



Comments of Pacific Gas & Electric Company

Day-Ahead Market Enhancements Initiative Phase 1– Third Revised Straw Proposal

Submitted by	Company	Date Submitted
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PG&E has been supportive of CAISO’s efforts to modify the Day-Ahead Market to enable it to better position system resources for the granularity differences and uncertainty in the real-time market. However, PG&E is concerned with the current progress of the initiative. PG&E would note that the Day Ahead market represents upwards of 90% of the total system costs that clear in the CAISO market from year to year. Changes to the market structure on the level envisioned in this initiative represent the most direct impact on the bills that Californian ratepayers and PG&E customers would face. Because of the potential impact, the CAISO must demonstrate a.) the feasibility of the benefits the market can realize through the changes to the market structure and b.) a fully vetted implementation timeline that includes sufficient testing for market participants. Up to this point, the CAISO has not met this bar.

For PG&E to support this initiative moving forward, the CAISO must provide stakeholders with a detailed technical feasibility study that demonstrates the optimization engine can maintain the current level of performance in a robust manner and a full implementation plan that includes input and feedback on the timing needs of market participants. Additionally, the CAISO must commit to launching this change in a stand-alone release, so market participants can evaluate the change in the system, rather than in a release with multiple changes at once. Only after the CAISO has provided these critical details can PG&E support moving forward with this initiative. PG&E continues to believe that there are real market efficiency benefits associated with increased granularity but, as it currently stands, the CAISO has not demonstrated that those benefits outweigh the risks of market disruption.

PG&E offers the following comments and summarized as follows:

1. PG&E cannot support this initiative moving forward unless CAISO provides stakeholders with a detailed technical feasibility study and a full implementation plan in its next proposal.
 2. In terms of market design, PG&E urges CAISO to keep the existing Residual Imbalance Energy structure, to not allow bid minimum load costs to vary within an hour, and to move discussions about NGR providing Ancillary Services to the ESDER 4 initiative.
 3. PG&E recommends that CAISO consider alternative solutions in case 15-minute granularity is not feasible.
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1. PG&E cannot support this initiative moving forward unless CAISO provides stakeholders with a detailed technical feasibility study and a full implementation plan in its next proposal.

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The time interval is a fundamental building block of the Day-Ahead Market, and a change of this scale greatly affects the day-to-day operations of a scheduling coordinator and indeed nearly all electricity consumers in California. Thus, it is critical to consider implementation concerns during the policy design phase, so PG&E recommends that CAISO start to address implementation issues in its next proposal. Moving forward, it is important for stakeholders to have the opportunity to weigh in on both feasibility and implementation concerns. PG&E cautions CAISO against moving too quickly in a way that does not give stakeholders adequate time to properly evaluate both the feasibility as well as the implementation impacts.

Regarding feasibility, PG&E urges CAISO to provide comprehensive data on the performance of the optimization engine with the increased time interval granularity before moving forward. Information on the number of simulations run, frequency of infeasible solutions, average run time, etc. should all be provided in the form of a technical feasibility study rather than as a call with stakeholders. Additionally, CAISO needs to demonstrate the ability to adhere to the same optimization standards even with the increased computation load.

Turning to implementation, PG&E requests that the CAISO Policy Team work together with the CAISO Implementation Team to provide a detailed plan to stakeholders including:

- a. thorough data transition structure,
- b. at least 3 months of unstructured market simulation time,
- c. high level test plan details,
- d. a matrix of all the market system affected by the changes,
- e. integration plan with stakeholder input,
- f. a mechanism for ongoing consumer participation, and
- g. a commitment to release ONLY this change during a release period.

Significant time for unstructured market simulation allows market stakeholders to test changes in bidding behavior that the CAISO is assuming will materialize in the form of benefits associated with the increased granularity (e.g. load and imports bidding in a lower granularity, impact of bid cost recovery, etc.). The commitment to release only this change during a release period is important because concurrent releases will make it difficult to parse out which change affected market outcomes in case of market anomalies.

This plan and technical study must be provided to market stakeholders before the CAISO staff brings this initiative to either the Energy Imbalance Market Governing Body or the CAISO Board of Governors. PG&E would note that the current timeline does not provide for enough time to achieve all of these milestones. PG&E would encourage the CAISO to delay work on Phase 2 in favor of achieving these critical elements.

2. In terms of market design, PG&E urges CAISO to keep the existing Residual Imbalance Energy structure, to not allow bid minimum load costs to vary within an hour, and to move discussions about NGR providing Ancillary Services to the ESDER 4 initiative.

PG&E has three market design related concerns with the current proposal. The first regards the proposed change to the Residual Imbalance Energy structure. We disagree with the proposed change to Residual Imbalance Energy and would urge the CAISO keep the existing structure to prevent strategic bidding changes that can result in undue bid cost recovery revenue.

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Second, PG&E would like CAISO to clarify whether CAISO intends to allow market participants to vary their minimum load costs calculation on sub-hourly granularity. CAISO cited that scheduling coordinators requested fifteen-minute bidding granularity during the stakeholder process because it will enable suppliers to reflect fuel costs, particularly for natural gas that may change during an hour. PG&E is not aware of any valid minimum load costs that would have sub-hourly variability that would not be reflected in the incremental energy bids. Unless the CAISO can provide examples of valid costs (or receives some from market participants) PG&E cannot support the ability to vary minimum load bids within the hour.

Lastly, PG&E recommends that CAISO remove the section on Non-Generator Resources (NGR) Providing Ancillary Services from this proposal. This section proposes implementing a resource constraint in the real-time market to ensure that the state of charge supports ancillary service awards. It is inappropriate to consider this proposal as part of this initiative and, instead, changes to the AS provision for NGR resources should be discussed under ESDER because (a) management of state of charge in the real time markets is not visible to market participants, who have no information other than their own telemetry on which to base a guess as to CAISO's estimate of state of charge at the beginning or during the horizon of a real time market run; (b) the ESDER4 proposal is considering ways of enabling market participants to provide state of charge information for both the day ahead and real time markets, and this change would have to be considered in light of that proposal; (c) the proposal as currently worded does not clarify whether it affects only incremental procurement of ancillary services, or would potentially lead to buy-back or no-pay with respect to day ahead awarded ancillary services. For all these reasons, PG&E requests that this section be removed from the DAME proposal and moved into the ESDER4 proposal for consideration there.

3. PG&E recommends that CAISO consider and evaluate alternative solutions in case 15-minute granularity is not feasible.

PG&E understands that the computation complexity of optimizing for 96 intervals is vastly greater than optimizing for 24 intervals. Given the original scope of the initiative (which included the DA Flexible Ramping Product), PG&E believes CAISO has not given enough time to develop sufficient alternatives to the current approach. PG&E suggests the following as potential alternatives if the 15-minute granularity proves too technically difficult to develop:

- Intra-hour ramp product: Given that CAISO is only considering hourly unit commitment for all resources, market participants may not elect to bid in sub-hourly load. In that case, CAISO may be better off remaining with an hourly schedule plus a ramp product to procure ramp for intra-hour ramping needs. This could also prove useful if the 15-minute market granularity is infeasible.
- Ramping Hour 15-minute granularity: CAISO could evaluate implementing the 15-minute granularity for a subset of the hours in a day, for example, during specific ramping hours that will provide the most benefit to stakeholders. This creates a large amount of implementation and system problems but might prove less burdensome computationally.

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- Other ideas: In the event the 15-minute time step proves infeasible, the CAISO should pause the development and restart the stakeholder process with a set of ideas and solutions rather than proceeding with a flexible ramping product first approach.