DOCKETED

Docket Number:	16-EPIC-01
Project Title:	EPIC Idea Exchange
TN #:	221634
Document Title:	AMS Comments - A Roadmap for Commercializing Microgrids in CA
Description:	N/A
Filer:	System
Organization:	Advanced Microgrid Solutions (AMS)
Submitter Role:	Public
Submission Date:	10/27/2017 1:50:45 PM
Docketed Date:	10/27/2017

Comment Received From: Nicholas
Submitted On: 10/27/2017
Docket Number: 16-EPIC-01

AMS Comments - A Roadmap for Commercializing Microgrids in CA

Additional submitted attachment is included below.

October 27, 2017 **VIA ELECTRONIC DOCKET 16-EPIC-01**

California Energy Commission
Dockets Office, MS-4
Docket No. 16-EPIC-01
1516 Ninth Street
Sacramento, CA 95814-5512

Re: Docket No. 16-EPIC-01: Advanced Microgrid Solutions Comments on a Roadmap for Commercializing Microgrids in California

I. Introduction

Advanced Microgrid Solutions ("AMS") appreciates the opportunity to provide Comments on the California Energy Commission ("CEC"), California Public Utilities Commission ("CPUC"), and California Independent System Operator ("CAISO") joint *Roadmap for the Commercialization of Microgrids in California*.

II. Background

AMS is pioneering the use of energy storage systems for electric utility grid support. Using a technology-agnostic approach, AMS designs, finances, installs and manages advanced energy storage solutions for commercial, industrial and government buildings. AMS deploys behind-the-meter energy storage systems to transform a site's electrical load into a dispatchable resource that can provide demand reduction and/or shifting, as well as satisfy capacity requirement resources to the grid. Our Hybrid Electric Building® technology consists of electric battery storage combined with advanced software. AMS is currently deploying a 90 MW / 360 MWh Hybrid Electric Building® fleet for Southern California Edison in California. This resource meets local resource adequacy requirements for SCE and will be scheduled by SCE into the CAISO as a Proxy Demand Resource product.

In these comments AMS identifies three barriers to entry for storage resources in microgrid applications:

A. **Multiple-Use Applications.** This microgrid roadmap needs to focus on articulating specific needs and defining standard products and performance requirements that allow a single asset to provide multiple services. With these in place, industry innovation will be further unleashed

and microgrid product providers can fully manage their resources to safely and responsibly meet multiple service obligations.

B. Compensation. A compensation model should be developed that accurately values the market and reliability services provided by energy storage in a microgrid application. The most important issue in this category is the elimination of any implicit "storage penalties."

C. Interconnection. Connecting storage as a microgrid resource to the grid may involve interconnection processes at the utility and at the state level. These processes are often overly complex, prohibitively costly, and unnecessarily lengthy. This roadmap should examine alternatives to accelerate the interconnection process for microgrids.

III. General Comments

A. Multiple-Use Applications

Energy storage is a critical component to a microgrid that requires a forward-looking perspective in developing rules and regulations around multiple-use applications. Therefore, it is imperative to establish a clear and beneficial role for microgrid resources in supporting key grid, customer, and environmental benefits. Concepts developed in this microgrid roadmap remain critical to clarifying and expanding the role of energy storage in microgrid applications. Specifically, expanding the role of energy storage in integrating higher penetrations of renewable resources, diversifying the energy portfolio, improving reliability, and expanding choices and toolkits for grid managers, operators, and customers.

The ability to provide multiple services from a single energy storage installation or an aggregation of energy storage installations allows ratepayers and grid operators to realize the full value of a microgrid. With compensation for each of these "stacked" services, energy storage systems become significantly more useful and economical while avoiding over-builds of infrastructure (e.g., single-use devices serving a distribution need).

As AMS works with the CEC, CAISO, and the CPUC in resolving multiple-use application issues, it will be important to set the market participation rules as well as the performance requirements for specific grid services needed to allow energy storage providers to optimize their technologies and operational characteristics. Rather than specifying or prohibiting specific business models or solutions, AMS urges that this microgrid roadmap focuses on articulating specific needs and defining standard products and performance requirements that allow a single asset to provide multiple services. With these in place, industry innovation will be further unleashed and microgrid product providers can fully manage their resources to safely and responsibly meet multiple service obligations (e.g., grid service and end-use customer obligations).

B. Compensation

AMS has experience with many market operators and utilities that arrive "pre-loaded" with a desire to logically partition the storage resource into neat compartments and compensate for each service based on the fraction that has been partitioned for that specific service.

The most critical operational barrier to energy storage resources in wholesale markets is accurate compensation. Energy storage resources can provide a number of different services traditionally provided by generation (e.g., regulation service, reserve services, and congestion management). Energy storage can also provide a number of different services to the host customer, such as load shifting to offset high energy prices and demand charge management. Yet, regulatory challenges related to accounting practices and requirements, alongside the lack of clarity in these practices, prohibit developers from obtaining revenue with a resource providing services under multiple classifications.

The case most often discussed is the "savings flow downhill" argument. To illustrate this concern, consider a retail customer with load coupled with on-site energy storage. If that storage is entered into the market and dispatched to provide a service (e.g., economic dispatch to lower overall energy market prices) the customer will receive a "downhill" benefit of a lower energy bill during those high-priced energy periods. If the customer also decides to use the storage at other times for local bill management the resource would not be compensated "uphill" at the market. For this model to properly function, the storage resource must be a market resource and the market must take precedence.

Additionally, demand-side resources that offer reduction services as a market offering can be criticized for being overcompensated - in that demand reduction "sold" to the market was never "purchased." In the case of storage, the energy delivered is purchased in the form of energy consumed during another time. This implies full compensation for services rendered with direct measurement circumventing the need for any sort of net-benefit test for proper compensation. In short, so long as markets are liquid, the storage resource operator is incentivized to offer market services at its margin cost, roughly equivalent to the cost of charging the system with secondary impacts from round-trip efficiency losses and resource degradation from cycling.

C. Interconnection

AMS deploys storage systems that are located behind the customer meter, but located in areas where they can provide increased reliability to the distribution utility and ultimately to electricity customers. The process of interconnecting with the grid at either of these levels is burdensome, in that the process is very costly, very lengthy, or both. There are also often complicated rules about

jurisdictional reach, forcing the storage operator to sometimes work with the local utility, the local reliability authority, or the market operator.

Interconnection processes have been established to ensure reliability of the grid. Installing a new, large-scale generation facility could have major negative impacts if transmission and distribution models are not studied thoroughly for unintended impacts. However, AMS contends that microgrids under a certain MW threshold should qualify for a streamlined approach to interconnection studies. AMS acknowledges that above a certain threshold, for example 50 MW, microgrids should be subjected to a thorough study; we feel that most small-scale installations do not pose a risk commensurate with the interconnection barrier.

IV. Conclusion

AMS appreciates the proactive approach to tackling barriers to the proliferation of microgrids. We very much look forward to continuing to work together as the market evolves. We hope that the barriers outlined here inform and assist in ensuring appropriate compensation and fair treatment for microgrid products, specifically energy storage, and their associated services.

October 27, 2017

Respectfully submitted,
/s/ Manal Yamout
Manal Yamout
Vice President, Policy & Markets
Advanced Microgrid Solutions
25 Stillman Street
San Francisco, CA 94114