

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking Pursuant
To Assembly Bill 2514 to Consider the
Adoption of Procurement Targets for
Viable and Cost-Effective Energy Storage
Systems.

Rulemaking R-10-12-007

**COMMENTS OF THE GREEN POWER INSTITUTE
IN RESPONSE TO THE ALJ'S RULING ON BARRIERS TO STORAGE**

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Introduction

Pursuant to the July 21, 2011, *Administrative Law Judge's Ruling Entering Documents into Record and Seeking Comments*, in Proceeding R.10-12-007, the **Order Instituting Rulemaking Pursuant to Assembly Bill 2514 to Consider the Adoption of Procurement targets for Viable and Cost-Effective Energy Storage Systems**, the Green Power Institute, a program of the Pacific Institute for Studies in Development, Environment, and Security (GPI), provides these *Comments*, which address the questions and issues posed in the *Ruling*.

The *Ruling* is focused on the June 28, 2011, workshop in this proceeding. The workshop consisted of a series of four invited presentations, plus three party-sponsored presentations, each followed by an opportunity for discussion for the workshop participants. The theme of the workshop was barriers to the implementation of energy storage in California. In these *Comments* we address the presentations, and the questions posed in the *Ruling*.

At the outset we would like to emphasize the fact that energy storage is a new and different thing on the grid. Storage is not generation, although it can supply some of the same services as are supplied by generation, including electricity. Storage is also not load, although it can supply some of the same services as can be provided by load, including demand-response. Indeed, storage is a family of technologies with a variety of characteristics that can provide a range of different kinds of services for the state's integrated electricity grid. Dealing with the diversity of systems that come under the rubric of storage, while recognizing that the field is still in rapid development, suggests to us that the best approach, from a regulatory perspective, is to make sure that there is sufficient flexibility in the framework to accommodate and promote new technologies and applications.

It is also important to note that while there is a considerable amount of discussion and emphasis on the link between storage and renewables integration, the fact is that grid operators at all levels have to balance all sources of unscheduled deviations on their systems. Intermittent renewable generation is one source of unpredictable fluctuations, but it is far from the only one. The grid operator's job is to deal with all fluctuations, some of which are correlated, and some of which are random. Focusing only on the fluctuations caused by intermittent generators may fail to elucidate optimal approaches to overall grid operations.

Barrier no. 1: Lack of Tariffs

Storage is a tool for the operation of the grid, or parts thereof. Although storage can provide electricity and electrical services to the grid it is not a source of energy, and for regulatory purposes it should not be treated as if it were generation. It needs to charge, and it needs to discharge. If it is going to charge from the grid, it needs to know what it will cost to purchase the charging power. If it is going to discharge to the grid, it needs to know what it will be paid for the products it provides. The economic viability of storage is dependent on the products having sufficiently higher value than the cost of the charging energy, in order to be able to pay for the capital and operating costs of the storage installation. No developer can assess the economic viability of a potential project without knowing the kinds of tariffs he will be operating under. And storage is sufficiently diverse that storage-specific tariffs applicable to a variety of applications need to be developed.

For Early Entry the Application-Specific Approach has Merit

Several of the workshop presentations, particularly those of the CEC and SCE, focus on taking an application-specific approach to the development of a market for storage. We agree. Because storage includes a wide variety of different technologies that have varying performance characteristics, in order to develop fair tariffs the first step has to be to identify applications for specific kinds of installations. We believe that it is in the public

interest to pursue a collaborative approach to the identification of applications, including industry, grid operators, regulators, and other interested parties in the process.

Targets for Storage Implementation

The CESA's presentation makes a strong case for the establishment of targets for energy storage systems, an option that is included for consideration in AB 2514, but not mandated. We are not opposed to targets, but we wish to point out that based on our experience with the state's RPS program, the existence of milestones, even established in statute, in no way guarantees program success.

Storage, Renewables, and RECs

The presentation of the CESA argues for the participation of storage in the California RPS program. At the outset, it is necessary to point out that storage is not an energy resource. RECs are created in conjunction with the generation of qualifying renewable energy. Storage that is interconnected to the grid may well process some amount of renewable electricity, but that will not affect the amount of RECs that are created and available in the marketplace.

One application for which more detailed consideration is due is when storage is used behind-the-meter in conjunction with a renewable generator in order to provide firm, schedulable power through the generator's interconnection to the grid. In existing renewable interconnections, RECs are created based on meter readings for the electricity that is supplied to the grid. Storage can be used to produce a more valuable electricity product for a renewable energy producer to provide to the grid, but in doing so the total amount of energy supplied through the utility interconnection meter is reduced. The question is: should RECs be created for the energy that is lost in the charging/discharging cycle of the storage device? We believe that this energy should not be considered to be part of station service at the power generator, and should be eligible for the creation of RECs.

Missed: One of the Potentially Greatest Services Storage Can Provide

One of the characteristics that makes grid operations challenging is the fact that when loads are connected, they must be served on demand. Grid operators do a good job of forecasting demand, but forecasting can never be perfect. Moreover, unexpected fluctuations in supply complicate the process. One of the often overlooked virtues of many types of storage systems is the fact that the timing of their charging is sufficiently flexible to present grid operators with a substantial new tool that resembles DR, but is even more flexible because as well as allowing quick shut-off of load, it allows quick re-application of load. This use of manipulable charging can be applied to a variety of storage systems deployed in a variety of applications, including plug-in vehicle charging.

Storage: A New Tool for Grid Operators?


In the olden days of vertically-integrated utilities, grid operators had their hands, so to speak, on the throttles of their own power plants, and could respond to grid imbalances directly with their own equipment. Today, grid operators respond to schedule deviations and imbalances with contracts for support services with service providers. We would like to put forth the idea that grid operators, including the CAISO and the major distribution utilities, consider investing in, owning and operating strategic storage systems that are designed to provide rapid-response services to the grid.

Conclusion

Storage systems can resemble generation in some respects, and load in some respects, but it is neither. It needs treatment that recognizes the unique characteristics of storage technologies of various kinds, and provides a clear incentive structure. This means developing storage-specific tariffs for both the purchase of charging power, and sales of electrical products. The first step in the process is the identification of promising applications.

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Respectfully Submitted,



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