



Submit comment on Hybrid Resource Draft Final Proposal

Initiative: Hybrid resources

1. Please provide your organization's overall position on the Hybrid Resources draft final proposal:

Choose:

- Support
- Support with caveats X
- Oppose
- Oppose with caveats
- No position

2. Provide a summary of your organization's comments on this proposal:

CalCCA appreciates the CAISO's continued efforts to develop and refine market participation rules for hybrid resources and co-located resources. CalCCA's comments focus primarily on the following issues.

- I. Improving CAISO's ability to optimize storage resources in the real time market:
CalCCA encourages CAISO to redouble its efforts to identify a better real time solution than the proposed minimum charge requirement. If it is not feasible to have a longer RTD time horizon than 65 minutes, CAISO should consider one or two reruns of the DAM prior to the beginning of each day and/or prior to the start of the daily storage charging hours.
- II. Addressing downward VER deviations for co-located resources:
CalCCA continues to support CAISO allowing for downward VER deviations to be offset by reduced co-located resource charging deviations to avoid unnecessary grid charging. These deviations are necessary to allow storage resources with Investment Tax Credit (ITC) charging restrictions to choose the co-located configuration without risking inadvertent grid charging that can occur because of VER forecast error between the time storage resource bids must be submitted and energy is produced by the VER in real-time.

3. Provide your organization's feedback on the market interaction for hybrid resources proposal, as described in the draft final proposal:

CalCCA is concerned that CAISO's "optimization" of hybrid resources in the day-ahead market will be suboptimal, since it will be limited by the collective educated guesses of the hybrid resource operators about which hours will be preferred for charging and discharging of the storage component. Because hybrid operators could face the risk of infeasible day-ahead discharge schedules, we anticipate that these operators may choose to essentially self-schedule day-ahead a

potentially significant portion of their combined hybrid resource capability. Unfortunately, this result may be an unavoidable aspect of the hybrid structure, but it points up the importance of making the co-located configuration as attractive as possible for resource owners. This is because the co-located configuration allows the CAISO to optimize each component of the co-located resource. We therefore urge the CAISO to reconsider its decision to not allow co-located storage resources to deviate from dispatch instructions when necessary to avoid inadvertent grid charging as further described in our response to Question 6.

CalCCA reiterates its comments on the RA Enhancements 5th Revised Straw Proposal that CalCCA continues to be concerned about CAISO's inability to optimize storage resources in the real-time market. The examples in Tables 14 and 15 of the RA Enhancements 5th Revised Straw Proposal illustrate the inefficiencies that will be created by this failure. For example, Table 15 shows that 50 MWh of available bid-in storage energy that otherwise would have cleared the RTM for HE18 is blocked by the 80 MWh minimum charge requirement and then none of the energy that was being preserved by the minimum charge requirement clears any of the subsequent intervals. This outcome will result in increased costs for consumers and increased risks for generators. The minimum charge requirement is a poor substitute for a better optimized real-time market solution with a longer time horizon to avoid the suboptimal result illustrated by Table 15.

CalCCA encourages CAISO to redouble its efforts to identify a better real time solution. If it is not feasible to have a longer RTD time horizon than 65 minutes, CAISO should consider one or two reruns of the DAM prior to the beginning of each day and/or prior to the start of the daily storage charging hours. The results of the DAM rerun(s) would have the benefit of much better-informed load and VER forecasts, additional information regarding generation and transmission outages, and more up-to-date storage state of charge information from the RTM. The DAM rerun could then be used to set minimum charge requirements that would be better aligned with RTM conditions for the remainder of the RTM intervals.

4. Provide your organization's feedback on the forecasting and dynamic limits proposal, as described in the draft final proposal:

CalCCA supports CAISO's forecasting and dynamic limits proposals, as described in the draft final proposal.

5. Provide your organization's feedback on the proposal to enhance the aggregate capability constraint for co-located resources, as described within the draft final proposal:

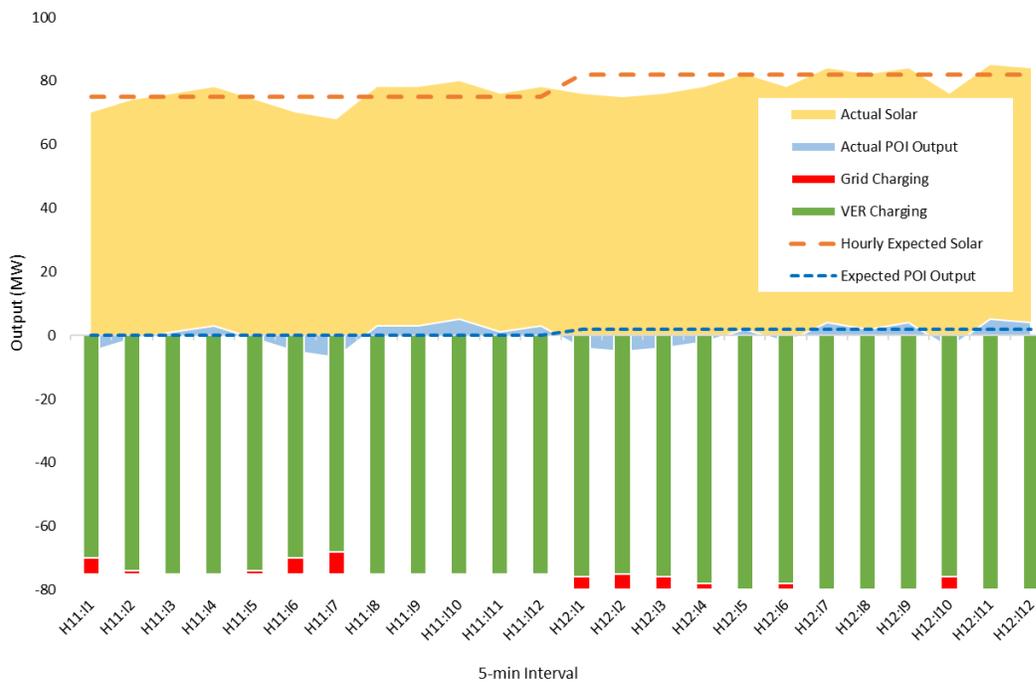
CalCCA supports CAISO's proposal to enhance the aggregate capability constraint for co-located resources, as described in the draft final proposal.

6. Provide your organization's feedback on the proposal to allow co-located storage resources to deviate from dispatch instructions to allow for offsetting VER variation, as described within the draft final proposal:

While the proposal to allow co-located storage resources to deviate from dispatch instructions to allow for offsetting VER variation described in the draft final proposal is a step in the right direction, it falls short. CAISO also should allow for downward VER deviations to be offset by reduced co-located resource charging deviations. These deviations are necessary to allow storage resources with Investment Tax Credit (ITC) charging restrictions to choose the co-located configuration without risking inadvertent grid charging that can occur because of VER forecast error between the time storage resource bids must be submitted and energy is produced by the VER in real-time. Figure 1

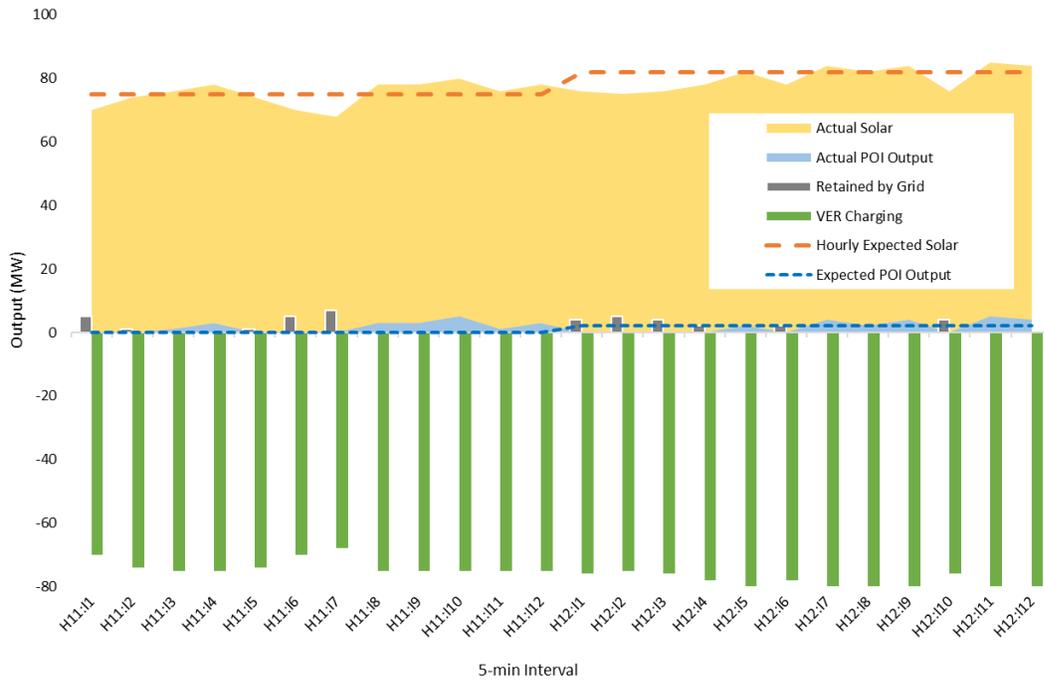
below illustrates how these forecast error deviations would occur if CAISO does not allow co-located storage resources to deviate from their Dispatch Instructions under the circumstance in which the co-located VER deviates in the downward direction below the level of charging Dispatch Instruction for the co-located storage resource. The inadvertent grid charging that would result either will reduce the ITC benefits of the storage resource or will motivate resource operators to schedule their co-located resources in such a manner that CAISO will not have as much storage capacity available to it or will have more upward uninstructed imbalance energy from VER resources. Neither outcome is desirable.

Figure 1. Output without Downward Deviation Rule



CalCCA urges CAISO to allow the co-located storage resource to deviate from its charging schedule as necessary to avoid inadvertent grid charging due to real-time market VER forecast error. We understand that there may be a concern that this will result in the co-located storage resource having a reduced state of charge for subsequent use. We believe that this concern does not acknowledge the likelihood that either i. some other storage resource that is providing regulation up will provide the energy needed to charge the co-located storage resource whose companion VER is producing less than forecast, or ii. a thermal regulating resource may provide the imbalance energy, resulting in increased GHG emissions. Either result is not desirable. Figure 2 below illustrates that rather than charging from the grid, the unexpected downward deviation in solar output is offset with reduced storage charging in that interval. The result is that for the co-located resource shown, the state of charge is lower than was expected by the 5-minute forecast, however another storage regulation resource likely will have retained its state of charge to offset this deviation. Note that by allowing the storage resource to deviate from its charge schedule when solar output is lower than expected, the actual output at the point of interconnection (POI) for the co-located resource is closer to the expected schedule if downward deviations are allowed, and the amount of VER production and storage resource charging from the co-located resource is the same with or without the downward deviation rule.

Figure 2. Output with Downward Deviation Rule



7. Provide your organization’s feedback on the metering topic, as described within the draft final proposal:

CalCCA supports CAISO’s metering proposal, as described in the draft final proposal.

8. Provide your organization’s feedback on the ancillary services proposal, as described within the draft final proposal:

CalCCA supports eligibility of hybrid and co-located resources for providing ancillary services.

9. Provide your organization’s feedback on the resource adequacy topic, as described in the draft final proposal:

During the August 10 stakeholder call, some stakeholders noted that CAISO’s proposal to use outage cards for hybrid resources could result in these resources being double penalized by potential UCAP reductions and by CPUC counting rules. The CPUC’s hybrid counting rules already discount the VER portion in the ELCC calculations and for expected storage charging. Further reductions to UCAP resulting from the use of outage cards would unfairly penalize these resources. Additional work is needed to ensure CAISO’s treatment of hybrid resources is not inconsistent with the CPUC counting rules.

CalCCA also seeks clarification that hybrid resources that submit bids for the full range of their resource adequacy obligations will not need to submit outage cards for the amount of capacity reflected in their bids. For example, a hybrid resource with a solar forecast to produce at a consistent output of 80 MW for several hours that plans to use a 50 MW portion of that output to charge the on-site battery if prices are below a given level, but is willing to deliver the full 80 to the grid if prices are above a given level, would not need to submit an outage card for 50 MW for the VER component.

Similarly, for the storage component, if there is available stored energy and the resource bids reflect a willingness to discharge the full 50 MW associated with the storage component if prices exceed a given level, no outage card would be needed even if the resource operator plans to charge the storage resource.

10. Provide any additional comments on the draft final proposal for the Hybrid Resources initiative: