



## Stakeholder Comments Template

### Day-Ahead Market Enhancements Phase 1 Initiative

This template has been created for submission of stakeholder comments on the straw proposal that was published on February 7, 2020. The proposal, February 10, 2020 Stakeholder meeting presentation, March 5, 2020 Stakeholder call presentation, and other information related to this initiative may be found on the initiative webpage at: <http://www.caiso.com/StakeholderProcesses/Day-ahead-market-enhancements>

Upon completion of this template, please submit it to [initiativecomments@caiso.com](mailto:initiativecomments@caiso.com). Submissions are requested by close of business on March 26, 2019.

Submitted by	Organization	Date Submitted
JK Wang (415-973-5162)	Pacific Gas & Electric	March 26, 2020

PG&E supports CAISO's effort to improve the Day-Ahead Market. To fully support the proposal, PG&E requests the CAISO provide more detailed explanation and examples that illustrate:

- How the prices of Energy and Reliability Energy (REN) arise in the market optimization
- Full settlement implications of proposed products and assurances of fair cost allocation

**Please provide your organization's overall position on the DAME straw proposal:**

- Support
- Support w/ caveats
- Oppose
- Oppose w/ caveats
- No position

**Please provide written comments on each of the straw proposal topics listed below:**

- 1. New day-ahead market products, including reliability energy, reliability capacity, and imbalance reserves.**

PG&E is interested in the proposed new products in the DA market and believes that changes along the lines proposed may add value, provided that they are properly designed and thoughtfully implemented. However, to ensure transparency and effectiveness of the prices of these products, we request that CAISO provide more detailed explanation and examples for the following points:

- a. PG&E is concerned that participants may still have an unclear understanding of how the prices for Energy, Reliability Energy and Reliability Capacity Up and Down, and Imbalance Reserves arise in the market optimization. The simple examples that CAISO gave in the March 5<sup>th</sup> presentation were helpful but may not give a complete picture of how these products and others interact to produce the prices. We request CAISO provide:
  - o Numerical examples of the products' interaction with transmission to level set participant understanding of the CAISO proposal. For example, more detailed examples that show the dynamic interactions among the market products, *i.e.*, how schedules of the various products would respond to an increment of demand at a node in the presence of constraints such as transmission limits and how their response would give rise to the LMPs for energy.
  - o Examples of how the schedules of the various products respond to an increment in the CAISO forecast energy at a node and how the schedules respond to an increment of Imbalance Reserves requirement would be helpful. The examples should show how the responses give rise to the prices of the products.
  - o A spreadsheet that participants could use to explore the scheduling decisions in the market and resulting prices.
- b. Details of how the prices will be used in settlements, including formulas and charge codes. This is important, since the charges and payments to participants provide the incentives for how participants will bid in the market and how they will respond to dispatch signals.
- c. In the presentation on Feb. 10<sup>th</sup> <sup>1</sup>, page 31, it is mentioned:

*“Efficient procurement of imbalance reserves and reliability capacity should consider the energy and capacity costs of the resource.”*

*“Imbalance reserves and reliability capacity should be awarded to resources with lowest combined energy and capacity costs.”*

And *“CAISO is considering mechanisms to reflect combined energy and capacity costs.”*

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<sup>1</sup>Day-Ahead Market Enhancement Straw Proposal, Stakeholder Meeting,  
<http://www.aiso.com/InitiativeDocuments/Presentation-Day-AheadMarketEnhancements-Feb10-2020.pdf>

We have the following requests for clarification:

- i. We request that CAISO clarify the meaning of “combined energy and capacity costs.” For example, is this a weighted algebraic combination of energy and capacity cost? CAISO should also show how using this combination of bid costs would affect bid selection and awards.
- ii. PG&E is concerned that combining bid costs for energy and capacity when scheduling Imbalance Reserves and Reliability Capacity and calculating their prices could lead to participants overpaying for energy in DAME.

For example, when the Day-Ahead Market clears RCU, the RCU offered by a resource would be evaluated based on a sum or possibly a weighted average of the resource’s RCU bid cost and its Energy bid cost. As a result, the market clearing price for RCU could include both Energy costs and Reliability Capacity Up costs. Consequently, participants could pay a price for RCU that covers both Energy and Reliability Capacity Up costs. However, RCU is not scheduled to produce Energy in the Day-Ahead Market but only must be available for dispatch in the Real-Time Market. In the Real-Time Market, the Resource that provides RCU in Day-Ahead may be dispatched to produce Energy. It would then be paid the clearing price for the Energy it produces at that time.

Thus, a resource that provides RCU in Day-Ahead would be paid a clearing price that includes an energy component, even though RCU does not provide energy in the Day-Ahead Market. When the resource meets its requirement to offer the RCU into Real-Time, the capacity could be dispatched and be paid again for energy in Real-Time.

## **2. Settlement and cost allocations.**

The information in the proposal is insufficient to evaluate the proposed settlement and cost allocations. PG&E requests clarification of the settlement rules for Energy, Reliability Energy, and CRRs. We also request additional details on the settlement rules for RCU, RCD and Imbalance Reserves. We request that CAISO provide more detailed explanations and examples of settlement rules in Appendix C, including

- Charge code matrix showing the calculation of payments of different types of resources,
- Scenarios of prices under proposed rules compared to those today,
- Examples of costs recovery of different types of resources.

## **3. Bidding rules and offer obligations.**

PG&E requests that CAISO provide additional details of how its proposal will tend to prevent gaming opportunities and ensure market fairness with the proposed new products.

In the proposal, CAISO mentions that a market participant could bid virtual demand and physical supply at the same location in such a way that both would be scheduled. In Real-Time, the participant could bid a high cost for energy from its physical resource to buy back its energy at the Real-Time LMP. The virtual demand would sell back its energy at the same Real-Time LMP. The participant effectively provides no actual energy and incurs no energy costs. However, the participant would receive a reliability energy payment for the energy scheduled on the physical resource without the resource actually being available in real-time.

To make this less likely, CAISO proposes to include cleared virtual demand in the cost allocation of the portion of reliability energy not corresponding to RCU/RCD. Thus, the reliability energy payment will be offset by the cost allocation to virtual demand.

PG&E would like more discussion of:

- The design of the disincentive to such a game,
- Any distortion to market incentives for use of virtual demands by participants for other purposes, such as that described below in Item 4 for VERs,
- The appropriateness to assign a portion of the reliability energy costs in DAM to virtual demands from participants that have no physical resources.
- Additional protective measures (such as limitations on virtual participation) and monitoring that CAISO and the Department of Market Monitoring could implement to reduce the impact of such gaming opportunities.

#### **4. Scheduling rules for variable energy resources.**

PG&E requests that CAISO clarify whether it plans to require that market participants use CAISO's VER forecast and to provide justification for such a requirement. On page 24, the Day-Ahead Market Enhancement Straw Proposal <sup>2</sup> recommends that market participants can submit virtual bids for any differences between the participants' forecast and CAISO's forecast. PG&E has the following concerns:

- a. Given the potential gaming opportunities in Item 3 above, will CAISO propose new rules for allocating a portion of costs for Reliability Energy not corresponding to RCU/RCD to all virtual bids? If so, how will those new rules affect the market participants' bidding process?
- b. Will the virtual bids employed generate other costs and how will they be allocated?

#### **5. Deliverability approach for reliability capacity and imbalance reserves.**

PG&E appreciates that CAISO took the effort to develop a nodal approach to improve deliverability accuracy of FRP and IR products. We request that CAISO address the two concerns below:

- a. Nodal approaches will likely be more computationally intensive than the zonal approach, which CAISO is currently deploying for FRP. We request that CAISO
  - Provide an estimate of the impact on solution times of the day-ahead optimization problem with the proposed approach,

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<sup>2</sup> <http://www.caiso.com/InitiativeDocuments/StrawProposal-Day-AheadMarketEnhancements.pdf>

- Compare it to the current computation complexity,
  - Discuss its implementation feasibility.
- b. On page 23, Section 3.9.4 of the technical description<sup>3</sup>, shift factors are used to formulate the FRP deployment scenarios for the proposed nodal approach. This formulation assumes forecasted uncertainties occur at the reference node (*e.g.* the load weighted demand nodes) and will lead to FRP being delivered to the reference node. Is CAISO only proposing to model FRP requirements as arising at the reference node? If so, is this adequate to treat uncertainty in VER production that is likely to be located at VER generation nodes?

## 6. Approach for congestion revenue rights.

PG&E requests that CAISO clarify and provide examples for the following points under the proposed approach:

- a. How will the target payment for each CRR be calculated considering that CAISO plans to separately model (i) transmission constraints on the flows resulting from the energy schedules in DAME and (ii) transmission constraints on the flows resulting from the Reliability Capacity schedules? For each CRR, will CAISO:
- i. Sum, over all transmission constraints that bind for the Energy schedules in DAME, the capacity on the transmission constraint used by the CRR to send a MW flow equal to the CRR size from the source node of the CRR to the sink node of the CRR times the shadow price of the constraint in the energy flow constraints?
  - ii. Sum, over all transmission constraints that bind for the Reliability Capacity schedules, the capacity on the transmission constraint used by a CRR to send a MW flow equal to the CRR size from the source node of the CRR to the sink node of the CRR times the shadow price of the constraint in the reliability capacity flow constraints?

Furthermore, we request that CAISO clarify

- Will the target payment to the CRR be the sum of these two values? If that is how CAISO plans to calculate the target payment to the CRR, it is likely that the revenue adequacy of the CRRs will decrease, since for the Reliability Capacity schedules, the CAISO only plans to collect congestion revenue for sending REN:EN (physical energy) from the sources of REN:EN to the reference node; It will not collect congestion revenue for RCU and RCD, even though they contribute to Reliability Capacity flows calculated in the transmission constraints and so to congestion.

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<sup>3</sup> <http://www.caiso.com/InitiativeDocuments/DraftTechnicalDescription-Day-AheadMarketEnhancements-AppendixC.pdf>

- The example CRR settlements in the presentation appear to assume that the CRRs will all sink at the reference node. There is no reason to believe that all CRRs will sink at the reference node. How would this assumption affect the revenue adequacy of the congestion rents collected to pay the CRRs their target values?
- b. It is not clear how a CRR would work as a factor to hedge the financial risks of market participants for moving Reliability Capacity from source supplying the capacity to the node, where it is required to meet CAISO forecast load.

## 7. Approach for local market power mitigation.

The proposed approach for local market power mitigation does not contain sufficient information for PG&E to evaluate. PG&E requests that CAISO clarify and address the following questions and concerns:

- a. How are the pivotal suppliers defined in the proposed LMPM of REN. Based on the Residual Supplier Index (RSI) definition, the pivotal suppliers are the ones, without whose *energy* bids the rest of market supply cannot satisfy the total demand. However, in the proposal, REN is calculated as  $REN = EN + RCU - RCD$ . How are those components (*i.e.*, EN, RCU, and RCD) mapped to the market participants in identifying the pivotal suppliers? And will it result in some participants being mitigated twice, since REN contains the energy component?
- b. What is the rationale behind mitigating REN, given there is no LMPM for ancillary services?
- c. What is the approach for setting reference bids of RCU/RCD?

## 8. Regression approach to determine the imbalance reserve requirement.

PG&E appreciates that CAISO took efforts to improve the accuracy of IR requirements by developing an approach considering both demand and VER. In the straw proposal, page 37, the proposed regression approach takes quantiles for each component (demand, wind, and solar) and uses their algebraic summation as the IR requirement. However, this summation could be far more than the actual quantile of a net demand, since the summation of the  $N$ -quantile of each component does not give the  $N$ -quantile of the sum. We request CAISO to justify the proposed approach with references from existing market practices or academic references.

## 9. Additional comments:

PG&E does not have additional comments.