California ISO

## Stakeholder Comments Template

## Hybrid Resources Initiative: Metering & Telemetry Technical Workgroup

This template has been created for submission of stakeholder comments on the **Hybrid Resources Initiative, Metering & Telemetry Technical Working Group** that was held on August 27, 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 **September 10, 2019.**

| Submitted by | Organization | Date Submitted |
|---|---|---|
| Shannon Eddy<br>Executive Director<br>415-819-4285 | Large-scale Solar Association (LSA) | September 10th, 2019 |

LSA appreciates the CAISO holding the Metering & Telemetry Working Group (MTWG) meeting (Meeting) to discuss details related to Hybrid Resources (HRs). LSA agrees with the CAISO's characterization of stakeholder feedback that metering and telemetry solutions may reduce HR forecasting risk, resolve most significant HR operational issues, and address other CAISO concerns regarding HRs.

For example, LSA's written comments on the Issue Paper supported CAISO ability to require reasonable information from HRs – regardless of Resource ID configuration – sufficient to ensure that those HRs can fulfill market awards they receive. That includes: (1) Sufficient information for CAISO to construct a forecast for any VER components; and (2) SOC information for any storage components. As such, CAISO metering and telemetry requirements for technologies included in HRs should reflect such requirements for projects using those same technologies on a stand-alone basis.

**Please provide your organization's comments on the following issues and questions.**

### 1. Metering Layout for Grid and Distribution Connection

There are a number of metering configurations that are available to the generating facilities that were presented during the 8/27/19 meeting. Please provide your organization's feedback on any issues related to the metering configurations discussed. Please explain your rationale and include examples if applicable.

LSA has several comments related to the metering layouts presented at the Meeting.

- **CAISO vs. CEC requirements:** The text and graphics in the CAISO presentation seemed to confuse CAISO metering requirements with additional requirements CAISO believes are need to meet CEC RPS reporting requirements for HRs with storage components, but are not required by the CAISO. For example, at least some of the diagrams seem to include separate meters for the storage components, not because CAISO rules require it, but because the CAISO believes that CEC RPS reporting rules require it.

  At a minimum, the CAISO clarify the following in the upcoming Straw Proposal,

  - **The meters needed only for CAISO tariff compliance.** This is especially important, since the CEC rules may change in the near future, and/or the CAISO's interpretation of those rules may not be correct (see below).

  - **Which hybrid configurations would require additional meters under its interpretation of the CEC guidance**, for that purpose only**.** For example:

    - Storage charged only from on-site renewable generation under a single Resource ID: Additional meters are not needed, since the metered export to the grid would already reflect any round-trip storage losses.

    - Storage charged only from the grid, under two or more Resource IDs: Additional meters are not needed, since the renewable and storage components are already separately metered, and technically any energy generated by a renewable component would be "exported" (injected into the grid) before being "imported" (imported from the grid) to charge the storage.

      *(As noted below, applicability of CAISO's interpretation of CEC guidance to multiple-Resource ID configurations is highly questionable since, for settlements and otherwise, this configuration is the same as separate renewable and storage projects except for the shared Interconnection Facilities.)*

    - Storage charged from both the grid and on-site renewable generation: This is the only configuration where additional metering between generation and storage components would be needed for RPS reporting purposes under the CAISO interpretation, so "round-trip" losses could be estimated and subtracted from generation. However, this need would be for CEC/RPS purposes, and not required under the CAISO tariff.

  - **Application of CEC requirements:** Given the CAISO's interpretation, the CAISO should describe in the Straw Proposal how it would determine and subtract round-trip losses through storage from production of on-site renewable generation, i.e.: (1) the data sources and calculations that would be used; and (2) which Resource ID (renewable generation or storage) would absorb the losses under multi-Resource ID configurations.

- **Characterization of losses:** It appears that losses for HRs are treated under the CAISO tariff the same as losses for other projects, i.e., projects that:
  - Meter before the Point of Interconnection (POI) must compensation for line losses to the POI;
  - Connect at distribution level must compensate for distribution losses; and
  - Meter on the low side of transformers must compensate for transformation losses.

  The above requirements apply to both HR and non-HR projects, i.e., the scope of this initiative need only address them to the degree that they are different from those applicable to non-HR projects. The CAISO should clarify in the upcoming Straw Proposal whether there are any HR losses requirements that are unique to HRs, other than the "round-trip" storage losses discussed further below.

**2. Metering Layout for AC and DC connection**

There were a number of metering configurations available for AC and DC connection of hybrid resource components that were presented during the 8/27/19 meeting. Please provide your organization's feedback on any issue related to the AC and DC metering issues that were discussed. Please explain your rationale and include examples if applicable.

As the Meeting presentation noted, resources using DC metering elements can participate in CAISO markets as SC-Metered Entities, using SQMD Plans. However, we understand that Scheduling Coordinators may consider this to be a burden, and considerable additional costs can be involved in establishing and sustaining that arrangement.

Thus, it would be better if the CAISO could certify one or more DC meters promptly, so resources using them can be CAISO-Metered Entities. LSA supports the CAISO's planned outreach to meter manufacturers that CAISO has made or is planning to make and offers its assistance on this matter.

**3. Other metering and telemetry needs**

Please provide your organization's feedback on other metering and telemetry needs for hybrid resources.

LSA wishes to comment on the extensive discussion at the Meeting about CEC RPS reporting requirements. Specifically, LSA agrees with SPower's comments on the Issue Paper concerning subtraction of storage "round-trip losses" for RPS reporting purposes under the CEC's RPS Eligibility Guidebook when there are separate Resource IDs for renewables and storage, in HRs containing both components.
The Guidebook (Section 3F) states as follows:

> The reportable RPS energy from this hybrid resource configuration would be equal to the renewable energy produced net of any losses from storage.

However, the Guidebook discussion describes requirements for a hybrid "facility," without defining that term. The issue of separate vs. combined Resource IDs, or the applicability of this guidance to configurations with separate renewables and storage Resource IDs, is not addressed in the CEC document.

As LSA pointed out, there is little difference for RPS purposes between:

- **A stand-alone solar project located near a stand-alone storage project**, where physically some of the energy generated and then exported to the grid is effectively injected into and withdrawn from the separate storage project, before re-export and transmittal to consumers; and
- **The solar component of an HR project co-located with a storage component**, where some of the energy generated is injected into and withdrawn from the on-site storage component, before export and transmittal to consumers.

Thus, renewable generation and storage equipment under separate Resource IDs would logically be considered as separate "facilties" under CEC rules, and there is little justification for treating them together as one "facility."

The CAISO itself treats the two Resource IDs as separate facilities for settlements, dispatch, Resource Adequacy, and other purposes. (In fact, under current Master File protocols, they are considered entirely separate and unrelated resources.)

Moreover, it would be inconsistent for the CAISO to charge market settlements for the full injection amount into storage from on-site renewables when there are two Resource IDs (as it appears may be the case, based on information in the Issue Paper), but then subtract round-trip losses from reportable RPS amounts. Effectively, the supplier would pay the CAISO as though all the energy came from the grid, but then be unable to get full RPS benefits because the CEC assumes that the round-trip losses energy never reached the grid. This situation would clearly be unfair and unreasonable.

With respect to metering requirements, under an interpretation considering renewable and solar HR components under separate Resource IDs as separate "facilities," there would be no need for the CAISO to meter the energy from the renewable component into an on-site storage component for either CAISO or CEC purposes. Instead, such metering would be at the option of the supplier, e.g., to demonstrate for ITC purposes that injections into on-site storage are from renewable sources.

This issue is significant to suppliers because of the impact on RPS-reportable energy. One example, prepared by LSA member 8minutenergy Solar, is given below.

Finally, suppliers understand that the CEC, and not the CAISO, determines RPS reporting rules. The CEC is in the process of updating its Guidebook, and some suppliers have already engaged with the CEC on this topic. Proposals in the CEC RPS Guidebook Proceeding would eliminate any "co-location penalty" for a hybrid solar + storage facility by counting all renewable generation net of line losses but including energy to charge the storage unit. Under this arrangement, the number of RECs from the solar + storage facility will be the same as that of separately connected solar and storage facilities.

It would be helpful for the CAISO to also engage with the CEC, to help explain issues related to separate Resource IDs, CAISO metering requirements, and the issue of comparability between co-located vs. separately located solar and storage projects. In addition, the CAISO should anticipate that the CEC RPS Guidebook may update the REC counting methodology to eliminate any "co-location penalty." The CAISO should design its systems to be flexible, such that they can accommodate different interpretations of current RPS accounting rules, and also respond to possible future change in those rules as the market evolves.

## Co-located Renewables + Storage Plants Get Short-changed on RECs (From 8minutenergy Solar)

According to current CEC counting rules, renewable generation eligible as a REC is measured at the Point of Interconnection (POI). When storage is co-located with solar or wind, the volume of RECs counted at the POI is net of the storage energy usage compared to a stand-alone renewable plant. This is in contrast to the arrangement where renewables and storage are not co-located and have separate interconnections. In that case, the full renewables output (net of inverter and line losses) is delivered to the POI and gets counted as RECs. If the off-taker has a separately connected storage facility, e.g., pumped hydro, it shapes the power there and absorbs the energy usage. In both cases, the renewables output and the net power usable to meet load are the same, but in the co-located case, the amount of RECs is lower. See an illustrative REC counting table below.

**Illustrative REC and Load Calculation Comparing Co-located and Separately Interconnected Solar + Storage Facilities**

| | Solar + Storage Co-located | Solar & Storage Separately Interconnected |
|---|---|---|
| Solar Output (net of inverter and line losses) - MWh | 100 | 100 |
| Storage Efficiency | 85% | 85% |
| Hypothetical LSE Load - MWh | 1,000 | 1,000 |
| MWh Used for Storage | 15 | 15 |
| Total MWh LSE Use | 1,015 | 1,015 |
| Solar Output as % of LSE Load | 10% | 10% |
| Solar Output as a % of Total MWh LSE Use | 9.85% | 9.85% |
| RECs Calculated per CEC - MWh | 85 | 100 |

## Additional comments

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