

**COMMENTS OF THE STAFF OF THE
CALIFORNIA PUBLIC UTILITIES COMMISSION
ON THE RENEWABLES INTEGRATION PHASE 2
DAY-OF MARKET 7/6/11 INITIAL STRAW PROPOSAL**

Submitted by	Company	Date Submitted
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The Staff of the California Public Utilities Commission (“CPUC Staff”) submits the following Comments on the questions posed by the CAISO relating to the July 11, 2011 Stakeholder Meeting and the Renewables Integration Phase 2, Day-of Market Initial Straw Proposal issued July 6, 2011.

1. Please provide any comments on the ISO’s proposed schedule, timeline, or process for this stakeholder process.

The CPUC Staff applauds the CAISO’s effort to move forward on defining a market vision and roadmap and to determine early in phase 2 of the initiative what fundamental market process reforms it will implement to support renewables integration. Stakeholders must understand how the fundamental market framework (both the day-of and day-ahead market structures) will change in order to meaningfully evaluate specific proposed market and product changes and their impacts on operating and investment decisions as well as on financial and other risks and their management. The CPUC Staff thus supports the general direction of the CAISO’s initial proposal as well as the effort to seek stakeholder input on broad fundamental design questions.

At this point in time, however, the CPUC Staff cautions that it is premature and unnecessary to commit to either of the two proposed options for revising the day-of market structure based on either 15-minute or 5-minute energy dispatch and pricing. Changing the real-time market design in a fundamental manner is a significant process that will require substantial effort and well-informed decision-making by stakeholders and the CAISO, and which has broad ramifications. The CPUC Staff recommends that the CAISO’s stakeholder process should allow additional time for stakeholder meetings where the CAISO would present (and obtain) additional analyses and information on the potential benefits and trade-offs of the competing (or other) market designs and proposed market products that would be critical components of the new markets. In

particular, the CPUC Staff suggests topics for further analyses and discussion under Question 9 below.

Further, achieving the stakeholder consensus necessary to support the comprehensive market changes being sought in the day-of and day-ahead market may require several iterations of draft proposals. The CAISO's stakeholder process should also assume (or at least allow for the possibility) of multiple draft proposals rather than assuming the CAISO will move in three steps from the initial to "final" proposal. The CAISO also should anticipate that the final day-of and day-ahead market designs may need to evolve after they are implemented by selecting a design that allows for reasonable evolution of the market design while minimizing the risk of disruptive changes that could impair contracting and investment decisions.

There are, however, various details and issues that are common to both of the proposed day-of design options and which the CAISO can continue to work on refining and clarifying with stakeholders. For example, stakeholders need to obtain and/or discuss additional information and implications on:

- how "mileage" based bids and payments for regulation and/or real time imbalance service would work,
- bi-directional regulation,
- whether to allow all generators or just VERs the opportunity to update schedules in 15 minutes intervals,
- what design features and products would fairly compensate the services and energy, and thus facilitate and incentivize participation by non-conventional resources (including demand response, storage, and distributed generation, as well as renewable generation with additional control capabilities), and
- how to avoid reliance on non-market administrative commitment and other non-market measures (and compensation) to provide needed flexibility.

Thus, the CAISO can continue to refine, flesh out and gain consensus regarding key reform elements and issues that are important regardless of which dispatch/pricing granularity option the CAISO ultimately pursues

The CAISO has not given sufficient justification for rushing through this stakeholder process as quickly as proposed. Narrowing the choice to one day-of dispatch/pricing design and eliminating others and proceeding to a "final" proposal by September 8, 2011 is premature. The CPUC therefore recommends that the ISO's proposed schedule and process allow for further refinement of *both* options A and B based on stakeholder comments in the near term and before stakeholders are asked

endorse one option over the other. The CAISO's two-day stakeholder meetings scheduled for August 10-11 should include further presentations by the CAISO on the benefits and trade-offs associated with both options, informed by additional details and by improved understanding of key issues common to both as noted above. Stakeholders should have an opportunity to subsequently comment before the CAISO elects to pursue fundamental day-of market redesign based on a 15-minute or 5-minute (or other) real time market energy dispatch and pricing platform.

2. Are there additional goals or operational challenges that the ISO should be addressing through this stakeholder process?

The CAISO should address in this initiative how potential market design changes would impact and interact with long term procurement and investment.

Further, goals for the initiative and criteria for evaluating proposals should include: (1) maximizing market participants' opportunities to predict and manage their own costs, (2) facilitating and incentivizing market participation by a range of existing and new services providers (including storage, demand response, price responsive demand, distributed generation, and supply-side renewable generation), and (3) minimizing reliance on involuntary constraints or other administrative measures and associated payments.

3. Please indicate whether your organization agrees with the guiding principles listed in the straw proposal. If not, please indicate why not. If you would like to have other guiding principles added, please describe those additional principles.

The guiding principles presented in the initial straw proposal appear to be generally reasonable, although the CPUC Staff asks the CAISO to add a Guiding Principle that encompasses the ideas of ratepayer protection and ensuring that market does not overcharge market participants.

There is currently no principle that is geared toward looking out for ratepayers or limiting as much as possible total renewable integration costs (which are ultimately borne by ratepayers). The CAISO has included as a Guiding Principle "cost-effective and implementable" and states that an expected outcome is that the market design should be "cost-effective to implement". While implementation costs may be a significant component of integration costs, they are only one component (and may only be significant in the near-term). The CAISO should include as a criterion for assessing the comparative merits of market alternatives their expected impact on the costs borne by market participants in general, and on total integration costs borne by load serving entities and their ratepayers.

The CPUC Staff does not have any further comments on the principles at this time, but requests that the CAISO explain more fully how Options A and B (with integration of a new Real Time Imbalance Service or "RTIS" into either option) would

satisfy the guiding principles. The CAISO should also explain if there are reasons why one option or the other would best satisfy the principles.

4. Please provide your organization’s views on any incremental ancillary services you believe are necessary to accommodate the intermittency of renewable resources.

The CPUC Staff is interested in learning more about the CAISO’s proposal for a new Real Time Imbalance Service (RTIS) product, as explained in response to question 8 below. The accompanying proposal to revise regulation to a single (up and down) service with generators operated closer to their set points also appears promising in conjunction with RTIS; however, it requires further assessment on the implications on the provision of regulation by non-conventional resources. Decisions regarding frequency response and inertia needs should be made after the CAISO releases the forthcoming report on this issue that CAISO staff described at the July 11 stakeholder meeting and after the CAISO clarifies other issues raised in the present straw proposal.

5. Does your organization believe that Residual Unit Commitment should be performed more granularly than daily (i.e. on-demand RUC)? Is on-demand RUC needed if the 15 minute unit commitment, either in RTED (Option A) or RTPD (Option B) looks forward 8-10 hours?

The CPUC Staff agrees that it may be beneficial to allow for a more flexible RUC than is provided by running RUC once daily, but that this decision point should occur later in this process. Key decisions and certain issues regarding the day-of market design issues need to be resolved before the CAISO decides to implement a more flexible or granular RUC. For example, the CAISO should explain:

- How would the intra-day RUC would work in connection with (or supplemental to) the day-ahead RUC within both Options (A and B)? How it would it be expected to impact the day-ahead RUC capacity procurement?
- How and to what extent would an intra-day RUC would interact with the RTIS product?
- What impacts would intra day RUC have on existing minimum online capacity constraints?
- What, if any, market manipulation risks could result from having capacity procurement mechanisms occur in the 72-hour, day-ahead, intra-day, and RTIS (1-minute) timelines?

6. Please provide your organization's views on replacing today's Hour Ahead Scheduling Process (HASP) for inter-ties with a simpler method that would not involve establishing separate hourly prices for the inter-ties and that would not include bid cost recovery. Please suggest proposals concerning what accommodations are necessary at the inter-ties to provide scheduling flexibility for western market entities.

The CPUC Staff agrees that it is important for the CAISO to determine how to address and mitigate uplift costs that have resulted from price arbitrage opportunities created by settling internal real time resources on a different time frame from the interties. In addressing this question, the CAISO should consider what steps, if any, could ensure that settling the interties at different times from real time energy does not create arbitrage opportunities. The CAISO should also consider and inform stakeholders on what, if any, other ISOs have a HASP-type market for scheduling imports and exports on the interties.

The CAISO also suggests that switching to a 15-minute real time market (Option A) could allow for better coordination with other Balancing Authority Areas, including settling the interties on the same schedule as internal resources.¹ The CAISO should provide further analysis to illustrate why and how adopting Option A would make it more likely that all resources (internal and external) could use the price set during the real time energy dispatch.² If there is sufficient support for this belief it could suggest a strong reason for stakeholders to prefer Option A. There should be further discussion and clarification of how such benefits depend on if and how the west moves to shorter scheduling on the interties.

7. Does your organization prefer a two settlement market or a three settlement market? Please describe why.

The CPUC Staff continues to agree with the CAISO that the effort and complexity of implementing a full hour-ahead market is unlikely to be justified by the benefits of a full hour-ahead market.³ The CPUC Staff recommends considering such a major reform only if the demonstrated benefits (for example, if it would improve opportunities for load participation, or improve renewable generation scheduling and risk management) outweigh the disadvantages.

¹ See CAISO Initial Proposal, p. 24.

² Id. at 25

³ See Comments of the CPUC Staff on Phase 2 Discussion & Scoping Paper (May 3, 2011) at 4.

8. Please provide your organization’s feedback on the concept of a 1 minute Real Time Imbalance Service (RTIS).

a. Does your organization agree that with RTIS, regulation should be changed to a bi-directional service?

The CPUC Staff might support changing regulation to a bi-directional service. However, before the CPUC Staff can support that proposal the CAISO should provide additional assessments of:

- potential disadvantages of changing to a bi-directional regulation, including the additional costs to design and implement the change weighted against expected benefits;
- other RTO/ISO experiences with bi-directional regulation;
- the likely and desirable amounts of travel from their MW set points regulation-providing generators might experience, how this may depend on amounts and methods of procuring regulation and RTIS, and how such reduced travel from set-points may facilitate participation by nonconventional regulation sources;
- if and how “mileage” and mileage compensation rates would be used to select and compensate regulation (and RTIS) providers, considering that while bid-based mileage compensation appears attractive from a market incentives perspective, its unintended consequences and its experiences (if any) at other ISOs/RTOs need to be assessed.

b. Is one minute the correct dispatch interval for RTIS?

The CPUC Staff cannot offer an opinion on this question at this time. Decisions on the correct dispatch interval should take into account the design of the real time dispatch/pricing granularity and the revised design of the regulation product, including expected maximum deviations from generator set points.

c. How should RTIS be bid, selected, and dispatched? Should a mileage bid be used for dispatch with a market clearing mileage price determined each minute?

The number of separate parameters for selecting and optimizing RTIS need to be clarified, such as whether it will be based on MW ramp/minute, MW ramp per set interval, total up or down energy available per interval, mileage compensation rate, mileage limit, or another parameter.

The CPUC Staff believes that market-based mileage rates may be desirable (particularly compared to administrative rates) but is concerned that the potential for gaming or excessive compensation is unclear and needs to be assessed. The CAISO should also address what would be the consequences of failing to perform in accordance with the dispatch, in order to ensure that deviation penalties are appropriate in light of reliability needs. The CAISO and stakeholders also need to assess how the amount of anticipated mileage payments made under the RTIS would differ under a 15-minute or 5-minute dispatch interval.

d. Does your organization’s opinion on RTIS differ depending on whether Option A or Option B is chosen?

The CPUC Staff’s opinion of the desirability and design options of the RTIS could be largely independent of whether Option A or B is selected. On the other hand, CAISO and stakeholder preferences for the RTIS design, and expected performance of the RTIS product, may differ under Option A or B and may provide a basis for favoring Option A or B.

The CPUC Staff therefore requests that the CAISO clarify how much RTIS it expects would be required under Option A (with its longer energy dispatch interval) compared to Option B. The CAISO should also explain if Option A would provide a superior coupling with the RTIS product; for example by allow RTIS to be deployed in a feasible manner that reduces or avoids the need to rely on administrative commitment constraints and compensation. In short, whether the CAISO *should choose* Option A or Option B may be differ depending on how the RTIS is expected to work under each market structure.

9. Please comment on your organization’s preference for Option A or Option B with regard to the real time market. If neither option is feasible in your view, please provide input on how the real time market should be configured.

a. Would 15 minute real time prices enable price responsive demand or demand response?

It appears possible that 15-minute real time pricing may facilitate participation through economic bidding in the real time market by non-conventional resources including price responsive demand and demand response—and also renewable generation and storage. This question should be further assessed based on analysis and stakeholder views. If true, this could be a reason to favor Option A.

b. In Option A, with 15 minute RTED, what is your organization’s opinion about a 10 minute ramp period?

CPUC Staff offer no comment at this time on the 10 minute ramp period.

Additional response to Question 9:

The CPUC Staff is very interested in the CAISO's proposal to potentially switch to a 15-minute real time market but need additional analyses and information before it will be able to express a preference for one proposal (A or B). This is especially due to the fact that, despite its potential benefits, a less granular 15-minute energy market could push more integration costs into non-energy services as opposed to direct energy prices.

The CPUC Staff feels that the CAISO's presentation and discussion of Options A and B, as well as the bi-directional regulation and RTIS products, has been very constructive and is a useful foundation. Nevertheless, additional discussions and analysis are needed to support these decisions, and the CPUC Staff understands there is still sufficient lead time to allow for more discussion and analysis. There is simply not enough of a basis right now to decide between the 5-minute or 15-minute real-time market structure.

Questions that the CAISO should more fully address and that stakeholders should weigh in on include at least the following:

- (1) How does each proposal meet the “guiding principles” and (separately) the “operational challenges” laid out in the market vision and roadmap? Is one option significantly better in this regard?
- (2) Would either proposal provide better opportunities for (or otherwise affect) ability to efficiently integrate and utilize participation by important new elements of the future market, including renewable and distributed generation, storage technologies, and demand response?
- (3) How much would it cost and how much time would be needed to implement each proposal? How does the CAISO expect each option would impact costs borne by market participants?
- (4) How would each option affect the efficient, transparent and fair allocation of renewable integration costs? Would either option better facilitate allocating costs to the market participants who can best manage the costs and risks?
- (5) How might selecting a 15-minute market (Option A) or a 5-minute market (Option B) impact the need for CAISO to rely on administrative solutions such as flexi-ramp commitment and compensation to reliably meet ramping requirements, avoid price spikes driven by shortage of ramping capability, and mitigate overgeneration? If Option A would better facilitate reliance on market signals rather than administrative procedures and compensation (because it allows co-optimization of energy, ancillary services, and unit commitment, or for any other

reasons to be revealed) this might be an important reason to support Option A over Option B, and should be more fully assessed.

- (6) The CAISO should provide its own assessments of whether either option would facilitate better participation by renewable generators. This question should also take into consideration comments submitted by renewable generators and those who procure and schedule their output.
- (7) The CAISO should provide additional assessments that explore how scheduling and pricing on the interties would be affected by each proposal, including the need to avoid creating price arbitrage opportunities and taking into account stakeholder responses to Question 6.

10. How often should renewable resources be allowed to schedule?

- a. **In Option A does every 15 minutes make sense?**
- b. **In Option B should renewable generation be able to schedule every 5 minutes, 15 minutes, or some other time interval?**

Response to Questions 10(a) and (b):

The CPUC Staff believes system forecasting benefits can result from allowing renewable resources to schedule as frequently as practical, perhaps down to the granularity of the energy dispatch interval. Deciding on the correct interval requires further assessment of financial risks and benefits (and thus scheduling incentives) that would result from allowing renewable resources to schedule more granularly. At a minimum, 15-minute scheduling appears to be desirable. Shorter intervals could be pursued if justified by technical support and stakeholder input.

- c. **Does it make sense to limit this scheduling opportunity to only renewable resources, or should it apply more generally? Who should be able to schedule more granularly than hourly?**

The CPUC Staff does not provide a view at this time regarding whether more granular scheduling should also be provided to other generators. The CPUC Staff would like to review feedback from conventional generators as well as additional analysis and discussion of potential results of allowing more (or all) resources to schedule more granularly than hourly. The CAISO should also analyze market manipulation risks and how to ensure that it has in place adequate market power mitigation measures if all resources are allowed to schedule more granularly.

11. Please provide any other comments your organization would like the CAISO to consider through this initiative

No response at this time.