



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.caiso.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 |
|--|-----------------|-------------------|
| <i>Grant McDaniel 530-300-3562</i> | <i>Wellhead</i> | <i>10/18/2019</i> |

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.

1. Hybrid Resource Definition

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

Wellhead fully supports the proposed definition of Hybrid Resources.

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.

Wellhead appreciates the CAISO including potential hybrid business drivers and use cases as part of this initiative. These use cases can serve as valuable checkpoints for the systems/methods proposed for forecasting, markets and systems, AS, metering and telemetry, and RA. It may also be useful to look ahead include the proposed imbalance reserve product in this list. While not critical, it may also be of some value

for the CASIO to also include some discussion of the drivers and use cases for co-located resources, particularly preserving the full value of existing RPS generation.

3. Forecasting

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

Wellhead supports the CAISO proposal for forecast granularity and the need for an on-site met station or other best available technology. Wellhead believes that it may also be useful to examine if the form of the forecasts provided should be *available energy output* for the generator model, and *available SOC* for the NGR model. If the CAISO intends on using an energy forecast for the NGR model, it would be useful to see some example of how this would be applied.

4. Markets and Systems

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

Wellhead supports updating the upper economic limit every 5 minutes but notes that the upper limit would seem to apply only to hybrids modeled as a generator.

Wellhead fully supports the CAISO's proposal to add an IC rights constraint for co-located resources. Wellhead also supports the elimination of the congestion component at the resource pricing node which will result from the implementation of the IC rights constraint.

Wellhead notes that the proposed interim solution for an IC rights constraint is sub-optimal. Wellhead understands CAISO's reluctance to trust on-site limiters but given the short time until the IC constraint can be put in place, it would seem to be a superior option to stranding capacity.

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)

Wellhead fully supports proposal for ancillary services and has no additional comments at this time

6. Metering and Telemetry

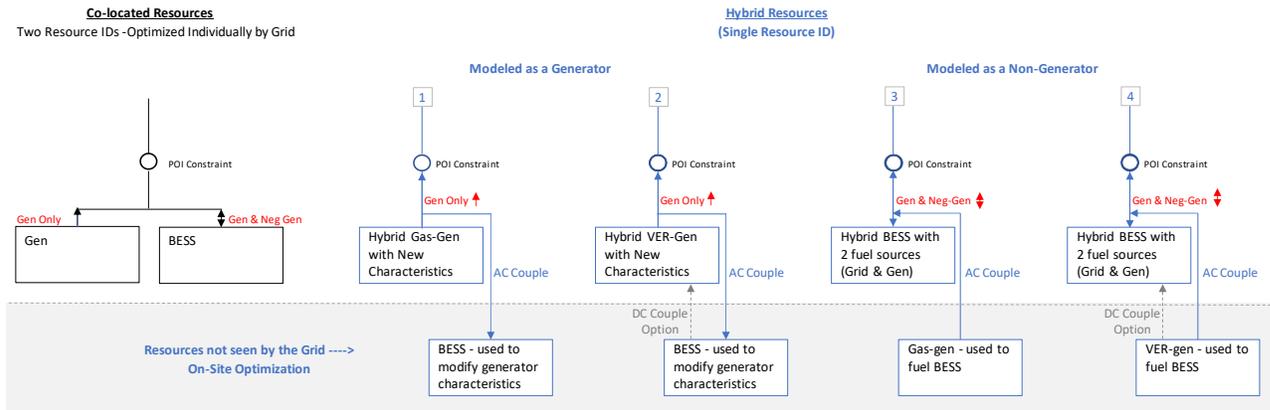
Please provide your organization's feedback on the metering and telemetry topic as described in the straw proposal.

No comments at this time

7. Resource Adequacy

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

For clarity, Wellhead believes the CAISO should differentiate between VER-hybrids and Gas-hybrids as well as how the resource is modeled as follows:



Generator Model

- (1) Hybrid Gas = Gas Pmax + Pmax (4-hour ES duration sustained output)
- (2) Hybrid VER = Min (VER total daily output / 4, Pmax (4-hour ES duration sustained output))
 - The generator model does not support charging from the grid, so the fuel available to the integrated energy storage is limited to the total daily output of the VER

Non-Generator Model

- (3) Hybrid Gas = Gas Pmax + Pmax (4-hour ES duration sustained output)
- (4) Hybrid VER = ELCC for VER component + Pmax (4-hour ES duration sustained output)

All models are subject to deliverability and capped at IC rights as proposed.

Additional comments

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

Wellhead appreciates the thoughtfulness of CAISO's Hybrid Resources Straw Proposal. Wellhead believes it may be useful for the CAISO to provide some further differentiation between the generator and non-generator models as was done in the 2016 Technical Bulletin on the Implementation of Hybrid Energy Storage generating Facilities.