



**COMMENTS OF NV ENERGY
ENERGY STORAGE AND DISTRIBUTED ENERGY RESOURCES PHASE 4
ISSUE PAPER
DATED MARCH 18, 2019
CAISO STAKEHOLDER PROCESS**

April 1, 2019

NV Energy appreciates the opportunity to comment on the CAISO's Issue Paper for the Energy Storage and Distributed Energy Resources Phase 4. Additionally, NV Energy generally supports the direction of this initiative. CAISO and stakeholders have identified three issues for potential enhancements for storage resources. Overall NV Energy is supportive of the proposed enhancement to allow state-of-charge management in the Real-Time Market. However, it is too early in the initiative for NV Energy to provide an opinion on the multi-interval optimization and storage Default Energy Bid issues.

I. Real-time State of Charge Management

CAISO has proposed to enhance the real-time market by allowing market participants to submit the desired state-of-charge for future hours throughout the day. This enhancement would allow market participants to position storage resources in real-time without removing bids or submitting self-schedules. This proposal would add an additional tool for scheduling coordinators to manage the resource in the real-time market. Therefore, NV Energy supports this proposal.

II. Multi-interval Optimization

Stakeholders identified an issue where storage resources maybe uneconomically awarded energy in the real-time market when comparing the Locational Marginal Price to the bid curve. CAISO has stated that this occurs infrequently and is due to the advisory optimization horizon. Resources may receive Bid Cost Recovery if the total revenue from the day is less than the total costs, therefore, CAISO is not proposing a solution for this issue. NV Energy agrees with other stakeholders that it might be easier to understand the issue described in slide 16 - 17 with additional information on the optimizations advisory awards and its impact to dispatch. Additionally, NV Energy would like to know whether this issue occurs in the Day-Ahead Market or is this only a Real-Time Market problem.



III. Energy Storage Default Energy Bid

CAISO proposes to create a Default Energy Bid (DEB) for storage resources within this stakeholder initiative. NV Energy will support a storage DEB that appropriately captures the resources costs plus lost opportunity costs. It is important that the DEB is set at a high enough level to prevent the resource from being discharged prematurely. Meaning that mitigation has resulted in the resource exhausting all discharge energy prior to the evening ramp and peak hours. CAISO recently designed a hydro storage DEB that utilized a minimum bid level as a safe guard to prevent uneconomic dispatch during mitigation. NV Energy proposes that a similar method for a minimum bid calculation be established for the storage resource DEB. CAISO has initially proposed to consider a DEB that is set at the forecast peak energy price of the day. Day-Ahead Market peak prices may be easier to accurately forecast than Real-Time Market peak prices. Therefore, NV Energy requests more information about the proposal before providing an opinion. CAISO's proposal assumes that a storage resource's lost opportunity costs are the daily trough and peak prices that occur. However, NV Energy is not convinced that this is the lost opportunity cost for storage resources. Stakeholders mentioned that storage resources may have daily cycle limitations and total lifetime cycle limitations. Therefore, the lost opportunity cost might occur from not being able to take advantage of future peak prices later within the year.