CESA Comments on
CAISO Interconnection Process Enhancement Topics

Submitted by	Company	Date Submitted
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The California Energy Storage Alliance (CESA)[1] appreciates the opportunity to provide comments on how the generator interconnection process, procedures, and agreements can be enhanced in a 2018 Interconnection Process Enhancements Initiative.

The California Independent System Operator (CAISO) requested that stakeholders submit topic suggestions to be considered for inclusion in the initiative scope. In response, CESA respectfully requests that the CAISO include a concerted focus on how interconnection processes can be further enhanced for energy storage applicants in two main ways, which should be added to the 2018 initiative:

1. Establishing pathways to avoid requirements for additional cluster studies for projects with energy storage replacing or co-located with another generator, including when that non-storage generator is being decommissioned
2. Improving the approach to considering the timing of storage 'loads' in interconnection studies

In light of the reform of generator interconnection procedures and agreements being considered at the Federal Energy Regulatory Commission (FERC) in Docket No. RM17-8-000,

[1] CESA is a 501(c)(6) membership-based advocacy group committed to advancing the role of energy storage in the electric power sector through policy development, education, outreach, and research. Individual member companies of CESA may have different views than those expressed by CESA. http://www.storagealliance.org/

CESA also recognizes and thanks the CAISO for already having adopted many of the improvements in the overall interconnection process as proposed by FERC in the rulemaking, with much of the work accomplished in the 2014 Energy Storage Interconnection Initiative.

1. **Create an expedited process for the utilization of full interconnection service at existing generating facilities by co-located energy storage systems**

   The CAISO has been progressive regarding the addition of energy storage resources to existing generating facilities. Specifically, it allows for a portion of an existing facility's capacity to be replaced with electric storage resources through a request to modify the existing interconnection instead of having to re-submit an interconnection request in the next cluster study open window. A Technical Bulletin was also issued by the CAISO on October 19, 2016 to serve as a guide for developers of hybrid projects – *i.e.*, existing or proposed generation (conventional or renewable) paired with energy storage – and to clarify their interconnection processes for how hybrid projects can interconnect beyond the approved capacity as long as a "limiting mechanism" is in place to limit the effective output within the approved capacity.[2] The allowance of and streamlined processes for requests to add energy storage resources to existing generating facilities enable existing generating facilities to firm capacity when paired with renewable generators and to reduce greenhouse gas ("GHG") impacts when paired with fossil-fuel-based generators.[3]

   However, CESA believes that there is a major opportunity to consider interconnection processes for the complete replacement of an existing generating unit with interconnection service in place.[4] As California strives to meet its renewable and GHG goals given the potential for retirements of uneconomic gas generation units, CESA believes that there is existing and approved interconnection capacity that is being underutilized and can be put to better use by energy storage resources to support California's transition to a cleaner grid. At present in the CAISO, such complete replacement requests require an interconnection request in the subsequent cluster study window, which CESA finds unnecessary if the energy storage resource can be shown to preserve the deliverability of the existing generating unit. With a more streamlined interconnection process for full repowering, energy storage projects can be developed in a more timely fashion and more cost-

[2] CAISO Technical Bulletin: Hybrid Energy Storage Generating Facilities, 19 Oct 2016. pp. 6-7.
[3] "Inside GE and SoCal Edison's First-of-a-Kind Hybrid Peaker Plant With Batteries and Gas Turbines." Greentech Media, 18 Apr 2017. https://www.greentechmedia.com/articles/read/inside-ge-and-socal-edisons-battery-integrated-gas-fired-peaker-plants
[4] CAISO Business Practice Manual for Generator Management, Section 12.1.3 Treatment of Energy Storage.

effectively due to savings from an avoided cluster study process, which can add $250,000+ to development costs.[5]

Understandably, such a complete repowering of an existing generating unit may require some lower-intensity re-study to ensure that the electric storage resource's charging behavior avoids the need for network upgrades. The CAISO has processes in place to model the market impacts of repowered units depending on the 'fuel source'. Notably, partially repowered units that charge from the grid only are allowed and are modeled and treated as a non-generator resource (NGR). CESA therefore sees no need to distinguish between partially repowered and fully repowered units that charge entirely from the grid. This approach unnecessarily limits the use of an established interconnection service and raises costs for developers to have to re-enter the cluster study process without any material benefit to the grid.

Additionally, CESA requests that the CAISO revise its material modification processes to enable the interconnection of energy storage additions to uneconomic gas generation units that are expected to retire and be decommissioned in the short term. In these cases, the gas generation facility may have a lower economic and technical useful life than the new energy storage addition, but the process, as it stands now, would require the hybrid facility owner to re-enter the cluster study process as a result of a 'fuel source' change that is deemed a material modification – *e.g.*, the paired energy storage unit charging from the grid once the gas facility is fully decommissioned instead of charging from the associated gas generation. Similar to CESA's recommendation in the next section of these comments on re-evaluating the charging deliverability requirements of energy storage in the CAISO interconnection process, CESA believes that these fuel source changes may not materially affect the deliverability of the site of the hybrid facility. An expedited, lower-intensity re-study process of the individual project may be necessary, and this initiative may be the appropriate venue to address these issues and develop these processes.

In conclusion, as California's electric resource mix changes for economic and policy reasons, there may be an increasing frequency at which these full and partial repowering opportunities arise. Many generation facilities are having to make near-term decisions on whether to retire these units or leverage its approved interconnection capacity for full or partial repowering with energy storage additions. The creation of an expedited and clear interconnection process for the complete and partial replacement of an existing generating unit with interconnection service in place would address these issues.

[5] The $250,000 figure is a representative estimate by CESA that includes not just actual study deposit costs, but also developer and consultant fees.

Addressing these issues in this 2018 initiative is therefore critically important and time-sensitive. The continued operation of these uneconomic plants to be studied in the more-than-two-year cluster study process or to await an expedited repowering interconnection process will likely cause these plants to just shut down and foreclose an opportunity to more cost-effectively add energy storage to meet California's grid needs and renewable/GHG goals.

2. Re-evaluate methods for modeling energy storage resources in worst-case scenarios

The CAISO determined in 2014 that energy storage resources can be interconnected using existing generator interconnection processes, procedures, and agreements.[6] CESA is generally supportive of the CAISO taking a negative generation approach as a more streamlined process for interconnection of energy storage resources, but believes that there are still opportunities for improvements regarding the CAISO's Deliverability Assessments as part of this process that determine whether generation resources qualify for Resource Adequacy (RA) capacity payments.

These Deliverability Assessments examine the maximum discharge capabilities of generation resources in 'worst-case' conditions for all generating facilities, but subject energy storage resources to a 'charging deliverability' study under which the CAISO studies the maximum megawatt charge during peak and off-peak periods to determine whether these incremental charging requirements drive the need for congestion management and thereby require network upgrades.

The current study approach is somewhat unreasonable and punitive. First, the assumption of energy storage resources charging during peak periods is illogical under normal conditions, when energy storage would be incented to act as a generator for basic economic reasons. Further, other traditional generators do not face similar 'fuel availability' requirements. Additionally, such charging deliverability studies are not necessary for determining discharge capabilities to receive RA status and are unnecessary given the advanced controls and algorithms that govern the rate and timing of their charging mode. For in-front-of-the-meter energy storage resources, charging behavior will be guided by economic signals from the wholesale market, and there should not be any concerns about unexpected charging, which may be the basis for examining charging during peak periods as the worst-case scenario.

[6] Energy Storage Interconnection Draft Final Proposal, 18 Nov 2014.

CESA therefore requests that the CAISO re-consider 'fuel availability' requirements for energy storage resources through a charging deliverability study and consider how the interconnection study methodology can be reformed to make more reasonable assumptions about the timing of charging.