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 ON THE AC'S RULING PROPOSING STORAGE PROCUREMENT TARGETS

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Introduction

Pursuant to the June 10, 2013, *Assigned Commissioner's Ruling Proposing Storage Procurement Targets and Mechanisms and Noticing All-Party Meeting*, 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 (GPI), the renewable energy program of the Pacific Institute for Studies in Development, Environment, and Security, provides these *Comments of the Green Power Institute on the AC's Ruling Proposing Storage Procurement Targets*. Our *Comments* discuss the topics of guiding principles, ownership and operation of storage systems, procurement targets, and procurement mechanisms.

We wish to make one overarching observation at the outset. In many ways, the *Ruling* treats storage as if it is identical to generation. However, storage is fundamentally different than generation, and we believe that there are instances in which the optimal policy for encouraging storage can only be identified by allowing storage to be treated differently than generation. Storage is not a source of energy. Storage is a tool (or set of tools) for manipulating energy, typically for the benefit of a seller of energy (for example by modulating the output of an intermittent generator, or shifting the delivery of energy from the time of generation to a later time), for the benefit of a grid operator (for example, providing ramping, regulation, and var and voltage support, and acting as a beneficial-use outlet when there is oversupply on the grid), or for the benefit of energy users (for example by minimizing demand charges, or operating a micro grid). We urge the Commission not to limit their policy approach to supporting storage by rigidly reproducing policies developed for generation. Storage is different than generation, and

policies designed to support storage should be allowed to be different, too, wherever there is an advantage to doing so.

Guiding Principles

On page 6, the *Ruling* offers three guiding principles for the storage rulemaking, as follows:

1) The optimization of the grid, including peak reduction, contribution to reliability needs, or deferment of transmission and distribution upgrade investments.

2) The integration of renewable energy

3) The reduction of greenhouse gas emissions to 80 percent below 1990 levels by 2050, per California's goals (see Pub. Util. Code § 2835(a)(3)).

We agree that these are worthy guiding principles for this proceeding. However, we wish to point out that the first two of the principles are not independent of each other, but rather are highly interrelated. Indeed, it could be argued that the second principle is actually a subset of the first principle. Grid optimization entails dealing with all sources of uncertainty on the grid, and the intermittency of solar and wind generators is simply one source of grid uncertainty, albeit a relatively new and fast-growing source as far as the grid is concerned. Like demand, intermittency has elements of predictability, and elements of unpredictability. The process of optimizing grid operations should deal with all sources of unpredictability simultaneously. There is no reason to deal with intermittent generators separately from or differently than other sources of grid uncertainty or imbalance. We would prefer to see the first two principles combined, for example, as follows:

> The optimization of the grid, including peak reduction, the integration of renewable energy, contribution to reliability needs, or deferment of transmission and distribution upgrade investments.

Ownership and Operation of Storage Systems

Storage systems, which come in a variety of technologies and configurations, each with its own characteristic capabilities and limitations, can serve a wide variety of applications. Storage installations associated with intermittent generators can upgrade the value of the electricity supplied by these generators to the grid by both modulating the short term output that is fed to the grid, and by shifting the timing of energy sales by storing energy that is generated during relatively lower-valued hours, in order to be able to feed it into the grid during relatively higher-valued hours. Stand-alone, grid connected storage installations can supply the full range of services needed to operate a grid, depending on the storage technology employed, and how and where it is interconnected.

One fact about storage systems that has been repeatedly asserted in this proceeding, including in the initial results of the consultant reports on the cost effectiveness of storage systems that were recently entered into the proceeding record, is that storage installations need to be able to take advantage of the full range of services that they are capable of providing in order to be cost effective. Storage systems that are associated with renewable generators, such as thermal storage at solar thermal generators, will be operated by the generators for the overall benefit of their enterprises. Due to the newness of the technology, it is highly likely that generators equipped with thermal storage or other storage systems will take some time in discovering how to optimally tie their systems together, over a range of operating conditions on and off the grid.

In the opinion of the GPI, the same considerations apply to storage systems that are not associated with renewable generators. Many stand-alone storage installations will be designed primarily to supply operating services to grid operators. Due to the newness of these types of installations, it is highly likely that grids equipped with storage systems will take some time in determining how to optimally use these storage systems over a range of operating conditions on the grid. We are concerned that storage facilities that are operated subject to limited and rigid contracts may not be able deliver the full range of services that the installations are capable of supplying. For this reason, the GPI believes

that for many storage use cases there is a real advantage to linking the ownership and operations of the storage systems to the grid they serve. Thus, we believe that the 50 percent restriction on utility ownership of storage installations that is part of the proposal in the *Assigned Commissioner's Ruling* should be removed. Storage is not the same as generation, and the ownership rules that the Commission has developed for generation do not need to be imposed on storage systems.

Procurement Targets

The ACR asserts that AB 2514 **requires** the Commission to set procurement targets for storage. This may be a technical quibble, but we believe that this is an incorrect assertion. The relevant portion of the statute reads (PUC § 2836(a)(1), first sentence):

> On or before March 1, 2012, the commission shall open a proceeding to determine appropriate targets, if any, for each load-serving entity to procure viable and cost-effective energy storage systems to be achieved by December 31, 2015, and December 31, 2020.

We note that the Commission is in fact **not** required to set procurement targets for storage, although it is clearly encouraged to consider doing so. We also note that if the Commission does decide to set procurement targets for storage, the statute specifies that these procurement targets be set for two specific dates, December 31, 2015, and December 31, 2020.

It appears to us that the proposal is conflating the setting of procurement targets, as the term is used in the statute, with the development of procurement mechanisms (see next section) for certain kinds of storage installations. The result is an amalgam that, in the opinion of the GPI, needs to be straightened out. The proposal sets up a procurement mechanism that anticipates solicitations in 2014, 2016, 2018, and 2020. It calls the suggested MW allocations for these solicitations procurement targets, and considers them to be the same as the procurement targets that are referenced in statute. The proposal further clarifies that a variety of storage projects-in-development currently on the books, including projects that clearly would not be able to bid into the proposed solicitations,

such as thermal storage at a solar-thermal electric generator, can be used to fulfill a utility's procurement target.

We believe that the proposal needs to distinguish between procurement targets, as the term is used in the statute, and the allocations that are set for a particular procurement mechanism that the proposal creates, which is aimed at only a subset of the spectrum of the storage industry. We support the setting of overall procurement targets for storage installations that can be fulfilled by a wide variety of storage configurations that contribute to the state's interconnected electrical system, including installations that are integrated with renewable generators, installations that are integrated into operations of various portions of the grid, and installations that are on the customer side of the meter or otherwise operated on behalf of the interests of electricity consumers. We recommend that these procurement targets be established for 2015 and 2020, as specified in statute.

The GPI also notes that the proposal uses the term procurement targets, as they are applied to the proposed solicitations, to refer to the amounts of storage capacity that should be awarded contracts in the various solicitations described in the proposal. The RPS program and other preferred-resources programs overseen by this Commission have long established the precedent that procurement targets refer to delivered energy or services, not contracted-for energy or services. We strongly urge the Commission to set storage-procurement targets that can only be fulfilled with operating storage capacity, not with contracted-for capacity, some of which will never materialize. It is inevitable that some projects-in-development will fail, and a target based on accumulating contracts alone is prone to elevate projects with poor probabilities of success in solicitations, relative to projects that have a much higher chance of success. Procurement targets should refer to operating storage capacity, not to contracts for projects-in-development that may or may not reach completion.

Procurement Mechanisms

The core of the *Ruling*'s proposal is the establishment of a procurement mechanism for storage installations that is modeled on the reverse-auction mechanism (RAM) developed for the RPS program. These solicitations are intended to elicit storage installations at the transmission, distribution, and customer levels of the grid. In the opinion of the GPI, there are a number of reasons that suggest that applying the RAM approach to the solicitation of storage installations at this point in time is unlikely to be overly successful. We recommend that the Commission consider other procurement mechanisms that may be more suitable for this still emerging market, such as demonstration projects and targeted RFOs.

RAM-type solicitations are designed to procure, at lowest cost to the ratepayer, well-defined products from installations that are commercially mature. This does not describe the current state of the storage market, which is not commercially mature, and which is composed of a range of technologies and configurations, each with a unique set of products that it can potentially provide to the grid. We are concerned that a RAM-type solicitation would be far too limiting to stimulate the full range of systems and products that the storage industry is capable of providing.

We also believe that some of the necessary market structures and tariffs that are needed to support a commercial storage industry of the kind that the RAM is likely to support are not yet in place. For example, developers need to have dependable tariffs designed for storage systems that will determine the terms and conditions under which they purchase the energy needed to charge their systems. Standard tariffs for the products they supply would also be extremely helpful. In particular, utility tariffs need to be developed that are product-oriented and technology-neutral, rather than being designed around the characteristics and capabilities of gas-fired generators, as current tariffs are.

While making tariffs more product-oriented and technology-neutral would be an important advancement, it would not be sufficient, in-and-of itself, to stimulate a wave of

development in transmission- and distribution-connected, energy-storage systems. The problem is that energy-storage systems are capital-intensive projects that need long-term certainty in order to secure financing, and ancillary services contracts tend to be short-term in nature. Some form of long-term contracting, possibly modeled on the tolling agreements that IOUs have with natural gas-fired generators, is needed as a complement to proper tariffs in promoting energy-storage projects that can provide a broad range of services to the grid at all voltage levels.

Simply allowing storage to compete in the electricity marketplace for the provision of goods and services is not appropriate at this point in time for this promising set of technologies, many of which are still in the early stages of commercialization. An effective policy for storage will have to provide some means of underwriting the extra costs associated with commercialization, in order to allow the process to proceed expeditiously. The policy design question should be: What is the most effective way to provide commercialization support to energy storage in order to allow it to achieve a state where it can compete on an equal footing in the greater electricity marketplace? The GPI believes that the most effective way to facilitate the commercialization of energy storage at this point in time is by supporting a series of demonstration projects and targeted solicitations for storage systems, as well as supporting other procurement programs that can elicit storage installations, such as the RPS in its efforts to promote renewable generators that include storage systems in their projects.

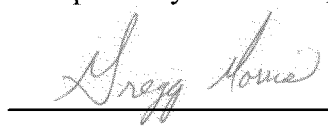
For the segment of the storage spectrum that is primarily directed at providing operating services to the grid, we believe that there are significant advantages in terms of being able to discover the optimal modes of operation for these kinds of storage systems by having them be under the direct operational control of the grid operator, rather than trying to operate them subject to parameters written into a services agreement. In particular, we believe that if a grid operator had full operational control over a storage system, he or she might very well be able to discover how to derive more benefits from the system than could be derived from purchasing the system's products in the competitive marketplace

as currently structured, with storage operations limited by operation contracts that do not take advange of the full range of their capabilities.

The GPI urges the Commission to revise its proposal for supporting the development of the storage industry by tailoring it more particularly to the distinct characteristics of storage systems, and by designing it to encourage the development of a still emerging industry, rather than treating it as if it were already commercially mature.

Dated July 3, 2013, at Berkeley, California.

Respectfully Submitted,



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