



Stakeholder Comments Template

Submitted by	Company	Date Submitted
Mark Higgins 510.665.7811 x106 mhiggins@storagealliance.org	California Energy Storage Alliance (CESA) ¹	July 15, 2014

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.

¹ The views expressed in these comments are those of CESA, and do not necessarily reflect the views of all of the individual CESA member companies. (<http://storagealliance.org>)

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:

CESA strongly supports the CAISO's approach to studying charging and discharging of energy storage resources under the GIDAP, provided both charging and discharging are subject to CAISO market dispatch instructions that already governs CAISO-interconnected generation resources.

CESA encourages the CAISO to revisit whether it will already have tariff authority to approve network upgrades triggered by Cluster 7 storage charging by the time the study process is complete. Assuming the CAISO Board of Governors approves, and FERC accepts, CAISO's proposed tariff language to address implementation of FERC Order 792², CESA sees no reason why the CAISO would not have such tariff authority by the time Cluster 7 projects sign interconnection agreements.

The CAISO should allow Cluster 7 projects the ability to opt into any new rules implemented as part of this stakeholder initiative for their Phase II studies. According to the current CAISO queue³, CESA calculates that there are 2,320 MW of Cluster 7 projects – 39 in all – that are either standalone energy storage or have an energy storage component. Thus, there is certainly potential for unanticipated issues to arise. Moreover, tariff reforms implemented by this stakeholder initiative are likely to result in a more clear methodology and tariff treatment for energy storage resources.

Therefore, the CAISO should allow for an off ramp for Cluster 7 projects in case issues do in fact arise. The way to achieve this is to create a path for Cluster 7 projects to be “normalized” under the new rules without forcing them to withdraw and reapply. CESA's recommendation is to allow generators to indicate, via the interconnection

² http://www.caiso.com/Documents/DraftTariffLanguage_Topics4-5_InterconnectionProcessEnhancements.doc

³ Current as of July 3, 2014: <https://www.caiso.com/Documents/ISOGeneratorInterconnectionQueueExcel.xls>

customer's Phase I results meeting comments, whether they wish to be studied during the Cluster 7 Phase II under the old rules or new rules.

With respect to the cases CAISO will study, CESA recognizes that system needs are changing and charging during the partial peak case is likely to be of interest to the load serving entities. Thus, demonstrating limited congestion for charging during partial peak periods may be perceived as a competitive advantage to the project developers. However, CESA believes this to be an issue of effective flexible capacity or "flexible deliverability", rather than a traditional energy only reliability issue. While CESA has no objection to information only partial peak congestion studies for charging per se, this type of study ultimately needs to be linked to a new "flexible deliverability" status, CAISO market products, and flexible capacity procurement in the CPUC's LTPP. Please see CESA's comments below regarding the Interconnection study process for additional context.

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.

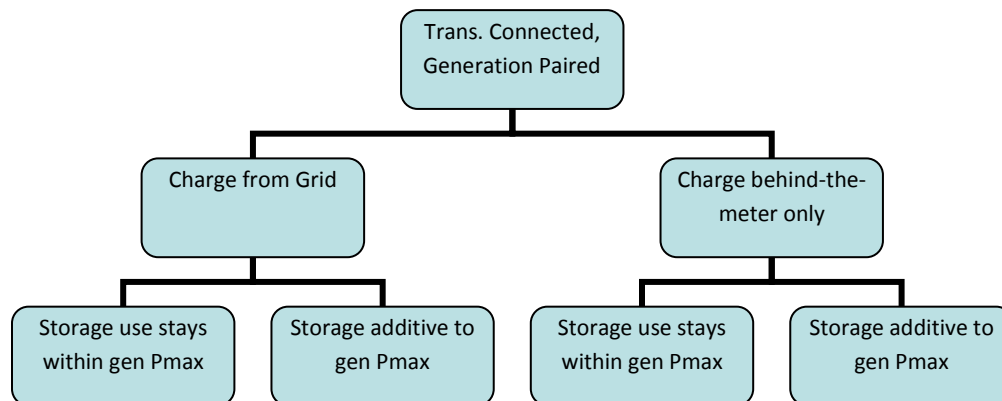
Toward this goal, the ISO has identified the following three issue areas as in scope and invites stakeholders to comment on these.

- **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:

CESA supports consolidation of all aspects of energy storage interconnection (i.e., impacts of both discharging and charging) under the GIDAP. As discussed above and below, CESA encourages the CAISO to create a new "flexible deliverability" option on the interconnection request that allows projects to be studied for network upgrades aligned with meeting system flexibility (as opposed to peak deliverability) requirements and linked with the CAISO's method for determining effective flexible capacity.

Given the multitude of energy storage use cases, even at the transmission level, CESA recommends that the CAISO evaluate whether it is receiving sufficient information from interconnection customers during the interconnection request process that would allow the CAISO to better identify the use case a particular IC envisions for its project, and to allow reliability and deliverability impacts to be more accurately studied during the study process. The following chart shows a simplified rendition of potential use cases for generator-paired storage assets interconnecting at the transmission level:



For example, a hypothetical 10 MW solar PV + 5 MW energy storage asset could have several different use cases resulting in many different dispatch profiles. For example, such a project could have a p_{Max} of 5, 10 or 15, and a P_{min} of 0 or -5 during peak scenario. There could also be different P_{max} values during off peak and partial peak scenarios.

- 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:

CESA recognizes that system needs are changing, and studying partial peak reliability impacts may be desirable. Regardless of whether the CAISO intends to study reliability in partial peak cases for future interconnection clusters, CESA recommends alignment of positive and negative generation (charging) reliability studies. If the CAISO intends to study negative generation for partial peak reliability impacts, the CAISO should also study positive generation for such impacts.

CESA encourages the CAISO to develop an option for projects to be studied for “flexible deliverability status” (Flex DS), in addition to projects’ option to obtain full or partial capacity deliverability status. While this new Flex DS may be a deliverability status that lacks linkage to a particular capacity or market product today, to a certain extent, this is a chicken or egg dilemma.

CESA supports unbundling effective flexible RA from system and local RA, but in order for these capacity products to truly address underlying market needs, effective flexible capacity should be determined based on a specific study process evaluating the ability of projects to have “flexible deliverability” to meet partial peak system flexibility requirements, and approving upgrades that are based on future system needs rather than the more binary and anachronistic focus on energy only versus deliverability to meet summer peak load.

- 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:

CESA recommends that energy storage functionality being added to existing interconnection requests that are “non-import” requests (i.e. projects that only charge from behind the meter generation) should be explicitly considered subject to the 5% safe harbor provisions, thus deemed not material.

CESA also recommends that the CAISO consider allowing congestion management / curtailment (similar to CAISO’s approach for Cluster 7 charging) as a mitigation for potentially material impacts due to modification requests for enablement of grid charging.

CESA recommends that legacy projects that have gone through the material modification process to add energy storage be allowed to go through a “charging only” interconnection study in a future queue cluster. This study would enable such resources to “upgrade” their interconnection status to allow for a similar level of service to other post-Cluster 7 bi-directional market resource interconnections.

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 solely 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:

CESA recognizes that the CAISO’s objective is to contain the scope of this stakeholder initiative to GIDAP-related storage issues in order to implement tariff changes in time for Cluster 8. CESA supports that approach, but encourages the CAISO to keep distribution, behind-the-meter, and load-paired use cases in mind while developing GIDAP policy reforms. Study methodology trickles down. The participating transmission owners often replicate many aspects of the CAISO’s tariff language and study processes in their wholesale distribution and Rule 21 tariffs to keep policy consistent across interconnection voltages. And there are many other CAISO-jurisdictional issues that directly impact distribution-connected and distributed BTM load-paired resources, such as deliverability, metering & telemetry requirements, and a joint CAISO-LSE-CPUC methodology to differentiate / net out wholesale market participation from behind-the-meter (load paired) storage resources.

As such, CESA provides the following comments to inform the broader discussion, recognizing that many of the issues related to distributed resources are likely out-of-scope for this specific initiative.

Use Cases

With respect to the use cases described by the CAISO:

- CESA points out that what the CAISO describes as “use cases” are really high level configurations, and are generally organized as a matrix of whether energy storage is standalone, generation-paired, load-paired, or both generation- and load-paired, and at what interconnection level the resource is interconnecting to (transmission, high voltage distribution, or low voltage feeder lines).
- CESA recommends that the CAISO generically add “energy storage paired with generation and load” to the customer-sited storage configurations.
- Within each configuration, there can be many different specific use cases that will need to be explored for policy implications and possible rule incompatibilities, particularly in the realm of behind-the-meter and load-paired cases, but also in the realm of generation-paired use cases (see *Interconnection Request Process* section for an example of the latter).
- CESA plans to further engage with the CAISO, CPUC, and CEC on these usage scenarios during the process of developing the Energy Storage Roadmap, and will further raise transmission-connected use case issues identified by our members over the course of this initiative.

Deliverability

Current deliverability rules were not designed in a way that, as a practical matter, allows small-scale distributed and customer-sited facilities to determine their deliverability status. Currently there appear to be two paths by which distributed facilities can be found to be deliverable.

The first path involves each individual facility to participate in the CAISO’s deliverability cluster study process. This process was clearly designed for larger scale projects which are able to absorb the significant costs involved to participate in this study process (\$50,000 per site) and which will, as a practical matter, have far greater certainty as to the specific geographic location of where a given facility seeking deliverability status will be located. These factors appear to greatly limit the ability of small scale solutions to have their eligibility determined in any practical way under this process.

The second path, whereby on an annual basis the CAISO determines the amount of capacity that can be deemed deliverable at different nodes on the CAISO system (“Deliverability for DG”) would appear to provide a potential means by which aggregated solution providers would have some insight into where on the system they can interconnect and be found deliverable, however, this process, too, appears rife with uncertainty given the relatively limited capacity that appears to be available based on the current methodology used by the CAISO and uncertainty regarding whether that capacity will be available to a given resource or set of resources when customers materialize.

An additional challenge appears to be the absence of readily accessible data that would enable a provider to determine which node a given customer-sited facility is associated with and thus whether or not any deliverability has been found on that node. Collectively these issues make it difficult for aggregated solution providers to commit to marketing and deploying customer-sited battery systems given the uncertainty regarding whether projects will be deliverable and thus able to provide capacity services.

Metering and Telemetry Requirements

Current metering and telemetry requirements are frequently cost prohibitive to small scale customer sited projects and impede the ability to pursue aggregated solutions. The impact of metering and telemetry requirements required as a condition of wholesale market participation should be evaluated and alternative, lower cost solutions should be explored.

Wholesale Participation Challenges for Projects with a Retail Component

The use of customer sited battery systems to provide both retail services and wholesale services is an area of significant growth potential and alignment with AB32 GHG reduction objectives⁴, but also one of substantial regulatory uncertainty. Rules should be clarified to ensure they don’t unnecessarily impede the ability for batteries to be used on both sides of the meter where those uses are compatible/non-mutually exclusive. For example, the CAISO, load serving entities, and CPUC should develop a methodology to reconcile charging specifically for wholesale market participation (which should not be billed at retail) from charging used to serve end use load (which

⁴ Approximately 50% of the state’s GHG reduction goals must come through grid decarbonization and transportation electrification (Source: *The Technology Path to Deep Greenhouse Gas Emissions Cuts by 2050: The Pivotal Role of Electricity*; Science 335, 53 (2012); James H. Williams, et al.). Distributed storage (either fixed or via vehicle-grid integration) is an important tool to ensure that transportation electrification is complementary to grid decarbonization goals.

would remain a retail function). This may require changes to the CAISO's and LSEs' metering and telemetry requirements, as well as advice letters from the LSEs that clarify what constitutes retail load.

Similarly, customer should not be forced to choose between retail oriented programs, like NEM, and the ability to use battery systems they may have deployed to provide wholesale services. At this point the rules appear unclear and should be thought through. Coordination between the CAISO, the utilities and the CPUC to address any conflicts between the interconnection requirements and tariff rules will be paramount.