



**Avangrid Renewables Comments
on the CAISO
Hybrid Resources Issue Paper**

Submitted by	Organization	Date Submitted
<i>Margaret Miller – 971-269-7909</i>	<i>Avangrid Renewables</i>	<i>August 13, 2019</i>

Avangrid Renewables appreciates the opportunity to submit comments on the Issue Paper on hybrid resources. Avangrid Renewables is strongly supportive of the CAISO's efforts towards exploring alternative modeling options and flexibility for the development and market operation of hybrid resources. The role of hybrid resources in various configurations should be expected to become a larger portion of the CAISO's supply fleet in the coming years and the time to address these issues is now. While hybrids come in many forms, Avangrid's comments are specific to intermittent resource/storage hybrids.

Avangrid Renewables requests the CAISO to separately define hybrid resources that consist of a single resource from the two-resource hybrid that could be considered co-located resources that share a single point of interconnection. The discussion at the meeting intermixed the two when it seems most of the issues that need resolution are centered around the single resource ID hybrid model.

Although pairing storage with a renewable resource adds value to a project in a number of ways, developers experience a number of challenges when developing these types of projects under the existing regulatory paradigm. Currently, single resource ID renewable storage projects receive no additional RA value for added storage which leads developers down the two-resource ID path. Losing EIR status on the wind or solar is another deterrent for a single resource configuration. On the other hand, the two-resource ID path creates very challenging optics in gaining confidence that a developer will qualify for the ITC on the storage which for the time being allows developers to offer these projects at a discounted price. The fact that the two resource ID projects are AC coupled also adds to the complexity in reviewing these projects for ITC qualification. Logically one would think this should not matter for ITC qualification but the reality is different. This may resolve itself over time as more of these projects go commercial but for now some may see the uncertainty around ITC qualification as a barrier towards developing these types of projects. Whether a developer is willing to move forward with a two-resource hybrid in

light of this uncertainty is subject to each individual company's tolerance for risk. While renewable/storage hybrid projects should be encouraged they can be discouraged for the reasons described above.

The more viable options developers have to bring these projects to market (single resource or two resource) the more cost effective and flexible alternatives can be offered to meet policy, grid operations and customer needs. Inverter technology is also evolving and more advanced configurations and controls may possible under a DC coupled hybrid that could compliment the single resource ID hybrid model and eliminate challenging optics around ITC qualification. However, absent changes to existing rules, developers will likely not pursue the single resource ID hybrid model when there may be a legitimate business case for doing so.

CAISO Comments Response Template:

1. Interconnection

Please provide your organization's feedback on the interconnection topic as described in section 3.2.

Avangrid Renewables supports consideration of alternative interconnection paths for hybrid resources.

2. Forecasting and Operations

Please provide your organization's feedback on the forecasting and operations topics as described in section 3.3.

Avangrid Renewables supports further exploration and development of requirements for 1) allowing Scheduling Coordinators to submit their own forecasts to support single resource hybrids and 2) what data and equipment (i.e., MET towers) should be required to allow the CAISO to effectively forecast for these types of resources.

3. Markets and Systems

Please provide your organization's feedback on the markets and systems topics as described in section 3.4.

Avangrid Renewables supports further discussion and exploration of a hybrid resource constraint or other approaches that would not artificially limit the output capacity of a hybrid resource.

4. Ancillary Services

Please provide your organization's feedback on the ancillary services topic as described in section 3.5.

Avangrid Renewables supports the review and potential modification of ancillary services requirements for hybrid resources as part of this initiative.

5. Deliverability

Please provide your organization's feedback on the deliverability topic as described in section 3.6.

No comment

6. Resource Adequacy

Please provide your organization's feedback on the resource adequacy topic as described in section 3.7.

Avangrid Renewables supports the CAISO evaluating the exceedance methodology as an option to calculate the RA value for single resource hybrids. Intermittent resources firmed with storage should warrant a higher RA value than an intermittent resource alone. However, due to operational differences, it seems the RA value applied to a single resource hybrid that is comprised of a renewable resource and storage should be less than what the sum of each individual resource would get for RA value under today's counting rules.

7. Metering, Telemetry and Settlements

Please provide your organization's feedback on the metering, telemetry and settlements topics as described in section 3.8.

No comment

8. Additional comments

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