

Stakeholder Comments Template

Submitted by	Company	Date Submitted
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Please use this template to provide your comments on the presentation and discussion from the stakeholder meeting held on August 13, 2014.

Submit comments to EnergyStorage@caiso.com

[Comments are due August 20, 2014 by 5:00pm](#)

The presentation discussed during the August 13, 2014 stakeholder meeting may be found at:

<http://www.caiso.com/Documents/AgendaPresentation-EnergyStorageInterconnection.pdf>

Please provide your comments in each of the topic areas listed below.

[Applying the GIDAP to Cluster 7 energy storage projects](#)

The ISO invites stakeholders to comment on the framework developed under existing GIDAP rules for accommodating Queue Cluster 7 energy storage interconnection requests (see slide 7 and slides 11-18) and its future application to subsequent queue clusters.

Comments:

PG&E appreciates the opportunity to comment on the CAISO's Energy Storage Interconnection Initiative Stakeholder Meeting and Presentation on August 13, 2014.

PG&E reiterates its strong support for accommodating Queue Cluster 7 energy storage Interconnection Requests, and future energy storage interconnection requests, under the existing GIDAP framework. PG&E would also like to emphasize the importance of some key criteria outlined in the CAISO Energy Storage Interconnection Presentation

developed for the August 13, 2014 stakeholder meeting. Firstly, this approach is limited to storage devices interconnected to the CAISO controlled transmission system that are stand-alone storage or storage combined with a generator, but **not** storage combined with load. And secondly, in order for a storage device to be considered a generator, it must respond to CAISO dispatch instructions, including curtailment to manage congestion, during both charging and discharging modes. All of PG&E's comments below are in reference to this category of storage device.

If a storage facility elects not to respond to CAISO dispatch for its charging, and thus is not eligible to interconnect under the GIDAP framework, it can request firm load service from the PTO, through existing load interconnection processes. A firm load request to PG&E will reside under CPUC jurisdiction.

PG&E agrees with the CAISO's presentation regarding reliability studies for storage, with a caveat around the study cases that are used for informational purposes. Reliability studies for the discharge operation of storage devices should be studied the same way as conventional generators. For charging mode, network upgrades should only be identified for overloads that cannot be mitigated through congestion management. PG&E also recognizes that under this framework, it is unlikely that additional network upgrades for charging will be identified beyond the reliability network upgrades required for discharge mode.

With respect to informational reliability study results, PG&E would like to caution against the potential for costly and time consuming informational studies that do not provide commensurate value. Storage devices are intended to follow market signals and operate in a fashion that benefits the operation of the grid and avoid worst case scenarios. Developing worst case scenarios to study for informational purposes can add significant cost and time to the interconnection study process. Informational studies should only be done where the value of those study results will exceed the incremental cost of the additional study work. Alternatively, this type of informational analysis could be done at the option of storage generators, outside of the GIDAP interconnection process.

Lastly, PG&E also agrees with using the current GIDAP Deliverability methodology to assess the discharge capability of storage devices. See the comments below regarding a potential "charging deliverability assessment."

Are changes to the GIDAP needed?

Given the framework developed under existing GIDAP rules for accommodating energy storage interconnection requests (i.e., without requiring modification to the GIDAP tariff), the ISO

invites stakeholders to comment on whether changes to the GIDAP tariff are still needed. Stakeholders are asked to be specific and describe any changes they believe are needed despite this framework and explain why they are needed. (see slide 9)

Comments:

PG&E believes that the current GIDAP is mostly sufficient to accommodate storage generator interconnections. However, the Interconnection Request (IR) should be updated to include technical data relevant to storage projects. There should be a single IR that includes all information relevant to how the interconnection for the storage will be studied. PG&E has attached its supplemental IR that was used for Cluster 7 storage projects, to serve as an example of the necessary data needed to study a storage device for interconnection.

Resource Adequacy

The ISO invites stakeholders to comment on whether they favor “unbundling” flexible capacity from system/local capacity as a means of facilitating energy storage in California and explain why or why not. (see slides 22-30)

Comments:

The California Public Utilities Commission (CPUC) has indicated that this issue will be considered in its next Resource Adequacy rulemaking.¹ PG&E believes that the CPUC’s Resource Adequacy proceeding is the appropriate venue for these discussions.

Is a “charging deliverability assessment” needed?

The ISO invites stakeholders to comment on whether a test is needed to ensure that a storage resource is able to fully charge during each 24-hour day in order to be able to discharge to provide its full RA value. If you believe such a test is needed, how would you propose such a test be performed? Please be specific. (see slide 31)

Comments:

PG&E believes that having good information about the ability of a storage device to charge, with respect to congestion and/or other constraints would be extremely helpful.

¹ CPUC Decision 14-06-050, Appendix A, p. A-13. Located at: <http://docs.cpuc.ca.gov/SearchRes.aspx?docformat=ALL&DocID=97619935>.

The concept of a “charging deliverability assessment” is fundamentally different from the current deliverability assessment that evaluates a generator’s ability to discharge under worst case scenario conditions. A lot of the value of a storage device is its ability to operate (charge and discharge) in a manner that alleviates stress on the grid by mitigating some operational challenges, not by operating under worst case conditions. PG&E is supportive of an effective “charging deliverability assessment,” if one can be developed, but again cautions against costly and time intensive studies without commensurate value.

Other issues

The ISO invites stakeholders to comment on any other issues within the scope of this energy storage interconnection initiative.

Comments:

PG&E’s understanding is that Storage projects that are asynchronous generating facilities will need to meet the same power factor requirements as generating facilities in both ‘charge’ and ‘discharge’ modes. If a Phase II charging or discharging mode study requires +/- 0.95 power factor at the POI, the storage facility will need to be capable of meeting it in both modes. If Phase II studies do not require +/- 0.95 power factor in both charging and discharging modes, the facility needs to maintain unity power factor at the POI.

While PG&E recognizes that metering and telemetry are out of scope for this initiative, it believes it is critical to quickly move forward with establishing metering and telemetry rules for storage devices. This would facilitate the smooth integration of storage. In particular, storage resources should be able to respond to CAISO real-time dispatch instructions through ADS.

Please see the example of additional fields to be added to the CAISO Interconnection Requests for storage devices.

PG&E does not have comments on any other issues within the scope of the Energy Storage Interconnection initiative at this time, but looks forward to addressing other issues outside of the scope of this initiative through the Energy Storage Roadmap and subsequent initiatives.

Suggested Additional Information for Interconnection Requests

Storage Type (e.g. Battery, Hydro- Pump, etc.):

Operating Voltage: _____kV

General description of the Storage System:

Submit an outline of the power flow from storage device to the grid (if applicable include on-site generation) in simplified one-line diagram.

Electric Source Function

Rated Storage Discharging Power: _____MW

Discharging Time under Rated Power: _____Hrs

Maximum Discharging Power: _____MW

Grid Interface Device (Make and Model of the Inverters and Step-up Transformers):

Will Power be Exported to the Grid? YES NO

If YES, Specify Maximum Power Export to the Grid _____MW

Reactive Power Capability _____MVAR

(Provide Reactive Capability Curve, if available)

Maximum Fault Contribution Current _____p.u.

Electric Load Function

Rated Storage Charging Power: _____MW

Charging Time under Rated Power: _____Hrs

Maximum Storage Charging Power: _____MW

Will the storage system be charged from the Transmission or Distribution Grid? YES NO

If YES, Describe the designated operation schedule:

The energy storage projects are assumed to respond to ISO's dispatch instructions including curtailment instructions in both charging and discharging states.

If NO, provide technical description of how the storage system will be charged, including source of energy.

Provide technical description on Charger Control System.

Additional Submittals

1. Submit GE PSLF load flow in the form of *.epc
2. Submit GE PSLF dynamic model for charging in the form of *.dyd
3. Provide one-line diagram of the storage system
4. Submit an outline of the power flow from grid to the storage device (if applicable include on-site generation) in simplified one-line diagram
5. Site layout (plot plan)