



8minute Solar Energy Comments

Hybrid Resources Initiative: Straw Proposal

Submitted by	Organization	Date Submitted
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General Comments:

8minute appreciates the work that went into creating this proposal for the hybrid resources initiative. An ideal scenario for accommodating PV+S plants would have been a two resource ID scenario where the ISO worked with the developers to control the grid charging of the battery in order to meet ITC requirements using existing market mechanisms. We understand the ISO perspective of not being responsible for controlling grid charging directly, but if there is a mechanism such as creation of a “micro-market” at each two-resource ID plant that allows the market to close locally, then to clear globally to accommodate grid charging, that would be ideal. At the expiration of the ITC period, the plant can then join the market with full capability.

1. Hybrid Resource Definition

No comments

2. Hybrid Resources Business Drivers and Use Cases

No comments

3. Forecasting

8minute thanks the ISO for laying out a framework for recognizing the need to limit the downside financial impact of an inaccurate forecast. Our recommendation to the ISO is as follows:

- 1) Generate a forecast for the VER as currently performed by the ISO. Additionally, if desired, allow the hybrid resource operator to generate a VER forecast that replaces the ISO forecast. In either case, the forecasting component of the combined hybrid resource should be performed only for the VER.
- 2) The scheduling coordinator will submit a forecast for the combined resource as described in the proposal to set the upper limit for the economic dispatch. We also note that due to ITC requirements, we need to specify a lower (charge) limit for the project so that BESS is not charged from the grid.
- 3) 8minute recommends that ISO have access to telemetry from the site to show the SOC, number of cycles and power output of the BESS. Further discussion is needed to determine how the ISO will utilize these data points in their operations.
- 4) If we combine (1), (2) and (3), ISO can determine a feasible range of output from the hybrid resource in terms of both magnitude and duration. We also want to bring to ISO's attention that most BESS systems come with limits on the number of cycles per year to maintain battery warranty. If the BESS has reached its limits, then the plant can only utilize the VER component. Similarly, if the BESS is fully charged from the on-site resource, it cannot be used to smooth VER output.
- 5) 8minute also suggests that hybrid resources be treated like PIRP program participants. This is so that the hybrid resources do not get penalized for missing its target dispatch power level because of inaccuracies in forecasts.

For the two resource ID-collocated resources, case, we have no additional comments related to the forecast. We point out that the forecast methodology proposed above may be used to solve the issues related to the interconnection limit as discussed in Section 6.2 of the proposal.

4. Markets and Systems

Hybrid/Single Resource ID: 8minute appreciates the effort made by the ISO to define a workable scenario where the scheduling coordinator will create a bid for the hybrid resource that can be updated hourly and the forecast that can be updated every 5 minutes to set the upper and lower (charge) economic dispatch limit. Additionally, the ability to control grid charging for preserving the ITC is very important. However, the proposed methodology mainly works if the power output of the BESS is comparable to the maximum expected uncertainty from the VER. For example, for a 200MW PV plant with a 20MW BESS, there will be frequent instances where the power output of the BESS is simply not enough to compensate for the swings in the PV output even with a reasonably accurate forecast. Additionally, the plant owner/scheduling coordinator assumes a risk in covering the missed energy in the real-time market. One way to

address this risk is to continue treating the VER component of the hybrid resource as an eligible intermittent resource (EIR), and only require the plant owner/scheduling coordinator to make up for shortfalls from the BESS component. Additionally, we recommend requiring only the BESS component to submit a MOO in the day-ahead. In real time, the MOO should be the combined MOO of the hybrid resources limited by the interconnection capacity.

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Two-resource ID collocated: In the two resource ID case, the inability to control the grid charging behavior in order to preserve ITC is a significant issue. If the ISO provides a way of using market bids to control grid charging of the BESS for the ITC period, most developers including 8minute would prefer the two-resource ID option as long as the Pmax/stranded resource issue is also addressed as planned.

- 1) Is it allowable for a BESS, regardless of its SOC, bid in such a way so that its "charge" bid is only selected to charge from the on-site VER?
- 2) Can a scheduling coordinator submit a "combination" bid that contains the generation patterns of both the PV and the BESS?

Finally, we expect many hybrid plants to prefer to fully participate in the markets by allowing grid charging as soon as the ITC period expires. Therefore, any proposed telemetry and metering should be set up such that **no** additional physical/repeated interconnection study work should be required to switch modes after the ITC expires.

5. Ancillary Services

8minute recommends the ISO to expand and clarify the definition of "plant potential" in the next straw proposal. We also note that some PV + storage plants are being designed with significant DC and AC overcapacity, and we would like to understand how "plant potential" relates to oversized plants. 8minute intends to operate hybrid plants with more AC power than interconnection limit where BESS will charge from the excess AC power, or the PV will be curtailed. This mode of operation should be accommodated by ISO regulations. If grid charging is not allowed, if VER is not producing any energy, the BESS may not provide any ancillary services that require grid charging (e.g. Reg-down).

We support the addition of telemetry points to incorporate the hybrid resources into ISO operations.

6. Metering and Telemetry

Any metering proposed by the ISO should consider the ability of the plant owner to detect and accurately account for grid charging. Therefore, the examples shown under “on-site charging” only should also include meters on the PV and BESS elements to make the accounting easier. Finally, we expect many hybrid plants to prefer to fully participate in the markets by allowing grid charging as soon as the ITC expires. Therefore, any proposed telemetry and metering should be set up such that no additional work should be required to switch modes after the ITC expires.

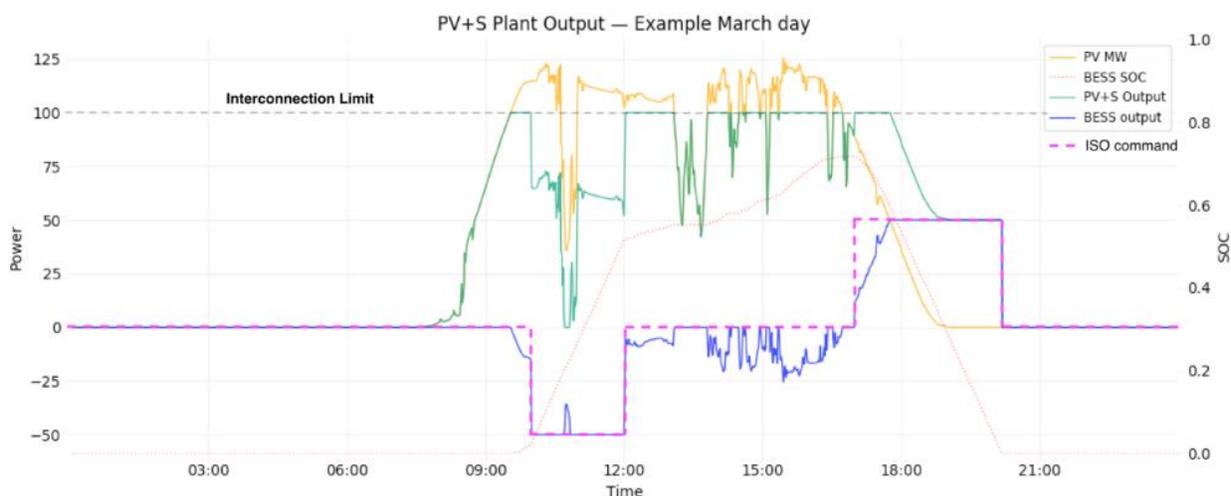
7. Resource Adequacy

8minute recommends requiring only the BESS component to submit a MOO in the day-ahead. In real time, the MOO should be the combined MOO of the hybrid resources limited by the interconnection capacity. We also recognize that RA related work is ongoing on other proceedings and would like to suggest that the two efforts synchronize the treatment of hybrid resources as they reach their final stages.

Additional comments

Accommodating AC-oversized plants.

An AC-oversized project is one in which the solar generation is intentionally built larger than the Interconnection Limit and a storage system is included to capture energy generated in excess of the Interconnection Limit then discharge it when the solar generation is less than the Interconnection Limit. See the below illustration:



SUGGESTED POLICY:

The ISO should not make the excess generation the “marginal unit” for the local LMP and this should not have any impact on local price because it is managed inside the Hybrid Resource.

The ISO should accommodate one or both of the following control options for this type of Hybrid Resource.

1. The solar onsite plant controller should report via telemetry the “current generation” and the “potential generation”. If the “potential generation” is greater than the Interconnection Limit and the storage facility can charge it, the ISO should instruct the storage resource to charge from excess generation.
2. The existing Hybrid Resource Constraint should include the option for the energy storage system to self-schedule charge of PV generation in excess of the Interconnection Limit instead of allowing the PV to be curtailed.