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OutBack Comments on JA12

Additional submitted attachment is included below.

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RE: Comments of OutBack Power Technologies on Appendix JA12 – Qualification Requirements for Battery Storage System

These comments are submitted by OutBack Power Technologies. OutBack is a privately held company headquartered in Arlington, WA, and is the leading designer and manufacturer of advanced power electronics for solar + storage applications. With an emphasis on product performance OutBack has established itself as the product of choice in harsh environmental conditions and applications where product reliability is paramount. Whether the application is village micro-grids in Africa, rural electrification projects in Latin America, remote off-grid cabins in Alaska, or a suburban home in Southern California, OutBack Power has set the bar for delivering high quality, cutting edge power conversion electronics.

OutBack is strongly supportive of adding energy storage as a powerful tool to integrate PV and shape both load and generation in order to achieve a true net zero energy building, and to help the State of California achieve its energy and greenhouse gas goals. We thank the Commission for their hard work in developing the energy storage option. However, we believe Appendix JA12 could use some improvement as the current language can be subject to misinterpretation, and may be attempting to legislate specific operational details which may be better left more flexible and responsive to changing conditions and pricing signals. We make the following recommendations to clarify the intent of the operational requirements and better align with actual battery system operation.

1) Clarify minimum requirements for TOU Control

JA12.2.3 Control Requirements

The requirements below are applicable to all control strategies.

(a) The battery storage system shall have the capability of being remotely programmed to change the charge and discharge periods. ~~At the minimum~~ To qualify for TOU Control, the system shall be capable to program at a minimum a summer and a winter Time-of-Use (TOU) schedule.

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Substantiation:

As originally worded, the requirement appears to state that all battery storage systems must have the ability to program a summer and winter TOU schedule. However, Basic Control, which charges from solar to serve on-site loads, is not affected by time-of-use. If Basic Control is truly a minimum requirement and doesn't have a time-of-use component, why would the ability to program a TOU schedule be mandated a minimum capability here? To look at it another way, if support for a TOU schedule is a minimum requirement, then would a system that has only Basic Control and serves all on-site load from on-site generated solar be considered non-compliant? The proposed revision would clarify that, in order to qualify for TOU Control, the system must support at least a summer and winter schedule, which is a reasonable minimum.

2) Simplify requirements to ensure energy management functions are not disabled without preventing reasonable and beneficial future program improvements

(c) The battery storage system control strategy shall prevent unauthorized persons from disabling the energy management functions of the system. ~~shall perform a system check to ensure the battery is not left in backup mode in anticipation of a power interruption, and reset the operation mode to one of the control strategies listed in JA12.2.3.1, JA12.2.3.2, and JA12.2.3.3, at a minimum, on the following calendar dates :~~

~~1) January 1st~~
~~2) May 1st~~
~~3) July 1st~~
~~4) September 1st~~

Substantiation:

Energy storage systems can have a reasonable service life exceeding 20 years, but a requirement for a quarterly reset can be problematic as it will force the system to override any future improvements or upgrades. One of the greatest benefits of storage is its flexibility, and as new rate structures or utility programs become available it would be beneficial to allow these systems to participate. However, the current language would mandate that the system perform a quarterly reset to the best we could envision in 2017. If

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the intent of the reset is to ensure the benefits of the system remain active, it would seem more prudent and direct to have language preventing the energy management function from being disabled.

3) Clarify minimum requirements for TOU Control

JA12.2.3.1 Basic Control

To qualify for the Basic Control, the battery storage system shall be installed in the default operation mode to allow charging only from an on-site or community photovoltaic system ~~when the photovoltaic system production is greater than the on-site electrical load~~. The battery storage system shall discharge ~~when the photovoltaic system production is less than~~ to serve the on-site electrical load, maximizing solar self-utilization.

Substantiation:

As originally drafted, Basic Control states that the battery can only charge when the PV production is greater than load, and that it must discharge at all times where the PV production is less than the load. Aside from the question of how the battery would get recharged if on-site load were always greater than production, typical system behavior is to first recharge the battery from any available solar production, both for battery health as well as that's how the physics works. In addition, the current language is potentially subject to gaming, as there is no defined performance objective for the battery discharge. As example, an unscrupulous agent could discharge a consistent token 1 Watt of energy, holding the majority of the battery in reserve. The proposed text revisions would clarify that the system charges only from solar, and discharges to serve load with the goal of maximizing self-consumption of that stored solar.

4) Clarify intent and allowable operations for TOU Control

JA12.2.3.2 Time-of-Use (TOU) Control

To qualify for the TOU Control, the battery storage system shall allow grid charging ~~only~~ during non-peak TOU hours only, and ~~begin discharging~~ shall discharge to the dwelling and/or the grid ~~only~~ during the peak TOU hours for the purpose of solar and load shifting. The operation schedule shall be preprogrammed from factory, updated remotely, or programmed during the installation/commissioning of the system.

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Substantiation:

As originally written, this language could be read to imply that the only charging that's allowed is from grid, only during non-peak hours, and solar charging is not allowed. The revised language would show that the intent of operation is time-of-use shift to align solar generated energy with load, that the system is allowed to charge from grid off-peak, and is intended to discharge on-peak.

5) Align with work done in other California venues for inverter communications

JA12.2.3.3 Advanced Demand Response Control
To qualify for the Advanced Demand Response Control, the battery storage system shall be programmed by default as Basic Control as described in JA12.2.3.1 or TOU control as described in JA12.2.3.2. The battery storage control shall meet either the demand responsive control requirements specified in Section 110.12(a) or the communications requirements of the California Common Smart Inverter Profile (CSIP). Additionally the battery storage system shall have the capability to change the charging and discharging periods in response to signals from the local utility or a third-party aggregator.

Substantiation:

Substantial work has been done in the California Rule 21 "smart inverter" interconnection proceedings to harmonize and standardize inverter communications, resulting in the California Common Smart Inverter Profile (CSIP). The CPUC, utilities and other stakeholders are building the framework for robust distributed energy resource participation in advanced energy markets, and developers, aggregators and manufacturers are responding. In addition, the list of allowable communications transport layers for OpenADR in 110.12(a) is overly restrictive and limited; as an example it does not include cellular modems, which are common in the solar and storage industry as the systems are often installed outdoors and the customer's Ethernet is either not available or not reliable, as an allowable communications transport. Ideally, the communications requirements should be aligned across the state for the same resources, or at a minimum an optionality to support either standard should be provided.