

## Stakeholder Comments Template

Submitted by	Company	Date Submitted
Doug Divine ( <a href="mailto:ddivine@eaglecrestenergy.com">ddivine@eaglecrestenergy.com</a> )	Eagle Crest Energy (ECE)	April 14, 2014

Please use this template to provide your comments in the Energy Storage Interconnection stakeholder initiative.

Submit comments to [EnergyStorage@caiso.com](mailto:EnergyStorage@caiso.com)

**Comments are due April 14, 2014 by 5:00pm**

The presentation discussed during the April 7 stakeholder meeting may be found at:

[http://www.caiso.com/Documents/Agenda-Presentation-EnergyStorageInterconnectionApr7\\_2014.pdf](http://www.caiso.com/Documents/Agenda-Presentation-EnergyStorageInterconnectionApr7_2014.pdf)

The ISO is requesting that stakeholders provide comments in one or both of the following two subject areas:

1. Issues and/or questions of more immediate concern relating to the submission of interconnection requests in the Cluster 7 application window. To the extent possible, the ISO will seek to address such issues/questions prior to the close of the Cluster 7 application window (i.e., prior to April 30).
2. Policy issues that may require more comprehensive examination through this initiative. As a reminder, policy issues relating to interconnection of energy storage to the ISO controlled grid are within the scope of this initiative. In contrast, interconnection below the ISO controlled grid, and market and rate issues, are examples of subject areas not within the scope of this initiative.

To aid the ISO in differentiating between comments in these two subject areas, please insert your comments under the appropriate heading below. Thank you.

**Please note:** In the comments below, for convenience, the term “load” refers to storage injection, charging, or other energy inflows from the CAISO grid, while the term “generation” refers to storage withdrawals, discharging, or other outflows to the CAISO grid.

### Issues/questions of more immediate concern relating to the submission of interconnection requests in the Cluster 7 application window:

ECE believes that, if possible, the CAISO should resolve the market pricing applicable to CAISO grid-connected storage load and generation. As described further below under “Market Issues,” this issue is so fundamental to storage economics that Interconnection Customers (ICs) proposing storage projects may not be able to evaluate the viability of their projects to the level needed to decide whether to submit an Interconnection Request (IR) to the CAISO at this time.

### Policy issues that may require more comprehensive examination through this initiative:

ECE welcomes the opportunity to comment in this initiative on the applicability of generator-interconnection rules in the Generation and Deliverability Allocation Process (GIDAP) to energy storage projects. The CAISO's solicitation of stakeholder views on these issues is consistent with recent directives from FERC and the CPUC focusing on fair and comprehensive consideration of storage and its cost-effective addition to electrical systems.

However, ECE has several concerns about the interconnection framework proposed by the CAISO on the April 7<sup>th</sup> conference call. These concerns, which are explained below, include the following:

- **Separation of storage interconnection analyses into separate storage injection or charging (load) and storage withdrawal or discharging (generation) analyses**, with deferral to the Participating Transmission Owners (PTOs) on the load analysis and only "coordination" between the two. This approach raises issues of:
  - **Study oversight and coordination.** The bifurcated framework has the potential to create conflicts and inconsistencies. Instead, any required load-related analysis for storage interconnections should be added under the current CAISO study process, because load inputs to storage facilities are not "customers" under PTO tariffs.
  - **Study methodology.** Under certain circumstances and for certain technologies, it may make sense to add load-related analyses to interconnection studies for storage. However, this additional analysis should: (1) reflect the specific facilities involved and the timing when the loads are likely to occur; and (2) avoid contradictory assumptions that could unfairly burden applicants with the worst features of both generation and load.
- **Scope of storage interconnection studies:** Storage facilities have the ability to function as transmission assets, and to provide policy-related benefits that generators cannot. Thus, to properly evaluate storage and related Network Upgrades (NUs), the CAISO should consider moving the NU analyses for storage to the annual CAISO Transmission Planning Process (TPP) or expanding the scope of the interconnection process to consider these benefits.
- **Consideration of market issues:** Though the CAISO wants to limit the scope of this initiative to interconnection issues, critical market issues must be resolved before storage projects in the interconnection process are asked to make serious financial commitments. Most important is the determination of whether wholesale or retail tariffs should apply to storage load and generation. This issue is a primary determinant of storage-facility economics, and neither ICs nor their potential counterparties can accurately assess the potential viability of their projects without that information.

### Study oversight and coordination

The CAISO's proposed separation of storage interconnection studies into generation interconnection studies under CAISO direction and load interconnection studies under PTO direction has the potential to introduce significant complications and inconsistencies into the study process. ECE proposes instead that any additional elements needed for transmission-connected storage projects be added to the current CAISO study framework.

That framework places the CAISO in charge of the overall study process. The CAISO has the option to delegate study functions to PTOs where this would be more efficient and/or the PTOs have unique knowledge or ability to perform that work. The CAISO has done so for many study elements, and there is no reason why this framework cannot also apply to storage projects.

As described below, ECE does not argue that there may be some elements that could be added to the generator-study process for storage projects, e.g., if the load demand will exceed the generation output to the degree that it will require more line and other electrical capacity.

PTOs are likely to have the expertise needed to perform this and other load-based evaluations, and the CAISO can delegate those functions to the PTO on the same basis that it does so for other analyses under the current framework. However, like the rest of the studies performed by the PTO in this process, load-related analyses should be done under CAISO direction and tariff authority, and not under independent PTO jurisdiction and tariffs.

It is clear, in fact, that PTO tariffs do not apply to storage loads. Rule No. 1 for the major PTOs all define applicable customers as those that consume and do not resell it:

- **PG&E:** The definition of “Customer” states that “A customer may take Bundled Service or Direct Access Service or Community Choice Aggregation Service, **but must take final delivery of electric power, and not resell that power.**”
- **SCE:** An “End-Use Customer” is defined as “A customer that **takes final delivery of electric power and does not resell the power.**”
- **SDG&E:** “Customer” means “Generally, **the end-users of electricity**, who may be served either by the UDC or retail electric service providers.”

Storage facilities do not consume energy except as a byproduct of interaction between the load and generation functions (i.e., losses). Instead, they re-deliver to the grid nearly all the energy that they accept from it, effectively reselling that energy. This resale element would disqualify their operations from PTO/retail jurisdiction, based on their tariff definitions.

[As a separate issue, separate treatment of multi-hour storage load could lead to the absurd conclusion that the applicable PTO would be required to procure Resource Adequacy (RA) capacity to cover it. This would make no sense for the many storage facilities likely to be operating in the generation mode when demands on the system are high (see below).]

### **Study methodology**

As noted above, Eagle Crest does not dispute that some load-related elements may be appropriately added to interconnection studies for storage facilities, but only to the extent that:

- **The maximum inflow rate would exceed the maximum outflow rate.** For example, a storage device with maximum load of 10 MW and maximum output of 8 MW could require an additional 2 MW of line and other electrical capability for the load, especially for project-specific transmission elements like generation tie-lines.

- **The input surplus is unlikely to occur during high-load hours.** Depending on the technology, the 10 MW demand under the example above could most likely occur when loads are low and thus would likely not place additional stress on the surrounding system. This aspect is most likely for multi-hour storage facilities, i.e., those most likely to be filling their capacity (having loads) during off-peak and other low-load hours, when prices on the system will be low.

These studies should ensure that storage projects do not get the worst impacts of both load and generation analyses. For example, if the generation analysis assumes full output when loads are high and the system is under stress, the load analysis should not assume full load under the same conditions. Clearly, storage projects would not act as generation and load at the same time.

In addition, the load studies should assume that storage projects get all the privileges of similarly-situated loads. For example, if similarly situated loads would qualify for line-extension allowances (free footage) based on expected revenues under utility Rule No.15, then storage projects should qualify for such allowances, as a credit against any generation tie-line cost (whether the tie-line is constructed by the PTO or the IC).

### **Scope of storage interconnection studies**

As noted above, storage facilities – depending on the technology and location – have the ability to function effectively as transmission assets, unlike a generator, and to provide system benefits that generators cannot. The amount, type, and location of storage cannot be optimized on the CAISO system with an interconnection-study process that is too narrowly constructed and does not include the full benefits that storage can provide.

The GIDAP (as it is now designed) focuses only on the impact and deliverability of new generation on the system, and on accommodating injections from those assets into the grid rather than how those assets can also take energy off the grid for later use. By contrast, the TPP is already set up to consider factors such as:

- **Potential transmission system benefits of storage**, as well as the transmission upgrades that optimize the ability of a storage project to manage system conditions; and
- **Policy-driven benefits of storage**, e.g., its ability to store renewable and other energy that might otherwise be curtailed under over-generation or congestion conditions and thus facilitate achievement of RPS goals and avoid financial impairment of existing renewable and other generators.

The economics of storage projects could be severely compromised by the cost and limited scope of the GIDAP process, coupled with the possibility that a storage project could be assigned system upgrade costs that the TPP would otherwise treat as reliability- or policy-driven.

These issues are more logically addressed in the TPP. The CAISO should, therefore, consider studying Network Upgrades for proposed transmission-connected storage projects connected at the transmission level studied in the TPP, with Interconnection Facilities examined in the Independent Study Process (ISP). This would ensure a proper and clear division between costs that should be borne by the storage project developer and those that should be treated like TPP Network Upgrades.

ECE understands that this change in study approach for storage would probably require a tariff change. ECE notes that the CAISO's compliance filing for FERC Order Nos. 792 and 792-A – which address interconnection-process changes for small (<20 MW) storage projects – is due in late June and asks the CAISO to consider including the above changes in that filing. The CAISO has combined its interconnection processes for large and small generators, so it makes sense to use that vehicle to propose these changes generally for all new storage projects.

Alternatively, the GIDAP methodology as applied to storage projects could be modified to consider these other reliability and policy-driven benefits, e.g., as a credit to transmission costs that might otherwise be assigned to such projects. This might be done using the same criteria and analysis methodologies applied in the TPP, adapted as needed to match the GIDAP framework.

Regardless of whether storage interconnections are analyzed in the GIDAP or the TPP, it is critical that all the benefits provided by storage be adequately recognized in such analyses.

### **Market issues**

Applying separate pricing regimens to storage generation and load functions is not workable on an operational basis. The construction and operation of storage generation and load functions are not separate but are continuous and inherent features of the facility as a whole. Splitting jurisdictions, interconnection/operating rules, and other aspects between these functions would likely yield undesirable results and would be unfair as well.

In particular, the quickest way to kill the economics of CAISO grid-connected storage projects is to apply retail tariffs to the load while applying wholesale tariffs to the generation. It is vitally important that the same pricing scheme apply to the energy flows in each direction. Moreover, current retail rate schedules simply do not have the wholesale-price granularity needed to ensure that accurate price signals incent such storage projects to operate in ways that will help the grid.

ECE believes that the same framework – based on wholesale CAISO market Locational Marginal Prices (LMPs) – is applied to projects connected to the CAISO grid. For example:

- Pumping energy for the Helms and Kirchoff Projects is billed at the applicable LMPs for the respective project locations, and generation is paid at the applicable LMPs at those locations.
- The CAISO's new Regulation Energy Management (REM) program aimed at Limited Energy Storage Resource Resources (LESRs) prices storage injections/withdrawals with 5-minute LMPs.

Moreover, there is ample FERC precedent to apply wholesale rates to transmission-connected storage. Thus, the CAISO's refusal to agree on the conference call that load for such storage projects would be subject to wholesale and not retail rates was quite alarming. (Note that ECE is not saying that the same price should apply to inflows and outflows (a potential "net metering" issue not addressed in ECE's comments), only that the same tariffs should apply to each.)

ECE understands that this "market" issue may be "beyond the scope" of this initiative. However, it is so fundamental to storage economics that the CAISO should resolve it before the current generator-interconnection application window closes, and certainly before applicants are asked to make greater financial commitments through posting of Interconnection Financial Security (IFS).