISO proposed that an EIM Entity's LMP differences will be allocated to the EIM Entity's measured demand, including loads and exports. PacifiCorp agreed that more discussion is needed on these issues. Given the nature of the EIM as an imbalance market, PacifiCorp was particularly concerned about allocation of charges to metered demand, rather than the net deviations for that particular hour. Allocations to measured demand raise significant cost causation concerns. The Revised Straw proposal did not include the section on neutrality but noted with respect to section 3.7.4 on unaccounted for energy, that additional discussions are needed to define the specific make-up of the UFE service area for EIM Entities in conjunction with the needed metering points to calculate UFE for each service area. Accordingly, these concepts need to be developed further.
- In section 2.1 and 3.1.4 the Revised Straw proposal clarifies that the EIM Entity Scheduling Coordinator will be responsible for imbalance energy settlement of non-participating resources. Section 3.1.5 also clarifies that the EIM Participating Resource Scheduling Coordinator will be responsible for imbalance energy settlement of its EIM participating resources. Does this mean that non-participating resources and load are required to have their uninstructed imbalance settled under the same scheduling coordinator ID as the EIM Entity scheduling coordinator? Is uninstructed imbalance on participating resources settled under the EIM Participating Resource Scheduling Coordinator ID or the EIM Entity Scheduling Coordinator ID?

ISO Response

The ISO has provided spreadsheet models that illustrate market settlement.

An EIM Participating Resource Scheduling Coodinator will be settled for both instructed imbalance energy and uninstructed imbalance energy.

Section 3.9 Market Rule Structure

- PacifiCorp supports CAISO's determination that the EIM rules should be contained in a discrete part of CAISO tariff. While this discrete section may contain cross references, CAISO must be cautious about overbroad references to portions of the tariff that contain provisions inapplicable to the EIM. Overbroad references undermine the importance of the separation of the EIM-related tariff provisions.

ISO Response

Noted

Section 3.10 Transmission Service

- PacifiCorp requests that CAISO modify the Revised Straw Proposal in Section 3.10, first paragraph, to remove the statement "In any event, any EIM transmission service rate should be the same across all EIM Entities." It is premature to definitively prejudge at this time how any transmission charges will be designed, particularly in light of the fact that the Revised Straw Proposal allows time for evaluation of EIM operations and participant utilization of EIM prior to establishing any charges.

ISO Response

The ISO has made no changes to the transmission service proposal outlined in the 2nd Revised Straw Proposal. The ISO is still evaluating potential options and will discuss further in future papers.

Section 3.13.1 Market Monitoring

- Section 3.13.1 on Market Monitoring is unchanged from Section 3.8.1 of the Initial Straw Proposal. As explained in its initial comments[27] and reiterated here, PacifiCorp continues to believe that additional discussion is necessary regarding the appropriate limitations to place on the information that can be requested by DMM of EIM-only participants. This should balance the need for the DMM to have information necessary for effective oversight of the EIM, but not go beyond that to include information that may be appropriate to entities that have joined CAISO or are participating in the other CAISO markets and processes.
- With respect to CAISO's statement that services provided by DMM will be included in the administrative charges, PacifiCorp noted in its prior comments that the proposed EIM charges already are based on an allocated share of the overall Market Services component of CAISO's Grid Management Charge.[28] PacifiCorp requests confirmation that there will

not be any separate, additional EIM charges associated with DMM oversight.

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[27] PacifiCorp Comments on CAISO's Initial Straw Proposal at 11.

[28] PacifiCorp Comments on CAISO's Initial Straw Proposal at 11.

ISO Response

The ISO will address this in the 3rd revised straw proposal.

The calculation of the administrative charges based upon activity based costing already include costs associated with DMM. There is not a separate charge.

IV. ADDITIONAL TYPOGRAPHIC CHANGES

- On page 1, CAISO should change "National Electric Energy Reliability Corporation" to "North American Electric Reliability Corporation."
- In Section 2.1, CAISO should insert an "a" into the definition of EIM Participating Resource after "is" and before "resource."
- In the 4th paragraph of Section 3.4.3, CAISO should change "where" to "were."
- In the 3rd paragraph of Section 3.11, CAISO should insert "month" after "12-18."

ISO Response

Noted

V. Conclusion

PacifiCorp continues to appreciate the ongoing efforts of CAISO management and staff to develop the EIM in a timely basis and in accordance with the principles in the Implementation Agreement. PacifiCorp's comments are intended to: (1) focus on critical issues related to the market design; (2) identify areas where PacifiCorp needs additional explanation or data to understand CAISO's proposal; and (3) provide specific proposed changes to improve the next iteration of the Straw Proposal. PacifiCorp will continue to be an active participant in the EIM stakeholder process and undertake the necessary activities to be able to support startup of the EIM October 1, 2014.

ISO Response

The ISO appreciates the extensive comments submitted on the revised straw proposal.

Company	Date	Submitted By
Pacific Gas & Electric (PG&E)	6/21/13	Will Dong (415) 973-9267 Paul Gribik (415) 973-6274

Opening Comments

Pacific Gas & Electric (PG&E) offers the following comments in the stakeholder process for the California Independent System Operator's (CAISO) Energy Imbalance Market (EIM) Initiative's May 30, 2013 Revised Straw Proposal ("Proposal").

PG&E's primary objective in the EIM stakeholder process is to recommend and support design elements that:

- Help achieve the benefits purported in the CAISO's EIM benefit study;
- Mitigate additional market risk that may be introduced by the EIM; and
- Ensure fair treatment of both the EIM Entity and the CAISO in regards to cost allocation and market obligations.

At the same time, PG&E is continuing its assessment on whether the benefits of an EIM will outweigh the costs and risk to PG&E customers. PG&E's support on an EIM depends on PG&E's comfort that the EIM treats our customers fairly and is likely to have a net positive impact.

PG&E comments are detailed below and focus on the following points:

1. PG&E appreciate the new GHG framework and is assessing impacts to our systems;
2. Convergence Bidding requires explicit consideration in the EIM stakeholder process;
3. A flexible capacity requirement (with a must-offer obligation, or MOO) should be set for EIM Entities similar to the requirements for CAISO participants;
4. Flexibility requirements, for both the forward and spot market requirements, need to be assessed for the joint EIM footprint;
5. Deliverability of flexible capacity in the EIM must be considered in the procurement of flexible capacity in the EIM Entity;
6. The CAISO should have the ability to commit fast-start resources in an EIM Entity;
7. The appropriateness of the allocation method for the four uplifts needs more examination; and
8. Two alternative modifications to the Minimum Shift Optimization (MSO) approach should be considered.

The absence of comments on a particular element of the proposal should not be perceived as our endorsement. This is a sizeable and complex initiative, and PG&E has not been able to fully vet every aspect of the proposal in the time allotted in the stakeholder process. Instead, PG&E has focused on what we consider the most important issues. We may offer input on the other elements

at a later date.

ISO Response

The ISO appreciates PG&E's continued participation in the stakeholder initiative.

1. Greenhouse Gas Proposal – PG&E is Evaluating the Implications and Assessing System Changes

PG&E appreciates the new GHG proposal and examples. The proposal provides a solid framework to evaluate the interaction of the GHG requirement and the energy markets in the CAISO and EIM Entities. We are still evaluating the implications of the design and assessing the potential changes to PG&E's bidding, settlement and monitoring systems.

ISO Response

Thanks

2. Convergence Bidding – Needs Detail and Explicit Consideration in this Process

PG&E is greatly concerned about the impact EIM will have on convergence bidding, but the proposal has been silent on this issue. We ask that the CAISO address this issue in the next proposal.

The proposed EIM will introduce significant new structural differences between the day-ahead (DA) and real-time (RT) EIM markets by creating different market footprints for these markets. For example, the two markets will differ in the following ways (there may be more):

- The transmission model used in CAISO's DA market will not model transmission systems in external EIM Entities while the transmission model used in EIM will model transmission systems in CAISO as well as external EIM Entities.[1]
- CAISO's intertie scheduling points that are used to schedule imports into CAISO from the EIM Entity and exports from CAISO to the EIM Entity will exist in the DA market model. However, these interties either won't exist or won't have the same composition in the RT EIM model.
- New EIM intertie scheduling points will exist in RT, that didn't exist in the CAISO's DA market. These interties are not modeled or scheduled in CAISO DA market.
- New generation and load nodes (in the EIM Entity) will be included in the RT EIM that are not modeled in the CAISO DA market. The schedules of PacifiCorp resources will be adjusted along with the schedules of CAISO resources since the systems will be co-optimized.

To the degree possible, the structural differences between the CAISO DA market and the RT EIM should be identified and their potential effects evaluated. In particular, the interaction of convergence bidding with the structural differences between markets must be investigated. Currently, convergence bidding at the interties is suspended due to strategic bidding activity, often called gaming, which exploited persistent structural market differences between CAISO's DA market and the Hour Ahead Scheduling Process. PG&E is concerned that the proposal has not yet considered the impacts or risks that may arise from convergence bidding interacting with the new structural differences and what safeguards need to be implemented before EIM goes live.

To help mitigate the risk associated with gaming of structural market differences introduced via the EIM, PG&E recommends that the CAISO address the issue of the allocation of uplifts related to convergence bidding as recommended by the DMM.[2]

This needs to be done before the EIM goes live.

Furthermore, PG&E recommends that convergence bidding at the interties should not be considered until the after EIM goes live and is operational long enough to show that the structural differences do not affect market outcomes in a way that increases risks if convergence bidding at the interties were allowed. At that point the CAISO should convene a second convergence bidding initiative to evaluate the potential risks and benefits that may arise from convergence bidding at the interties. This is similar to the prudent approach taken by the CAISO in its Order 764 market modifications.

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[1]Some aspects of the EIM Entity transmission system may be modeled in the DA market, but it is unclear how much. PG&E assumes less detail will be modeled in the DA market compared to the RT.

[2] See section 4.3 http://www.caiso.com/Documents/DiscussionPaper-Real-timeRevenueImbalance_CaliforniaISO_Markets.pdf

ISO Response

Since virtual bids are not exposed to day-ahead congestion in the EIM Entity, the ISO has proposed not to settle virtual bids for real-time congestion due to constraints within the EIM Entity BAA.

The ISO continues to improve modeling consistency within the ISO between the day-ahead market and real-time market. Based upon the outcome of these efforts, the ISO may commence a stakeholder initiative to determine if additional design changes are warranted.

3. Set a Flexible Capacity Requirement (with an associated MOO) for EIM Entities Similar to that for CAISO Participants

Today, initiatives are underway at the CPUC and the CAISO to establish a one-year-forward flexible capacity requirement for CAISO participants.[3] The goal of these initiatives is to ensure that there are adequate resources to meet the system net load ramping requirement in all hours. To ensure this requirement can be met, the CAISO will require its participants to satisfy a one-year-forward

flexible capacity requirement and specific DA and RT must-offer obligations (MOO) for the capacity used to meet this requirement.

Although EIM Entities need to have sufficient resources to meet their load and operating reserves, they do not appear to be subject to the same planning requirements as CAISO participants to provide any necessary flexible capacity with a must-offer obligation. This disparity could create a situation where an EIM Entity without a similar planning requirement relies on California customers to plan for and provide the flexibility needed to balance its grid in real-time.

PG&E encourages the CAISO to work with PacifiCorp and future EIM Entities to avoid asymmetries in key planning and operations standards such as the requirement for flexible capacity.[4] The EIM market design should ensure that EIM Entities come into the RT optimization with sufficient resources committed to meet not only the forecast load and operating reserves, but also to jointly accommodate the variability and forecast uncertainty to which the EIM dispatch must respond across the joint EIM footprint. Therefore, the CAISO should establish for EIM Entities a similar flexible capacity requirement as for CAISO participants, including a similar MOO for flexible capacity to provide economic RT bids. This issue of how to calculate and allocate the flexible capacity requirement should be addressed in the next paper and explored with stakeholders.

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[3]Such as the Flexible Resource Adequacy Criteria and Must Offer Obligations initiative http://www.caiso.com/informed/Pages/StakeholderProcesses/FlexibleResourceAdequacyCriteria-MustOfferObligations.aspx

[4]PG&E also wants to better understand the relationship between the EIM and the new 30-minute corrective capacity the CAISO wants to procure (see Contingency Modeling Enhancements Initiative

ISO Response

The EIM Entity BAA will have a flexible ramping constraint requirement. This requirement must be met independently in the submitted base schedule prior to the start of the EIM.

4. Flexibility Requirements (both forward and spot) Need to be Assessed on the Basis of the Joint EIM Footprint

Flexible capacity requirements for participants in CAISO and for participants in PacifiCorp could be evaluated separately as is done today. Or, flexibility requirements could be considered together for the expanded EIM footprint and allocated to participants both in the CAISO and the EIM Entity. This issue of whether to set flexibility requirements separately or jointly applies to two different (but related) requirements. The first requirement is the one-year-forward flexibility requirement discussed in item #3 above. The second requirement is the flexibility reserve target that is set and procured for in the RT market.[5]

If the CAISO does not factor the impact of PacifiCorp into its determination of both the forward and spot market flexibility requirements, then the CAISO may set requirements for its California participants that are too high. A similar effect would be seen for PacifiCorp if it were to evaluate its flexibility requirements on a stand-alone basis. Without this combined consideration of a

requirement, the flexibility reserve benefit could be significantly diminished (this benefit in the CAISO's study was 19-60% of the total benefit).[6]

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[5]The flexibility reserve is currently procured in the RT market through the enforcement of a flexibility constraint. Eventually, the CAISO will procure the needed flexibility in both the DA and RT markets via a flexibility product.

[6] Based on the data on page 9, flexible reserve benefits range from 19% - 60% of the total benefits. http://www.caiso.com/Documents/PacifiCorp-ISOEnergyImbalanceMarketBenefits.pdf

ISO Response

After the base schedule with the flexible ramping constraint met, the EIM will dispatch the lowest cost resources to meet load and the flexible ramping constraint across the EIM footprint.

5. Consider How Transmission Constraints and Limits in Transfer Capability Impact the Procurement of Flexible Capacity in the EIM

The proposal allows for the procurement of flexible capacity (through the enforcement of the flexible constraint or by procurement of a future flexible product) in the EIM Entity. We have two concerns that we request be addressed in the next proposal.

a) First, flexible capacity at times has been stranded in generation pockets. PG&E recommends the CAISO provide stakeholders with an analysis on how often this happens and consider the implications on procurement of flexible reserves across the different BAAs.

b) Second, the net transfer capability (transfer capability available to the EIM less energy scheduled or flowing) would seem to be a constraint on how much flexible capacity is procured on either side of the intertie. Not considering this limit means that the CAISO may not have access to flexible capacity procured on one side but needed on the other.

The next proposal should include a discussion on mechanisms to ensure flexible capacity procured can be delivered to the intended locations within the EIM.

ISO Response

Section 3.4.3 of the 2nd Revised Straw Proposal contains an expanded discussion of the flexible capacity proposal, which will be discussed further at the July 9 stakeholder meeting.

6. CAISO Should Have the Ability to Commit Fast-Start Resources in an EIM Entity

The current proposal allows for the RTUC commitment of resources in the CAISO but not the EIM Entity. This one-sided treatment will likely diminish the inter-regional dispatch advantage advertised in the benefits study and is an example of the possible unfair reliance on RA planning

and must-offer obligations required within California by an EIM Entity. PG&E is seeking similar unit commitment treatment across the CAISO and the EIM Entity.

The CAISO should consider expanding EIM so that it has the ability to commit fast start resources within an EIM Entity through RTUC so long as they can be brought online. In the 15 minute market, commitment of fast-start resources bears a close resemblance to the dispatch of on-line resources. The decision to commit a fast start resource in RTUC is made based on short term load forecasts and economic trade-offs of dispatching on-line resources or committing off-line fast start resources. This differs from the commitment decisions made in the DA processes.

The CAISO should have the ability to commit fast start units in an EIM Entity in the RTUC process. Additionally, fast-start resources in the EIM Entity should have similar must offer obligations in the EIM as the CAISO's RA units (see discussion in item #3).

Resources committed in the EIM whether in CAISO or an EIM Entity should be eligible for bid cost recovery (BCR). BCR payments would be recovered via uplifts allocated across the CAISO and the EIM Entity. The stakeholder process is already addressing mechanisms to share the uplift costs including RT BCR.

ISO Response

The changes in the 2nd Revised Straw Proposal include an option in which an EIM Entity can elect to allow or not allow unit commitment in the EIM. Whether the opportunity for unit commitment should be further expanded can be discussed further in the July 9 stakeholder meeting.

7. Appropriateness of the Allocation Method for the Four Uplifts needs More Examination

The CAISO proposes to allocate the costs for four uplifts between the CAISO and EIM entities on the basis of the gross absolute real-time deviation from the DA schedules for the CAISO and the adjusted base schedules [7] for the EIM Entity. The four charge codes identified by the CAISO for allocation to the EIM are:

1. CC6477 Real Time Imbalance Energy Offset (RTIEO)
2. CC6774 Real Time Congestion Offset (RTCO)
3. CC6678 Real Time Bid Cost Recovery (RT BCR)
4. CC7024 Flexible Ramp Up Cost

Allocation of these uplifts to the EIM Entity is appropriate. Condition changes from the adjusted base schedules in the EIM Entity may cause an increase in the RTIEO or the RTCO similar to what occurs today in the CAISO. For example, if conditions change in the RTD run (e.g., load forecast), then transmission violations may be caused by the adjusted base schedule. EIM would remove the violations in real-time, and EIM may incur RTCO as a result. In addition, the adjusted base schedule

only removes violations on the EIM Entity system. Violations in CAISO may be caused by parallel flows resulting from the adjusted base schedule. So the adjusted base schedule may still cause transmission constraint violations on the EIM Entity system or the CAISO system.

Similarly, the CAISO may commit units in RT to meet the needs of the EIM Entity resulting in RT BCR and the CAISO will be procuring flexibility in the spot market for the joint balancing area so allocation of some of these costs to the EIM Entity is appropriate.
Although allocation of the four charge codes is appropriate, we are less sure that the method of allocation (gross absolute deviations) is appropriate for all four codes. PG&E understands the value of using the same simple allocator for all the uplifts, but we recommend additional analysis and explanation that the proposed allocator is synchronized with all four billing determinates (allocation guiding principle #6). For example, an allocation based on the amount of uninstructed deviation may make more sense for certain uplifts, especially where uninstructed deviations drive a larger portion of the uplift. The CAISO should provide analysis and additional discussion in the next paper on the synchronization of the proposed allocators for each of the four determinants.

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[7]Adjusted Base Schedules are balanced schedules submitted by the EIM Entity before the start of the EIM that may be adjusted by the Market Operator (CAISO) to remove transmission constraint violations on the EIM Entity system.

ISO Response

The 2nd Revised Straw Proposal (e.g., section 3.7.8) has changed the allocation of offset costs in response to a variety of perspectives in stakeholder comments.

8. Consider Modifying the Minimum Shift Optimization (MSO) to Make the EIM More Attractive to EIM Participants

The proposal makes three clarifications regarding the Minimum Shift Optimization (MSO) process: 1) balanced base schedules are submitted at the EIM Entity Scheduling Coordinator (SC), not by the EIM Participant Scheduling Coordinator; 2) adjustments to base schedules are made at the EIM Entity SC level to remove transmission violations in the EIM Entity system and maintain balance; and 3) compensation for the adjustments in schedules will be handled outside the EIM between the EIM Entity and the EIM participants.

Even though PG&E is protected from having our day-ahead schedules adjusted by the MSO, we continue to believe this proposed approach may reduce the incentive for entities in PacifiCorp to participate in an EIM, diminishing the benefits of an EIM for all parties. As described in our previous comments, adjusting base schedules at the EIM Entity level can create settlement problems between the EIM Entity and participants in the EIM Entity. For example, suppose that two EIM Participant SCs submit balanced base schedules into the EIM. When the Market Operator adjusts base schedules to remove a transmission violation, it may increment the energy scheduled from the generator of one EIM Participant SC and reduce the energy scheduled from the generator

of the other EIM Participant SC. This will create a transfer of energy from one SC to the other. The proposal does not provide any mechanism for settling the transfer between the two SCs created by its adjustment process. Instead, it plans to rely upon the EIM Entity to settle the energy transfer created by CAISO. PG&E offers two alternative solutions below to address this problem.

Alternative #1: Modified MSO
If the combined schedules violate a transmission constraint, the EIM Market Operator could use a modified MSO process that will keep each EIM Participant SC's adjusted base schedule in balance. In this way there would be no transfer of energy created between EIM Participant SCs that would have to be settled outside EIM.

Alternative #2: Pro-rata Curtailment of Schedules
Another approach might be to curtail the EIM Participant SCs' schedules pro-rata based on their contributions to flow on a violated constraint. The EIM Market Operator could inform each EIM Participant SC of the amount of flow reduction it is responsible to provide on the constraint and the EIM Participant SC could submit a revised base schedule to provide the reduction. This would not place a disproportionate burden on any single EIM Participant SC. If the EIM Participant SC does not provide revised schedule that achieves the flow reduction instructed, the EIM Market Operator could curtail both generation and load in an EIM Participant SC's base schedule to achieve the required reduction. In this way, the EIM Market Operator is not increasing output from a generator without considering its cost. Any curtailed load would be served in the EIM at the appropriate RT LMP.

Based on our understanding, this second alternative is similar to an approach that is used in the Energy Imbalance Services (EIS) market administered by the Southwest Power Pool (SPP).

PG&E believes either alternative approach is more equitable than the proposed MSO and thus will provide the right incentive for EIM participation. Since participation in the EIM is optional for resources in an EIM Entity, participants may decide not to submit offers in the EIM to avoid having their base schedules adjusted by the Market Operator in the MSO process creating transfers of energy between participants that the Marker Operator will not settle at a market price. If enough participants decide not to participate in EIM, the economic benefits from EIM could be reduced. We ask the CAISO to consider the alternative modifications in the next proposal.

ISO Response

See section 2.3. The ISO believes the BAA specific real-time congestion balancing account reduces or eliminates the need for the minimum shift optimization.

Company	Date	Submitted By
Portland General Electric	6/18/213	

Opening Comments

Portland General Electric Company (PGE) appreciates the opportunity to submit these comments to the California Independent System Operator (CAISO) regarding the Energy Imbalance Market (EIM) Design revised Straw Proposal posted on May 31st, 2013. PGE commends the CAISO's effort to extend a portion of its organized market, a stand-alone EIM platform, to entities outside of the CAISO's footprint. PGE understands the CAISO is under pressure to develop a firm market proposal as soon as possible given their implementation timeline with PacifiCorp. However, PGE is concerned that certain of the CAISO's policy choices presented so far in the areas outlined below have not received sufficient consideration, given their potential significant impact to the region, as a result of the accelerated timeline.

ISO Response

The ISO will include a 3rd revised straw proposal prior to the draft final proposal as well as addtinal comment period for the 2nd revised proposal..

Governance

PGE believes strongly that an EIM should operate under its own governance structure, with an independent body. PGE understands this model would likely incur additional costs compared to sheltering the governance within the existing CAISO Board, but believes these are necessary costs to insure a well-functioning, transparent, independent management that respects the diverse interests of all parties and gives sufficient weight and representation to their views. PGE appreciates the CAISO's offer to separate the governance discussions into a new stakeholder process and looks forward to participating in that forum.

ISO Response

The ISO understands the need for EIM participants to have a voice in policy decisions affecting EIM. As noted in the schedule the ISO plans to issue a white paper discussing EIM governance no later than Aug 13 and will discuss it at the Aug 20 stakeholder meeting in Portland, Oregon. The ISO will request stakeholder comments on the white paper by Aug 27. Revisions to the governance white paper and subsequent discussions will be scheduled to address stakeholder comments received.

Transmission Service

In order for the EIM to remain a discreet, sub-hourly (or sub-15-minute) balancing market, transmission policies must be carefully crafted to avoid giving an incentive for parties to change trading practices and push all market optimization to the EIM, thereby disrupting the market fundamentals both within and outside the EIM footprint.
PGE encourages the CAISO to reassess its initial transmission policy proposal in light of the following principles, which PGE believes should guide transmission rate and policy design in any market, bilateral or organized:

- Open access principles should apply broadly to all market participants – no one entity should be given undue priority in their access to transmission.

- All market participants who utilize a transmission provider's system should pay for the service they receive – no one entity should be given "free rider" opportunities.

These principles have been consistently applied by the FERC and are foundational to transmission policy and rate design across the country.

ISO Response

The ISO has made no changes to the transmission service proposal outlined in the 2nd Revised Straw Proposal. The ISO is still evaluating potential options and will discuss further in future papers.

Capacity Treatment

PGE strongly supports the concept of creating resource sufficiency requirements for EIM participants that standardize the balancing capacity requirements for each entity and properly give incentive for new capacity market entrants over time. These requirements would ensure that no single entity could lean on the capacity of another to solve their imbalance requirements through the EIM and would ensure that sufficient capacity resources are developed to meet the region's needs going forward. They would also ensure that each entity would carry the appropriate *quality* of balancing capacity on their system (e.g., fast ramping) to meet their on-system needs without degrading interconnect reliability. PGE wishes to acknowledge and support the detailed comments made by Powerex on this topic, and looks forward to exploring these concepts further with the CAISO as the stakeholder process continues.

ISO Response

See sections 2.3 and 3.3 of the 2nd revised straw proposal, which present additional discussion of resource sufficiency issues.

Bilateral Market Interface

PGE is concerned that the CAISO proposal does not adequately address seams issues arising at the interface between the EIM and the bilateral markets, both from a physical standpoint and from a market coordination standpoint. PGE encourages the CAISO to clarify their expectations for coordinating activity, including with import/export bids following the FERC Order No. 764 changes, and how they will minimize market disruption and reliability impacts when operating their EIM within a highly interconnected Western grid.

ISO Response

In developing the ISO FERC Order No. 764 market design changes, the ISO worked closely with neighboring balancing authorites and with the WECC 15-minute schedule taskforce to minimize potential seams issues with the introduction of 15-minute schedule. The ISO will continue to partipate in these forums as the 15-minute market develops for intertie transactions. If PGE would like specific features to be considered, please describe them in comments.

Company	Date	Submitted By
Powerex Corp.	June 14, 2013	Thomas Elgie 604-891-6010

Summary

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

ISO Response

Thanks

CAISO is moving too fast

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

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

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

Powerex understands and supports the CAISO efforts to continue to move forward with this initiative in a timely manner. However, the pace of all stakeholder processes must be commensurate with the complexity and importance of each of the topics and issues addressed. Accordingly, this stakeholder process must include very substantive opportunities for stakeholder

involvement, preferably ahead of the comment process that ensues at FERC. This is particularly important, considering many of the stakeholders do not necessarily have years of experience and knowledge of CAISO markets and the complex technical issues raised in the Revised Straw Proposal. Powerex urges the CAISO to slow down to a reasonable pace whereby stakeholders are afforded the full opportunity to contribute to the CAISO's EIM design.

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

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

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

ISO Response

The ISO will be publishing an additional revised straw proposal prior to posting on the draft final proposal and has provided additional time for comments to the 2nd revised straw proposal.

Transmission Service Guiding Principles

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

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

Each of the first three principles are well established transmission access and/or transmission rate design principles set forth, and repeatedly confirmed, by the Federal Energy Regulatory Commission.
The fourth principle is a foundational market design principle of all wholesale energy markets. Structurally different transmission rates across different energy market timeframes (i.e. Day Ahead versus real-time versus EIM) for the same delivery period (i.e. Hour Ending 11, on June 15, 2013) must be avoided to prevent shifting of market activity into the market timeframe with the lower transmission rate driving significant undesirable market inefficiency and reliability outcomes.

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

ISO Response

The ISO appreciates Powerex's perspective on the issue of transmission rate design, as well as the perspectives expressed in several other stakeholder comments. The ISO has made no changes to the transmission service proposal outlined in the 2nd Revised Straw Proposal, due to detailed development that has gone into other aspects of the EIM proposal, but is still evaluating potential options and will discuss further in future papers.

EIM Transmission Service Rates

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

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

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

For example, the CAISO could pursue a new transmission rate design that encompasses a broader geographical transmission footprint to include PacifiCorp's transmission system, thereby replacing the entire PacifiCorp OATT with a CAISO/PAC *blended* transmission access charge. Such a design may improve market efficiency, but would have to be applied across all market timeframes (Day Ahead, Real Time, EIM), to avoid participants shifting day ahead, real- time and EIM market activity from a market timeframe with a higher transmission rate (i.e. Day Ahead) to a lower one (i.e. EIM). Under this approach, transmission pancaking could be removed across a broader footprint, while

importantly, continuing to charge PacifiCorp customers for their use of the CAISO transmission system, and vice versa, consistent with cost causation and non-discriminatory access to transmission.

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

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

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

ISO Response

The ISO appreciates Powerex's perspective on the issue of transmission rate design, as well as the perspectives expressed in several other stakeholder comments. The ISO has made no changes to the transmission service proposal outlined in the 2nd Revised Straw Proposal, due to detailed development that has gone into other aspects of the EIM proposal, but is still evaluating potential options and will discuss further in future papers.

CAISO's Transmission Service Cost Recovery Principles are misguided

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

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

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

Non-discriminatory open access to transmission, neutrality of transmission costs for the transmission provider, allocating costs consistent with cost causation, and applying structurally similar costs across all market timeframes are all foundational principles which cannot be violated. In contrast, transmission rate pancaking is regularly "tolerated" in transmission rate design. In fact,

it is widespread today in the day ahead, real-time and sub-hourly western energy markets, including exports out of, and wheels through, the CAISO, as part of western transmission providers' FERC approved tariffs.

Nonetheless, Powerex does agree with the CAISO that the elimination of rate pancaking is an objective worthy of pursuit. Powerex strongly believes, however, that this objective should be pursued as part of a holistic transmission rate design process, not as part of an EIM initiative. As the CAISO correctly points out, rate pancaking acts as a hurdle rate which can reduce the efficiency of dispatch. However, this effect occurs in all CAISO market timeframes, including the CAISO's proposed 15-minute market, and hence has little nexus specifically to an EIM. In fact, removing this hurdle rate uniquely for EIM Participants, and uniquely for EIM transactions only, would not only be unduly discriminatory and violate cost causation, but has the potential for significant unintended efficiency and reliability consequences, as EIM entities respond to this powerful price signal.

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

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

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

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

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

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

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

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

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

This principle appears to be a subset of the principle:

Non-discriminatory open access to transmission for all market participants

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

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

ISO Response

The ISO appreciates Powerex's perspective on the issue of transmission rate design, as well as the perspectives expressed in several other stakeholder comments. The ISO has made no changes to the transmission service proposal outlined in the 2nd Revised Straw Proposal, due to detailed development that has gone into other aspects of the EIM proposal, but is still evaluating potential options and will discuss further in future papers.

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

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

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

1) Discriminatory access to CAISO transmission, contrary to the CAISO's "As-Available" description
2) Discriminatory transmission cost advantages for EIM participants in procuring 5-minute, 15-minute, real-time hourly, and day ahead CAISO energy.
3) Inefficient dispatch outcomes outside of the CAISO, including the EIM footprint.
4) Increased transmission costs for non-EIM transmission customers, inconsistent with cost causation
5) Shifting of EIM Participants' Day Ahead, Hour Ahead and 15-minute CAISO export and CAISO wheel through activities into the EIM

Under the CAISO's proposed 15-minute market design, all EIM energy bids and non-EIM energy bids for 5-minute, 15-minute, or hourly energy will be submitted at the same time. These bids will then be co-optimized, producing the most efficient dispatch solution based on these co-mingled bids. From absolutely no perspective can one accurately describe EIM bids as subordinated in this transmission and energy optimization process – i.e. to only access "as-available" or "residual" transmission rights after dispatch to non-EIM real-time bids.
In other words, under this alternative, all non-EIM participants seeking to export energy or wheel energy through the CAISO will be required to continue to include upwards of $9 per MWh of CAISO transmission costs in their energy bids, while EIM Participants will not. In effect, this will enable EIM participants that are similarly situated with non-EIM participants, to out-compete for CAISO transmission, and hence for combined energy and transmission dispatch out of the CAISO real-time markets.

Consider the following example:

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

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

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

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

This example illustrates several important aspects of the CAISO's "free transmission" proposal. First, the transmission that is awarded is not "as-available" but rather competed for, with EIM

Participants receiving a substantial, unduly discriminatory, transmission cost advantage.

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

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

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

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

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

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

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

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

The CAISO's argument that its transmission revenue recovery will be fully funded by existing transmission rates rendering charging for EIM transmission usage unnecessary, is also clearly flawed for several reasons. First, as demonstrated in the example above, export dispatches out of

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

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

ISO Response

The ISO appreciates Powerex's perspective on the issue of transmission rate design, as well as the perspectives expressed in several other stakeholder comments. The ISO has made no changes to the transmission service proposal outlined in the 2nd Revised Straw Proposal, due to detailed development that has gone into other aspects of the EIM proposal, but is still evaluating potential options and will discuss further in future papers.

CAISO's Transmission Service Cost Alternative 2 violates several principles

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

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

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

ISO Response

The ISO appreciates Powerex's perspective on the issue of transmission rate design, as well as the perspectives expressed in several other stakeholder comments. The ISO has made no changes to the transmission service proposal outlined in the 2nd Revised Straw Proposal, due to detailed development that has gone into other aspects of the EIM proposal, but is still evaluating potential options and will discuss further in future papers.

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

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

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

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

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

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

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

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

ISO Response

The ISO appreciates Powerex's perspective on the issue of transmission rate design, as well as the perspectives expressed in several other stakeholder comments. The ISO has made no changes to the transmission service proposal outlined in the 2nd Revised Straw Proposal, due to detailed development that has gone into other aspects of the EIM proposal, but is still evaluating potential options and will discuss further in future papers.

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

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

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

ISO Response

The issue of allocation of costs on the PacifiCorp transmission system for generators and loads utilizing the PacifiCorp transmission grid in the EIM relates to transmission rate design for EIM as a whole. The ISO has made no changes to the transmission service proposal outlined in the 2nd Revised Straw Proposal, due to detailed development that has gone into other aspects of the EIM proposal, but is still evaluating potential options and will discuss further in future papers.

The allocation of EIM congestion revenues collected on the PacifiCorp grid is addressed in section 3.7.8.2, "Real-Time Congestion Offset", and related sections of the 2nd Revised Straw Proposal. This section has significant updates from earlier documents, and will be discussed at the July 9 stakeholder meeting.

EIM Resource Sufficiency Framework Must Be Designed to Prevent Leaning

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

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

Designing an EIM which permits such activity would undermine both the efficient and sufficient commitment of capacity resources in the western interconnect, with serious reliability consequences.
FERC raised a similar concern regarding SPP's initial design of its EIM. FERC rejected that design, stating:

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

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

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

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

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

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

Inside the CAISO, sufficient balancing reserve capacity to meet the CAISO's firm load obligations (including firm exports) is procured and charged very differently, through a variety of processes. First, California has a resource adequacy program which helps ensure sufficient capacity is installed (or contracted for) on a forward basis to meet the forecasted firm load obligations of load-serving entities. Discussions are underway to potentially expand this resource adequacy program to incorporate the growing need for flexible capacity resources necessary to balance a changing CAISO generation fleet.
Second, the CAISO has a day ahead residual unit commitment (RUC) process, whereby it commits additional dispatchable generation day ahead to meet potential shortfalls between day ahead supply awards and the CAISO's forecast of real-time demand. Importantly, additional RUC capacity may be procured as a result of (i) CAISO forecasts of higher demand in real-time than cleared in the day ahead market; and/or (ii) potentially insufficient supply as a result of virtual supply awards or VERs comprising a portion of the supply awarded in the day ahead market.

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

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

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

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

CAISO markets.

Similarly, the CAISO could expand its ability to procure additional capacity commitments from external markets through expansion of its RUC process and proposed Flexi-ramp product to the interties.
Not only would a co-optimized capacity commitment process result in more efficient generation commitment decisions, some reductions in capacity commitment across the combined footprint could be achieved through geographical diversity, under a transparent and well-modeled framework.

However, a co-optimization of capacity commitment must be done carefully to ensure that:

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

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

Independent of the development of a co-optimized capacity commitment process, it remains imperative that the CAISO ensure that all EIM Participants be required to be balanced from a capacity perspective both day and hour ahead – i.e. require resource sufficiency. Failure to do so could lead to insufficient dispatchable energy resources being online and available to maintain reliable service to firm load.

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

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

An example based on the CAISO's presentation on June 6, 2013 helps illustrate the issue.
The CAISO presentation provided the following numeric example:

Load Forecast	1000 MW
Export A	100 MW
Export B**	200 MW
Total	1300 MW

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Gen A	500 MW
Gen B*	400 MW
Gen C*	150 MW
Import A*	100 MW
Import B**	150 MW
Total	1300 MW

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

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

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

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

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

ISO Response

See section 2.3 and related sub-sections within sections 3.3, 3.4, and 3.7. The ISO has provided additional information on the congestion balancing account by BAA, flexible ramping constraint requirement by BAA, and penalties for under-scheduling. Load scheduling requirements and penalties for under-scheduling ensure that each EIM Entity enters each 15-minute interval with resources that match its forecasted demand. The flexible ramping constraint requirement by BAA ensures that each EIM Entity can independently meet its requirements for balancing supply and demand variations in the real-time market. The real-time imbalance energy offset, the real-time congestion balancing account, and other allocations of offset charges ensure that each EIM Entity is responsible for any costs of revenue insufficiency.

Requiring EIM Participants to be resource sufficient

Powerex recommends the CAISO implement a robust capacity-based resource sufficiency test, that

requires either all EIM Participants, or alternatively all EIM Entities, to submit a resource plan day ahead and 75 minutes prior to each hour that sets forth a feasible plan, including:

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

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

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

Powerex looks forward to further discussion on this topic.

ISO Response

See section 2.3 and related sub-sections within sections 3.3, 3.4, and 3.7. The ISO has provided additional information on the congestion balancing account by BAA, flexible ramping constraint requirement by BAA, and penalties for under-scheduling. Load scheduling requirements and penalties for under-scheduling ensure that each EIM Entity enters each 15-minute interval with resources that match its forecasted demand. The flexible ramping constraint requirement by BAA ensures that each EIM Entity can independently meet its requirement isn the real-time market. The real-time imbalance energy offset, the real-time congestion balancing account, and other allocations of offset charges ensure that each EIM Entity is responsible for any costs of revenue insufficiency.

CAISO's Carbon Proposal Requires More Details and Discussion

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

Powerex understands the CAISO's proposal as described below.

- The CAISO will add estimated carbon costs to all incremental EIM generation offers when evaluating offers to serve CAISO load, and not add any carbon costs to incremental EIM generation offers when evaluating offers to serve non-CAISO load.
- As part of this optimization process, the CAISO lowest cost dispatch solution for the combined CAISO-EIM footprint will effectively "allocate" the lower-intensity generation selected to CAISO load and "allocate" the higher intensity generation selected to non-CAISO load.

- The CAISO will then settle with EIM participants in a manner which assumes that the EIM participant continues to be responsible to submit carbon allowances under the CARB program (for generation that was dispatched in the EIM and "deemed" by the CAISO to have served CAISO load).
- The dispatch outcome will, in effect, have the CAISO "perfectly resource shuffle" amongst selected EIM energy offers, consistent with the CAISO's interpretation of CARB's safe harbors.

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

The CAISO carbon proposal also raises several obvious questions:

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

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

ISO Response

Powerex's understanding is correct. The ISO and CARB are actively working on the GHG design for EIM. Section 3.12 has been updated based the input from CARB.

CAISO Should Not Apply Market Power Mitigation Outside CAISO Footprint

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

Second, the CAISO does not intend to include in its EIM design, the ability for the CAISO to commit/start-up generation resources outside of the CAISO footprint itself, nor does it include the

ability for the CAISO to compel EIM Participants to submit offers into the EIM. Applying local market power mitigation to resources that have the unilateral ability to choose not to start-up and/or choose not to submit offers for any particular hour in the EIM, is unlikely to be successful in increasing the supply of offers below the mitigated price level.

Third, the CAISO's market power mitigation framework was designed in the context of its broader MRTU market design, taking into consideration the CAISO's broader settlement framework, including its resource adequacy program, bid cost recovery mechanisms, start-up cost bid submission framework, etc. Simply applying the CAISO's existing local market power mitigation outside this broader MRTU framework may lead to unintended consequences and may deter broader participation in the EIM.
Powerex appreciates this opportunity to comment on the CAISO's Revised Straw Proposal and looks forward to additional stakeholder meetings and opportunities to comment on the CAISO's comprehensive Revised Straw Proposal and the broader EIM initiative.

ISO Response

The 2nd Revised Straw Proposal clarifies that LMPM will be performed for each BAA separately prior to the start of the EIM. LMPM focuses on competitiveness of local transmission constraints, rather than more global conditions.

Company	Date	Submitted By
Southern California Edison	6/18/2013	Paul Nelson (626) 302-4814 Jeff Nelson (626) 302-4834

Opening Comments

The following are Southern California Edison's (SCE) comments on the California Independent System Operator's (CAISO) Design Straw Proposal and Issue Paper (Proposal) for an Energy Imbalance Market (EIM) issued on May 30, 2013.1 SCE shares the CAISO's goal to create a robust set of rules and processes for other balancing authorities to participate in a combined EIM that can result in operational and cost benefits to all parties. However, SCE is concerned that the current schedule lacks the time necessary to properly evaluate the proposal and consider potentially superior alternatives.

Given the time restriction, SCE limits comments to the following issues:

1. Schedule lacks sufficient time for careful review and constructive comments.
2. Other proposals need to be evaluated to reflect GHG cost in the EIM.
3. The EIM Proposal appears to be incompatible with convergence bidding.
4. Investigation of situations that create up uplifts needs careful review.
5. The role of resource adequacy for EIM Entities requires more discussion.
6. Transmission pricing needs to align incentives between day-ahead and EIM participation, and a process for resolution is needed.
7. More detail on the modeling and operation of interfaces between the ISO and the EIM entity is needed.
8. More detail on the Minimum Shift Optimization is needed.

SCE continues to review other aspects of the EIM Proposal. Lack of comments on specific issues here does not necessarily constitute endorsement.

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[1]. http://www.caiso.com/Documents/RevisedStrawProposal-EnergyImbalanceMarket-053013.pdf. In addition, the
CAISO held a meeting on June 6, to review the proposal with the following presentation: http://www.caiso.com/Documents/Agenda_Presentation-EnergyImbalanceMarketJun6_2013.pdf

ISO Response

The ISO will include a 3rd revised straw proposal in the schedule and has provided additional time for stakeholder comments on the 2nd revised straw proposal.

1. Schedule lacks sufficient time for meaningful review and comment

It is clear from the recent Proposal that the creation of an EIM market with PacifiCorp (or other interested parties) is not a simple extension of the current CAISO tariffs and operations onto EIM participants. The latest draft presents a solution to deal with greenhouse gas (GHG) emission costs that creates a fundamentally different locational market price (LMP) for the EIM Entity than compared to LMPs in the CAISO.[2] In addition, the Proposal introduces market power mitigation, allocation of uplifts, proposals for transmission service, flexible ramping constraints, and minimum shift optimization. Yet parties only have eight days from the CAISO's stakeholder meeting to understand the issue presented in a 64 page document and then provide comments. This is simply not enough time to understand the implications of the CAISO's proposal and provide meaningful recommendations or alternatives for stakeholder review.

The risk of designing a deficient or defective EIM market that may impact large portions of the Western Electricity Coordinating Council is too important to rush simply to make an arbitrary deadline. SCE also recommends parties have time to review comments from others, as well as the original Proposal, and offer additional comments. While this might delay the implementation by some nominal period, the benefit of issue identification and resolution clearly justifies a delay. Better to plan well now and avoid possible future costly mistakes.

SCE recommends parties have four additional weeks to review both the CAISO's Proposal as well as the stakeholder comments proffered in this round of review. The CAISO should then review this second round of comments before making revisions to the current proposal.

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[2] Example 1 in the Proposal (p54) shows that the LMP's in EIM Entity would not recover their costs, and therefor requires a separate payment.

ISO Response

The ISO will include a 3rd revised straw proposal in the schedule and has provided additional time for stakeholder comments on the 2nd revised straw proposal. The schedule changes made still support implementation of EIM in October 2014 consistent with the PacifiCorp/ISO implementation agreement filed with FERC.

2. Other proposals need to be evaluated to reflect GHG cost in the EIM

SCE is still evaluating the CAISO's and other possible solutions to incorporate GHG into the function of the EIM market. At this point, SCE does not support or oppose the current solution proposed by the CAISO.

The CAISO's proposal to introduce GHG costs into the EIM market relies on a process that allocates (or deems) the output of an EIM participant to remain within the EIM Entity or be deemed as an export into the CAISO (or some combination of both). We refer to this as an "accounting based" proposal. This results in the creation of a locational market price (LMP) in the EIM Entity that has a different economic meaning from an LMP in the CAISO's market. For instance, Example 1's LMP for G2 in the EIM Entity is insufficient to cover the cost that was allocated to be exported to the CAISO.3 The proposed solution is an additional payment not included in the LMP.

In addition to the "accounting based" proposal for GHG, the CAISO should also explore a "flow based" approach, as described below. With at least two proposals developed to a comparable level of detail, stakeholders can compare the pros and cons, and implications of alternative approaches, or perhaps even identify a superior solution. We strongly encourage the CAISO to explore at least this additional option before making a final decision on any approach.

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[3] Page 54 of the CAISO's Energy Imbalance Market Revised Straw Proposal dated May 30, 2013.

ISO Response

The ISO has maintained the "accounting based" approach in the 2nd revised straw proposal and is working closely with CARB on the proposed design.

Description of a possible "flow based" approach to GHG

A "flow based" approach requires the CAISO to determine, for each generator in the EIM Entity, how much of its power flows into California. Assuming EIM Participants bid production costs without any consideration of GHG, the optimization would then automatically increase EIM bids to reflect the cost of any GHG obligation based upon the flow into California.

Once bids are adjusted, the optimization functions exactly as today. That is, LMPs in both the CAISO and the EIM continue to have just three components (System Energy, Losses, and Congestion). Generation receives payments based on their local LMP times their production. For units dispatched, their LMPs will be at least as high as their submitted bids.

Unlike the CAISO proposal:

- Physics and market economics determine both power flows and GHG obligation,
- Generation requires no additional "GHG payments" or export allocation payments (as
- all LMP's already reflect the cost of GHG),
- LMP price signals remain transparent (no separate pricing to specific units "deemed"
- to sell to California), and,
- The CAISO does not have to "deem" any particular unit as delivering to California while potentially deeming its electrically connected twin as serving the EIM Entity.

To see conceptually how a "flow based" approach works, consider again Example 1 of the revised

proposal.[4] Assume the bids and operating characteristics for G1, G2, and G3 remain the same as in the CAISO's example. In a "flow based" approach, the CAISO would first determine, from the perspective of the optimization's power flow, what percentage of output from each EIM generator flows to California (net flow based on all interconnections).

For simplicity, assume G2 and G3 are electrically similar (e.g. they are on the same bus) and 25% of their output flows into California[5]. Thus, for every 1 MWh scheduled by the EIM, these units will accrue a GHG obligation of one-fourth their output times their GHG emissions factor. This will be translated into a "GHG bid adjustment" by multiplying the quantity of GHG obligation times the cost of GHG (i.e. the emission price times the emission factor) which will be added by the CAISO to the bids submitted by G3. Using the CAISOexample along with an illustrative 25% "flow in to California", the table below shows the calculations for the cost of GHG and the final bids used by the optimization.

Flow based GHG bid adjustment for G1 and G2 based CAISO's example 1

Generator	Bid ($/MWh)	Emission Factor (tons/MWh)	Emission Price ($/ton)	Flow to CA	GHG bid Adjustment ($/MWh)	Final bid used in the optimization ($/MWh)
G2	$35	0	$16	25%	0 * 16 * 25% = $0	$35 + $0 = $35
G3	$30	1	$16	25%	1 * 16 * 25% = $4	$30 + $4 = $34

Under this approach G2 and G3 submit bids which do not include the cost of GHG of $35 and $30/MWh. Based on the powerflow model, the CAISO adjusts the bids to reflect each unit's relevant GHG cost based on the modeled flows to California. In this example the CAISO makes no adjustment to the bid of G2 (it produces no GHG), and includes a "GHG bid adjustment of $4 to G3". Thus, the ultimate bids used for all aspects of the EIM optimization would be $35/MWh for G2 and $34/MWh for G3[6].

While SCE sees many benefits to the CAISO proposal, as noted previously some portions of the approach give us concern. In fact, a side-by-side comparison may help prove the benefits of the CAISO's proposal and address concerns. We strongly encourage the CAISO to formulate a "flow based" approach and present it to stakeholders, and allow parties to explore the full implications of both approaches before deciding on a methodology.

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[4] Page 54 of the CAISO's Energy Imbalance Market Revised Straw Proposal dated May 30, 2013.
5 The powerflow models the electrical flow on all transmission lines based on the generator's location, the physical characteristics of the transmission system and the distribution of load. The determination of how much flow from each EIM generator enters California should be based on the powerflow modeled in the optimization. This approach requires additional discussion on just how dynamic (e.g. determined every 5-minutes) or static (e.g. determined based on results from the DA market run) the flow determination for each unit should be.
6 To the extent units avoid a GHG obligation by being "DECed", this bid adjustment should be included in the DEC

bids. To the extent a unit will not avoid GHG obligations from being DECed (e.g. the unit is DECed below an
Adjusted Base Schedule that carried with it no GHG obligation) the original bid should not be adjusted for GHG.

ISO Response

The ISO has maintained the "accounting based" approach in the 2nd revised straw proposal and is working closely with CARB on the proposed design. Additional examples have been provided in the 2nd revissd proposal.

3. The EIM Proposal appears to be incompatible with convergence bidding

The structure between the day-ahead market (CAISO only) and the real-time market (CAISO & EIM Entities) are fundamentally different. We fail to see how convergence bidding can be funded without uplift which will create unjustified convergence bid costs that are assigned to load. This impacts both the intertie nodes and internal CAISO nodes thus this remains a problem even if the CAISO leaves Convergence Bids on the ties turned off.

Anytime the CAISO changes the market model between day-ahead (DA) and real-time (RT), uplift may be created by convergence bid transactions. If a convergence bid transaction only makes money when the CAISO changes the market model between the DA and RT market, convergence bidders are "betting against the CAISO". They are not taking a financial position against another Market Participant, but rather directly against the grid operator itself, and thus the transaction has no "willing counterparty" and the transaction will likely not "self-fund." [7] We note the CAISO currently takes "any and all bets" for internal nodes, even if they create uplift. And each and every time the CAISO loses the "bet" it compels load – even if load wanted nothing to do with the bet – to pay the bidder in full on the CAISO's behalf. This is inherently unjust and unreasonable and inconsistent with the functioning of a true market. We view it highly likely 'bets against the CAISO' will occur because in the EIM Proposal, the structure of the RT market is different compared to the DA market.

The problem with current EIM proposal is a fundamental difference between the CAISO DA market which excludes EIM Entities and the RT market which includes them. This problem will occur both with the intertie convergence bids and internal nodes impacted by EIM optimization. In addition, the allocation of convergence bid costs needs to be discussed as EIM will impact cost on internal nodes as well as the interties.

Finally, convergence bidding likely cannot converge prices given that the CAISO proposes to model only the CAISO market in DA but both CAISO & EIM Entities in RT.

With the DA and RT markets being fundamentally different and if there is money to be made, then this is a recipe for uplifts to load, which is unjustified as load is not a willing counterparty.

In SCE's opinion, the only options available to the CAISO are:

(a) EIM Entity participation but no Convergence Bidding.
(b) Convergence Bidding but no EIM Entity.

(c) Allocation of uplifts from all Convergence Bids back to Convergence Bidders so that they have no incentive to make "bets against the ISO".
(d) Modeling the EIM Entity in the DA market.

This is a fundamental issue that must be resolved. The convergence costs created can quickly off-set any savings attributed to dispatch improvements. In perspective, the convergence bids attributable to "bets against the ISO" in 2011-12 amounted to $95 million which exceeds the estimated mid-point benefits of $70 million.[8]

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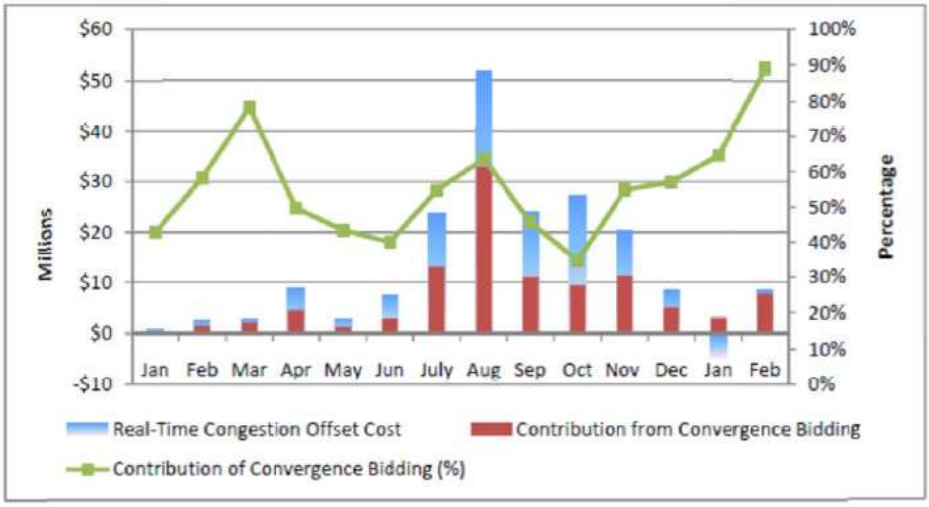
[7]See SCE comments in in Docket ER10-1360. March 8, 2013, Revision of Real-Time Scheduling Transmission Constraint Relaxation Parameter.
[8] Mid point of the medium case from the EIM PacifiCorp Benefits Study, April 2013. See footnote 7 for source of $95 million in bets against the ISO.

ISO Response

Since virtual bids are not exposed to day-ahead congestion in the EIM Entity, the ISO has proposed not to settle virtual bids for real-time congestion due to constraints within the EIM Entity.

The ISO continues to improve modeling consistency within the ISO between the day-ahead market and real-time market. Based upon the outcome of these efforts, the ISO may commence a stakeholder initiative to determine if additional design changes are warranted.

4. Investigation of situations that create uplifts needs careful review



CAISO market uplifts have been unreasonably high as shown by Mark Rothleder's testimony in the CAISO's filing on revision of the Real Time transmission constraint relaxation parameter in ER10-13609. Real Time Congestion Offset (RTCO) uplift costs in the 12 month period from March 2012 through February 2013 were approximately $179 million.

About $95 million of this cost was due to Convergence Bids, which equates to approximately 53% of the total uplift. The $179 million uplift is paid for by load and SCE strongly recommends that the

CAISO address these uplifts now before such uplift becomes an unnecessary burden on PacificCorp load as well once the EIM is implemented.

Notably, the Federal Energy Regulatory Commission (Commission) stated in its Order[10] that: "The Commission encourages CAISO to pursue its evaluation vigorously [emphasis added] and to propose solutions to the observed difficulties promptly when they become evident."

While the Department of Market Monitoring (DMM) has provided a proposal[11] toward a first step in addressing the Commission's directive, SCE is yet to see any evidence of the CAISO committing its efforts toward implementing this solution. SCE strongly urges the CAISO to immediately initiate a stakeholder process to address such costs and begin by determining the viability of the DMM's proposal and resolve this before it impacts EIM Entities.

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[10] http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=13255895 – Paragraph 28 in Docket ER10-1360. May 9, 2013, *Order on Tariff Revisions*.

11 http://www.caiso.com/Documents/DiscussionPaper-Real-timeRevenueImbalance_CaliforniaISO_Markets.pdf

ISO Response

The ISO continues to improve modeling consistency within the ISO between the day-ahead market and real-time market. Based upon the outcome of these efforts, the ISO may commence a stakeholder initiative to determine if additional design changes are warranted.

5. The role of Resource Adequacy for EIM Entities requires more discussion

California has a Resource Adequacy process, outside the CAISO market, to ensure that sufficient resources are available to meet peak demand and flexibility needs. CAISO confirmed at the workshop that the EIM process can commit (start-up) a unit in California to meet requirements in the EIM entity, but not vice versa. This creates a situation where an EIM Entity could lean on the CAISO resources to meet reliability needs for peak events or flexibly requirements.

SCE has questions concerning resource adequacy as illustrated in the following example:
Load is continuing to increase, yet all the economic bid resources available in the CAISO and EIM Entity have been fully committed and the CAISO has no more bids. How does it serve the increasing load?

- Are CAISO reserves (spin, non-spin) dispatched to meet EIM Entities needs?
- Would flows from the CAISO to the EIM Entity be curtailed?
- Does CAISO request the EIM Entity to dispatch any non EIM participating generation to meet load?
- Would the CAISO instruct the EIM entity to dispatch its reserves?
- More generally, concerning the flow from the CAISO to the EIM Entity:
- Who carries the reserves associated with the flow between the ISO and EIM
- Entities?
- Does the CAISO view this as an export schedule or as native load?

The need for reliability standards and operations of the EIM needs careful review. It may

be necessary as pre-condition for EIM Entity participation to demonstrate and maintain resource adequacy. The issue becomes even more complicated if resource adequacy must include 'flexibility". This topic needs more stakeholder discussion.

ISO Response

As SCE notes, the resource adequacy program is a set of California requirements outside the ISO market, which can make it difficult for the ISO to propose similar requirements in other states. Instead, the ISO proposes a set of resource sufficiency requirements in the EIM design, as detailed in sections 2.3 and 3.3 of the 2nd Revised Straw Proposal, including flexible ramping capability for maintaining the feasibility of imbalance energy dispatches.

Concerning SCE's specific questions, the ISO's reserves (regulation, spin, and non-spin) are dispatched to meet the ISO's reserve obligations, and other EIM Entities remain responsible for their own reserve obligations without dispatch of ISO reserves. As an imbalance energy market, EIM will pool all imbalance energy resources in the EIM footprint (including the ISO) to meet the EIM footprint's demand, within transmission limits and available bids. If an EIM Entity has demand exceeding that supported by its base schedule, and EIM cannot meet that excess demand, the ISO as Market Operator will notify that EIM Entityof that condition, who will then be required to use its tools to resolve its imbalance as it would if EIM were not available (including exceptional dispatch of resources that were not bid into EIM, emergency assistance from other BAAs, load shedding, consultation with the WECC RC, etc.). (See sections 3.1.3, 3.3.7, 3.6.2, 3.6.4 of the 2nd Revised Straw Proposal.) Each EIM Entity's reserve requirements are determined by its load, generation, scheduled transactions with other BAAs, and possibly reserve-sharing group requirements, but is not affected by flows between the ISO and the EIM Entity, because the EIM dispatch is not a transaction for reserve capacity. The Market Operator would not be responsible for determining how the EIM Entity should meet its compliance with NERC and WECC standards.

6. Transmission pricing is needed to align incentives between dayahead and EIM participation

As an interim implementation of the EIM market, SCE can support the CAISO's proposal not to charge for transmission as the flows between PacifiCorp and CAISO may be limited, but this situation must be addressed in the near term. Should additional balancing authorities join the EIM or flows become significant, this practice should not continue as it creates a disincentive to schedule load day ahead (which includes transmission costs) compared to getting transmission for free in the EIM.

The process to develop the methodology for transmission charges and wheeling charge in the CAISO took many years. The resulting methodology created a single transmission rate for the CAISO, but it also resulted in a transfer of costs between the CAISO's participating Transmission Owners (PTOs). Some of the transmission pricing proposals set forth in the Proposal raise issues of transmission cost shifting, and would have to be considered carefully by all CAISO market participants and PTOs. SCE does not support changing the methodology for calculating the CAISO's Transmission Access Charge. In no case, should a solution involve a cost shift between CAISO load entities and EIM Entities.

Thus, SCE recommends the following additional principal be added to the list on Page 50 of the

Proposal: "No cost shifting of transmission costs between the CAISO and EIM Entities."

Due to the tight time schedule, SCE is not ready to offer a transmission pricing proposal for stakeholder review. We request the CAISO establish a process and schedule to resolve this issue.

ISO Response

The ISO has made no changes to the transmission service proposal outlined in the 2nd Revised Straw Proposal. The ISO is still evaluating potential options and will discuss further in future papers.

7. More detail on the modeling and operation of interfaces between the ISO and the EIM entity is needed.

The examples provided in the Proposal treat the EIM transaction as if it was a scheduled import into CAISO between balancing authorities under today's market structure. In today's market structure, specific external resources are excluded in the market model. In contrast, under combined EIM, an import to the CAISO needs to be modeled together with its source, i.e., a specific resource(s) that is external to CAISO and where the import originates may need to be modeled explicitly. Similarly, load external to the CAISO is excluded from today's market and the output from an internal generator is modeled to serve the CAISO load in its entirety. In contrast, under EIM, it can't be assumed that the output of a CAISO generator will serve only CAISO load.

Due to these potential changes in how resources are modeled, to determine LMPs, shift factors are required to describe how much of the output from a resource will serve the CAISO load vs. how much will serve EIM entities' load. Please include the shift factors for the examples showing the LMP determination and provide the solution to this example.

Does the EIM Proposal change the way LMPs are determined in the CAISO? Does this result require the CAISO to treat the EIM entity as a neighboring balancing authority that only transacts based on "contract path" schedules rather than as an integrated flow-based market?

ISO Response

The EIM does not change how the real-time market optimization determines LMPs. The EIM is an integrated flow-based market across the EIM footprint (EIM Entity BAAs and ISO BAA).

8. More detail is needed on the Minimum Shift Optimization regarding the intertie assumptions

Please provide more detail of the intertie adjustments that can or cannot be performed under the minimum shift optimization (MSO).

ISO Response

As proposed, import/exports bids in to the 15-minute market can be adjusted through the minimum shift optimization. Note that section 3.3.9 of the 2nd Revised Straw Proposal discusses alternatives to the minimum shift optimization.

Company	Date	Submitted By
Six Cities	6/16/2013	Bonnie Blair bblair@thompsoncoburn.com 202-585-6905

Opening Comments

In response to the ISO's request, the Cities of Anaheim, Azusa, Banning, Colton, Pasadena, and Riverside, California (collectively, the "Six Cities") submit the following comments on the ISO's May 30, 2013 Energy Imbalance Market Revised Straw Proposal ("the Revised Straw Proposal").

The Six Cities continue to support ongoing exploration of the Energy Imbalance Market ("EIM") concept with the objectives of improving efficiency and enhancing reliability for all EIM participants. In addition, the Cities appreciate the ISO's preliminary efforts to address the concerns expressed in the Cities' April 19, 2013 comments regarding the need to ensure that allocation of all costs associated with the EIM is consistent with the receipt of benefits that result from the EIM. However, the Cities remain concerned with the following aspects of the Revised Straw Proposal: (i) the potential that capacity procured by load within the ISO Balancing Authority Area ("BAA") may be used to support EIM Entities without appropriate compensation or reciprocal support; (ii) inequities in the proposed method for allocating Real-Time Market ("RTM") costs resulting from the non-reciprocal use of capacity identified in point (i) and differences in measures of RTM usage, for allocation purposes, between the ISO BAA and EIM Entities; and (iii) the failure to address issues concerning the allocation of RTM uplift costs within the ISO BAA.

ISO Response

See section 3.7.8 for the updated proposal for treatment of real-time uplifts and neutrality accounts.

Point (i) The potential that capacity procured by load within the ISO Balancing Authority Area ("BAA") may be used to support EIM Entities without appropriate compensation or reciprocal support;

With regard to point (i), the ISO acknowledged during the June 6, 2013 stakeholder conference that the ISO could commit capacity within the ISO BAA to satisfy flexible capacity requirements in an EIM Entity's BAA, but it will have no reciprocal ability to commit capacity in the EIM Entity's BAA to meet ISO requirements. The ISO has proposed the imposition of forward flexible capacity obligations for Load Serving Entities ("LSEs") within the ISO BAA. There is no assurance under the Revised Straw Proposal that EIM Entities will contribute flexible capacity in proportion to the incremental requirements the EIM imposes on the ISO system. There may not be sufficient flexible capacity within an EIM Entity BAA, or, even if there is, the ISO will have no ability to call on it for the benefit of the combined EIM area. Under these circumstances, LSEs within the ISO may suffer an unreasonable burden in terms of an expanded flexible capacity procurement obligation, increased

utilization of flexible capacity without compensation, or reduction in reliability due to reliance on capacity they have procured to meet the needs of a broader area, or all of the above. The EIM design must include provisions to ensure that LSEs within the ISO BAA are not called upon to support capacity needs of load outside the ISO BAA (either through expanded capacity procurement obligations, increased utilization of flexible capacity without compensation, or degradation of reliability), and that all EIM Entities provide adequate capacity (both in terms of operating reserves and operating characteristics) to support their loads.

ISO Response

The ISO has clarified that an EIM Entity Scheduling Coordinator must submit a base schedule that includes the ability to independently meet the EIM Entity BAA flexible ramping requirement.

Point (ii) Inequities in the proposed method for allocating Real-Time Market ("RTM") costs resulting from the non-reciprocal use of capacity identified in point

With regard to point (ii), the general concept in Section 3.7.8 of the Revised Straw Proposal of allocating RTM costs based on "RTM usage" is likely to lead to inequitable results for several reasons. In general, it does not appear that measurement of "RTM usage" based on gross deviations will result in allocation of RTM costs in a manner that is consistent with the cost causation principle. Consider the following simplified example:

BCR COST ALLOCATION EXAMPLE

ISO BAA		EIM ENTITY	
DA Resources	35,000	Adj. Base Resources	10,000
DA Load	35,000	Adj. Base Load	10,000
RT Resources	35,500	RT Resources	9,500
RT Load	35,000	RT Load	10,000

Assume that the dispatch of the additional 500 MW of resources in the ISO BAA leads to Bid Cost Recovery uplift.

As the Six Cities understand the ISO's allocation proposal, the ISO would attribute 500 MW of gross deviations to the ISO BAA and 500 MW of gross deviations to the EIM BAA, resulting in allocation of 50% of the BCR costs to the ISO BAA and 50% of the BCR costs to the EIM BAA. In this example, neither ISO BAA load nor EIM BAA load contributes to the deviations. Yet the ISO BAA load would be allocated 50% of the uplift cost caused entirely by the negative deviation of one or more EIM Entity resource(s). Such a result is patently unreasonable. Moreover, as discussed in connection with point (i) above, any potential for reciprocal support from the EIM Entity to the ISO BAA would be limited, because the ISO would have no ability to commit additional resources in the EIM Entity BAA.

Furthermore, as the Six Cities understand the Revised Straw Proposal, the ISO does not plan to

apply consistent metrics to measure RTM usage for the ISO BAA and for EIM Entities. At pages 43-44 of the Revised Straw Proposal, the ISO indicates that the ISO share of RTM usage is to be based on gross deviations of loads and resources from Day-Ahead schedules. The ISO proposes to calculate RTM usage for EIM Entities, however, based on deviations from the adjusted base schedule. Because adjusted base schedules, including load schedules, are established at 75 minutes prior to each Trading Hour and can be updated as frequently as every 15 minutes until 40 minutes before the start of the relevant 15-minute market, it is reasonable to expect that deviations from adjusted base schedules will be lower in proportion to overall load in the EIM Entity BAA than deviations from Day-Ahead schedules in the ISO BAA. As a result, it appears likely that entities within the ISO will bear a disproportionately high share of RTM costs.

ISO Response

If an EIM Entity Scheduling Coordinator elects to update base schedules every 15-minutes, the cost of changes in base schedules between market interval would be settled outside of EIM, according to the EIM Entity tariff. ISO market participants would not be exposed to these costs.

Point (iii) The failure to address issues concerning the allocation of RTM uplift costs within the ISO BAA.

With regard to point (iii), the ISO's failure to address flaws in the allocation of RTM uplift costs within the ISO BAA will compound the inequities associated with the proposed method for allocating RTM costs described above. The Revised Straw Proposal indicates that the ISO intends to continue allocating RTM uplift costs assigned to the ISO BAA based on measured demand. This is unreasonable for at least two reasons. First, it is inconsistent with the cost causation principle, because it ignores the fact that resources also contribute to deviations from Day-Ahead schedules. In the example discussed above, the resource or resources in the EIM Entity that contributed to the negative deviations should be responsible for the BCR uplift paid to the resource or resources in the ISO BAA that provided the necessary energy. It is inconsistent with the cost causation principle to assign any of those uplift costs to the ISO BAA or even to the load in the EIM Entity. In addition, as the Six Cities have commented in the context of other stakeholder processes, it is unreasonable to deny LSEs within the ISO BAA the ability to adjust their Day-Ahead load schedules so as to minimize deviations if other market participants are able to make such adjustments so as to manage their exposure to uplift costs associated with deviations. LSEs within the ISO BAA should have the same ability to adjust their Day-Ahead load schedules so as to minimize deviations as will be available to EIM Entities under the Revised Straw Proposal.

As noted in the Six Cities' April 19, 2013 comments, the market design for the EIM will not satisfy the just and reasonable standard unless the responsibility for EIM costs, including RTM uplift costs, aligns with the enjoyment of EIM benefits, in accordance with the cost causation principle. The failure to provide for consistent capacity requirements and the flaws in the "RTM usage" allocation proposal discussed above are inconsistent with the cost causation principle and the just and reasonable standard. The ISO must address the inconsistency in capacity requirements and develop a method for allocating EIM costs, including all associated RTM uplifts, in a manner that assigns such costs to the entities that cause them, as well as allowing all market participants the opportunity to manage their exposure to such costs.

ISO Response

The EIM design seeks to isolate real-time uplifts and neutrality accounts by BAA. Each BAA must then develop rules for how these accounts are allocated within the BAA. The ISO is not proposing any changes in the settlement of real-time uplifts and neutrality accounts in the EIM stakeholder initiative. The ISO would need to commence an ISO specific stakeholder initiative to address how these accounts are allocated within the ISO.The ability to schedule and settle load in the EIM Entity at a more granular level established by the EIM Entity, may help facilitate how the EIM Entity will allocate such costs.

Company	Date	Submitted By
SMUD	6/18/2013	Gary Lawson Gary.Lawson@smud.org (916) 732-5802

Opening Comments

The Sacramento Municipal Utility District (SMUD) appreciates the opportunity to provide its comments to the California Independent System Operator Corporation's (CAISO) May 30, 2013 "Energy Imbalance Market (EIM) Revised Straw Proposal and Issue Paper" (Revised Straw Proposal). SMUD operates its system within the Balancing Authority of Northern California (BANC) Balancing Authority (BA) Area footprint and serves as the contract operator of the BANC BA, which is directly interconnected to the CAISO BA. SMUD is also a member of the Transmission Agency of Northern (TANC), which manages SMUD's share of entitlements to the 500 kV California-Oregon Transmission Project (COTP). The COTP makes up one third of the California-Oregon Intertie (COI), for which the CAISO serves as the COI Path Operator. SMUD has participated in numerous forums examining a west-wide EIM, including earlier discussion at the Western Electricity Coordinating Council (WECC) and the Public Utility Commissions EIM group and the ongoing discussions at the both Northwest Power Pool and the CAISO. SMUD therefore has a direct interest in the CAISO's EIM proposal both in terms of its policies and it operational impacts. Indeed, SMUD will be directly impacted by a CAISO EIM whether or not its Balancing Authority chooses to participate. Moreover, given the investment in time and resources made in this effort both by SMUD and other stakeholders, it is important that the design process be afforded sufficient time to address the outstanding design details and legitimate concerns raised by stakeholders.

ISO Response

The ISO appreciates your ongoing participating in this stakeholder initiative.

Uplift Allocations

SMUD appreciates the CAISO's clarification on the proposed uplift allocation, as well as providing guiding principles for cost allocation. While SMUD generally agrees with these highlevel guiding principles, it does have some concerns with respect to some of the proposed uplifts, as described below.

The CAISO proposes to allocate four different real-time uplifts to EIM participants:

Real Time Imbalance Energy Offset (RTIEO)
Real Time Congestion Offset (RTCO)

Real Time Bid Cost Recovery Allocation
Flexible Ramp Up Cost Allocation

While SMUD does not necessarily dispute the uplifts the CAISO has identified, it does have lingering concerns with the certainty of these charges. First, SMUD's primary concerns are with the RTIEO and RTCO. For example, the CAISO's April 2013 report to its Department of Market Monitoring, titled "Annual Report on Market Issues and Performance" (Report), discusses the significance of both the RTIEO and RTCO charges. Indeed, these specific charges have been historically high and therefore the focus of analysis by the CAISO over the past few years:

Real-time imbalance costs for energy and congestion totaled about $236 million in 2012, compared to $165 million in 2011. [T]his was primarily attributable to increases in the real-time congestion imbalance offset costs, which rose from $28 million to $186 million.

As explained later in this chapter, the increase in real-time imbalance costs for congestion was driven primarily by high real-time congestion prices on constraints whose flow limits were reduced in real-time. In most cases, these limits were reduced to account for unscheduled flows observed in real-time.

Real-time imbalance energy offset costs decreased from $137 million in 2011 to $50 million in 2012, the lowest yearly value since the nodal market began in 2009. As explained in the following sections, the decrease in real-time imbalance energy costs in 2012 was primarily driven by the suspension in virtual bidding on inter-ties in December 2011. Report at 90.

It is of particular note that the CAISO cites to the suspension of virtual bids at the interties as one reason at least the RTIEO has decreased. It is very likely, however, that virtual bidding will be reinstated at the interties through the Order 764 (15-minute market) implementation by the time EIM goes live or soon thereafter. Moreover, the RTCO has increased dramatically.[1] While there may be many reasons for this, it is clear that the CAISO's real-time market has experienced significant uplifts over the past and these costs will be shared with EIM participants. Given the fact that there are multiple design changes and additions impacting the real-time market occurring on or around EIM, including 15-minute markets and reinstatement of virtual bidding at the interties, these costs will be hard to predict.

SMUD also notes that costs associated with Flexible Ramping Allocations and Bid Cost Recovery have been sizeable in the past and have the potential to significantly increase over time.

At bottom, SMUD remains concerned that, should these uplifts somehow increase, cost allocation disputes will arise and many of the alleged benefits of an EIM will evaporate.

Moreover, the initial proposed governance structure does not afford EIM participants sufficient protections in the CAISO's internal processes with respect to changes potentially influencing these costs. While the CAISO has indicated a willingness to consider other structures, this will not be known until the parallel process described in Section 3.8 (Market Rule Oversight) has concluded. In any event, SMUD believes, at a minimum, that metrics should be developed to ensure these charges are carefully monitored and that the causes of these uplifts can be separated with relative accuracy. This is especially important given the convergence of several design changes impacting the real-time market within a very short time period.

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[1] The CAISO refers to "real-time congestion *imbalance* offset" costs, as opposed to what is referenced above, "real-time congestion offset" costs (CC6774). Based on the charge codes assigned, SMUD understands that these are one and the same.

ISO Response

The ISO has updated its proposal as outline in Section 3.7.8

The ISO understands the need for EIM participants to have a voice in policy decisions affecting EIM. As noted in the schedule the ISO plans to issue a white paper discussing EIM governance no later than Aug 13 and will discuss it at the Aug 20 stakeholder meeting in Portland, Oregon. The ISO will request stakeholder comments on the white paper by Aug 27. Revisions to the governance white paper and subsequent discussions will be scheduled to address stakeholder comments received.

Market Rule Oversight

SMUD appreciates the CAISO's recognition and decision to address governance matters head on. To do so, the CAISO has proposed a parallel stakeholder process to commence in August. Revised Straw Proposal at 47. While SMUD does not object to a separate process, it is important that it remain in-sync with the other EIM activities. The governance process should not be allowed to proceed on a separate track to the extent it may lag behind the completion of this instant process.

ISO Response

Noted

Optimal Commitment

SMUD has viewed the concept of an EIM as an incremental sub-commitment/scheduling-interval market (to an hour-ahead or 15-minute ahead market). That is, the EIM is a market that could supply (or take) differences in loads and generation that weren't covered in the hour-ahead or 15-minute ahead schedules. Furthermore, we've also viewed the EIM as a form of an economy energy market – i.e., EIM Participants have already made their capacity commitment decisions, and the EIM provides a way for participants to more efficiently dispatch that capacity.

Contrary to this view, the CAISO has proposed to treat EIM bids as equal to other non-EIM bids by including EIM bids in Real Time Unit Commitment (RTUC), the proposed 15-minute unit commitment run. The CAISO states: "[t]he unit commitment function of RTUC does not affect the EIM Participating Resources because the commitment status of these resources is given, and not optimized." *Id.* at 31. As such, inclusion in RTUC treats EIM bids as having the same firmness and capacity attributes as non-EIM bids that have procured transmission reservations for supply or load. This appears problematic.

SMUD is concerned that including EIM bids in with RTUC imputes some capacity value to EIM supply, which is the wrong signal to market participants, which are expected to bring sufficient capacity apart from EIM. This could incent participants to rely more heavily on the EIM for capacity. Accordingly, SMUD proposes exploring the concept of excluding EIM bids from RTUC, and introducing EIM bids post-RTUC for use in only in Real Time Dispatch.

ISO Response

Both the 15-minute market and RTD are included in the EIM. Thus bids submitted by both ISO resources and EIM Participating Resources will be used in the market optimization. This is consistent with the look-ahead horizon used in the ISO's real-time market, in which EIM's binding 15-minute interval is already within the optimization horizon of the ISO's RTD process. In fact it may be problematic to not consider the same energy bids in both RTUC and RTD as it would create a systemic inconsistency between dispatch results in the two processes.

The EIM Entity Scheduling Coordinator will need to balance supply and load, along with a flexible ramping constraint requirement, independently prior to the start of the EIM. Whether EIM dispatches are based on 5-minute or 15-minute intervals, they are incremental or decremental adjustments to EIM Entities' balanced and feasible base schedules, which already match forecasted demand and have adequate unit commitment to support that balance.

Transmission Service

SMUD continues to support a charge for EIM use of *as-available* transmission and believes it should be included at EIM start-up. Alternatively, SMUD would be less concerned should the CAISO commit to its previously-stated (i.e., during the April 11th stakeholder meeting) limitation of 100 MW for EIM transactions between itself and PacifiCorp as a threshold for adding the charge. Obviously, should other entities join the initial EIM, this will likely exceed such a threshold.

SMUD is concerned that any co-optimization of EIM bids with non-EIM bids will advantage EIM imports/exports over non-EIM imports/exports which must secure transmission reservations. Moreover, this would appear to create a longer-term economic incentive for leaning on the EIM market to the possible detriment of reliable operations by lowering RTD prices below 15-minute prices. SMUD therefore urges the CAISO to initiate the EIM with transmission charges.

ISO Response

The ISO has made no changes to the transmission service proposal outlined in the 2nd Revised Straw Proposal. The ISO is still evaluating potential options and will discuss further in future papers.

The transfer capability between the ISO and EIM Entity will reflect day-ahead schedules between the BAAs. For example, assume there is a day-ahead export from the EIM Entity to the ISO of 30 MW and the transfer capability is 100 MW. As a result, the incremental transfer capability available within EIM is 70 MW (although EIM could also support decremental dispatching as counter-flow to the pre-scheduled 30 MW, plus the transfer capability that is available in the opposite direction). Both the 15-minute market and RTD will enforce the 70 MW transfer limit for any increase in exports from the EIM Entity to the ISO. Note that the 100 MW transfer capability that has been assumed in discussions is a conservative illustrative number, and the available transmission will be determined through ongoing EIM operations.

Greenhouse Gas Emissions Costs for Imports into California

SMUD appreciates the CAISO addressing the specific GHG costs for imports in its Revised

Straw Proposal and supports the CAISO continuing discussions with the California Air Resources Board and stakeholders.

ISO Response

Noted

EIM Administrative Costs

SMUD previously raised questions about the CAISO's administrative rate of $0.19 per MWh, effective October-December 2014. This rate is based on an EIM cost of $96M divided by an allocated volume of 500 TWh. SMUD still 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.

While SMUD sought clarification during the last round of comments, the CAISO did not directly respond to SMUD's question, but rather restated its methodology. Therefore, for purposes of clarification, SMUD asks the CAISO to explain how the $0.19 per MWh rate can remain when the calculation was based on an unrealistic volume of 500 TWh – i.e., reflective of a WECCwide participation?

Further, the CAISO has only committed to this rate through December 2014. What would the rate be if only PacifiCorp participates after December 2014 and the volume remains significantly under 500 TWh?

ISO Response

The ISO has included additional information in Section 3.7.10. The information shows how the existing market services rate was segmented between the day-ahead market and real-time market and how the existing systems operations rate was segmented between real-time dispatch and balancing area services. Since EIM only encompasses the real-time market, activity based accounting costs that are not attributed to the real-time market have been excluded from the EIM administrative rate. $96 million is not a fixed annual cost that will be incurred by implementing EIM for less than the full 500 TWh.

The CAISO Must Separately Address Potential EIM Impacts to the California-Oregon Intertie

While SMUD understands that EIM dispatches are not intended to diminish existing nonparticipating transmission rights-holders, SMUD is still concerned regarding potential, or unintended, impacts on non-EIM transmission rights. To this end, SMUD supports the comments of TANC and its request for additional information, including studies and testing, especially as it pertains to the California Oregon Intertie.

ISO Response

EIM will not impact transmission rights as they would otherwise be scheduled in the ISO's markets. The ISO will not reserve transmission capacity for EIM from being scheduled through the ISO's

otherwise-existing market processes.

Conclusion

SMUD reiterates its appreciation for the CAISO's efforts and looks forward to its responses to both SMUD and other commenters.

ISO Response

The ISO appreciates SMUD's continued participation in the stakeholder initiative.

Company	Date	Submitted By
Salt River Project "SRP"	June 17, 2013	

Opening Comments

SRP[1] appreciates the opportunity for continued participation in CAISO's EIM stakeholder process.

We offer the following comments for your consideration:

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[1]SRP (Salt River Project Agricultural Improvement and Power District) provides electricity to over 950,000 power users in a 2,900 square-mile service area in parts of three Arizona counties – Maricopa, Gila and Pinal. SRP's infrastructure includes 45 generating units, 300+ substations, 3,072 transmission line miles and 19,005 distribution line miles.

ISO Response

The ISO appreciates SRP's continued participation in the stakeholder initiative.

Transmission Service and Usage

SRP appreciates the discussion of transmission service in section 3.10.

The three alternatives appear to be specific to transmission flows between and among CAISO and EIM entities. Additionally, CAISO has indicated that the EIM security constrained economic dispatches will honor the specific transmission rights and capacity that are made available by CAISO and EIM entities.

With regard to Alternative 1, no transmission charge, has CAISO considered potential "private use" implications to EIM participating utilities that have financed transmission assets through tax-exempt bonds?

With regard to Alternative 2, the EIM transmission access charge, it is not clear how this charge would apply to exports. It is our understanding that this charge would only be applied to loads within the CAISO or EIM entity footprints because the EIM dispatch would only consider EIM participants. Please confirm.

Consistent with the current approach, we encourage the CAISO to implement a market design for transmission both now and in the future which respects and/or accounts for the usage of non-EIM entities' transmission lines and facilities. If it is contemplated that the EIM dispatch will utilize a flow-based calculation for transmission availability, further stakeholder discussions and input will be needed.

ISO Response

The ISO has made no changes to the transmission service proposal outlined in the 2nd Revised Straw Proposal. The ISO is still evaluating potential options and will discuss further in future papers.

Please describe the process CAISO will undertake to make changes to the market design that is selected and initially implemented?

ISO Response

Changes to the EIM design in the future will be accomplished through the stakeholder initiative process similar to how the ISO develops market design changes.

How or where will CAISO communicate the quantity of transmission that is available between and among CAISO and the EIM entities?

ISO Response

The posts its transmission capability on its OASIS, at oasis.caiso.com.

How will unscheduled transmission be made available to other Transmission Customers?

For example, assume CAISO and PacifiCorp have 100 MW of rights between the two entities. In the forward market, a 15 minute schedule is in place for 60 MW. Presumably, the EIM has 40 MW of transmission availability to utilize in the 5 minute security constrained economic dispatch. If the EIM utilizes only 35 of the 40 MW of transmission availability, will the remaining 5 MW be offered up to the market? If yes, please describe how and when this available transfer capability will be posted to OASIS.

ISO Response

40 MW is available to the EIM for both the 15-minute market scheduling and 5-minute dispatch throughout the operating hour, for incremental transfers in the same direction as the pre-existing 60 MW schedule, and decremental imbalance energy bids could be accepted as counter-flow to the 60 MW schedule, plus any capacity available in the opposite direction. After the 15-minute scheduling opportunity that is available in compliance with FERC Order 764, participation in EIM is the only market mechanism that is available to market participants within the WECC region for further scheduling or dispatchTransfers between the EIM Entity BAA and ISO will oberve the 40MW transfer limit in the real-time market. Any unused transfer capability will remain unused as there is not mechanism beyond EIM to make use of the unused as-avaiable transfer capabitity intra-5 minutes other than loop flow or inadvertent flow.

Company	Date	Submitted By
Transmission Agency of Northern California	6/14/2013	

Opening Comments

The Transmission Agency of Northern California (TANC) appreciates the opportunity to provide its preliminary comments on the California Independent System Operator's (ISO) May 30, 2013 Energy Imbalance Market (EIM) Revised Straw Proposal (Revised Proposal). As TANC indicated in its March 15, 2013 letter to the ISO and its April 19, 2013 comments on the ISO's EIM Straw Proposal, TANC requires adequate information to review the details of the EIM to ascertain that the proposed EIM will not adversely affect the reliable operation of the California-Oregon Intertie (COI), including the ability to operate and schedule transmission.

ISO Response

The ISO appreciates TANC's continued participation in the stakeholder initiative.

Based upon the Revised Proposal and the ISO's June 4, 2013 responses to TANC's April 19, 2013 comments, TANC does not believe that the ISO has provided the requisite information

For instance, the ISO's June 4, 2013 response fails to confirm, as requested by TANC, that non-EIM participating transmission (e.g., the California-Oregon Transmission Project) will not be adversely impacted by the EIM or that the ISO is willing to enter into a mitigation agreement to resolve any such adverse impacts. In addition, the ISO has not proposed operating procedures to adequately address the issue of parallel flows and impacts that the EIM may have on non-EIM participating facilities. Furthermore, the Revised Proposal does not provide any mechanism for compensation for the use, intended or otherwise, of non-ISO transmission facilities.

TANC again requests the ISO to conduct appropriate studies and testing of the EIM, with the inclusion of impacted systems, before any EIM implementation to ensure that no adverse impacts occur on non-participating transmission systems or that mitigation measures and/or compensation occurs to resolve impacts.

ISO Response

The ISO's response confirmed that the ISO's operation of EIM would operate within the limitations of transmission capacity that is made available by participants in EIM and the ISO market in general, and that the ISO will continue to engage with TANC and other interested COI parties in an effort to address the parties' concerns. On matters of transmission usage that are within the scope of EIM design, the ISO will operate in conformance with NERC, NAESB, and WECC standards and business practices, and in conformance with agreements among the COI participants. Except on these matters, TANC's concerns will be best addressed directly through separate discussions among the ISO, TANC, and other COI participants.

Company	Date	Submitted By
TID Water & Power	6/14/2013	

Opening Comments

TID would first like to thank the CAISO for the opportunity to make comments on the Energy Imbalance Market (EIM) Stakeholder Process. TID believes that while EIM has the potential to solve many issues surrounding the interconnection of variable output renewable resources; EIM must be structured in a manner that allows for mass participation without excessive burdens on current market participants and undue hurdles for potential new EIM participants.

ISO Response

The ISO appreciates TID's continued participating in the stakeholder initative.

TID believes that in certain circumstances, 5-Minute energy can be provided from outside BA's without specifying a generation asset.

In cases where the a Scheduling Coordinator controls a portfolio of potential EIM Participating Resources that are electrically close, the CAISO should allow that SC to provide EIM energy from that portfolio as a system, instead of being required to register all possible generation sources within the EIM Entity BA. By allowing this, the CAISO will ensure greater participation from certain potential EIM participants while allowing for flexible operation of the EIM Entity's generation portfolio.

ISO Response

Similar aggregation rules will apply within the EIM Entity BAA as do within the ISO BAA. This is necessary to ensure accurate modeling of network flows within an EIM Entity and for its interactions with the ISO and other EIM Entities.

TID is also concerned with the possibility of EIM participants unduly burdening adjacent systems.

TID believes that it is possible for EIM Energy to negatively impact transmission rights of adjacent BA's through unintended congestion impacts on parallel transmission paths. TID urges the CAISO to ensure that the Full Network Model adequately reflects transmission limitations on non-participants' systems and all transmission limitations, inside and outside participant's footprint, are considered in dispatching generation.

ISO Response

The ISO has commenced a separate Full Network Model Expansion stakeholder initiative. The FNM Expansion initiative includes the resource-specific modeling that is necessary to ensure accurate representation of network flows due to market operations within both the ISO's BAA and the EIM footprint.

TID also urges the CAISO to ensure that EIM participants are fully paying their fair share.

The proposed Grid Management Charge (GMC) rate of $0.19 per MWh seems rather low considering the fact that most market participants are paying closer to $0.40 per MWh. TID believes that if EIM Energy is to be treated fairly in relation to DAM and HASP energy transactions, the applied bundled rate should be somewhere closer to traditional market GMC rates. By offering EIM a discounted GMC rate, as it appears in the May 30, 2013 Revised Straw Proposal, TID feels that traditional transactions are being unduly prejudiced. Charging EIM MWh's the standard GMC rates would not only ensure equal treatment of all transacted MWh's, it would also increase the magnitude of the denominator, decreasing the per MWh cost for all market participants.

ISO Response

The ISO has included additional information in Section 3.7.10. The information shows how the existing market services rate has been segmented between the day-ahead market and real-time market, and how the existing systems operations rate has been segmented between real-time dispatch and balancing area services. Since EIM only encompasses the real-time market, activity based accounting costs that are not attributed to the real-time market have been excluded from the EIM administrative rate.

ISO revenues collect through the EIM administrate rate, will offset other costs and may even reduce the revenue requirement that needs to be recovered through the GMC.

Finally, TID believes that the CAISO should look into unifying its Intertie Transfer Capacities.

Currently, many CAISO initiatives rely on an independent calculation of Intertie Transfer Capacity, creating multiple values for a single point of interconnection. One specific example is the methodology used to calculate the available transmission capacity on an intertie for the purposes of Resource Adequacy Capacity imports. The methodology fails to take into account the physical capacity limitations and, many times, severely underestimates an interties ability to provide such service. TID believes the CAISO should investigate and remedy these inaccuracies in Intertie Transfer Capacities and this initiative is an acceptable place to do so, as the CAISO already plans on assigning EIM participation limitations based on CAISO determined Intertie Transfer Capacities.

ISO Response

EIM implementation will not affect the ISO's calculation or use of intertie capacity that is now used by the ISO. The ISO will not determine the transfer capability of transmission that is made available by participants in EIM, but rather will rely on their determinations. Thus, while the goals and issues stated by TID are important, they do not seem well-suited for this stakeholder process. The ISO encourages TID to pursue this topic in other ways, such as operational coordination or perhaps other ISO stakeholder initiatives.

Company	Date	Submitted By
Western Power Trading Forum	6/13/2013	Ellen Wolfe, Resero Consulting 916-791-4533 ewolfe@resero.com

Opening Comments

WPTF appreciates the opportunity to present comments on the ISO's EIM Design Revised Straw Proposal of May 30 and the discussion that took place at the June 5, 2013 Stakeholder meeting. WPTF appreciates the ISO's efforts to drill down to the important policy and technical issues. We offer some comments on the design proposal to date and the open issues below.

ISO Response

The ISO appreciates WPTF's continued participation in the stakeholder initiative.

Interfaces of the EIM and its Neighboring BAAs

The ISO's proposal seems to continue to carry ambiguity about participation in the EIM through imports and export bids at the outer interties of the EIM, e.g., the boundary of PacifiCorp and its neighboring (non CAISO) BAAs. WPTF again asks the ISO to confirm that outside participants will be able to bid to supply energy or receive energy from the EIM and that the ISO adjust its straw proposal to explicitly address such imports and exports into the EIM with respect to the balance of the EIM design details, including transmission charge treatment and GHG treatment.

ISO Response

If the EIM Entity supports 15-minute schedule on its ties with non-ISO BAAs, then EIM will consider economic bids from these imports/exports during the 15-minute market optimization.

The updated GHG proposal includes imports from non-ISO BAAs to the EIM Entity BAA in determination of GHG obligations.

Transmission Access Charge

WPTF generally supports the ISO's general principles for transmission cost allocation. WPTF would especially like to see a balance struck between avoiding rate pancaking and providing non-discriminatory access – a balance that requires careful consideration of transmission charge collection for EIM participants. WPTF would very much appreciate clarification about what transmission charges PacifiCorp will require for participation in the EIM from within its service area, including what is required to bid into the EIM at the outer interties of the PacifiCorp EIM.

ISO Response

The ISO has made no changes to the transmission service proposal outlined in the 2nd Revised Straw Proposal. The ISO is still evaluating potential options and will discuss further in future papers.

Transmission Availability Generally

WPTF requested in its last set of comments and asks again for more information about the transmission availability between PacifiCorp and the CAISO. We would like to understand in a general sense how much transmission is available from the respective parts of PacifiCorp - be it 100 MWs, 400MWs or some other amount. Further it would be helpful to understand how much of that transmission is DC and the extent to which the characteristics of that DC transmission can support real-time energy transfers.

ISO Response

An illustrative, conservative number of 100 MW has been used in some discussions, and the actual value will need to be determined through actual EIM operations. The transmission that is currently anticipated for EIM use is the AC system. The ISO does not assume that 5-minute dispatch can be accommodated by scheduling practives for the existing DC lines, and has not determined whether 15-minute dispatch is feasible on the DC lines.

Clarify Imbalance Treatment

WPTF understands that in some instances suppliers within the PacifiCorp area may be participating based on 15-minute meter data and that PacifiCorp has offered to accept such 15-minute data and convert it to the 5-minute data required by the CAISO. WPTF seeks confirmation and clarification on this point. To the extent that PacifiCorp generates 5-minute data from 15-minute data, WPTF questions the extent to which the 5-minute imbalance settlements would be meaningful and to the extent they are not meaningful what the implications are of disparate 5-minute imbalance settlement between CAISO and EIM participants.

ISO Response

The same metering requirement apply in EIM for the ISO and EIM Entity BAA. The ISO will be metering supply on a 5 minute basis and non-participating load on an hourly basis.

EIM GHG Policy Refinements Needed

WPTF appreciates the ISO's thinking on the treatment of GHG. We encourage the ISO to continue to further refine the EIM GHG treatment. In particular we have several concerns/recommendations. The proposal seems to create distortions. For example an import from the EIM that serves CAISO RT load will have its carbon offset but other imports into the ISO that serve ISO real-time load will not. That would seem to create disparity. Similarly, a clean resource that imports at a PacifiCorp intertie (for example) in the DA market will experience the value of the carbon as profits but in the real-time it will not; whereas a clean import at a non-EIM import point would experience the carbon value as profit in the DA and in the RT.

- Similarly, we're generally concerned that more discussion is warranted before the ISO settles on a cost-based payment for the carbon value of the EIM imports to serve load rather than a marginal clearing price-based clearing mechanism.
- The GHG discussion should include explicitly how imports into the EIM from the EIM's outer interties will be treated, especially with respect to any assignment of emissions the ISO continues to include in its proposal.
- We're generally concerned about the ISO assigning emissions rates. Does the ISO intend that the emissions rates will vary along a thermal generator's heat rate curve? Forcing a static emissions rate independent of output level could create distortions. As mentioned in the previous bullet, WPTF is also concerned about the emissions treatment of intertie energy.
- WPTF encourages the ISO to have the emissions rates used in the ISO market model for implied imports from the EIM to be a field that the SC "bids" or otherwise populates. That would eliminate any possibility of the ISO creating a bid including carbon based on incorrect emissions assumptions.
- WPTF is also concerned that if the allowance cost index the ISO uses does not match the price at which the SC can ultimately procure the allowances that it will create risks for the suppliers or SCs. If the ISO wishes to continue considering use of the current BCR carbon price index it would be helpful to provide some data about the behavior of the index. Alternatively, or additionally, we ask the ISO to consider the pros and cons of having the SC specify the allowance cost in its bids.
- WPTF seeks clarification on how the ISO will account for the deliveries into CA from EIM participants. Will the ISO issue tags, and if so when? If the ISO does not plan to issue tags that reflect the energy imported versus the energy staying outside CA, then how will the ISO identify the amount of imports? In this case, how will the ISO assure that such alternative mechanisms will satisfy the ARB requirements? WPTF encourages the ISO to develop further and communicate these mechanisms; ARB compliance will require this and parties also need to know whether with the market run they will be informed of the amount of the energy incurring carbon costs in order to hedge the costs.

ISO Response

Section 3.12 of the 2nd Revised Straw Proposal contains an expanded discussion of GHG emission costs for imports into California, which will be discussed in the July 9 stakeholder meeting. This section has been prepared in consultation with the California Air Resources Board (CARB) staff. Details of this proposal, including the issues identified by WPTF, will be discussed at the July 9 stakeholder meeting.

Forward Capacity Needs

WPTF appreciates the ISO's thinking through issues related to ramping and capacity costs that may be caused by the EIM formation. We encourage further consideration of the extent to which the EIM participants will appropriately share in the capacity costs and benefits that result from the expanded footprint, and the extent to which EIM participants should have forward capacity showings or comparable incentives and cost allocation for capacity needed to ensure the ability to balance the EIM real-time market. WPTF encourages the ISO to consider mechanisms whereby EIM Entities not only report their forward schedules to demonstrate that the they are balanced, but also report reserve information to demonstrate sufficient capacity is available for reserves. Similarly, there should be a mechanism to verify after the fact that each BAA was sufficiently sourced and that

any RT shortfalls are due to reasonable and random variations and not reflective of on BAA "leaning on" another.

Comparability and cost causation should be applied to the forward capacity needs to effectively operate the EIM RT market.

ISO Response

The EIM Entity Scheduling Coordinator must submit a balanced base schedule that also include a flexible ramping constraint requirement for the EIM Entity BAA.

Provide continued Review of the Balance of Benefits and Burdens

We have raised a number of concerns above, including concerns that the transmission rate, forward capacity treatment, carbon treatment and possible metering differences may create distortions in the market. We encourage the ISO to continually monitor the benefit and burden mix of the proposed EIM and to update participants and interested parties in subsequent paper revisions of the relative mix of benefits and burdens.

Assuming that net benefits continue to be demonstrated and that development of the EIM moves forward we also recommend that metrics are included in the design to measure, and provide publicly, the EIM benefits so as to encourage future expansion of the EIM model to other BAAs.

ISO Response

Noted

Closing Comments

In Summary, WPTF appreciates the consideration of the ISO, PacifiCorp and other interested parties. We would be pleased to provide further information on any of the points raised above and look forward to further discussions.

ISO Response

The ISO appreciates WPTF's continued participation in the stakeholder initiative.

Company	Date	Submitted By

Western Resource Advocates	6/14/2013	Gary Graham, Lands Project Director Nancy Kelly, Senior Policy Advisor

Opening Comments

Western Resource Advocates (WRA) is an environmental organization dedicated to protecting the land, air and water of the Interior West. Meeting the emissions reductions identified by science as necessary to protect public health and avert climate disaster is central to our mission, and integrating higher levels of renewable energy reliably and economically is an essential component of an overall strategy to reduce greenhouse and other noxious emissions.

In order to further the goal of a single west-wide market, we support a market design that effectively hedges the costs of participating in the market and is responsive to and workable for entities across the interconnection. We appreciate the ISO providing the opportunity to participate in the development of the EIM and we look forward to working with the ISO and other stakeholders in considering its governance.

ISO Response

The ISO appreciates WRA's continued participation in the stakeholder initiative.

The ISO understands the need for EIM participants to have a voice in policy decisions affecting EIM. As noted in the schedule the ISO plans to issue a white paper discussing EIM governance no later than Aug 13 and will discuss it at the Aug 20 stakeholder meeting in Portland, Oregon. The ISO will request stakeholder comments on the white paper by Aug 27. Revisions to the governance white paper and subsequent discussions will be scheduled to address stakeholder comments received.

Closing Comments

Our purpose in this brief memo is to express our preliminary support for the no-charge approach to the settlement of transmission service. We agree that revenues from EIM transfers across the EIM footprint are unnecessary to recover transmission costs, since transmission rates were developed without the expectation an energy imbalance market. We also agree that developing a transmission cost recovery mechanism without solid operational data could deteriorate the expected benefits. For these reasons, we suggest that the no-charge approach to the settlement of transmission service be considered a "permanent structure based on reciprocity" and not just a one-year transitional mechanism. If treated as transitional, we support a significantly longer transition than one year to allow for the full development of the market and sufficient operational data on which to base an alternative transmission recovery mechanism before considering alternatives that may undermine the expected efficient dispatch benefits.

ISO Response

The ISO has made no changes to the transmission service proposal outlined in the 2nd Revised Straw Proposal. The ISO is still evaluating potential options and will discuss further in future papers.

Company	Date	Submitted By
Xcel Energy	6/14/2013	

General Comments

These comments do not provide redlines with respect to typographical errors.

Xcel Energy has prioritized its comments into three categories, High medium and low due to the short turn-around time under which the CAISO and stakeholders are operating. Xcel Energy considers those issues under the High priority critical to the efficient operation of the market and asks that these be addressed first.

ISO Response

The ISO appreciates Xcel Energy's continued participation in the stakeholder initiative.

High Priority Issues: Participant definitions, obligations and agreements

It seems that the CAISO expects the BA to be the primary settlement entity with the CAISO. As structured, the only entity submitting pre-operation settlement information is the BA. The resource owners will only be submitting offers. For settlements, the CAISO will settle with the Participating Resource SC for any difference between the EIM Entity SC schedule and the actual output. This creates many issues, including when the CAISO discusses potential disgorgement due to load forecast errors, and the development of the adjusted base schedules due to congestion within the EIM footprint especially with respect to the sufficiency of supply for a party with reduced base schedules. It is also unclear which entity will pay for the load service under the proposed methodology. Does the CAISO assume that all load will be settled with the EIM Entity and then the EIM entity will have to address load service within the BA? Xcel Energy proposes that the CAISO address these issues to ensure the market processes work smoothly across all market participants and does not end up in regulatory or legal proceedings.

As an example of the problem with the proposed process, in Section 3.3.5, the CAISO proposes that the EIM Entity will be responsible for submitting all load information. If this load forecast is not accurate, the CAISO will impose penalties on the EIM Entity Scheduling Coordinator. However, the EIM Entity Scheduling Coordinator is not the owner of all loads and resources within the BAA. Does the CAISO expect the EIM Entity to submit a financially binding schedule for a resource that it does not own that differs from what the resource owner expects to be submitted? This could lead to extremely contentious conditions for EIM Entities and resource owners and may reduce market participation at both the resource and EIM Entity level.

Xcel Energy proposes the following means to address its concerns:

First: Require that all participating Load Serving Entities and Participating Resources be responsible for submitting balanced load and resource schedules, possibly in the role of Scheduling Coordinator. If there is congestion, the CAISO can inform the participant of the maximum generation from its generator(s) and notify them of adjustments to other resources the entity owns to address the congestion. If no resource owned by that participant can address the congestion, the CAISO would inform that entity it is at risk of being served from the EIM market without financial hedge or potential supply shortage

requiring Reliability Coordinator intervention. The CAISO could also identify other resources participating in the EIM that might be able to serve the loads with a bilateral agreement between the two entities. Under this methodology, the CAISO would have the information necessary to address congestion without causing secondary settlement issues outside of the EIM settlement process.

Second: Xcel Energy recommends the CAISO adjust the proposed congestion management process. If a resource will be limited due to the system configuration, the CAISO must separate the reliability adjustments from the financially settled schedules. The use of the Adjusted Base Schedule for financial settlement is unacceptable as currently proposed. Under the proposed methodology, the Adjusted Base Schedules are likely to cause imbalance across the different resource owners in the EIM footprint. Due to the imbalance created, the EIM Entity will need a bilateral agreement or tariff schedule to address any imbalance caused by adjustments made by the CAISO. This methodology will be extremely contentious if not unworkable. Therefore, the financially binding schedule must be one proposed by the resource owners/load serving entities, not the EIM Entity. If the CAISO sees congestion in the model runs, the CAISO can then notify the entities affected by the congestion that the proposed schedule is infeasible. However, the CAISO should use the Adjusted Base Schedule as reliability information only, not financial settlement. In this way, the process would notify the EIM participants that their financial hedge (the self-schedule) is infeasible but sufficient offered resources exist to serve the load. It would then be up to that entity to address the shortfall as it desires.

Finally, Xcel Energy understands that the CAISO may need to address issues raised in this section by redesigning the definitions and roles of the different entities. However, it would be appropriate to include draft agreements for each entity type identified in Section 3.1 and the EIM Service Agreement referenced in Section 3.3.1 as part of the next version of the Straw Proposal.

ISO Response

The ISO proposes that the EIM Entity Scheduling Coordinator should be solely responsible for submitting the base schedule to the market operator for the EIM Entity BAA. This is because, as the entity that is responsible for maintaining system balance within its BAA, it is the only entity that would be aware of all entities' expected demand and planned resource schedules. In this role, it may either perform its own demand forecasting or rely on forecasts by load serving entities within its BAA. The determination of the demand forecast granularity within the BAA is determined by how the EIM Entity defines load aggregation points. For example, the EIM Entity could define its load aggregation points based upon the geography of the load serving entities within its BAA. This would allow separate forecasts to be submitted on behalf of each load serving entity, which can facilitate settlement of demand within its BAA. The under-scheduling penalties have been clarified in this draft, are only applicable if the EIM Entity Scheduling Coordinator elects not to use the Market Operator's demand forecast for each load aggregation point, and even then are only applicable if the error exceeds a threshold (currently proposed to be 4%).

The ISO recognizes the issues that Xcel identifies, but the alternative in which each EIM Participating Resource Scheduling Coordinator submits its own balanced schedule could have other complexities. When EIM Participating Resource operators have bilateral trades with other entities, it would be difficult to validate differences in scheduled interchange among these entities (e.g., in

the event of disputes, or if different participants' scheduled interchange values are inconsistent) unless e-tags are available within the BAA, and not all BAs use e-tags within their BAAs. The settlement of demand and supply imbalance energy can seem straight-forward at first if the ISO were to do this settlement with loads in load aggregation points and supply resources that have base schedules, EIM dispatches, and metered output. However, different EIM Entities may have different approaches to allocation of offset costs. The ISO's proposals in the 2nd Revised Straw Proposal respond to several stakeholder comments by isolating offset costs to the EIM Entity in which they occur, but going farther could be complex if there are differences in intra-BAA allocation of the offset charges. Relying on the ISO for settlement of offset costs would seem to require either agreement among all potential EIM Entities on a uniform allocation methodology, or fees to compensate the ISO for BAA-specific settlement structures.

See section 2.3 for discussion of need for the minimum shift optimization given the proposed congestion balancing account by BAA. In response to a variety of concerns in stakeholder comments, the ISO will discuss at the upcoming stakeholder meeting whether the 2nd Revised Straw Proposal's proposed allocation of offset costs can eliminate the need for the minimum shift optimization.

The ISO plans to develop standard agreements for each type of entity for discussion in the tariff-related stakeholder meetings listed in section 2.4 of the 2nd Revised Straw Proposal.

Congestion management

The congestion management process described in the revised Straw Proposal raises several questions. Specifically, how does the proposed congestion management process work in relation to loop flow, how is transmission priority for the different resources determined, and how is the congestion management coordinated with the WECC Reliability Coordinator?

If the CAISO identifies congestion, the cause of this congestion must be determined. If the cause is external loop flow, then an automatic adjustment to a proposed Base Schedule is problematic as it would either degrade the hedge value of the EIM-scheduled physical transmission service or it would create a revenue neutrality shortfall for the EIM redispatch. To address the hedge value the CAISO must determine the appropriate priority for the flows to determine which source of flow should be restricted. Otherwise, there is a potential for curtailments incurred by the party with a higher transmission priority. The revenue issue is discussed further below. (Related to our comments above, the CAISO can better address this issue if the individual Load Serving Entities are responsible for providing balanced load and resource schedules.)

Throughout the document, base schedule adjustments are indicated as separate from reliability-based curtailments, as would be initiated through the UFMP. Additionally, the straw proposal indicates that the CAISO will exhaust market redispatch prior to coordinated reliability curtailments such as the UFMP or RC intervention. However, the proposal must address how loop flow impacts contribute to the need for base schedule adjustments and how mitigation of loop flow impacts will occur. ***Without a simultaneous process to address loop flow impacts at the time of market redispatch, there will be an unacceptable potential for revenue insufficiency for redispatch and associated revenue neutrality uplift costs in the market footprint.*** For example, Section 3.6.4 anticipates that EIM market dispatch is exhausted prior to recourse to the UFMP. This could create uplift for market participants. Will the CAISO offer a redispatch option to non-market

areas in circumstances where the redispatch by the EIM is an efficient remedy for the external parties' curtailment obligations? If so, the proposal must address the interface for providing the cost allocation to the non-market entity associated with the redispatch service.

The proposed design seems permits the use of aggregate external systems response into the EIM dispatch (for example in Section 3.3.13). This may be a low-cost way for external systems to participate but could create some reliability and inefficiency problems and the CAISO should evaluate this sort of external interaction. For example, if there are situational awareness and dispatch efficiency concerns with the BA-based external resource dispatch utilizations.
Specific to Section 3.3.9.1 Minimum Shift Optimization Detail, what if the EIM must also relax the constraint (e.g. does not have sufficient resources to mitigate the problem), at what point does the RC process enter the picture?

ISO Response

Concerning transmission priority, EIM uses "as available" transmission, meaning that no transmission is reserved for EIM use in the day-ahead or hourly market processes (which are open to all market participants), and that dispatches through EIM only use incremental or decremental transmission capacity that remains available after these day-ahead or hourly market processes. EIM will not adjust schedules that are in an EIM Entity's base schedule, regardless of their transmission priority.

If the Market Operator observes congestion within the EIM footprint, EIM will dispatch the participating resources using bids submitted by EIM Participating Resource Scheduling Coordinators. The effectiveness of the available resources in relieving the congestion affects the LMPs at the resources' locations, which in combination with the resources' bid prices determine their dispatch. The network model on which EIM operates will determine the effectiveness of resources in relieving congestion, but it can be difficult or impossible to identify the source of the congestion resulting in the dispatch, particularly if the EIM footptint does not cover the entire WECC footprint and unscheduled deviations occur outside the EIM footprint. However, the congestion component of the LMP will reflect the congestion effectiveness at the respective location.

The Market Operator will be able to inform the WECC RC of EIM's dispatches and to enforce constraints if requested by the RC. Because EIM will operate only with bids submitted by EIM Participating Resource Scheduling Coordinators, coordinated reliability curtailments such as the UFMP or RC intervention in mandating schedule curtailments remain the role of the EIM Entity. An EIM Entity may choose to take such actions after the EIM Market Operator notifies the EIM Entity that the Market Operator observes congestion or other conditions and has no effective bids for resolving it, or may choose to take reliability actions separately, based on its own procedures. Any actions taken by the EIM Entity will be communicated to the EIM Market Operator via the base schedules, interchange tags, transmission limit adjustments or outage, derate information.

As discussed in sections 2.3 and 3.3.9 of the 2nd Revised Straw Proposal in response to several stakeholder comments, the ISO is considering that the automatic adjustment to base schedules (which would have started EIM's dispatch optimization without violations of transmission constraints) may not be the most effective approach. Instead, EIM Entities would be able to use the advisory results from the ISO's day-ahead market and the forward-looking horizon of real-time market processes to eliminate constraint violations themselves. If base schedules still have infeasibilityconstraint violations, neutrality shortfalls may occur in EIM and would be allocated to the EIM Entity in which the congestion occurs. Using available information, the effects supply and demand pattern including interchange schedules not associated with the ISO or EIM Balancing Area will be considered when modeling the flow pattern in the EIM area.

The 2nd Revised Straw Proposal does offer a redispatch option to non-market areas in circumstances where the redispatch by the EIM is an efficient remedy for the external parties' curtailment obligations, for example in section 3.2: if an EIM Entity supports 15-minute intertie scheduling, imports and exports to the EIM Entity Area from other BAAs that provide bids for the 15-minute EIM market can also receive 15-minute schedules. The settlement for participation by these imports and exports through the EIM Entity will occur as it would for other EIM Participating Resources except there will be no 5 minute dispatch energy.

Greenhouse Gas Issues

The CAISO is proposing to use a cost adder to account for the greenhouse gas (GHG) rules within the CAISO. As proposed, Xcel Energy understands that the CAISO will request emissions information for each registered resource. The CAISO will then use the emissions information to add to the resource offer price a surcharge to cover the GHG certificate(s) that would be required if the generator provides energy to California. To ensure clarity, the CAISO needs to provide additional information, including all emissions types monitored under the California Air Resource Board (CARB) rules. The discussion is also unclear if there will be a fixed dollar adder for all units or if the process will multiply emissions certificate clearing price times the emissions rate of each unit, thereby creating a unique emissions charge for each unit. If a certificate price based on the CARB auction is to be used, the straw proposal needs to address when and how the price used for dispatch will change.

Xcel Energy is concerned with the GHG issue and the interaction with the EIM. As proposed, there could be significant gaming potential. The best, most practical solution would be for the CAISO to take on the obligation to provide to CARB the necessary certificates rather passing the obligation to the generator owner. In the alternative, could the CAISO provide the ability to exclude a resource from those dispatched to serve loads in California? If Xcel Energy's understanding related to the emissions level being use as a multiplier, the entry of an emissions level of 9999 (or similarly large number) could act as the switch for a non-participant in the California emissions market. This would allow the resource to participate in the EIM without requiring it to participate in the California emissions program. Alternatively, a simple check box in the unit registration information might also provide the necessary means for the CAISO systems to exclude generation from the market dispatch serving the CAISO.

ISO Response

The ISO has been working closely with CARB on the reporting of GHG obligations under EIM. Section 3.12 has been updated with additional information on how resource specific emissions factors will be developed.

Resettlement Process

In Section 3.7.9, Xcel Energy recommends that the straw proposal include a cap on the duration of retroactive resettlement exposure. Xcel Energy recommends a period of not to exceed 24 months.

ISO Response

The ISO issues an initial settlement statement three business days after the operating day. Resettlement statements at 12 and 55 business days after the operating day (and possibly at additional times) may contain additional, incremental changes in settlement data. Resettlements may occur at later dates under FERC-approved guidelines, but settlements more than 55 business days after the operating day generally occur only for unresolved disputes and in the event of FERC orders.

Marginal Losses

Does the CAISO anticipate any problems or issues with respect to use of marginal losses associated with market dispatch as compared to hourly ex post loss resettlements for the bilateral schedules under traditional OATT? The straw proposal would benefit from an expanded discussion of losses and how the CAISO will settle the losses.

ISO Response

Real-time marginal loss surplus will be allocated by BAA as described in Section 3.7.8.1

Medium Priority Issues: Interaction with Reliability Coordinator (RC)

The straw proposal does not indicate specific process interactions with the RC. Has this issue been discussed inside the CAISO? When will this issue be included in the straw proposal?

As an example of the need to coordinate, in Section 3.3.7 the CAISO discusses supply adequacy and resource scheduling requirements. If non-participating resources cause "excessive energy supply", does the CAISO plan to coordinate with the RC so the RC can issue directives to those non-participating resources?

ISO Response

The Market Operator will be able to inform the WECC RC of EIM's dispatches and to enforce constraints if requested by the RC. Coordinated reliability mangement such as the UFMP or RC intervention in mandating schedule curtailments or generation curtailments remain the role of the EIM Entity. The RC function is part of an ongoing reorganization of the WECC organization, and as the separate RC organization becomes established, the ISO will discuss these functions with the RC. It is possible that the ISO as EIM Market Operator should inform the RC of over-generation, unresolved congestion, or other issues that the ISO sees within EIM Entities' BAAs, or that the RC and EIM Entities will prefer for that coordination to occur between the RC and the EIM Entities.

Local Market Power Mitigation (LMPM) – Threshold/Definition

In Section 3.2.5, the CAISO discusses a market mitigation process but does not mention what reference price will be used or the basis for that price. This must be included in the straw proposal to ensure clarity. Additionally, Xcel Energy recommends a conduct and impact threshold test first, and only if thresholds are exceeded would the CAISO perform the competition analysis.

Xcel Energy supports CAISO's proposal for use of a distributed reference bus in the EIM footprint. However, more detail such as the relevant market (each BAA, etc.) must be provided in the straw proposal.

ISO Response

The reference price or default energy bid (DEB) is bid value that is used in cases a resource is mitigated. Currently, the DEB is determined an independent entity based a (1) Variable Cost Option, (2) Negotiated Rate Option, (3) LMP Option will be applied.

For the purpose of LMPM, tThe reference bus will be unique for each BAA. LMPM will be run

independently by BAA. The establishment of the reference bus is a start up item between the EIM Entity and the Market Operator.

Flexible Ramping

Does the multi-interval capability discussed in Section 3.4.1 include ramp look-ahead optimization? There needs to be more discussion to tie Section 3.4.1 to the Flexible Ramping process discussed in Section 3.4.3. Additionally, please provide an example of the methodology used to determine the amount of Flexible Ramping discussed in Section 3.4.3.

Xcel Energy requests the CAISO add cost allocation examples related to Flexible Ramping to the straw proposal as well. Specific to Section 3.4.3, Please discuss the ability to assess the potential impacts and to perform shadow settlements for this proposal. Can the CAISO base the supply allocation on a market-price basis at the time rather than a daily or monthly average? Would the use of a simultaneous co-optimization from the unit commitment data rather than design a separate ramp product be feasible? Finally, will the EIM efforts be coordinated with the current WECC VGS efforts underway to establish a "flex reserve" operating criteria?

ISO Response

The flexible ramping constraint costs will be calculated for each BAA based on the requirements of the BAA. Each EIM Entitiy will then develop its own allocation approach for its BAA.

Real-Time Uplift Costs

The CAISO proposes in Section 3.7.8 an allocation methodology to split certain uplift charges between the CAISO BA and the EIM participants as well as a list of the charges that will be uplifted to the EIM participants. Please provide additional detail related to the CAISO reasoning for allocating any CAISO costs to the EIM participants.

ISO Response

The ISO has modified its proposal in Section 3.7.8. In addition, the ISO has posted an illustrative spreadsheet with the 2nd revised straw proposal.

Transmission Service

In Section 3.10, the CAISO discusses three options for transmission service charges related to EIM service. Xcel Energy supports Option 1 for transmission pricing. This option makes the market more transparent and less subject to gaming. As proposed, all loads within the EIM must meet a deliverability requirement for resources. In order to meet this obligation, the load serving entity must obtain transmission service from the generator to the load. This ensures the transmission provider collects its revenue requirement. Therefore, a transmission charge is not required. In addition, Xcel Energy does support a through and out transmission rate for the EIM footprint.

ISO Response

The ISO has made no changes to the transmission service proposal outlined in the 2nd Revised Straw Proposal. The ISO is still evaluating potential options and will discuss further in future papers.

Variable Energy Resource (VER) Forecast and Attributes

What is the basis (or billing determinant) for the charge discussed in Section 3.3.14, the VER Forecast MWh or the VER actual MWh? Xcel Energy assumes the fee is per MWH of VER output forecasted rather than produced but asks for clarity. The process for the CAISO to use load and VER forecasting by the market operator, including qualification criteria (if any) and other detailed process information still needs to be provided. Please clarify in the proposal that if a market participant provides its own forecast for variable generation the $0.10/MWH fee is waived. (The proposal is not clear in this regard but does refer to the CAISO tariff for further details.)

Does the CAISO allow for dispatchable VER? If so, it would be appropriate to address the process in the EIM Straw Proposal. If not, does the CAISO anticipate dispatchable VERs in the future?

ISO Response

Actual MWh produced.

The ISO uses independent forecasting services as well as dedicated ISO staff and current telemetry to determine its VER forecasts, which become an input to the real-time market software. If the EIM Entity has an independent forecast for its variable resources and shares its forecast, the $0.10 per MWh service charge would be waived. The decision to use its own forecast is made by the EIM Entity.

The ISO's proposed FERC Order No. 764 market design changes allow VERs to economically bid in the real-time market. If the LMP is greater than the resource's energy bid, then the resource is scheduled and dispatched to it forecasted output. However, if the LMP is less than the resource's energy bid then the resource will be dispatched below its forecasted output to a level that the LMP is greater or equal to its bid.

Section 3.2. subsection 1

At the top of page 11 Xcel Energy suggests the following edit: "…the EIM Entity Area from other (add) "***non-market***" BAAs.

ISO Response

Noted

Section 3.3.3. Behind-the-meter generators (BTMG) and net load calculations.

Will there be any differences in operating data supplied in real-time versus in settlements? Will all BTMG require real-time SCADA/telemetry? Will there be any market distinction between BTMG that can follow a dispatch signal versus price-taker resources such as non-dispatchable VER or QF

resources?

ISO Response

Real-time telemetry as well as revenue-quality metering for settlements are required for all EIM Participating Resources with at least 10 MW of generation, regardless of whether there is load behind the meter, to produce an accurate state estimator solution. Smaller generating units can be aggregated and registered as an aggregate market resource, and metering is required for the aggregated resource.

Section 3.3.5. Load Scheduling Requirements

In the disgorgement discussion, PSCO applauds the CAISO for their proposal to provide an alternative to the flat percentage error basis for the disgorgement calculation and to permit use of the CAISO-supplied forecast as an alternative. With what frequency will CAISO permit market participants to alternate between the two options?

ISO Response

The ISO has added detail concerning load scheduling in section 3.3.5 of the 2nd Revised Straw Proposal. An EIM Entity may declare its intent to use the Market Operator forecast, but actual use of this forecast is determined from hour-to-hour, by the sum of supply resources in the base schedule being within 1% of the Market Operator forecast for a particular hour.

Section 3.3.6. Resource Plans.

Will the flex reserves (aka "load following reserves") maintained by a BA with high VER penetration be allowed for inclusion in the BA's ancillary service plan? If not, to what extent will the market rules require any non-NERC required reserves for the BAA? Does the CAISO believe that the Flexible Ramping Constraint will address the VER integration issue?

ISO Response

Each EIM Entity BAA will have a flexible ramping constraint requirement, as well as meeting its ancillary service requirements under WECC standards. The EIM Entity Scheduling Coordinator must submit a base schedule that meets the requirement independently. A key difference between the ancillary service capacity stated in resource plans and the flexible ramping constraint requirement is that EIM dispatches will avoid the use of energy from the ancillary service capacity, whereas the flexible ramping supplies the energy that covers variations from base schedules.

Section 3.3.7. Supply Adequacy and Resource Scheduling Requirements

If excessive energy supply resources are curtailed by the market operator, what specific criteria will form the basis for the curtailment? This section also raises concerns with the proposed process for entities to participate in the EIM since only the EIM Entity Scheduling Coordinator will submit load information but the EIM Participating Resource Entities will be submitting resource offers. Since there is no connection between the resource owners and the loads required in the straw proposal, there is no clear way to determine which resources should curtail output. The proposed structure

separates those entities that offer resources from the entities responsible for submitting load information. The methodology proposed by Xcel Energy related to the entity obligations above would address this issue with fewer related problems than the current proposal.

ISO Response

EIM will only issues dispatches using economic bids offered by EIM Participating Resource Scheduling Coordinators, and will not curtail self-schedules in the EIM Entity's base schedule. If the bids of EIM Participating Resources, combined with EIM's capability of optimizing across the EIM footprint, is insufficient to meet variations in the EIM Entity's demand, the Market operator will notify the EIM Entity of that condition. It will then be the EIM Entity's responsibility to resolve the condition through other means.

Section 3.3.12. Load Aggregation Points (LAPs)

The CAISO must reconcile two statements at the top of Page 29;

1. "There will be no two-way communication on what their load forecast is at the LDF level."
2. "The EIM Entity Scheduling Coordinator is encouraged to review and verify LDF accuracy."

How/where does the review go if there is no two-way communication? Also related to this section, will CAISO be able to address GDFs for Joint-Owned Units? The overall straw proposal does not yet have any discussion on the numerous issues that arise with respect to JOUs.

ISO Response

The ISO publishes load distribution factors three day after the market run. This data can be used to improve future LDFs. The market operator will not communicate load forecast at specific nodes (as determined by the LDFs) when running the EIM, only after the fact.

GDFs apply in instances where multiple generators are aggregated into a single market resource, which does not appear to be the subject of this question. In the case of jointly owned generation, the ISO will work with the EIM Entities and EIM Participating Resource Scheduling Coordinators to work through the modeling, scheduling, and settlement issues. A likely model may be that the ISO would model the separate ownership shares as multiple generators at the same location, and rely on the resource owners to separate the resource data so that each appears to be a separate resource for market purposes.

Section 3.3.18. Network Constraint & Contingency Definition

This is a good flexible proposal, much appreciated by Xcel Energy. However, there should be a process for review to consider circumstances where the level of generalization is too broad to accommodate the efficiency, reliability and situational awareness needs of the EIM. For example, a broad aggregation of multiple lines into a multi-element flowgate would result in an inefficient calculation of distribution factor impacts and should not be acceptable if it results in inefficiency or unreliable redispatch impacts in the EIM. Xcel Energy also commends the CAISO on this section for proposing what appears to be a "flowgate-on-the-fly" capability as transmission providers encounter unanticipated conditions.

ISO Response

In instances where limits for individual transmission elements (lines, transformers, etc.) may be critical for enforcement, in either base or contingency cases, the individual limits will be modeled. In some cases, limits for groups of elements may be more restrictive than the sum of their elements' separate limits, for reasons such as maintaining voltages. In other instances, reliability concerns may be the basis of nomograms among transmission flows and/or generator output. All of these are within the ISO's modeling capability.

Section 3.5. EIM Output Results

Xcel Energy suggests that the CAISO add total VER output in the EIM footprint and the load-zone forecast data to the public information provided as output.

ISO Response

The ISO currently publishes VER forecast and load forecast for the ISO BAA. Similar data release is available within the EIM.

Section 3.5.1. 15 Minute Energy Schedule

Will there be potential for disgorgement in both the 15-minute and 5-minute settlements?

ISO Response

Non-participating load is settled at the weighted average price based upon the load forecast used in the markets. The ISO has updated the under-scheduling penalties for non-participating load in the 2nd revised straw proposal.

Section 3.6.4. Seams Coordination and Interaction with WECC Congestion Management

The last paragraph, first sentence, seems to be missing the word "not" between explicitly and managed.

ISO Response

Noted

Section 3.6.7. Business Continuity

The CAISO needs to add more detail to this section. For example, what should the EIM Entity assume for net scheduled interchange (NSI) when communications are lost? Should the BA hold the NSI at the last scheduled value during interruption, the NSI goes to zero, or just the NSI associated with the EIM reduces to zero? Xcel Energy agrees that the EIM BAA will be responsible for managing its imbalance needs, but the process requires clear definition for both the EIM Entity and the CAISO.

ISO Response

The ISO will add this detail in a future document in this stakeholder process.

Section 3.7.1. Settlement of Non-Participating Resources

This section needs more clarity with respect to applicability between an EIM Entity and an EIM Entity Scheduling Coordinator . Also the CAISO should use the term " non-participating resources" anywhere the discussion refers to a resource not submitting offers to the Market Operator. This will ensure clarity of understanding for all participants.

ISO Response

If the content has not been clarified by other revisions in the 2nd Revised Straw Proposal, please indicate what type of clarification in section 3.7.1 would be helpful. The ISO will continue to consider whether formalizing a term for non-participating resources will clarify the discussion.

Section 3.7.3. Uninstructed Imbalance Energy

What meter value will be used for import/export tags? Does the CAISO intend to use the value shown on the tag after the hour?

ISO Response

Static imports and exports are deemed delivered. The final MWh value from the e-tag serves as the meter value for settlements.

Section 3.7.4. Unaccounted For Energy

The first paragraph does not define a difference between two measurements it only defines one measurement.

ISO Response

Unaccounted For Energy is the difference between the net energy delivered (generation, imports, demand and exports) into the Utility Distribution Company (UDC) service area, adjusted for UDC service area losses, and the total measured demand within the UDC area adjusted for distribution losses using distribution system loss factors approved by the local regulatory authority. This will be corrected in the 3rd Revised Straw Proposal.

Section 3.7.5. Inadvertent Energy Accounting

This section needs more detail.

ISO Response

If the content has not been clarified by other revisions in the 2nd Revised Straw Proposal, please indicate what type of clarification in section 3.7.5 would be helpful.

Section 3.7.6. Settlement Metering

section needs to be reconciled with the last paragraph on page 40, and needs more clarity with respect to revenue neutrality.

ISO Response

Section 3.7.6 concerns metering requirements for generation within EIM Entities' BAAs, while the last paragraph on page 40 of the Revised Straw Proposal concerns non-participating load that is not dispatchable for demand response. See section 3.7.8.1 of the 2nd Revised Straw Proposal for further discussion of associated issues.

Stakeholder Processes

The straw proposal does not yet define a stakeholder process to request improvements on market process or operating practices. This should be addressed in the next version of the straw proposal.

ISO Response

The ISO understands the need for EIM participants to have a voice in policy decisions affecting EIM. As noted in the schedule the ISO plans to issue a white paper discussing EIM governance no later than Aug 13 and will discuss it at the Aug 20 stakeholder meeting in Portland, Oregon. The ISO will request stakeholder comments on the white paper by Aug 27. Revisions to the governance white paper and subsequent discussions will be scheduled to address stakeholder comments received.

Lower Priority Issue: Outage Information

The CAISO needs to clarify when outages, as mentioned throughout the document, means generation outages, transmission outages or both.

ISO Response

If it is not specified the proposal is referring to both. Where it is necessary the ISO will specify.