

FLEXIBLE RESOURCE ADEQUACY CRITERIA AND MUST-OFFER OBLIGATION

FIFTH REVISED STRAW PROPOSAL, POSTED JANUARY 17, 2014

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CESA continues to applaud the CAISO’s collaborative work with the California Public Utilities Commission (“CPUC”) and stakeholders reflected in the Fifth Revised Straw Proposal (“Proposal”) to ensure that flexible capacity energy storage resources are available in the very near future to reliably operate the grid while fulfilling state energy and environmental goals. CESA will continue to work closely with the CAISO and the CPUC in developing the CAISO tariff changes necessary for the CAISO to adopt flexible resource adequacy (“RA”) capacity requirements that specifically include energy storage for regulation, load following, and ramping needs.

Energy Storage for Regulation Should be Included in Category 1

The Proposal provides that the effective flexible capacity for energy storage resources electing Regulation Energy Management (“REM”) would be set at the lesser of a resource’s 15-minute output capability or the resource’s Net Qualifying Capacity (“NQC”) to maintain consistency with the bundling principle. Under the CAISO’s current market rules, a 15-minute bi-directional energy storage resource can provide REM continuously for the entire Must Offer Obligation window from 5:00 pm to 10:00 pm. Such a resource could not only provide regulation over the entire duration, but it also contributes directly to the 3-hour maximum ramp, as is shown below in Figures 1 and 2.

Figure 1: Regulation as Component of Flexibility

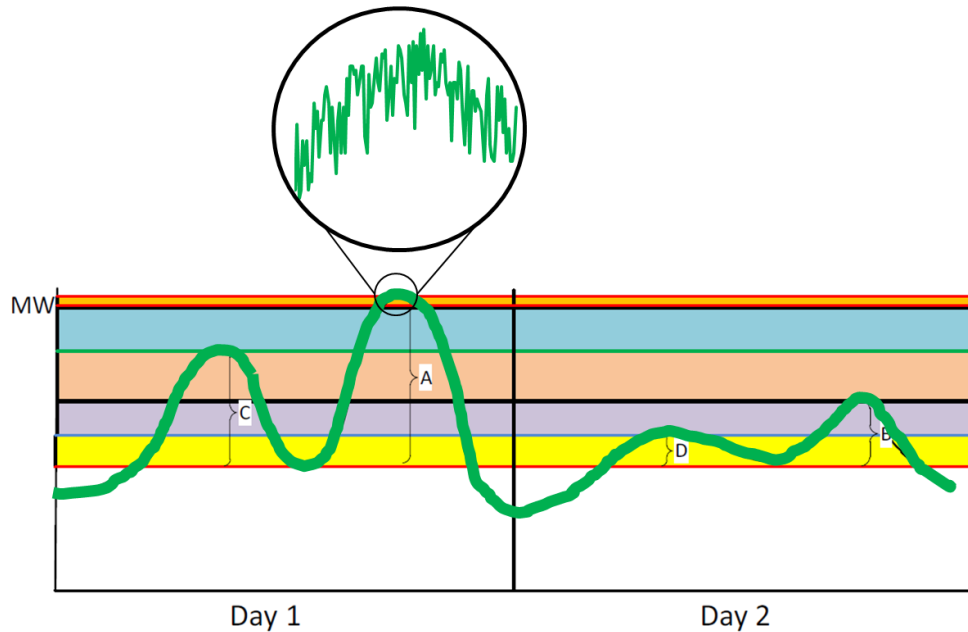
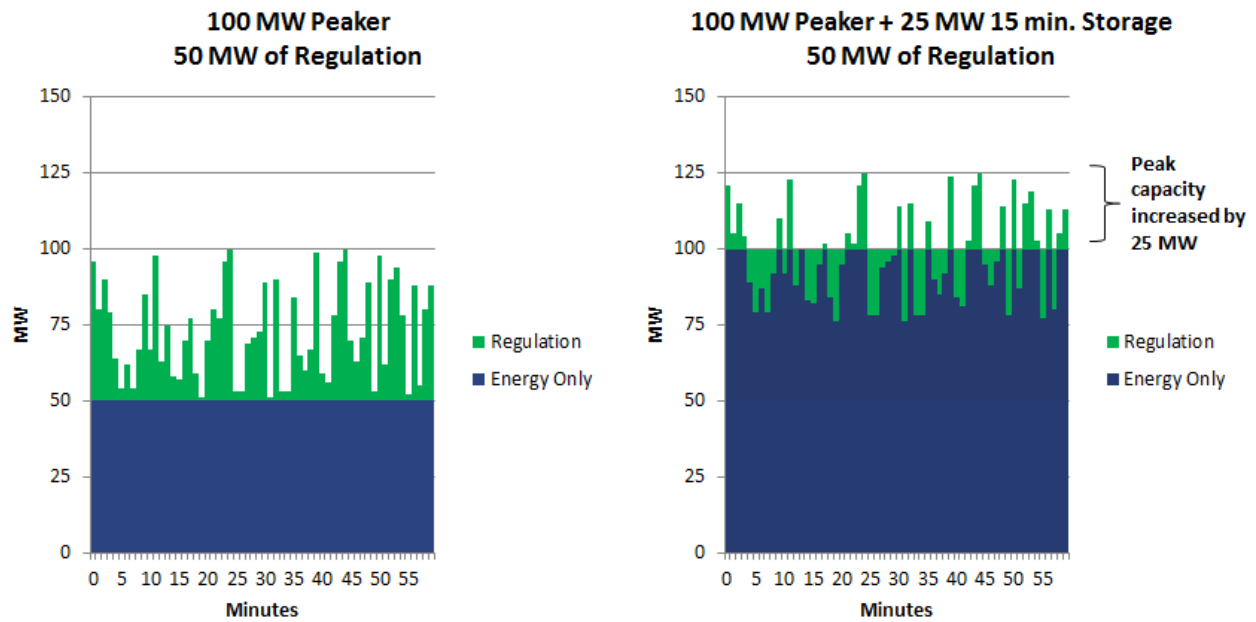


Figure 2: 100 MW Peaker vs. 100 MW Peaker + 25 MW 15-Minute Energy Storage



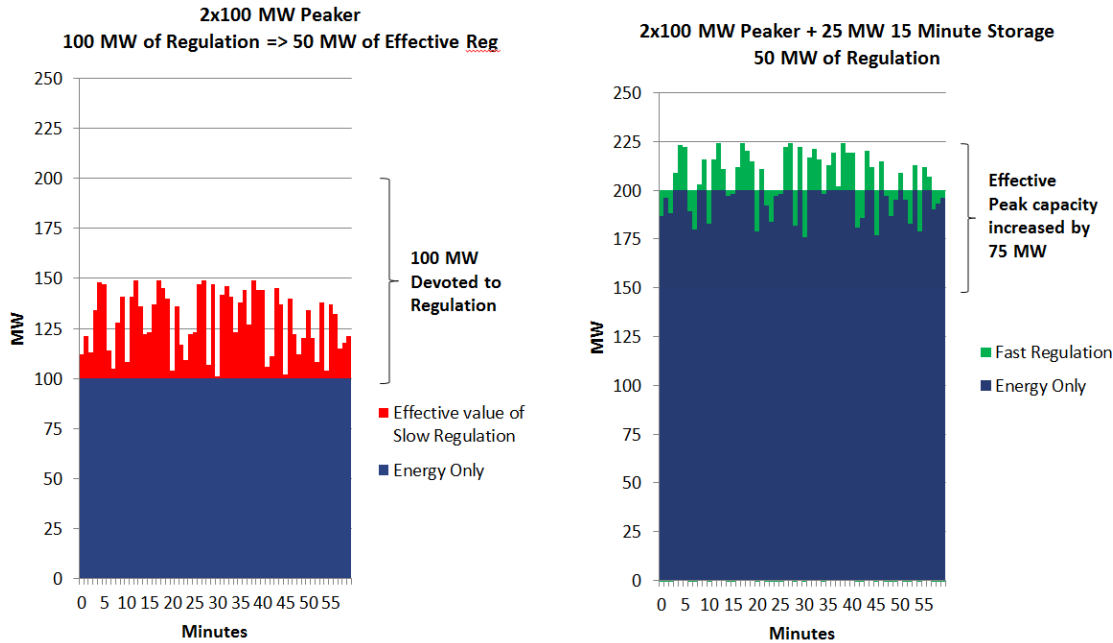
As is shown above in Figure 2, the REM resource demonstrably contributes to peak capacity at its full 15-minute rating.

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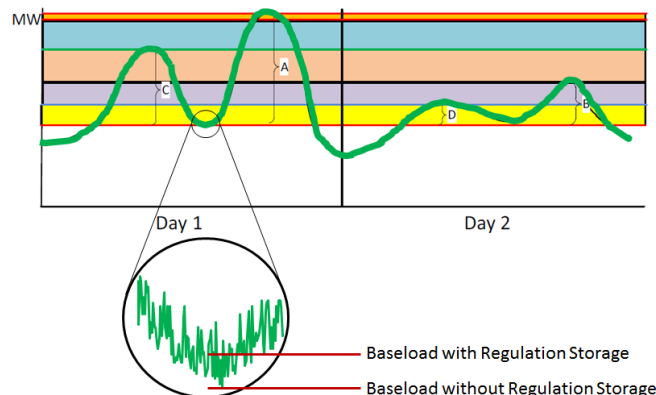
Additionally, because energy storage resources have been found to supplant the regulation capacity of at least two slower regulating generators, the EFC of a fast responding storage resource is in fact more than double its 15-minute capacity, in comparison with traditional resources. The effect of this fast response is shown below in Figure 3.

Figure 3: 2x100 MW Peaker vs. 2x100 MW Peaker + 25 MW of 15 Minute Storage



Bi-directional regulating storage resources *decrease* the need for flexibility at the low points in the net load curve shown below in Figure 4:

Figure 4: Regulation Energy Storage Reduction in Flexible Need

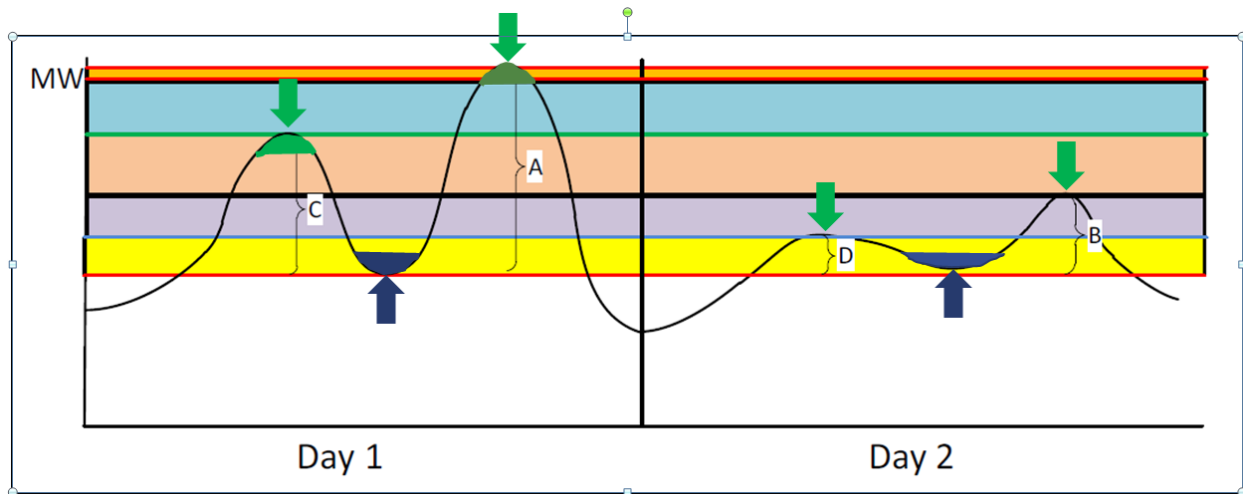


CESA recommends that the EFC of a 15-minute energy storage resource should be calculated according to its actual contribution to the 3-hour ramp. Effective Flexible Capacity (“EFC”) should not be arbitrarily limited to the NQC, as is in effect proposed in the Proposal. CESA urges the CAISO to set the FRAC-MOO rules according to its real grid operation needs and its own market rules, rather than conform to a NQC rating system inconsistent with grid operations and a bundling principal that is unworkable in practice.

Longer Duration Energy Storage That Charging Should be Included in Category 1

Significant progress has been made toward the development of counting methodologies that assure comparable treatment of capabilities in the Proposal. However, many energy storage resources have the capability to charge and discharge in a highly dispatchable manner, and the counting methodology for the charging dispatch is still unclear. As shown below in Figure 5, long duration bi-directional energy storage can provide flexible benefits during charging and discharging.

Figure 5



Energy storage resources that can provide dispatchable charging during times of low net load provide a flexibility benefit to the grid, because they decrease the overall ramp. According to

the structure of the Proposal, dispatchable charging is not counted as flexible capacity. Rather, the Proposal treats dispatchable charging as a reduction in the need for flexible capacity.

In order to account for the value of dispatchable charging, CESA advocates that the CAISO should allow dispatchable charging to count as a Category 1 flexibility measure. Resources that can charge dispatchably fulfill the same need as other Category 1 resources used to deal with the lowest secondary ramp. They should be counted as such. Thus, a single long duration energy storage resource might count toward two categories. For instance, it could count toward Category 2 for its discharge characteristics, and Category 1 for its charge characteristics. This approach begins to dovetail with the CPUC’s proposed EFC metrics for RA, which considers bi-directional flexibility.

The CAISO could explicitly account for dispatchable charging that contributes to ramp reduction in its flexible capacity need determination. However, this approach is confusing for two reasons. The first is that the CPUC’s proposed EFC metric considers dispatchable charging as part of the EFC of a resource. The second reason for confusion is that this approach separates the flexibility benefit of energy storage into two very different capabilities: need fulfillment and need reduction. Regardless of how dispatchable charging is accounted for, it is important that Load Serving Entities are able to specifically count the dispatchable charging of energy storage resources toward their flexibility obligations. Explicit counting is needed to support procurement all forms of flexible capacity.

Technical Studies

Finally, CESA recommends that the CAISO’s final draft elaborate on the specific technical studies needed to determine the optimal deployment of energy storage and meet flexibility needs identified in the 2013 Special Reliability Assessment produced jointly by the CAISO and NERC.

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