



Stakeholder Comments Template

Submitted by	Company	Date Submitted
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CESA applauds the CAISO's efforts to better account for flexible ramping needs in grid operations. However, CESA would like to request clarity about the implementation of the Proposal in relation to energy storage.

Specifically, CESA asks the CAISO for additional clarity around the manner in which the multi interval optimization functionally accounts for energy storage resources. CESA would like to understand how the CAISO's optimization would work in tandem with energy bids to enable the most operationally beneficial dispatch of energy storage resources.

Functionally, energy storage resources should be highly useful for assisting with the CAISO's ramping needs. Most energy storage resources are able to provide several benefits in comparison to conventional resources. The majority of energy storage resources can:

1. Ramp quickly, often to full capacity in a single interval
2. Start and stop without penalty or BCR costs
3. Provide both downward and upward ramping as needed

These characteristics should enable highly effective flexible ramping from energy storage resources.

However, energy storage resources also generally share two characteristics that may be challenging within a bidding, optimization, and dispatch scheme oriented around traditional generators.

1. Energy storage does have a limitation on its ultimate energy charge or discharge capability. Correctly managed, an energy storage resource should be a highly available resource, contributing to ramping needs throughout the day. However, an inefficiently dispatched storage resource could be exhausted part way through the day, limiting its availability in providing grid services. CESA would simply like to better understanding how the bidding and optimization could work together to maximizing the availability of storage resources in order realize the greatest reliability benefit for the grid.

2. Energy storage energy costs for both positive and negative dispatch will depend upon the energy used to charge the storage resource. Once again, optimal dispatch could see energy storage resources providing energy to the grid at costs below that of conventional resources. Suboptimal dispatch could result in the reverse scenario. CESA again would like to better understand how bidding could work with the optimization algorithm to provide the lowest cost dispatch of energy to the grid.

CESA requests that the CAISO provide several examples of how energy storage bids would be awarded according to the multi interval optimization to ensure appropriate energy storage dispatch throughout the day.

CESA understands that the resource bids are the responsibility of the Scheduling Coordinator; however, as the CAISO's multi-interval optimization will be responsible for which resources are selected during certain intervals, CESA would like to better identify how energy storage resources should bid to ensure that they are dispatched appropriately.

Overall, it appears as though the flexible ramping product is being oriented around compensating conventional generators for their opportunity costs when they do not dispatch energy. However, the proposal does not appear to take into account the opportunity costs of inefficient dispatch of highly flexible resources like energy storage and some demand response resources. CESA requests that the CAISO explain whether our understanding is correct, and if not, how the proposal could be modified to account for such opportunity costs.

CESA appreciates the opportunity to provide these comments, and welcomes an open dialogue related to these issues.