

Hybrid Resources Phase 2B Refresher Training Q&A

Details:

On January 24 2023, the ISO held the refresher training in preparation for implementation of Hybrid Resources Phase 2B beginning on February 1, 2023. During the session there were a number of questions. This document outlines those questions that were asked with their responses.

Co-located Resources:

Q: Is this refresher intended for new and existing co-located resources as well?

A: Yes, In fact the Master and Sub-ACC feature is specifically for co-located resources.

Generator Resource Data Template:

Q: Will the Generator Resource Data Templates (GRDT) provided for testing be automatically moved to production once the hybrid initiative is implemented?

A: For resources identified as mixed fuel, the master file team sent out the GRDTs that were used in the MapStage environment for validation. If there are any concerns, contact RDT@caiso.com. If you want changes made prior to 2/1 be sure to get them to us by Thursday 1/26. However, changes can be made on an ongoing basis, keeping in mind the 5 day turnaround time.

Master and Sub-ACC:

Q: When will the master file support Master and Sub-ACC for co-located resources?

A: February 1, 2023

Q: If one of the units has an outage, will the max of the other units increase?

A: The Pmax of remaining resources will not increase if one has an outage.

Q: Why aren't you using "parent" and "child" terminology?

A: Parent and Child is how we refer to resources, however Master and Sub are how we refer to Aggregated Capability Constraints (ACC).

SIBR:

Q: When will SCs be able to see the resources in SIBR in preparation for 2/1 day-ahead market?

A: You will see these resources in SIBR on 1/31 when the ISO reads the master file data into SIBR.

ISO or SC Forecast:

Q: I was under the impression that SCs would be assessed a forecasting fee regardless whether they are using the ISO or SC Forecast. Is that true?

A: If you have a hybrid resource with a VER and choose to provide your own forecast (SC forecast option), the forecast fee will not apply. If you are an eligible intermittent resource but choose to provide your own forecast, there will still be a forecast fee, because we still need an ISO forecast for our forecasting and DOT formation.

Hybrid Dynamic Limits:

Q: Are SC's required to submit hybrid dynamic limits for their hybrid resources? I thought that it was, but in this presentation it seems like it's optional. Is it deemed to be a tariff violation if we do not submit? How about a self-schedule?

A: Yes. The tariff requires SCs for hybrid resources should "submit Hybrid Dynamic Limits representing Hybrid Resources' upper economic limit and lower economic limit in each Real-Time Market five-minute Trading Interval for a rolling six-hour look-ahead period." The CAISO interprets this to mean that, for every interval in which the hybrid resource has an economic bid (including a self-schedule or a base schedule [for WEIM Participating Resources]), the SC should actively submit a dynamic limit reflecting the hybrid resource's operational capabilities. By "actively submit", the CAISO means that the SC should use the SIBR UI or API; the SC should not simply rely on the automated functionality built into SIBR whereby the system automatically inserts dynamic limits on the SC's behalf.

Q: Is there a requirement on how often the hybrid dynamic limits are updated? I know we can update every 5 minutes, but is that required?

A: Yes. The requirement to submit hybrid dynamic limits is stated above. If the conditions that underlie a previously submitted dynamic limit have not changed (e.g. no change in the forecast for the solar component of the hybrid resource) such that the dynamic limits continue to reflect the hybrid resource's operational capabilities, there is no need to change the dynamic limits.

Q: Couldn't there be a bid for the battery portion of the resource even when the solar resource is not able to generate?

A: This is correct. The battery component's operational capabilities would need to be reflected in the dynamic limits, even if the solar resource isn't generating. In this case, depending on the storage resource's state-of-charge, the storage resource could charge, discharge, or both (notwithstanding any OMS outages).

Q: Could hybrid dynamic limits be used to avoid a solar curtailment?

A: Hybrid dynamic limits should reflect a hybrid resource's operational capabilities. Reducing a higher dynamic limit to charge an onsite battery is permissible. For a hybrid resource with a renewable and storage component, solar curtailment may be avoided by charging the storage resource incrementally more, when actual renewable generation is above forecasts. This is

inherently a feature of the hybrid model. However, the ISO emphasized that hybrid resources are still required to respond to ISO dispatch instructions

Q: Does the market treat the lower hybrid dynamic limit as a PMIN or a Self-Schedule? For example, if a 120MW hybrid resource is expecting 90-100 MW of solar output and they set the lower limit to 90MW, and the market can only support 89MW from an "economic" point of view... would the market treat the 90MW lower hybrid dynamic limit as a PMIN and therefore de-commit the resource (0MW DOT) or would it treat the limit as a Self-Schedule and drive the price negative to accommodate the self-schedule.

A: Yes, the market would force the unit to clear at a minimum of 90MW. Note that the dynamic limits are more similar to a Pmin or Pmax. The policy papers refer to them as 'effective Pmin' or 'effective Pmax'. We will provide some examples in the BPM. In this case, the lower hybrid dynamic limit would likely not be 90 MW. It may instead be 0 MW, if the solar is able to physically operate at 0 MW, and may be negative if there is interconnection capacity and a physical capability for a storage component to charge. The ISO emphasizes that the hybrid dynamic limits are not meant to represent where a resource would prefer to operate, but should instead represent where the resource is physically capable of operating.

Q: Will the hybrid dynamic limits limit AGC dispatch?

A: The SC for a hybrid resource should make sure hybrid dynamic limits are in line in with the Unit Operating Lower Limit (UOLL) and Unit Operating High Limit (UOHL) of its AGC unit. If the UOLL/UOHL are consistent with the lower hybrid dynamic limit and upper hybrid dynamic limit, respectively, the hybrid dynamic limits shouldn't change the operation of an AGC unit.

Q: Does AGC/Regulation set-point respect the hybrid dynamic limits?

A: No. It does not use the hybrid dynamic limits for 4 second control.

Q: Do the hybrid dynamic limits impact market awards? Do they impact dispatch instructions to hybrid resources?

A: Hybrid dynamic limits act as 'effective' upper and lower limits. When the market makes decisions to award energy for each participating resource in the market, it considers load, resource outages, and all bids (among many others). The market will not award energy for a hybrid resource in excess of the upper hybrid dynamic limit or be below the lower hybrid dynamic limit. The award from the market will then be issued in a dispatch instruction, still respecting the hybrid dynamic limits, to the resource.

Q: Can you provide examples of how hybrid dynamic limits can be used for on-site charging? What scenarios is it ok and what scenarios are not ok?

A: Suppose a hybrid resource has a Pmax of 150 MW, and has a 100 MW solar component and a 50 MW storage component. If the forecast for the solar component is 80 MW – which matches actual real-time production - and the scheduling coordinator for this resource wants to ensure

that the resource charges the battery with at least 20 MW for a specific interval, the scheduling coordinator could submit an upper hybrid dynamic limit of 60 MW to the ISO. This will result in a dispatch instruction from the ISO to the resource of no more than 60 MW. If the solar component is actually producing 80 MW, this will leave an additional 20 MW that could be used to charge the hybrid storage resource. The ISO again emphasizes that a hybrid resource is responsible for responding to whatever dispatch is awarded to the resource.

Metering and Telemetry:

Q: Where do we stand on the availability of DC revenue quality meters?

A: If you have a DC meter, you can submit meter data as a Scheduling Coordinator Metered Entity (SCME). If you are an ISO Metered Entity (ISO ME) there are some options available to you depending on your situation. Please contact the EDAS department at the ISO to discuss these options further.

Q: What do you mean by a “component”? I need additional clarification here.

A: Each hybrid resource has a resource ID, which is made up of multiple components that have different generation types. Each component is assigned a component ID, and the relationship between component IDs and resource IDs is tracked in the master file. Also, the draft final proposal for Hybrid Resources has additional information.

Q: Can you share details about the specific meetings where we discussed DC/AC coupled hybrid resources?

A: The two hybrid resource metering/telemetry training sessions occurred on September 26 and October 6. The first session was recorded and the presentation and recording are located on the ISO Website in the Learning Center. For details of other meetings that may have occurred, contact the EDAS department at the ISO.

ISO Today/Today's Outlook

Recommendation: Suggesting / requesting that CAISO consider providing a system-wide State of Charge chart on the website to supplement the charging/discharging chart information please and thanks.