

To: EIM Governing Body – Chair Dr. Carl Linvill, Vice Chair John Prescott, and Members Anita Decker, Valerie Fong, and Robert Kondziolka

From: Susan Schneider, Phoenix Consulting, LLC

Date: June 29th, 2020

RE: Energy storage adjustments to accommodate renewable-energy production (Agenda Item #6)

I am writing to request your support for a small change to the CAISO Management proposal designated as Item #6 on your June 30th meeting agenda. That item mostly concerns Mixed-Fuel Projects (MFPs) with a Co-located Resource configuration.

The most common MFP design, based on new project Interconnection Requests, will be solar + storage projects. Those with the Co-located Resource configuration will assign each fuel type its own Resource ID (scheduled/settled separately); they will share a common output limitation at the Point of Interconnection (POI). I have been representing in this CAISO initiative developers planning to construct and operate many such projects.

Specifically, my comments concern the “additional functionality to allow storage resources to absorb differences between VER forecasts and actual output,” mentioned on slides 5-6 of the CAISO Management presentation. This letter briefly explains the concept and requests your support for this minor change to the framework design. This change will prevent unnecessary renewable-energy curtailments while requiring no CAISO market design or software changes.

Explanation of the concept. Please see the table below. Assume a 100 MW (@POI) project, consisting of a 100 MW solar Resource ID and a 50 MW storage Resource ID.

**ILLUSTRATION – CURRENT RULES vs. LSA PROPOSAL
(100 MW maximum @POI)**

RESOURCE ID	SCHEDULE	RT SOLAR CAPABILITY	CURRENT RULES		DEVELOPER PROPOSAL	
			ACTUAL OUTPUT	SOLAR CURTAILMENT	ACTUAL OUTPUT	SOLAR CURTAILMENT
Solar Resource ID	75 MW	85 MW	75 MW	10 MW	85 MW	0 MW
Storage Resource ID	25 MW	-	25 MW	-	15 MW	-
TOTAL ENERGY	100 MW	-	100 MW	-	100 MW	-

In this example, the scheduled output for the solar Resource ID is 75 MW and the scheduled output for the storage Resource ID is 25 MW, i.e., the CAISO is expecting 100 MW of energy from the two projects combined (same as the POI limit).

Now assume that in real time the solar Resource ID can produce 85 MW instead of 75 MW. CAISO rules would allow a stand-alone solar project with a 100 MW output limit to operate at the full 85 MW capability, even though it is scheduled to operate at the lower 75 MW level.

However, here the solar Resource ID can only produce the additional amount if the storage Resource ID reduces its output from 25 MW to 15 MW, to keep the total within the 100 MW POI limit. Though the CAISO would still receive 100 MW from the two Resource IDs together, at the same POI, CAISO rules do not allow the storage to deviate from its schedule to make this accommodation. Instead, the additional 10 MW of solar production must be curtailed (see the **orange font** in the table above).

The developers' proposed modification would allow the storage Resource ID to reduce its output to make room for the additional solar Resource ID output, so the latter need not be curtailed (see the **purple font** in the table above). The CAISO systems could issue the exact same Dispatch Instructions – for 100 MW total – and the CAISO would receive the **exact** same 100 MW that it is expecting and depending on.

The separate settlements for each Resource ID would reflect the deviations – the solar Resource ID would include a payment for the additional 10 MWh, and the storage Resource ID would include a charge for the energy not discharged (assuming positive market prices).

Thus, no software modifications are needed, and the responsibility remains with the MFPs themselves to adjust the two portions of the project to meet the CAISO's needs. The only change is to provide that the storage Resource ID deviation would not be a violation of CAISO rules.

Developer request. I am requesting your support for this minor change to the CAISO's MFP Co-located Resource proposal. Because this change requires only a small market-rule change, this concept should be implemented along with the other proposals for Co-located Resource configurations in Fall 2020.

I would be happy to answer any questions you may have about this matter, at the June 30th meeting.

Sincerely,

Susan R. Schneider

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Principal and Manager