



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.aiso.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 |
|--|--|---------------------------------|
| Shannon Eddy Executive Director 415-819-4285 | Large-scale Solar Association (LSA) | October 21 st , 2019 |

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.

LSA appreciates the opportunity to comment on the Hybrid Resources Initiative Straw Proposal. LSA has the following general comments, which are reflected in the individual comment sections in the remainder of this document.

Single- vs. multiple-Resource ID configuration: Developers should be able to select either configuration without adverse settlement consequences or restrictions on the services they can offer, and CAISO should be able to obtain the information it needs on the resource current state and capability to be confident that the services offered can be provided.

Collocated Resource configuration: CAISO’s impression that this configuration as proposed can be used to comply with ITC rules through “accounting mechanisms” is incorrect. The CAISO should consider the options described below as “storage injections on the side” during the entire ITC recovery period to enable multiple-fuel projects to use this configuration while demonstrating compliance with ITC limits on charging from the grid.

Single-Resource ID hybrids: Many of the CAISO’s proposals would treat VER-storage hybrids as though they suddenly become entirely different from VERs simply by the addition of a single MW of storage capacity. Such hybrids are part VER and part storage, and not all of either one.

For example, hybrids with significant VER components retain fundamental characteristics of VERs and should not lose access to the fair, equitable, and practical VER accommodations CAISO has developed over time. Likewise, hybrids with significant storage components cannot reasonably be expected to forecast the outcome of market bids using their storage capability.

1. Hybrid Resource Definition

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

LSA does not object to the new definition. In addition:

- **The new definition should be accompanied by new associated defined terms, e.g.:**
 - Mixed-Fuel Project, which could be configured as either a Hybrid Resource (single Resource ID) or Collocated Resources (multiple Resource IDs)
 - Collocated Resources, the multiple-Resource ID configuration of a Mixed-Fuel Project
 - Collocated Resource, a separate Resource ID of a Mixed-Fuel Project
 - Component, the portion of a Hybrid Resource consisting of capacity of a single fuel type – e.g., a VER-storage Hybrid Resource would have a VER Component and a Storage Component
- **The CAISO should include in the next proposal iteration an explicit statement that a VER Collocated Resource (separate Resource ID) in a VER-storage Mixed-Fuel Project would be treated as a separate project for RPS reporting purposes**, consistent with its clarification at the last stakeholder meeting. In other words, round-trip storage losses would not be subtracted from the VER Resource ID output.

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.

No comments at this time.

3. Forecasting

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

LSA supports the overall concept that forecasting be used to limit financial risks of hybrids with VER Components. As noted above, the concept of the forecast as the “upper economic limit” should be applicable to hybrids with significant VER Components, as it is for VERs. However, this element as proposed is not practical.

As noted in the discussion at the stakeholder meeting, assuming at least some market bids for the storage component, CAISO scheduling and settlements for VER-storage hybrids essentially consists of scheduling/settlement for the VER Component plus scheduling/settlement for the Storage Component. While the VER Component output can be forecasted (see below), the output (and charging) activity of Storage Components with any market bids would essentially require SC before-the-fact forecasts of CAISO markets, e.g., market-clearing prices and real-time dispatch pursuant to market bids, which would be problematic for any resource.

Instead, as discussed further below, the forecasting requirement for VER-storage hybrids should be limited to the VER Component. At a minimum, as long as they are willing to provide met data and separate telemetry to CAISO, hybrids should be able to:

- Receive CAISO forecasts for their VER components; and
- Be allowed to deviate from their Dispatch Operating Targets (DOTs) using their VER capacity.

Beyond that, the CAISO should be able to use the proposed “interconnection rights constraint” functionality to accommodate the dual nature of Hybrid Resources, (e.g., meteorological data needed for VER forecasts).

The interconnection rights constraint would use a new Master File field to tie together the multiple Resource IDs of Collocated Resources, to adjust Energy and Ancillary Services market awards, schedules, and dispatches in order to enforce the overall project maximum POI injection rights without stranding capacity.

This ability to tie two Resource IDs together in the Master File could also be designed to tie two Components of a hybrid together. The VER Component could be treated like a VER, receiving VER forecasts and perhaps even participating in PIRP (have CAISO forecast output, submit RT schedules, and adjust those schedules in real time to reflect forecast changes, as it does for PIRs). The Storage Component could then be bid or scheduled separately, since the resource owner would have no way to anticipate the outcome of its storage-related bids, and the Master File functionality would net the two components to produce a combined Resource ID settlement.

A Collated Resource configuration could manage these Components separately. However, the netting capability of the Hybrid Resource model may be needed to facilitate ITC recovery (see above), or to avoid adverse settlement consequences of separate Resource IDs (e.g., load-related charges for charging energy, from the assumption that it is coming from the grid, combined with the all-or-nothing charging framework CAISO has offered thus far).

4. Markets and Systems

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

The CAISO should seriously consider ways to mitigate the “stranded asset” problem on an interim basis before the proposed “fix” is implemented in Fall 2021. Specifically, these interim alternatives should be seriously evaluated:

- **VER Resource IDs exceeding their Master File Pmaxes:** Allowing VER Resource IDs to exceed their Master File PMaxes in real time when the other Resource ID(s) were under theirs, as long as the overall project Pmax was respected and the CAISO has access to VER met data and telemetry. This option is based on the current CAISO rules allowing VERs to exceed their Dispatch Operating Targets (DOTs) in real time under most circumstances.

For example, consider a mixed-fuel project with 100 MW interconnection service, separate Resource IDs with 100 MW solar and 100 MW/400 MWh storage, respectively), and the solar and storage Resource IDs at 50 MW each in the Master File until the “fix” is implemented. If the solar Resource ID gets a DOT of 50 MW while the storage Resource ID is operating at 40 MW, the solar Resource ID could be allowed to produce up to 60 MW (assuming sufficient insolation), keeping the total to the 100 MW project interconnection service.

This flexibility would partially mitigate the Master File problem by “unstranding” up to 50 MW of the solar Resource ID, at least in real time, allowing it to produce at its full 100 MW. This would not violate the GIA, because the total project output for both Resource IDs would not exceed the 100 MW interconnection service, and the required controls limiting POI output would ensure this.

CAISO concerns that current real-time limiting schemes are not sufficiently limiting POI output are legitimate. However, that very real problem should not impede consideration of this mitigation option. CAISO should be testing and enforcing the effectiveness of these controls in any case, e.g., though a regular validation check that the sum of the real-time production from all collocated Resource IDs does not exceed the allowed POI output level, and there is no evidence that this alternative would worsen that problem.

- **Storage injections “on the side:”** Physical, metered/telemetered direct “internal” connection between the VER and storage Resource IDs, “behind” both Resource ID meters to the grid, to limit scheduling and output to the grid (as measured by the “grid” meters) to the Resource ID values in the Master File.

Thus, in a given hour for the sample project above, the Solar Resource ID could inject 50 MWh directly into the storage facility and schedule/inject 50 MWhs into the grid, allowing the VER Resource ID to produce the full 100 MW in that hour. CAISO could read the internal meter for RPS purposes (so that portion of the VER Resource ID could be reported to the CEC), but the financial settlement with CAISO would reflect only the grid meters.

(As noted above, in addition to “unstranding” VER capacity before the Fall 2021 fix, this arrangement can be used during the ITC recovery period to demonstrate compliance with those limitations while using a collocated-resource configuration.)

- **Switching between single- and multiple-Resource ID configurations:** The tremendous economic impacts of stranding significant amounts of capacity under a collated-resource configuration may lead many resources to begin operations as hybrids and switch to collated resources after the problem is fixed. Some projects may also begin operations as hybrids in order to more easily comply with ITC rules and then convert to collated resources afterwards to take advantage of greater charging flexibility from the grid.

The CAISO should consider an expedited NRI process – e.g., just modifying any metering and Master File arrangements – for resources switching between hybrid and collocated-resource configurations (in either direction). Such resources would have already gone through the entire NRI process in order to begin operations and should not have to start over as though they were completely new resources.

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)

No comments at this time.

6. Metering and Telemetry

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

With high-side metering, charging from both on-site generation and the grid can be appropriately metered by using a meter on the battery on the low side. It is not necessary to have a generator component meter on the low side; energy flows in and out of the battery, combined with metering at the high side and system losses, can provide required data for RPS purposes.

Charging from both on-site generation and the grid can be appropriately metered with a "net" low side meter and a battery meter in a similar way as described above.

7. Resource Adequacy (and Must-Offer Obligations)

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

RA value: LSA supports the CAISO's revised proposal to reflect approved stand-alone methodologies for the different components that make up the resource, because: (1) The reliability value of the components to CAISO should be the same under either single or multiple Resource IDs; and (2) adoption of the CAISO's prior Exceedance proposal could encourage project selection of this configuration just to maximize RA value.

Must-Offer Obligations: It is appropriate for the MOO to extend to Hybrid Resources, in the same manner as it is applied for the same resource types under separate Resource IDs. The applicable QC values must be qualified for Hybrid Resources as soon as possible.

However, adding 10MW/40 MWh of storage to a 100 MW VER project (picking an extreme example) should not magically make a project into a non-VER and/or impose the significant risks of Day Ahead scheduling on such a resource. As proposed in LSA's comments on the [Issue Paper](#), Hybrid Resource MOOs should reflect the relative components that make up the hybrid. For example, the MOO for this hypothetical resource should be as follows:

- **DA MOO:** Same as for a stand-alone storage resource (since the VER component should have no DA MOO):

$$\text{DA MOO} = \text{DA MOO for a 10 MW/40 MWh storage project}$$

- **RT MOO:** Same as for the separate resources but limited for the POI output limitation, i.e.:

$$\text{RT MOO} = (\text{RT MOO for a 100 MW VER}) + (\text{RT MOO for a 10 MW/40 MWh storage project}),$$

but not more than 100 MW

Additional comments

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