

Stakeholder Comments Template

Submitted by	Company	Date Submitted
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Please use this template to provide your comments on the Issue Paper & Straw Proposal posted on June 24, 2014 in the Energy Storage Interconnection initiative and as supplemented by the presentation and discussion during the stakeholder web conference held on July 1, 2014.

Submit comments to EnergyStorage@caiso.com

Comments are due July 15, 2014 by 5:00pm

The Issue Paper & Straw Proposal posted on June 24, 2014 may be found at:

http://www.caiso.com/Documents/IssuePaper_StrawProposal-EnergyStorageInterconnection.pdf

The presentation discussed during the July 1, 2014 stakeholder web conference may be found at:

http://www.caiso.com/Documents/Agenda_Presentation-EnergyStorageInterconnectionJul1_2014.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 its proposed approach for the application of existing GIDAP rules to energy storage projects in Cluster 7 (e.g., that existing GIDAP rules can accommodate Cluster 7 storage projects that want to be treated as generators for both aspects of their operation; how reliability and deliverability studies will be performed; that GIDAP will not be utilized to assess requests to obtain a higher level of service for charging mode; and, the process for interconnection customers to seek such firm load service from the PTO through

means other than the GIDAP). Stakeholders are asked to identify any issues with this approach for Cluster 7 and to suggest potential alternatives.

Comments:

PG&E appreciates the opportunity to comment on the CAISO's Issue Paper and Straw Proposal for the Energy Storage Interconnection dated June 24, 2014. PG&E strongly supports the CAISO's proposed approach for the application of existing GIDAP rules to energy storage generators in Cluster 7 with only a few caveats and comments described below.

- Existing GIDAP rules can accommodate Cluster 7 storage projects that want to be treated as generators for both aspects of their operation. As stated in the policy paper, this would require both charging and discharging of the facility to respond to CAISO dispatch instructions, including curtailment instructions to manage congestion or other operational issues on the system.

If a storage facility elects not to respond to CAISO dispatch for its charging, and thus not be subject to CAISO market rules and restrictions such as Congestion Management, it can request firm load service from the PTO. However, a firm load request will reside under CPUC jurisdiction, which may restrict the ability for the charging aspect of the storage facility to participate in CAISO wholesale markets. PG&E would like to seek clarification of the requirements for storage participation in CAISO markets through this initiative. PG&E believes that one of the resulting changes to the GIDAP through this initiative should be a requirement that storage generators adhere to CAISO market rules and restrictions.

- PG&E agrees with the policy proposal that reliability studies for Cluster 7 should be performed by the PTOs based on the maximum discharge and charging capacity. Reliability studies for charging will only identify information about potential constraints, and not identify any additional network upgrades. It stands to reason that if a storage device is being operated in a manner that benefits the electric system and is following market signals, there should not be a need for additional network upgrade facilities at ratepayer expense, above and beyond what is already needed for discharge at maximum capacity. PG&E would also like to clarify that the informational results for the reliability charging study are informational only, and are not operating restrictions.

PG&E would like to examine the assumptions for the reliability study for charging outlined in this policy proposal, in order to obtain a balance between meaningful informational results and minimizing additional study costs for interconnection customers. PG&E believes that reliability studies should only be done for charging using

existing cases (i.e. the same cases used for studying generation). Developing additional cases to study reliability of charging for informational purposes can add significant study costs without providing much additional value.

- While the current GIDAP rules for studying reliability and deliverability of storage generators provide a sufficient framework for Cluster 7 Phase I studies, the GIDAP rules will need to be modified to accommodate storage facilities in a more comprehensive manner. After the CAISO works with stakeholders through this initiative to update the GIDAP rules, Cluster 7 projects should have the opportunity to opt in to any new rules or study methodologies to benefit from any changes that are established through this initiative. This would be similar in nature to the option given to Energy Only generators to participate in the “one time” Deliverability Assessment” studied during Phase II of Clusters 3&4.

While we believe there are some potential expansions necessary to the GIDAP to fully account for energy storage generators, as noted briefly above, the interim solution is a good one while all stakeholders work through this process to identify ways in which the GIDAP needs to be expanded.

Issues in scope for this initiative

Beyond Cluster 7, the ISO anticipates that it will receive further requests to interconnect energy storage projects in the Cluster 8 application window that will close April 30, 2015. Through this initiative, it may be possible to identify improvements that could be implemented prior to the Cluster 8 window so that those improvements can be applied to projects in that cluster.

Toward this goal, the ISO has identified the following three issue areas as in scope and invites stakeholders to comment on these.

- Interconnection request process. The objective is to ensure a one-stop, streamlined process for interconnecting energy storage to the ISO grid. Consolidation of all aspects (i.e., impacts of both discharging and charging) of energy storage interconnection under the GIDAP will be explored. Stakeholders are asked to explain where process improvements are most needed and could be most beneficial, and to suggest potential improvements.

Comments:

PG&E believes that the current GIDAP process needs only minimal change to account for energy storage projects. Specifically, certain storage facility technical data needs to be

collected on the electrical charging aspects of a project. This should be fully managed by the CAISO. The CAISO should publish a draft of this technical data for stakeholder comment.

Storage generators should be required to adhere to the same rules and restrictions with regards to their charging, or negative generation, as all other generators. This should be established through the interconnection application, and there should not be flexibility for a storage generator to operate outside of these restrictions.

Interconnection study process. The objectives are to: (1) examine the alignment between the methodologies used in ISO interconnection studies (e.g., reliability, deliverability) and the energy storage configurations and use cases, and (2) determine whether any changes can or should be made to these methodologies. Although the ISO is not making any commitments as to the extent of any changes that may be made to these methodologies (again, both reliability and deliverability), the ISO is open to this examination and is inviting stakeholder input. Stakeholders are asked to explain how current interconnection study methodologies may not align with energy storage use cases and to suggest potential alternatives for how these studies could be performed. Given that the current deliverability study methodology is aligned with existing resources adequacy rules, stakeholders are asked to suggest how these studies could be performed if those rules are assumed to change.

Comments:

PG&E believes the existing study methodologies for GIDAP and study process for Cluster 7 storage generators in this policy proposal are mostly sufficient for studying storage. Any study process enhancements for storage should continue to be informational only and not provide for any additional network upgrades, above and beyond what is needed to accommodate discharge. A main benefit of developing storage is to help integrate the new mix of renewable generation and make a “smarter” grid.

As described above, PG&E believes that existing base case information and engineering judgment in the current reliability study process are mostly sufficient to provide information about potential or hypothetical congestion situations for charging storage. In general, PG&E would like to avoid significantly expanding study cases, and therefore study costs, unless it will provide valuable information about potential congestion. To most efficiently study potential congestion scenarios for charging, PG&E believes it is best to have flexibility on a case by case basis, to determine what scenarios to study to obtain the most meaningful information.

Project modification process. The objective is to examine whether any further changes (to the two existing project modification processes discussed in the paper: the modification request process and the independent study behind-the-meter expansion process) can or should be made given that developers may want to modify projects (e.g., to add energy storage to a renewable project) either still in queue or those in commercial operation. Although the ISO is not making any commitments as to the extent of any changes that may be made to these existing project modification processes, the ISO is open to this examination and is inviting stakeholder input. Stakeholders are asked to explain how these existing processes may not provide adequate means for requesting project modifications, and are asked to describe changes that could be made or suggest potential alternatives to these processes.

Comments:

PG&E is supportive of the ability for storage projects to utilize the modification and independent study behind-the-meter expansion processes as avenues for interconnecting storage. Under certain conditions, this can provide a streamlined framework for storage interconnection. Due to the high variability of potential storage configurations, it is very important for the CAISO and the PTOs to have the ability to evaluate modification requests on a case by case basis, and use engineering judgment to determine whether the modification process or new interconnection request is appropriate for interconnecting a storage project.

A framework for differentiating between energy storage configurations

Although the ISO has identified the range of configurations that may be possible, due to time constraints the ISO is concerned that inclusion of all possible configurations in this initiative may jeopardize the goal of identifying GIDAP improvements that could be implemented prior to the Cluster 8 window. Thus, the ISO is recommending that this initiative focus **initially** on ISO grid connected storage configurations (and not distribution connected and customer sited). The ISO believes that solutions developed for ISO grid connected storage configurations will likely inform solutions for distribution connected and customer sited configurations (e.g., where appropriate, conforming changes could be made to distribution utility WDATs). Consistent with this approach, the ISO asks stakeholders to identify energy storage interconnection issues or challenges associated with ISO grid connected configurations (e.g., where the current interconnection rules may either fail to address or conflict with the needs of storage projects) and to make proposals for addressing these issues.

Comments:

PG&E agrees with the CAISO’s approach of initially limiting the scope of this stakeholder initiative to projects interconnecting to the CAISO controlled transmission grid. Any interconnection changes or updates to PG&E’s Wholesale Distribution Tariff (WDT) would be managed with the FERC. PG&E further notes that it is currently processing storage interconnection requests under the WDT, when applicable, in a manner consistent with what the CAISO is proposing in this policy paper for Cluster 7.

Additionally, this process should focus on energy storage projects that are wholly market participants, not those that wish to provide behind-the-meter service to retail loads.

PG&E’s Proposed 2014 Energy Storage RFO Interconnection Related Provisions

Although not explicitly requested in the CAISO’s stakeholder comments template, PG&E believes it may be informative to provide the CAISO and stakeholders information from PG&E’s draft Energy Storage Request for Offers (RFO) Solicitation Protocol regarding the RFO schedule and interconnection related provisions. It is important to note that PG&E’s draft solicitation protocol is pending review and approval by the CPUC in R.10-12-007 and is therefore subject to change.¹

Below is a listing of the salient excerpts from the draft protocol pertaining to interconnection requirements. For reference purposes page numbers from the draft protocol are provided inside parentheses.

- PG&E prefers projects that are active in the interconnection queue (page 16);
- Each Participant is strongly encouraged to initiate and submit an interconnection request to PG&E (or other California IOU) for distribution interconnection and to the CAISO for transmission interconnection prior to Offer submittal, as appropriate (page 16);
- For Offers that are shortlisted and have not initiated an interconnection request, the process should be initiated at the first available opportunity, and Offers are required to be in the process by execution of the applicable Agreement (page 16);
- Participants may offer either Full Capacity Deliverability Status, as defined in the CAISO Tariff and PG&E’s Wholesale Distribution Tariff (WDT) or Energy Only (page 32);

¹ To view PG&E’s Draft Energy Storage Solicitation Protocol, go to www.pge.com/rfo and click on “2014 Energy Storage RFO.”

- For those projects that have a current interconnection study . . . or Interconnection Agreement, each Offer must include all completed interconnection studies or a copy of the Interconnection Agreement to be considered for selection. The Participant must provide to PG&E the results of any updated interconnection studies as those results become available. This information may be used by PG&E in ranking and evaluating Offers. (page 33)

Key Proposed Milestone Dates for the Energy Storage RFO

December 1, 2014: PG&E Issues RFO

February 27, 2015: Deadline for PG&E to receive Offers

June 30, 2015: PG&E notifies selected Participants of their Offer eligibility for Shortlist Negotiations

June 30, 2016: PG&E's 2014 Energy Storage Shortlist expires.