

## 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](mailto: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](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](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: NRG concurs with this proposed approach for Cluster 7 projects.

### 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: NRG strongly supports the CAISO's goal of creating a "one-stop" storage interconnection process that would avoid having to endure two separate processes (one for the charging mode, one for the discharging mode).

As the CAISO notes, traditional deliverability analysis processes, which examine super peak load conditions, may be misaligned with the ways in which storage will be most effectively used. While NRG does not have specific modifications to the interconnection study process to propose at this time, NRG supports re-examining the interconnection study process to identify how it can be modified to provide a better platform for effectively and efficiently deploying storage.

- 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: [No comment.](#)

- 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 is 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: [NRG believes that there is great value in considering changes to the interconnection process that would allow developers and generation owners to add storage to existing resources and/or existing interconnection projects in the most efficient and fastest way. NRG is particularly interested in exploring ways that storage projects could use “excess” existing interconnection capacity \(e.g., where the interconnection facilities provides X MW of capacity to deliver power to the grid but the interconnected resource is capable of a maximum delivery of something less than X MW of power\).](#)

### **[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: NRG understands that the CAISO is proposing to limit the scope of this initial storage interconnection process to storage projects that interconnect with the CAISO Controlled Grid, and not distribution- or customer-connected storage, so that the CAISO can modify its GIDAP procedures to facilitate storage projects seeking to interconnect in Cluster 8. Additionally, NRG understands that the CAISO has proposed that this initial storage interconnection stakeholder process focus on interconnection issues and that rate treatment, metering and telemetry and market design issues are outside of the scope of this initial process. Nevertheless, NRG expects accelerating growth in the number of smaller, behind-the-meter storage devices over the coming years, and the CAISO should begin engaging with market participants and other regulatory agencies to create a framework for those resources to participate in current CAISO markets (like regulation energy management) and potentially emerging markets (like frequency regulation or reactive power support) through seamless aggregations that minimize the burden on participating individual resources.

Additional comments:

**Thermal storage and storage modeling.** The CAISO's focus in this initiative seems focused on storage technologies that exchange electrical energy with the CAISO grid (e.g., batter storage systems). However, thermal storage technologies that enhance the operation of existing thermal generating units also hold promise. These thermal storage technologies surface issues that the CAISO has proposed be outside the scope of this initial initiative, which is focused on interconnection issues. However, NRG encourages the CAISO to soon engage a process that will consider these issues, which include things such as the classification of charging energy (some thermal storage devices can be "charged" – i.e., heated – either through exhaust heat or electrically) as wholesale or retail transactions, and the model through which such thermal storage-enhanced generating resources will be represented to the CAISO's market optimization. The issue of how to model storage devices or storage-enhanced generation devices in the CAISO's market optimization is a key issue that extends beyond thermal storage projects.