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, Straw Proposal** that was held on October 3, 2019. 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 October 21, 2019**.**

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.

1. Hybrid Resource Definition

Please provide your organization's feedback on the Hybrid Resource Definition as described in the straw proposal.

CESA supports the CAISO's definition of hybrid resources and appreciates this clarification since it provides a clear distinction between hybrid and co-located resources and address the different use cases and operations of resources with single and multiple resource IDs. CESA also appreciates that the CAISO has not limited any of the definitions to a set number of generation technologies given the potential for creating and optimizing combinations of multiple resources under a single market resource ID and a sole point of interconnection (POI).

However, CESA believes that further clarification and refinement is needed to the definition of hybrid resources to account for how the combined resource should be

represented in the CAISO's market as Non-Generator Resources (NGR) or traditional generator, which may depend on use case, whether the paired storage resource charges from the onsite generation only or from both the grid and onsite generator, and sizing ratio of the paired storage resource relative to the paired generator. For hybrid resources, these distinctions will have an impact on many aspects of the Straw Proposal, including for forecasting, metering, and resource adequacy (RA), among others. Similar to what was done in the CAISO's 2016 Technical Bulletin, it may be helpful to also outline how the hybrid resource will be treated in CAISO markets and modeled in the Master File. To inform the other aspects of the proposal, CESA suggests that the CAISO treat and model hybrid resources charging from onsite generation only as a generator given that such resources are only capable of positive output to the grid, whereas hybrid resources charging from both onsite generation and the grid as NGRs given that such resources have both positive and negative generation attributes.

2. Hybrid Resources Business Drivers and Use Cases

Please provide your organization's feedback on the Hybrid Resources Business Drivers and Use Cases described in the straw proposal.

CESA generally supports the business drivers and use cases identified by the CAISO in its Straw Proposal. Given California's overarching energy and climate goals, hybrid resources will play an integral role in the state's electric grid in the coming years. Importantly, the CAISO appropriately identifies how the various business drivers and use cases may overlap and how resources may provide multiple use cases. The outlined use cases will be helpful as guidance to understand the different configurations and market participation approaches that hybrid resources could take, which are being considered in this initiative.

3. Forecasting

Please provide your organization's feedback on the forecasting topic as described in the straw proposal.

CESA supports the CAISO's proposal for hybrid resources to self-provide forecasts, which was previously an issue raised in the Issue Paper around how the CAISO only provides forecasts for eligible intermittent resources (EIRs). CESA appreciates the CAISO's consideration of stakeholder input on this matter. CESA agrees with the CAISO proposal to require self-provided forecasts at 5-minute and 15-minute intervals on a rolling three-hour basis.

However, there are several areas that warrant further discussion and potential revision.

First, CESA recommends that the CAISO develop further details on how bidding for hybrid resources could be updated more frequently (*e.g.*, up to 5-minute intervals) that the current process that allows for an update once an hour at 75 minutes prior to the operating hour. Unlike EIRs, where the CAISO can update their forecasts in near real-

time fashion, hybrid resources would be treated as a non-EIR dispatchable generator according to the Straw Proposal, which may overly penalize hybrid resources from forecast deviations. While self-provided forecasts should be reasonably accurate, hybrid resources may be unreasonably assessed forecast deviation penalties if not allowed to update their bids closer to the operating hour when forecasts increase in accuracy. In addition, though the paired storage resource is intended to mitigate forecast uncertainty of the onsite variable generator, the current proposal for bidding for hybrid resources would make it difficult for storage resources with smaller storage-to-generator sizing ratios to mitigate large forecast deviations, which even the best forecasting methods and tools cannot always mitigate or minimize. For projects seeking to enhance renewable energy production through smoothing, this inability to update forecasts more frequently can be harmful, but there may also be other use cases that could benefit from these changes.

Second, for hybrid resources that effectively act as NGRs that can charge from either the onsite generator or the grid, CESA believes that the CAISO should modify the requirements of the self-provided forecast to be based on the available energy output of the generator (based on meteorological or other forecast data) and the available state of charge (SOC) of the battery. Given the flexibility for the battery charging, bidding from such resources are not necessarily limited to the forecasted output of the onsite generator. As such, it appears reasonable to consider how the available SOC of the storage device should be reflected in the self-provided forecast of the hybrid resource acting as an NGR.

Third, CESA seeks further information on how the CAISO will monitor and enforce “strategic forecasting”. With imbalance charges in place for forecast deviations, CESA believes that hybrid resources will have a financial disincentive for such improper strategic forecasting. Clarifications on what constitutes strategic forecasting will be helpful for hybrid resource bidding.

Finally, CESA recommends that the CAISO allow for different pathways to ensure accurate forecasts. While having onsite meteorological stations can be one means to provide accurate forecasts, some developers use alternative means, such as satellite-derived solar irradiance data and measurement or sky imagers, in order to track and predict cloud formations and forecast their output. There may be financial burdens or implementation challenges for certain developers to have onsite meteorological stations to have individual generator operators to submit plant-level forecasts. In addition, if feasible, CESA also wishes to explore whether developers could receive and access the CAISO-performed forecasts for a service fee. Some developers and operators, especially those with little experience or market penetration, might not be able to perform a forecast as accurate as that of CAISO.

4. Markets and Systems

Please provide your organization’s feedback on the markets and systems topic as described in the straw proposal.

CESA supports the proposed implementation of forecasts to the market mechanisms applicable to hybrid resources but with hybrid resources being allowed to update their upper economic limit more frequently (*e.g.*, every five minutes). However, an upper economic limit appears to be only applicable to generators. As noted previously, hybrid resources operating as an NGR do not have such an upper limit bounded by the forecasted output of the generator considering the paired storage resource has the ability to charge from the grid. The upper economic limit for hybrid resources as NGRs should be reflected in the Revised Straw Proposal as being limited by the forecasted generator output plus the SOC of the paired storage resource.

Additionally, CESA does not support the CAISO's interim proposal to apply an interconnection rights constraint for co-located resources, which would set the Pmax of the storage device in the Master File below the rated capacity of the storage resource, resulting in stranded capacity. CESA understands that the CAISO is proposing this as an interim solution until a longer-term solution can be developed and implemented but allowing limiting schemes and controls to ensure the point of interconnection (POI) rights are not violated is a feasible and more optimal option. Limiting schemes and controls are currently used for many storage projects today in order to prevent certain operations, such as charging from the grid, so CESA would prefer the CAISO work to discuss and develop solutions that would allow such limiting schemes and controls to be used to ensure POI rights are not violated.

5. Ancillary Services

Please provide your organization's feedback on the ancillary services topic as described in the straw proposal. (Please indicate Support, Support with caveats, Oppose, or Oppose with caveats)

CESA supports the CAISO's ancillary services proposal but seeks clarification on the CAISO's definition of "resource potential" and how it differs from the self-provided forecast. CESA also requests that the proposal account for how hybrid resources would be able to provide ancillary services when treated as generators versus NGRs.

CESA also takes note of the CAISO's question around an SOC metric for other types of non-lithium ion battery storage. As CESA understands it, these other technologies should be able to submit SOC bid parameters that reflect their ability to provide ancillary services. CESA is open to answering further questions from CAISO regarding this matter if there are specific concerns.

6. Metering and Telemetry

Please provide your organization's feedback on the metering and telemetry topic as described in the straw proposal.

CESA supports the CAISO's proposal on metering and telemetry and appreciates the clarity it offers to developers, owners, and scheduling coordinators (SCs) of hybrid and co-located resources. CESA also supports continued consideration of settlement-grade DC meters for DC-coupled hybrid resources.

7. Resource Adequacy

Please provide your organization's position on the Resource Adequacy topic as described in the straw proposal.

CESA supports the establishment of a default RA counting methodologies for hybrid resources as outlined in the Straw Proposal, but we understand that this is likely the purview of the California Public Utilities Commission (CPUC). Regardless, RA valuation should be differentiated by hybrid resources between those that involve storage paired with dispatchable and non-dispatchable generation, as well as those that are operating as a generator versus an NGR.

CESA believes that an additive methodology is appropriate for hybrid resources operating as an NGR, regardless of whether the storage device is paired with a dispatchable (*e.g.*, Pmax of gas) or non-dispatchable generator (*e.g.*, ELCC for solar). The flexibility of the storage resource to charge from either the grid or the onsite generator provides assurances of "fuel" for charging such that the storage resource should be counted for its four-hour sustained discharge. However, for hybrid resources with operational constraints (*e.g.*, charging only from onsite generator) that operate like a generator, the storage resource is limited in the fuel available by the onsite generator, which suggests that a simple additive approach may not accurately estimate the capacity value of the hybrid resource. The CPUC is actively considering effective load carrying capability (ELCC) proposals and conducting studies through the RA and RPS proceedings to develop counting methodologies for such resources, so CESA recommends that the CAISO not make a premature determination on this matter in this initiative. In the interim, CESA is supportive of an additive methodology subject to deliverability and POI constraints.

For co-located resources, RA capacity methodologies appear more straightforward, with the qualifying capacity (QC) and net qualifying capacity (NQC) determined on an additive basis. CESA recommends that CAISO perform the split on capacity values when developing NQC list to account for the POI limit, which offers the greatest flexibility, where the CAISO can manage resource deliverability.

Otherwise, CESA is supportive of the establishment of must-offer obligations (MOOs) as defined in the Straw Proposal and the coordination of this initiative with the Day-Ahead Market Enhancements (DAME) Initiative and the RA Enhancements Initiative.

Additional comments

Please offer any other feedback your organization would like to provide on the Hybrid Resources Initiative.

CESA appreciates and acknowledges the leadership of the CAISO in the creation of a framework for hybrid and co-located resources to be procured and properly operated in the CAISO's markets.