

**COMMENTS OF
THE CALIFORNIA ENERGY STORAGE ALLIANCE:**

Non-Generator Resource Working Group Meeting – September 13, 2016

Submitted by	Company	Date Submitted
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The California Energy Storage Alliance (CESA)¹ offers these comments on the California Independent System Operator's (CAISO) Non-Generator Resource (NGR) Working Group (WG) meeting held on September 13, 2016.² This Working Group is part of the larger Energy Storage and Distributed Energy Resources Phase 2 (ESDER) initiative. The NGR WG meeting focused on the concept of use-limitations, commitment costs, opportunity costs, and RAAIM treatment for NGRs in the CAISO market.

CESA appreciates the CAISO's work on this NGR matter. CESA believes the ESDER initiative should be leveraged to improve and refine the NGR model. Three categories of NGR enhancements were discussed as part of the September 13th WG meeting:

- 1) Do NGRs have opportunity costs? If so, should they receive use-limited status, outage cards, etc?
- 2) Do NGRs have Commitment Costs? If so, should they be able to reflect them and what details are needed for this capability?
- 3) Should NGRs also have tools to manage excessive intraday dispatch, e.g. a MW throughput limitation per day?

CESA offers comments on these matters below.

A. NGRs have opportunity costs and will require use-limited status, outage-cards, etc.

ESDER should confirm the eligibility of NGRs to have use-limited status, how such status is acquired, and how outages and (a lack of) bid mitigation rules accommodate use-limitations and related opportunity costs. This is an extremely high-priority enhancement to the CAISO's NGR rules.

The CAISO generally defines use-limitations, for purpose of Resource-Adequacy Availability Incentive Mechanism (RAAIM) exemptions, as exogenous factors that limit a resource's capabilities to participate in the CAISO market. This concept can apply to power plants with air quality emissions limitations,

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>)

²<http://www.caiso.com/Documents/EnergyStorage-DistributedEnergyResourcesPhase2WorkingGroupWebConference091316.html>

hydro resources facing limited ‘fuel’ availability in a given time-period, warranty limitations, or other factors.

Use-limitations create opportunity costs and risks of exposure to the RAAIM penalties, and such costs should be both biddable and recoverable and/or avoidable. For NGRs, which are not mitigated, marginal opportunity costs can likely be reflected in economic bids. This is a necessary feature for NGRs.

The CAISO should allow the following types of use-limitations to determine use-limited status for energy storage resources (or other resources) in the CAISO’s market:

- 1) Limits on ‘cycles’ per month, per year, or even per day
- 2) Limits on starts or commitments per month, per year, or even per day
- 3) Limits on MWh through-put per month, per year, and per day.

Based on CESA’s interviews with energy storage companies and developers, these types of limitations can and do exist in warranties and other contracts that are exogenous to the project, thus qualifying as use-limitations. In some cases, definitions for ‘cycles’ are embedded in warranties so standardized or resource-specific ‘counting’ and tracking of cycles may be possible. The above list is designed to accommodate any NGR that participates in the CAISO’s market. When and if definitions must broaden to cover unforeseen NGR use-limitations, the CAISO should allow such updates via the Business Practice Manual (BPM) update process.

The CAISO may want to track these limitations by resource, as such tracking is necessary for resources that take ‘use-limit reached’ outages. Additionally, the CAISO may recommend that Scheduling Coordinators track their own usage and progress towards limits. Such tracking should then inform eligibility for use-limit reached outages and related RAAIM exemptions.

Attestations or paperwork documenting the use-limitation should be sufficient to declare and receive use-limited status. CAISO Tariff rules direct honest and ethical behavior, and an attestation-based approach can simplify the process of acquiring use-limited status. In the future, if warranted, the CAISO may wish to host a workshop to further vet and detail the set of use-limitations that determine eligibility for use-limited status.

B. Intraday energy throughput limitations require a solution and RAAIM exemption, where applicable.

Working Group participants noted the potential need for some solution or tools to manage intraday through-put limitations on energy storage devices. Such limitations likely prevent excessive wear and tear on an energy storage device and are a feature of multiple storage contracts, as mentioned by speakers at the Working Group meeting from the Investor-Owned Utilities (IOUs). Speakers from the IOUs thus recommended a solution to this need.

CESA supports the use of a biddable parameter ‘MWh throughput limitation’ in the optimization to address these types of use-limitations.³ Such an approach was favored by several IOU speakers and

³ Other mentioned solutions – a major maintenance adder in commitment costs or the use of differing bid-stacks based on the state of charge as a means of managing cycling and the state of charge – seem less targeted towards addressing this intraday cycling problem. Any solution must address RAAIM exposure as well, and these solutions may do so inadequately.

seems to effectively accommodate the concern without inappropriately exposing such resources to RAAIM penalties. Moreover, such rules somewhat mirror long-standing established structures used for managing hydro use-limitations. Such rules should therefore be non-discriminatorily adopted for NGRs.

C. NGRs have commitment costs too, and should be able to reflect those costs

Commitment costs are a regular part of the CAISO's resource modeling and optimization. Commitment costs can vary widely and are often resource specific. In any case, a basic rule of CAISO participation is that resources should be able to recover costs, including commitment costs. This aspect of the market encourages resources to accept CAISO commitments, even when energy prices may discourage commitments. Thus, commitment cost recovery is essential to CAISO reliability.

The NGR-model should be enhanced to include commitment costs. No exhaustive list of NGR commitment costs exists at this time, but the CAISO should generally assume that commitments can create costs for NGRs including, but not limited to, thermal loads, pumping and priming loads, and synchronization loads. To illustrate these costs, the CAISO should note that Sodium-Sulfur batteries operate at temperatures above 300 degrees Celsius requiring thermal loads to ready the batteries for use, that Compressed Air Energy Storage (CAES) devices may have small gas turbines associated with their operation, that flywheels may have 'minimum loads' associated with maintaining flywheel velocity, that pump-hydro storage (PHS) resources have loads associated with synchronizing the turbines of the resource, and that many batteries can have warranty-based limitations, cell-replacements similar to a 'major maintenance' service, or other requirements where even a commitment could invoke an opportunity costs. Collectively, this range of NGRs and of commitment costs or 'no-load' costs warrants a wide avenue for representation and collection of commitment costs. NGR commitment costs should include commitment-specific costs as well as major maintenance adders and opportunity costs, if applicable.

CESA recommends the CAISO allow broad representation of costs with the potential for independent groups, CAISO staff, or market monitors to potentially review or request data on commitment costs.⁴ This expedient path allows cost-recovery while deterring improper representation of costs.

Finally, the CAISO has noted that the CPUC station-power rules can inform CAISO market views and treatment of commitment costs, such as auxiliary loads. The CAISO should therefore prepare to implement any eventual station power ruling from the CPUC, within reason.

⁴ CAISO has used independent consultants such as Potomac Economics to establish commitment costs in the past.