

**Southern California Edison**  
**Stakeholder Comments**

**Energy Imbalance Market**  
**2<sup>nd</sup> Revised Straw Proposal**  
**issued July 2, 2013**

<b>Submitted by</b>	<b>Company</b>	<b>Date Submitted</b>
Paul Nelson – (626) 302-4814 Jeff Nelson – (626) 302-4834	Southern California Edison	July 26, 2013

The following are Southern California Edison’s (SCE) comments on the California Independent System Operator’s (CAISO) Second Revised Design Straw Proposal and Issue Paper (Proposal) for an Energy Imbalance Market (EIM) issued on July 2, 2013.<sup>1</sup> 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. SCE appreciates the response and effort by the CAISO to address parties concerns.

SCE comments on the following issues:

- Convergence Bidding appears incompatible with current EIM design and the Proposal’s solution may inadvertently create a new problem
- Provided infeasibility costs can be tracked and charged to the responsible party, then the minimum shift optimization (MSO) may not be necessary
- The CAISO should evaluate curtailing resource leaning as an alternative to making a flexibility requirement part of the EIM operations
- Unit commitment rules and the methodology to allocate bid cost recovery need further investigation
- Consider making EIM Export Allocation Payments subject to refund given the regulatory uncertainty associated with GHG compliance for EIM Entities
- The CAISO should offer more detail on the treatment of GHG in the EIM
- Please provide a complete numerical examples of Expanded Security Constrained Economic Dispatch (SCED) with GHG Emission Costs

---

<sup>1</sup> [http://www.caiso.com/Documents/SecondRevisedStrawProposal-EnergyImbalanceMarket-Jul2\\_2013.pdf](http://www.caiso.com/Documents/SecondRevisedStrawProposal-EnergyImbalanceMarket-Jul2_2013.pdf). In addition, the CAISO held a meeting on July 9, to review the proposal with the following presentation: [http://www.caiso.com/Documents/Agenda\\_Presentation-EnergyImbalanceMarketJul9\\_2013.pdf](http://www.caiso.com/Documents/Agenda_Presentation-EnergyImbalanceMarketJul9_2013.pdf).

- BAA Real-Time Congestion Balancing Account

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

**1. Convergence bidding appears incompatible with current EIM design and the CAISO’s proposed solution may inadvertently create a new problem**

As mentioned in the comments to the May Proposal<sup>2</sup>, SCE continues to have concerns about convergence bidding and the EIM design. The structure between the day-ahead (DA) market (CAISO only) and the real-time (RT) market (CAISO & EIM Entities) is fundamentally different which prevents price convergence. In addition, without convergence, SCE does not see how convergence bidding can be funded without uplift which will create unjustified convergence bidding 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.

In response to parties concerns, the CAISO proposes to “exclude congestion settlement from EIM Entity BAA constraints that are not modeled in the day-ahead market.”<sup>3</sup> At the July 9, stakeholder meeting, the CAISO explained that this would be done by assuming the shift factor of the constraint with the EIM BAA is zero. This would remove the impact of the constraint on the real-time convergence bid prices at CAISO nodes. However, the result of this adjustment would be a difference between the physical (RT-physical) and convergence (RT-convergence) prices. SCE appreciates the CAISO’s effort to resolve our concerns, but the solution may inadvertently create a systematic difference which can be exploited by market participants.

With the removal of the impact of an EIM constraint, then the RT-convergence price should be lower than the RT-physical price. If the DA price converges to the RT-physical price, then convergence bidders have an incentive to sell supply in the DA and buy it back with the lower RT-convergence price. If the DA price converges to the lower RT-convergence price, then physical bidders have an incentive to buy supply in the DA and sell

---

<sup>2</sup> [http://www.aiso.com/Documents/SCE\\_Comments-EnergyImbalanceMarketRevisedStrawProposal.pdf](http://www.aiso.com/Documents/SCE_Comments-EnergyImbalanceMarketRevisedStrawProposal.pdf). Pages 5-6.

<sup>3</sup> Proposal page 4, see also pages 55-56.

it back at the higher RT-physical price. (Please see Attachment A for a more detailed discussion and examples.)

Regardless of whether the DA market converges to RT-convergence or RT-physical price, the CAISO's proposal creates a structural arbitrage opportunity. Since at core the opportunity appears to take advantage of the changes in the market model between DA and RT EIM, SCE is concerned that CAISO load will be forced to fund this arbitrage via uplift. Convergence bidders would not be 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." If this is the case, SCE objects to the current design proposal.

SCE continues to have concerns if Convergence bids can function properly given the change to the market structure between DA and RT. SCE concerns, **including the apparent structural arbitrage opportunity**, would benefit from review by the Department of Market Monitoring and the Market Surveillance Committee for their opinion if such concerns are a problem. The treatment of Convergence Bidding requires additional discussion before finalizing any EIM design.

**2. Provided infeasibility costs can be tracked and charged to the responsible party, then the minimum shift optimization (MSO) may not be necessary**

The purpose of the MSO is to contain the costs of resolving schedule infeasibilities to the responsible EIM Entity. SCE agrees with the principle of tracking the costs of resolving infeasibilities and charging it to the responsible party, following cost-causation principles. SCE is looking forward to more details and examples on exactly how the costs to resolve infeasibilities will be tracked and calculated. If the CAISO is able to demonstrate that it will be able to accurately identify and assign costs, SCE agrees that there may be no need for the MSO.

**3. The CAISO should evaluate curtailing resource leaning as an alternative to making a flexibility requirement part of the EIM operations**

SCE supports CAISO's efforts to create measures that would prevent entities from coming into EIM short on resources (capacity and ramping capability) and leaning on other balancing authority areas (BAAs). CAISO has proposed to apply a "ramp sufficiency test for

each EIM Entity BAA” and to isolate any entity failing this test from rest of the EIM.

While this may be a reasonable approach, it raises some questions:

- a. How will this be done in the optimization which is based on the full network model?
- b. What impact will it have on RT prices and power flows?
- c. Would there be any unintended interactions with Convergence Bids and with the prices at which they’re settled?

Also, one of the EIM benefits identified in the EIM cost benefit study, is the ability to share resources between areas, especially at times when one area has a surplus and another a shortage. If there is an available and economic resource in the combined area to meet the ramping requirement, the current proposal would isolate it from a potential customer (another EIM entity, failing the ramp sufficiency test), resulting in a higher overall cost solution.

An option CAISO should evaluate is to consider the EIM exports and imports as non-firm. In this scenario, if an EIM Entity does not have sufficient ramping capability, it could rely on imports or exports, to the extent that there are available bids from Participating Resources in other BAAs. However, if a resource providing this flexibility becomes needed in its native control area, the EIM intertie schedules would be curtailed; ensuring that the BAA coming fully resourced into the EIM is not harmed by other BAAs that lean. In this case the BAA would face high prices or would need to implement their own protocols to maintain reliability.

#### **4. Unit commitment rules and the methodology to allocate bid cost recovery need further investigation**

The Proposal states that CAISO located units could be committed to resolve constraints or displace higher cost units in the EIM Entity area, while the EIM Entity can elect whether it will allow the Market Operator to commit units in its BAA. A restriction to not commit EIM Entity units would prevent a more economic unit from resolving constraints or displacing higher cost energy for the combined CAISO & EIM footprint, resulting in higher prices for all buyers, and loss of economic opportunity for willing sellers. It also creates asymmetric operating rules between the CAISO and the EIM Entity. From an operation of the combined footprint, there are benefits to be able to commit the lowest cost unit, but there are cost allocation issues that need to be investigated.

Bid cost recovery (BCR) amounts are created when market revenues are insufficient to recover their bid costs. BCR then must be allocated to market participants. The methodology needs to make sure that the cost is assigned using cost causation principles and that unfair allocation does not result. For example, if unit commitment consistently occurred to benefit one EIM Entity, yet all participants were assigned the cost it would result in unreasonable cost shifting. This is a problem that needs to be addressed because, under the current Proposal, CAISO units can be committed due to events in the EIM Entity BAA, but not vice versa. With the current load share allocation rules for BCR, CAISO customers would pick up the costs that benefit the EIM Entity.

SCE recommends that the CAISO review the current BCR rules and determine what changes are necessary to make sure the cost assignment results in fair allocation. The design of unit commitment rules and its respective BCR allocation needs to be coordinated.

**5. Consider making EIM Export Allocation Payments subject to refund given the regulatory uncertainty associated with GHG compliance for EIM Entities**

CAISO has created its EIM proposal to account for GHG costs under the premise that EIM Entity Participating Resources will be California Air Resources Board (CARB) jurisdictional entities and as such will be required to comply with California's Cap-and-Trade Program. It is not entirely clear, however, if all EIM Participating Resources will ultimately be CARB jurisdictional entities.<sup>4</sup> If EIM Participating Resources are not CARB jurisdictional entities then the EIM Participating Resources will not be required to comply with the Cap-and-Trade Program as assumed in the EIM design. Thus, if Participating Resources are determined to not be CARB jurisdictional entities after they have been compensated for GHG costs according to the EIM design, then the Participating Resources could be left with windfall profits from unjustified payments intended to recover GHG cost. Accordingly, SCE recommends the CAISO consider making all Export Allocation Payments<sup>5</sup> subject to FERC Refund until it is certain that EIM Participating Resources will incur GHG costs for California's Cap-and-Trade Program.

---

<sup>4</sup> There are outstanding concerns regarding CARB's ability to regulate out-of-state generators as first deliverers of electricity. It is reasonable to anticipate that after the deadlines for the surrender of compliance obligation (the first of which is November 1, 2014) there may be legal challenges that will determine the CARB's jurisdictional authority.

<sup>5</sup> The Export Allocation Payment contains the shadow price that covers the marginal GHG cost.

## **6. The CAISO should offer more detail on the treatment of GHG in the EIM**

SCE appreciates that the CAISO has offered additional detail on how GHG will be incorporated into the EIM, but there are still a number of outstanding issues that have yet to be detailed.

Specifically, the CAISO should address the following questions:

- a. How are deviations settled when the export allocation changes within the 5 minute market? For example, an EIM Participating Resource, “Generator Y,” has instructions for a 5 minute dispatch that will result in an export allocation of 10 MWh, which equates to 4 tonnes of GHG at Generator Y’s 0.4 tonne/MWh emissions factor. Generator Y fails to perform and produces 0 MW so the EIM Entity ramps up “Generator Z,” a non-participating EIM Entity resource, to provide 10 MWh. Generator Z is a coal unit with an emissions factor of 0.8 tonnes / MWh so 8 tonnes of emissions are created—4 tonnes more than would have been created if Generator Y had not deviated. Given that there is no intra-5 minute market, Generator Y will “pay back” the 5 minute LMP for deviating, while Generator Z will receive the 5 minute LMP.
  - i. The export allocation had been assigned to Generator Y in the 5 minute market, but given that Generator Y did not perform—does it still have an export allocation?
  - ii. If not, then who has responsibility for that export allocation and how are they compensated for it?
  - iii. Generator Z is not an EIM Participating Resource and thus does not receive an export allocation nor subsequent CARB compliance obligation. Does that export allocation and CARB obligation fall to PacifiCorp?
  - iv. What price will Generator Y “pay back”? Note that it may have received an export allocation payment on top of the energy (LMP) payment.
  - v. What if Generator Y was scheduled to deliver 20 MWh total, half to CAISO and half to PacifiCorp, but instead delivers only 10 MWh. Are the allocations prorated or sequential?
  - vi. Please provide detailed examples on how deviations are settled.
- b. What entity will be the Purchasing-Selling Entity (“PSE”) on the e-Tags created for the net interchange between the CAISO and EIM BAAs?<sup>6</sup>
- c. What export allocation information will the CARB have access to?

---

<sup>6</sup> Net interchange e-Tagging is discussed in Section 3.7.7.1 of the Second Revised Straw Proposal, but there is no mention of the Purchasing-Selling Entity.

**7. Please provide a complete numerical examples of Expanded Security Constrained Economic Dispatch (SCED) with GHG Emission Costs**

In Section 3.12.2, Expanded SCED with GHG Emission Costs, the Proposal presents the mathematical formulas. While the CAISO provides a theoretical layout of LMP with the equations on Page 70, it does not carry such concepts into its examples.

For example, the formulas show that the transmission line flow and locational market prices (LMP) are determined with the use of shift factors which show the percentage of power flow of the generator to remain in the CAISO or the EIM Entity. However, the numerical examples do not include shift factors in the determination of the LMPs or the amount of line flow between L1 and L2. To summarize, the examples do not follow the LMP theory provided in the formulas.

There is also a lack of clarity in the formulation of the allocated exports, as the formula for the  $E_j$  (EIM energy export allocated to EIM Entity generator  $j$ ) is not defined. As a result, it is unclear exactly how the Proposal manages to combine in the dispatch an LMP (using shift factors) and a deemed export allocation for GHG compliance.

SCE recommends the CAISO publish complete examples (with the shift factors) of the SCED with GHG Emission Costs and then host a technical conference to review with stakeholders. Until there is more clarity on the details of the SCED, SCE cannot fully endorse the SCED proposal.

**8. BAA Real-Time Congestion Balancing Account**

SCE supports the concept of setting up separate BAA Real-Time Congestion Balancing Accounts to capture the costs to relieve constraints related to each specific BAA for both the 15 minute and 5 minute dispatch, provided that the CAISO can accurately identify the entity responsible for causing the congestion. SCE recommends that CASIO use the 15-min interval shift factors for determining the shadow price and congestion costs.