

## 2013 Stakeholder Initiatives Catalog, Discretionary Initiatives High Level Ranking

Submitted by	Company	Date Submitted
Alan Meck, <a href="mailto:alan.meck@cpuc.ca.gov">alan.meck@cpuc.ca.gov</a> , 415-703-5324  Ed Charkowicz, <a href="mailto:eac@cpuc.ca.gov">eac@cpuc.ca.gov</a> , 415-703-2421	California Public Utilities Commission	November 27, 2013

CPUC Staff submits a list of the five most important initiatives that CAISO should address in 2014. We appreciate this opportunity to continue to work with CAISO on improving market efficiency to reduce costs to ratepayers.

### **Initiative 1: 8.4 Real-Time Congestion Uplift Allocation and 8.5 Review of Convergence Bidding Uplift Allocation**

**8.4 Real-Time Congestion Uplift Allocation:** This initiative would examine potential changes to the allocation of real-time congestion revenue imbalance uplift. Real-time congestion revenue imbalance is caused by scheduled day-ahead flow exceeding real-time scheduled flow on constraints that bind in real-time. When this occurs, out-of-market payments are received by schedules that increased the flow on the constraint in the day-ahead market but are reduced in real-time. The uplift is allocated to measured demand. This initiative would explore allocating the uplift to physical and virtual schedules in proportion to the quantity of out-of-market congestion payments received by those schedules. In its May 9 Order, the FERC stated: “The Commission encourages CAISO to pursue its evaluation [of proper uplift allocation] vigorously and to propose solutions to the observed difficulties promptly when they become evident.”<sup>1</sup>

**8.5 Review of Convergence Bidding Uplift Allocation:** Under current tariff provisions, all uplifts associated with convergence bidding are allocated to Measured Demand. This initiative would conduct a comprehensive evaluation of the costs and benefits associated with convergence bidding and implement a method or methods for allocating the costs of convergence bidding to the entities that benefit from it. Alternatively, this topic could be included in a more

---

<sup>1</sup> FERC, Order On Tariff Revisions, p. 11 (May 9, 2013).

comprehensive review of ISO cost-allocation methods to consider whether these methods comport with the cost causation principle.

### High Level Prioritization Criteria Matrix

		Criteria	HIGH	MEDIUM	LOW	NONE	Your Score
			10	7	3	0	Use 0, 3, 7, or 10
A	Benefit	Grid Reliability	Significant Improvement	Moderate Improvement	Minimal Improvement	No Improvement	7
B		Improving Overall Market Efficiency	Significant improvement	Moderate improvement	Minimal improvement	No impact	10
C		Desired by Stakeholders	Universally desired by stakeholders	Desired by majority of stakeholders	Desired by a small subset of stakeholders	No apparent desire	X
D	Feasibility	Market Participant Implementation Impact (\$ and resources)	No Impact	Minimal Impact	Moderate Impact	Significant impact	10
E		ISO Implementation Impact (\$ and resources)	No Impact	Minimal Impact	Moderate Impact	Significant impact	3
						<b>Total</b>	30

**Grid Reliability** (provide a detailed explanation of how and why this initiative provides an improvement in grid reliability) –initiatives 8.4 and 8.5 should improve grid reliability to the extent that market participants align their behavior—which affects congestion and reliability— with cost consequences.

**Improving Overall Market Efficiency** (provide a detailed explanation of how and why this initiative provides an improvement in grid reliability) – CPUC staff has identified a serious potential for congestion uplift costs in CAISO market design initiatives coming in the near future such as the Energy Imbalance Market (EIM) and, eventually, the reinstatement of virtual bidding on the interties. If CAISO fails to address the issues of congestion cost allocation and virtual bidding uplift allocation, the EIM and the reinstatement of virtual bidding on the interties may cause significant uplift charges that will flow to California ratepayers.

CPUC staff believes that virtual bids are poorly suited to solve congestion problems. For example, when unanticipated loop flows come across CAISO's transmission lines, virtual bids could cause revenue shortfalls because the ISO must pay a higher price to deliver energy to a

congestion constrained area. Virtual bidders also receive the same higher price from the CAISO, yet they provide no additional information to CAISO to help anticipate congestion and have no stake in anticipating the congestion uplift in the Real-Time market or mitigating the price differential.

Furthermore, virtual bidders can use the so-called "offsetting bids"<sup>2</sup> to actually *cause* congestion and profit from it. Offsetting bids cause congestion uplifts that are charged to ratepayers while the profits go to the virtual bidder. The Department of Market Monitoring found in 2012 that nearly all of the \$56 million net profits paid to virtual bidders were due to congestion uplift costs gained in just this fashion.

Lastly, there is a danger that the EIM would cause systemic price differences between Day-Ahead and Real-Time markets because the Day-Ahead market will only settle energy for California, whereas the Real-Time market will include California and the EIM. Virtual bids could arbitrage those price differences. However, virtual bidders gaming systemic price differences is exactly what forced the CAISO to shut down virtual bidding at the interties in 2011..

As for real-time congestion uplift allocation, CPUC staff reiterates its concern over the potential for EIM Scheduling Coordinators in other Balancing Authority Areas (BAA) to schedule flows that cause uplifts in load pockets outside of their respective territories. The EIM's current load-based allocation for such charges presents serious flaws in terms of cost causation (because the entities creating externalities bear none of the cost) as well as risk (because Scheduling Coordinators will likely find ways to game the congestion they cause such as in the virtual bidding situation described above).

Therefore, it is important to take up both of these initiatives to align cost allocation with cost causation.

**Market Participant Implementation Impact (\$ and resources)** *(provide a detailed explanation of what you expect the impact to be in terms of \$ and resources)* – these initiatives will not impinge the ability for participants to take advantage of the legitimate benefits of virtual bidding (e.g., hedging risk of high or low prices).

**ISO Implementation Impact (\$ and resources)** *(provide a detailed explanation of what you expect the impact to be in terms of \$ and resources)* – CPUC staff believes that issues 8.4 and 8.5 should be combined.

At this point in time, CPUC staff cannot fully assess the burden on CAISO's resources because it could vary widely based on the solution CAISO chooses to pursue integrating both initiatives.

---

<sup>2</sup> An "offsetting bid" is where the virtual bidder places a demand bid at a node with high demand, and then a supply bid on the other side of a line where congestion is expected, knowing that loop flows from other BAAs could show up and violate the transmission constraint and forcing CAISO to change its model in Real-Time to accommodate the unscheduled flows.

## **Initiative 2: 3.9 Mitigating Transient Price Spikes, Real-Time Imbalance Energy Offset (RTIEO) / Real-Time Congestion Offset (RTCO) (D)**

This initiative would address concerns from market participants that increased volatility in the real-time market collaterally increases RTIEO and RTCO costs. They note that price spikes regularly occur in one or two real-time intervals resulting from modeling imperfections for which no action is taken by operators in response. PG&E stated that “[t]hese pricing aberrations increase cost without appearing to serve a market efficiency purpose. This initiative would develop effective near, and midterm, solutions to mitigate these situations.”<sup>3</sup>

Similarly, SCE noted that “[t]he CAISO continues to observe real-time price spikes of significant frequency and magnitude even after California ISO 2013 Stakeholder Initiatives Catalog 2013 recommendations for improvements in the 2009, 2010, and 2011 CAISO Annual Report on Market Issues and Performance. Factors that likely contribute to economically disconnected RT prices include, but are not limited to, modeling issues (e.g. loop flow), market structure issues (e.g. Hour Ahead Scheduling Process sell off), convergence bidding, market power mitigation, and resource deviation within 5-min RT intervals.”<sup>4</sup> SCE also indicated that “economically disconnected price spikes have significant impacts to the market, are not indicative of an efficient market, and have caused over half a billion dollars in uplift costs since the start of MRTU caused over half a billion dollars in uplift costs since the start of MRTU.”<sup>5</sup>

CPUC staff agrees with the utilities in that arbitrary and disconnected price spikes significantly impact the market and are a major contributor to uplift costs<sup>6</sup>.

The CAISO noted that it is implementing four efforts to address aspects of this problematic issue:

1. Lowering the transmission constraint relaxation parameter used in the scheduling run of the real-time dispatch.<sup>7</sup> However, the impacts that this effort will have are unknown, given the other initiatives involving EIM, the Full Network Model Expansion, and reinstating Virtual Bidding across interties. It remains unclear to what extent relaxing the constraint to \$5,000 may decrease Real-Time Congestion Offset costs.

---

<sup>3</sup> PG&E’s Comments, *2012 Stakeholder Initiatives Catalog*, p. 2 (Oct. 11, 2012), available at: <http://www.caiso.com/Documents/PGE-Comments-RevisedStakeholderInitiativesCatalog.pdf>; see also CAISO, *2013 Stakeholder Initiatives Catalog*, p. 23 (Oct. 3, 2013), available at: [http://www.caiso.com/Documents/2013\\_StakeholderInitiativesCatalog.pdf](http://www.caiso.com/Documents/2013_StakeholderInitiativesCatalog.pdf).

<sup>4</sup> SCE’s Comments, *2012 Stakeholder Initiatives Catalog Comments on Catalog Additions, Deletions, and Clarifications* (Oct. 10, 2012), available at: <http://www.caiso.com/Documents/SCE-Comments-RevisedStakeholderInitiativesCatalog.pdf>; see also, CAISO, *2013 Stakeholder Initiatives Catalog*, p. 22–23.

<sup>5</sup> SCE’s comments, p. 1.

<sup>6</sup> SCE estimated that “[s]ince the start of MRTU in April 2009, CAISO has incurred roughly \$575 million in RTIEO and RTCO uplift costs.” SCE’s Comments, p. 1 n. 2. SCE also referred to the chart included on slide 16 in the CAISO 2012 Market Performance and Planning Forum Presentation, which took place on September 12, 2012 and is available at: [http://www.caiso.com/Documents/Agenda\\_Presentation-MarketPerformance\\_PlanningForum09122012.pdf](http://www.caiso.com/Documents/Agenda_Presentation-MarketPerformance_PlanningForum09122012.pdf).

<sup>7</sup> CAISO, *2013 Stakeholder Initiatives Catalog*, p. 23.

2. Implementing FERC Order 764 market changes. This initiative introduces a 15- minute real-time market, which is expected to address the discrepancy created by the current hour-ahead scheduling process.<sup>8</sup>
3. Developing the Flexible Ramping Product (FRP) initiative to lessen real-time price spikes due to a shortage in ramping capability.<sup>9</sup> However, because this is expected to work much like the Flexible Ramping Constraint, which has had negligible impact in price volatility, there are concerns that FRP may not provide the impact expected.
4. Executing the Full Network Model (FNM) initiative plans to make modeling improvements in the day-ahead that will improve convergence between day-ahead and real-time modeled conditions.<sup>10</sup> There are many concerns that the FNM may garner unintended consequences and, at this point, the effects that the FNM changes will create are unclear. The continued changes between the modeled Day-Ahead to actual Real-Time frame cannot be anticipated due to the lack of visibility of generation inputs across the interties.

### High Level Prioritization Criteria Matrix

		Criteria	HIGH	MEDIUM	LOW	NONE	Your Score
			10	7	3	0	Use 0, 3, 7, or 10
A	Benefit	Grid Reliability	Significant Improvement	Moderate Improvement	Minimal Improvement	No Improvement	3
B		Improving Overall Market Efficiency	Significant improvement	Moderate improvement	Minimal improvement	No impact	10
C		Desired by Stakeholders	Universally desired by stakeholders	Desired by majority of stakeholders	Desired by a small subset of stakeholders	No apparent desire	X
D	Feasibility	Market Participant Implementation Impact (\$ and resources)	No Impact	Minimal Impact	Moderate Impact	Significant impact	10
E		ISO Implementation Impact (\$ and resources)	No Impact	Minimal Impact	Moderate Impact	Significant impact	3
						<b>Total</b>	26

<sup>8</sup> *Id.*

<sup>9</sup> *Id.*

<sup>10</sup> *Id.*

**Grid Reliability** (provide a detailed explanation of how and why this initiative provides an improvement in grid reliability) – transient uneconomic price spikes distort the pricing signals in the Markets, resulting in market participant behavior focused on modeling price impacts rather than actual or expected operating conditions. When the market prices reflect economically based price signals, grid reliability should improve when the market prices more consistently reflect operating conditions in the grid.

**Improving Overall Market Efficiency** (provide a detailed explanation of how and why this initiative provides an improvement in grid reliability) – transient uneconomic price spikes by definition indicate market inefficiency. Therefore, removing such price spikes, to the extent possible, will help improve overall market efficiency because transient price spikes do not reflect actual grid conditions.

**Market Participant Implementation Impact (\$ and resources)** (provide a detailed explanation of what you expect the impact to be in terms of \$ and resources) – None.

**ISO Implementation Impact (\$ and resources)** (provide a detailed explanation of what you expect the impact to be in terms of \$ and resources) –because the transient price spikes have plagued the ISO Markets since their inception in 2009, the ISO resources required to address this issue may be relatively significant. However, the costs should be inconsequential compared with the current cost on the load.

### **Initiative 3: 9.6 Standard Capacity Product Enhancements**

This initiative seeks to address concerns about the over procurement of resource capacity, eliminate incentive payments for resources on planned outage, and add clarity to the rules for situations that were not contemplated when the initial SCP requirements were developed (e.g. the same penalty cost used equally across all months when a greater impact and penalty should be realized to reflect the impact to the market during different times of the year).

This initiative could be rolled into Phase III SCP initiative, which seeks to incorporate Demand Response resources under the SCP requirements.

**High Level Prioritization Criteria Matrix**

	Criteria	HIGH	MEDIUM	LOW	NONE	Your Score
		10	7	3	0	Use 0, 3, 7, or 10
A Benefit	Grid Reliability	Significant Improvement	Moderate Improvement	Minimal Improvement	No Improvement	10

B		Improving Overall Market Efficiency	Significant improvement	Moderate improvement	Minimal improvement	No impact	0
C		Desired by Stakeholders	Universally desired by stakeholders	Desired by majority of stakeholders	Desired by a small subset of stakeholders	No apparent desire	
D	Feasibility	Market Participant Implementation Impact (\$ and resources)	No Impact	Minimal Impact	Moderate Impact	Significant impact	7
E		ISO Implementation Impact (\$ and resources)	No Impact	Minimal Impact	Moderate Impact	Significant impact	7
						<b>Total</b>	24

**Grid Reliability** (*provide a detailed explanation of how and why this initiative provides an improvement in grid reliability*) – this initiative better aligns the price of replacement with the true cost of outages to the grid. The current system charges generators on outage for the month based on the annual Capacity Payment Mechanism cost multiplied by 1/12. In other words, it treats every month as being equal, which ignores the fact that capacity could be scarcer during the summer months than in spring months. Currently, the price of replacement fails to reflect scarce capacity.

**Improving Overall Market Efficiency** (*provide a detailed explanation of how and why this initiative provides an improvement in grid reliability*) – this initiative improves the incentives for generation to manage their outages toward times when they will have the least market impact, which will improve market efficiency.

**Market Participant Implementation Impact (\$ and resources)** (*provide a detailed explanation of what you expect the impact to be in terms of \$ and resources*) – this initiative should align incentives toward plant maintenance that decrease the probability of forced outages at certain times of the year when they have the greatest impact on the market. The net impact on market participants should be negligible since ongoing cost of maintenance is expected to remain the same.

**ISO Implementation Impact (\$ and resources)** (*provide a detailed explanation of what you expect the impact to be in terms of \$ and resources*) – this initiative should minimally affect CAISO resources.

## Initiative 4: 3.4 Multi-Day Unit Commitment in the Integrated Forward Market (IFM)

Currently, the forward looking time horizon in IFM is one day, which also takes into account the impact of prior commitment of units with very long start up times. During the MRTU process, some stakeholders requested that the ISO make two-to-three day commitment decisions in the IFM to create more efficient results and better reflect the impact of startup-up cost for resources that have long start-up times. There are several design issues, including the need for bidding and bid replication rules, as well as software performance and solution time requirements, which should be discussed and resolved via a stakeholder process before considering modification of the software to accommodate multi-day unit commitment in IFM.

As the ISO completed its design for the new market, the ISO found that there is an opportunity to run an optimization process, “Extremely Long-Start Commitment” (ELC), following the Resource Unit Commitment (RUC) process. The RUC process considers unit commitment to meet the ISO’s forecasted demand for generators with up to 18-hour start-up times. However, there are a small number of generators with start-up times exceeding 18 hours. The ELC process provides the ISO with the opportunity to determine when it should commit these generators for reliability purposes by using a 48-hour optimization period.

Status: The 72-Hour Residual Unit Commitment is an interim step that will provide some benefits until the full multi-day unit commitment solution can be implemented. The initiative was completed in 2011 and documentation can be found at <http://www.caiso.com/27ae/27aebe3060d40.html>

**High Level Prioritization Criteria Matrix**

		Criteria	HIGH	MEDIUM	LOW	NONE	Your Score
			10	7	3	0	Use 0, 3, 7, or 10
A	Benefit	Grid Reliability	Significant Improvement	Moderate Improvement	Minimal Improvement	No Improvement	7
B		Improving Overall Market Efficiency	Significant improvement	Moderate improvement	Minimal improvement	No impact	7
C		Desired by Stakeholders	Universally desired by stakeholders	Desired by majority of stakeholders	Desired by a small subset of stakeholders	No apparent desire	X
D	Feasibility	Market Participant Implementation Impact (\$ and resources)	No Impact	Minimal Impact	Moderate Impact	Significant impact	7



E	ISO Implementation Impact (\$ and resources)	No Impact	Minimal Impact	Moderate Impact	Significant impact	3
					<b>Total</b>	24

**Grid Reliability** *(provide a detailed explanation of how and why this initiative provides an improvement in grid reliability)* – the capability to economically commit long start unit in the market is likely to increase the availability of flexible resources in real-time. By serving some load with base load resources that have a long start time, this initiative could increase available flexible ramping from already existing resources. Flexible resources are a significant concern for reliability, and they may become increasingly important in the future.

**Improving Overall Market Efficiency** *(provide a detailed explanation of how and why this initiative provides an improvement in grid reliability)* – the Department of Market Monitoring found that, in 2012, 1% of all intervals experienced a price spike driven by insufficient ramping capability. For the reasons stated above, this initiative could increase available flexible resources and mitigate flexibility-driven price spikes with economic dispatch of flexible resources, thereby increasing market efficiency.

**Market Participant Implementation Impact (\$ and resources)** *(provide a detailed explanation of what you expect the impact to be in terms of \$ and resources)* – more long start units could economically participate in the market, which may increase market efficiency by shifting faster start and more nimble generation away from base load operation to market products that reward flexibility, fast starts, and ramping response.

**ISO Implementation Impact (\$ and resources)** *(provide a detailed explanation of what you expect the impact to be in terms of \$ and resources)* – this initiative requires accurate models of Day-Ahead solutions and may be difficult for CAISO to implement given the potential cost and complexity of modeling potential solutions.

## Initiative 5: 10.3 Transmission Interconnection Process (D)

The CAISO described this initiative in the following manner: “During the FERC Order No. 1000 compliance initiative, some stakeholders suggested that a process is needed for participating transmission owners (PTOs) to provide reliability, operational and other technical feedback to non-incumbent transmission project sponsors seeking to interconnect to a PTO’s existing transmission facilities. Some stakeholders also suggested that the ISO should take on a more active role in managing transmission interconnection applications.

Although currently the ISO’s tariff governs generator interconnections, transmission and load interconnections are managed through applications to the PTOs under the terms of their transmission owner tariffs. Some stakeholders have expressed concern that having separate tariffs for transmission interconnections may result in interconnection studies not being properly sequenced between generator and transmission interconnections, and inconsistent tariffs and practices among PTOs may cause uncertainty and confusion. In addition, there may be cost allocation questions to be considered.

The number of transmission interconnection applications may grow in the future with the expanded opportunities for non-incumbent transmission owners to become project sponsors. The ISO acknowledges that suggestions for a single transmission interconnection process for the entire ISO footprint may have merit and the ISO should consider taking on a more active role in transmission interconnection applications.”<sup>11</sup>

			HIGH	MEDIUM	LOW	NONE	Your Score
		Criteria	10	7	3	0	Use 0, 3, 7, or 10
A	Benefit	Grid Reliability	Significant Improvement	Moderate Improvement	Minimal Improvement	No Improvement	3
B		Improving Overall	Significant	Moderate	Minimal	No impact	7

<sup>11</sup> CAISO, 2013 Stakeholder Initiatives Catalog, p. 42. .

		Market Efficiency	improvement	improvement	improvement		
C		Desired by Stakeholders	Universally desired by stakeholders	Desired by majority of stakeholders	Desired by a small subset of stakeholders	No apparent desire	
D	Feasibility	Market Participant Implementation Impact (\$ and resources)	No Impact	Minimal Impact	Moderate Impact	Significant impact	10
E		ISO Implementation Impact (\$ and resources)	No Impact	Minimal Impact	Moderate Impact	Significant impact	3
						Total	23

**Grid Reliability** (provide a detailed explanation of how and why this initiative provides an improvement in grid reliability) – more efficient coordinated generation and transmission interconnection processes should benefit overall grid reliability.

**Improving Overall Market Efficiency** (provide a detailed explanation of how and why this initiative provides an improvement in grid reliability) – overall market efficiency is enhanced with a well-planned and functioning transmission system.

**Market Participant Implementation Impact (\$ and resources)** (provide a detailed explanation of what you expect the impact to be in terms of \$ and resources) – the impacts on market participant implementation impact would be negligible over existing processes.

**ISO Implementation Impact (\$ and resources)** (provide a detailed explanation of what you expect the impact to be in terms of \$ and resources) – this initiative appears to require moderate effort initially but, once completed, it may save time and resources in the long run as interconnection process synergies become effective .