California ISO

Stakeholder Comments Template

Hybrid Resources Initiative: Straw Proposal

This template has been created for submission of stakeholder comments on the **Hybrid Resources Initiative, Second Revised Straw Proposal** that was held on May 7, 2020. The meeting material and other information related to this initiative may be found on the initiative webpage at:
http://www.caiso.com/informed/Pages/StakeholderProcesses/HybridResources.aspx

Upon completion of this template, please submit it to initiativecomments@caiso.com. Submissions are requested by close of business on May 28, 2020**.**

Submitted by	Organization	Date Submitted
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Please provide your organization's comments on the following topics and indicate your organization's position on the topics below (Support, Support with caveats, Oppose, or Oppose with caveats). Please provide examples and support for your positions in your responses as applicable.

CPUC staff appreciates the CAISO's continued development of the Hybrid Resources Initiative. In the latest installment, CAISO has indicated that they plan to move forward with a final version of several parts of the proposal. CPUC staff has several questions on these parts of the proposal and we ask that the CAISO address these questions before moving forward. Issues of concern for CAISO's phase one include:
-location of resource pricing nodes relative to aggregate capability constraint
-definition of and relationships between high sustainable limit, aggregate capability constraint, dynamic limit, and
-reason for delays in implementing the full version of the aggregate capability constraint

In addition to these questions on the phase 1 items, staff have concerns about the implementation of the dynamic limit tool, and the ability of SCs to purposefully or accidentally use the dynamic limit tool to distort the market away from the most efficient outcomes. Finally, CPUC staff continue to urge the CAISO to consider seriously revising their market designs for hybrid and storage resources, to maximize the value that these resources can provide to the grid.

1. Terms and Defintions

CPUC staff have no comments at this time.

2. Market Interaction for Hybrid Resources

Dynamic limit tool

CAISO has proposed that each hybrid resource be able to submit a dynamic limit to be used by the market optimization to establish physical limitations of the resource; however, exactly what comprises this dynamic limit is unclear. CPUC staff request that the CAISO provide detailed examples of how a resource would calculate a dynamic limit. We request that the examples include the following:

- calculations over the entire fifteen-minute market (FMM) timeframe;
- examples of calculations for subsequent market runs;
- simultaneous calculations of High Sustainable Limit (as defined in the Revised Straw proposal); and,
- an explanation of the differences in meaning and in calculation between the Dynamic Limit and the High Sustainable Limit under different conditions.

CPUC staff would appreciate further clarity on the following questions::

1. Does the CAISO expect each hybrid resource to forecast its dispatch for charging and discharging as part of the dynamic limit?
2. Does the CAISO expect scheduling coordinators (SCs) to forecast their charging and discharging for all advisory intervals in each market run of the FMM?
3. How does the dynamic limit compare to the High Sustainable Limit described in the earlier proposal?
4. Does the CAISO anticipate addressing potentially harmful outcomes that could be caused by SCs changing their expectations of charging and discharging throughout the day?
    a. Example: if an SC for several hybrid resources submits forecasts predicting that the resources will be charging in an hour, this may prompt commitment of another resource to meet that expected load. If the SC then updates their expectations for the day and does not plan to charge in that hour, the other commitment will not be optimal. Alternatively, if the SC forecasts significant discharging at the same time, this could prevent another resource commitment.
5. How does an SC calculate and use the dynamic limit in the day ahead market?
6. Does the CAISO have a plan to monitor changes between day ahead and real time dynamic limits?

We understand that the CAISO intends to monitor the use of the dynamic limit in order to prevent and/or penalize misuse of the tool. CPUC staff would prefer that plans for this kind of monitoring were developed in advance and discussed with stakeholders. While there will always be some need for

creativity and improvisation in monitoring Staff would like to know what basic plans and base metrics would be in place to help report on the behavior of these resources and SCs.

Pricing co-located resources correctly
The CAISO has proposed to settle co-located resources that are behind a single point of interconnection (POI) constraint at the price that occurs on the grid side of the POI constraint. This is not optimal , and could lead to inconsistent incentives. If resources are paid according to the price on the grid side of the constraint, the paid price will be higher than the price which is used to dispatch the resource. In that case, the resource will have an incentive to deviate above their dispatch point to increase profits.

Like any other constraint in the CAISO system, Staff believes that the resources should be paid in a way that incorporates the constraints that limit dispatch of the resource. In this case, that means pricing the resources with the price that occurs at the resource side of the POI constraint and not the grid side of the constraint. Incorporating the cost of that constraint into the prices for resources that are subject to the constraint is vital to a functioning market. CAISO should price the resources behind the POI constraint correctly, at the resource side, and devise a way to allocate the congestion revenue that results from that pricing.

3. Point-of-Interconnection (POI) Constraint for Co-Located Resources

Staff believe that the POI constraint, the aggregate capability constraint, and the interconnection rights constraint are all the same thing. If this is not the case, staff request that the CAISO clarify differences among these terms.

CPUC staff support the concept and design of the interconnection rights constraint and advocate for implementation of the full constraint, including ancillary services (AS), as soon as possible. This is in contrast to the CAISO's proposed phased schedule of implementation. CAISO's proposal states that they first plan to implement a constraint that will ensure that the total energy output from the co-located resources does not exceed the iinterconnection rights, and will later add AS into the constraint. Until AS are added, resources that use this constraint will not be able to sell AS. From a programming standpoint, the full constraint does not appear to be much different than the energy-only constraint. Implementing the full constraint would allow these resources to continue to provide AS while enforcing the constraint. The phased implementation that the CAISO has proposed may take many resources out of the AS market for some time. Staff asks, as we did in comments on the previous proposal, that the CAISO elaborate on the difficulties in implementing the full version of the constraint.

Page 17 of the revised proposal suggests a different use of the aggregate capability constraint than what we currently understand. In reference to a hybrid solar-storage resource that isforecast to produce 20 MW less than maximum output, the proposal suggests that "... the absence of the additional 20 MW of solar output should be captured by the aggregate capability constraint." Staff believe that this is a reference to the forecast of the resource, but that the forecast changes would help to set the dynamic limit and not the aggregate capability constraint. This example seems to suggest that the aggregate capability constraint can be used for forecasts or other temporary differences. CPUC staff understand the aggregate capability constraint to be something closer to a master file

value, which will not be changed regularly. Staff request that the CAISO clarify this example and how the aggregate capability constraint would be used to reflect charging restrictions or forecast output.

4. Metering

CPUC staff have no comments at this time.

5. Resource Adequacy

CPUC staff request that the CAISO provide further details regarding how the various outages and constraints available to hybrid resources would interact with the Resource Adequacy Availability Assessment Mechanism) RAAIM or other Must-Offer Obligation evaluation metrics. With the multitude of different limits and parameters that are involved in operating hybrid resources, it will be important to think carefully through how they interact with compliance mechanisms. Carefully considering those interactions beforehand will be important to avoid unwanted confusion later in implementation.