



Advanced Microgrid Solutions



**Comments of Advanced Microgrid Solutions, SolarCity & Stem**

**Energy Storage and Aggregated Distributed Energy Resources Participation Stakeholder Initiative**

Submitted by	Company	Date Submitted
Manal Yamout <a href="mailto:manaly@advmicrogrid.com">manaly@advmicrogrid.com</a>	Advanced Microgrid Solutions, Inc.	October 11, 2016
Seyed Madaeni <a href="mailto:smadaeni@solarcity.com">smadaeni@solarcity.com</a>	SolarCity	
Anthony Harrison <a href="mailto:anthony.harrison@stem.com">anthony.harrison@stem.com</a>	Stem, Inc.	

Advanced Microgrid Solutions (AMS), SolarCity and Stem offer the following joint comments on the Energy Storage and Aggregated Distributed Energy Resources Phase II stakeholder initiative Second Revised Straw Proposal, posted on September 19, 2016. Stem and AMS together have 175 megawatts (MW) under contract with Southern California Edison (SCE). AMS continues to develop 50 MW of energy storage capacity at a variety of Southern California sites and Stem has built over 400 storage “towers” totaling 75 MWhrs in commercial operation in California, all of which with the potential to be aggregated for participation in CAISO markets.

AMS, SolarCity and Stem have been active participants in the ESDER Phase II proceeding and working groups. We continue to keenly understand the importance of resolving barriers for aggregated behind-the-meter (BTM) resources and support the CAISO’s overall drive to enhance the current market structure to allow for participation of BTM distributed energy resources (DERs).

**NGR enhancements**

The CAISO has been focused on two areas of potential NGR enhancement: (1) representing use limitations in the NGR model and (2) representing throughput limitations based on a resource's state of charge (SOC).

The CAISO has concluded that the second area will be re-evaluated once more resources are participating as storage resources modeled under NGR. The CAISO will no longer pursue this area in ESDER 2 and will instead focus its efforts in the first area of potential NGR enhancement.

The CAISO is requesting stakeholders provide comments on the first area.

Specifically:

1. What are the exogenous limitations for NGRs that can't be optimized within the market?
2. What are the opportunity costs and commitment costs that need to be reflected in energy bids to manage limitations?

**Comments:**

AMS, SolarCity and Stem commend the CAISO's commitment to further clarify areas of NGR enhancement and refine the proposals to focus on facilitating enhancements that provide the highest value to non-generator type resources. As an industry, we continue to identify and advocate for NGR metering and settlement for less than twenty-four hour periods, especially for storage resources located behind a retail customer's meter. Such a metering and settlement arrangement fits clearly within the concept of Multiple Use Applications (MUA) providing benefits to customers and the grid. This functionality is key to NGR resources acting as MUAs, including in potential transmission applications within the Aliso Canyon impact area.

The Second Revised Straw Proposal identifies use limitations in the NGR model. AMS, SolarCity and Stem agree that NGR-modeled storage resources should qualify as a use-limited resource (use-limited resources being defined as "resources that, due to design considerations, environmental restrictions on operations, cyclical requirements, such as the need to recharge or refill, or other non-economic reasons, is unable to operate continuously"). Important to consider, as the Second Revised Straw Proposal notes, is the understanding of storage performance limitations and non-linear degradation based on state of charge and depth of cycling.

The opportunity costs and commitment costs that need to be reflected in energy bids to manage limitations need to continue to be explored and should reflect economic considerations of MUA commitments. These may include shifting retail charging from off-peak

to on-peak or missing the opportunity to curb peak demand as a result of wholesale market dispatch, increased battery cycling, and multiple transitions to charge and discharge states per day.

### **Demand response enhancements**

Proposals are under development by two stakeholder-led work groups within ESDER 2 in two areas of potential demand response enhancement:

- Baseline Analysis Working Group (BAWG) – Explore additional baselines to assess the performance of PDR when application of the current approved 10-in-10 baseline methodology is sufficiently inaccurate. The BAWG proposes the following settlement options for PDRs and RDRRs:
  - Residential Resources: 4 day weather match by max temperature, control group.
  - Commercial Resources: 10 of 10 with 20% adjustment cap, Average of previous 5 days, control group.
- Load Consumption Working Group (LCWG) – Explore the ability for PDR to consume load based on an ISO dispatch, including the ability for PDR to provide regulation service. The working group has recommended bi-directional PDR modelling. The LCWG proposes to maintain the separation of wholesale and retail energy settlement for increased load consumption. This supposes that the value of increased wholesale consumption, perhaps at a negative price, has value to the DRP or customer since the increased consumption would also be charged under retail rates. Under this construct, is this a feasible concept?

The CAISO is requesting stakeholders provide comments on the proposals of both the BAWG and LCWG.

### **Comments:**

AMS, SolarCity and Stem all participate in the Baseline Analysis and Load Consumption working groups (LCWG) and are highly supportive of these important initiatives under the ESDER Phase II. We encourage the CAISO to adopt the working group's recommendations reflected in the Staff Proposal. In particular AMS, Solarcity and Stem are encouraging swift extension of frequency regulation to PDR as proposed by the LCWG. AMS, SolarCity and Stem strongly believe that regulation markets should be accessible to BTM energy storage systems. We have no additional comments on BAWG or LCWG at this time.

**Multiple-use applications**

The ISO has not yet identified specific multiple-use application (MUA) issues or topics that require treatment in ESDER 2. The CAISO proposes to continue its collaboration with the CPUC in this topic area through Track 2 of the CPUC's energy storage proceeding (CPUC Rulemaking 15-03-011). If an issue is identified that should be addressed within ESDER 2 the CAISO can amend the scope and develop a response.

The CAISO is requesting stakeholders provide comments on this topic area as well as this proposed approach.

**Comments:**

As we continue to work with the CAISO, the CPUC and utilities in resolving MUA-related issues, it is important to set the market participation rules and incentives, as well as the performance requirements for specific grid services needed to allow energy storage providers to optimize their technologies and operational characteristics. Stacking the values associated with multiple uses increases the resource value and economic viability of energy storage systems, while improving wholesale market efficiency and reducing costs to the electric grid.

With this in mind, AMS, SolarCity and Stem support the CAISO's continued collaboration with the California Public Utilities Commission in Rulemaking 15-03-011 to develop appropriate standards and guidance for MUAs. MUAs reflect DER owners offering a combination of the thirteen value streams identified by the Rock Mountain Institute to the three identified stakeholders: the ISO, UDC and end-use customers.

**Distinction between charging energy and station power**

In this topic area the CAISO will continue its collaboration with the CPUC through Track 2 of the CPUC's energy storage proceeding (CPUC Rulemaking 15-03-011) rather than exclusively through ESDER 2. At this time, the CAISO proposes the following:

- Revise the CAISO tariff definition of station power to exclude explicitly charging energy (and any associated efficiency losses); and
- Revise its tariff later to be consistent with IOU tariffs on state-jurisdictional issues, as needed, in the event that they revise their station power rates. The CAISO speculates that two potential, substantial forms this could take that would require the CAISO to revise its tariff regard netting and metering for storage resources. Specifically:
  - The CAISO currently agrees that negative generation pursuant to CAISO dispatch could be treated commensurate with positive generation such that storage

resources could “net” their station power consumption against this negative generation; and

- The CAISO believes that rather than a mandated “one-size-fits-all” metering configuration, each storage resource could negotiate and agree with its local energy provider on a metering configuration (e.g., single-meter, multiple meters, predetermined deductions/additions, or combinations thereof).

The CAISO is requesting stakeholders provide comments on this topic.

**Comments:**

AMS, SolarCity and Stem have no comments at this time.

**Other comments**

Please provide any additional comments not associated with the topics above.

**Comments:**

AMS, SolarCity and Stem have no additional comments at this time.