BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Consider Smart Grid Technologies Pursuant to Federal Legislation and on the Commission's Own Motion To Actively Guide Policy in California's Development of a Smart Grid System.	Rulemaking R.08-12-009

COMMENTS OF MEGAWATT STORAGE FARMS, INC. ON THE JOINT RULING AMENDING SCOPING MEMO AND INVITING COMMENTS

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COMMENTS OF MEGAWATT STORAGE FARMS ON THE JOINT RULING AMENDING SCOPING MEMO AND INVITING COMMENTS

Introduction

Pursuant to the February 8, 2010 Assigned Commissioner and Administrative Law Judge's Joint Ruling Amending Scoping Memo and Inviting Comments on Proposed Policies and Findings Pertaining to the Smart Grid, MegaWatt Storage Farms, Inc. ("MegaWatt") hereby submits this document in proceeding R-08-12-009, **Order Instituting Rulemaking to Consider Smart Grid Technologies Pursuant to Federal Legislation and on the Commissioner's Own Motion to Actively Guide Policy in California's Development of a Smart Grid System.**

Comments

MegaWatt strongly supports having storage fully included in the smart grid activities covered by this ruling. Storage is transformative and an essential element in the smart grid.

Storage allows the grid to transform from the current massive just-in-time delivery system, to a store-and-forward system. The just-in-time grid is generally characterized by predictable generation, unmanaged transmission and distribution flows (wires) and unmanaged loads that fluctuate with significant random changes. The new, green smart grid, (including renewables, storage and demand management) will have significant fluctuating generation (from intermittent renewables), manageable and schedulable transmission and distribution flows (via

storage and DC-DC links), and significant amounts of managed and schedulable loads (via storage, demand/response and realtime pricing). In other words, with the smart grid, the characteristics of generation, transmission, distribution and loads will all change. Storage will be a central element in making a smooth transition from the old just-in-time model to the emerging smart grid model.

Under SB17, the California Public Utilities Commission ("CPUC" or "Commission") has been asked, by July 1, 2010, to "determine the requirements for a smart grid deployment plan consistent with the policies set forth in the [SB17] bill and federal law." MegaWatt respectfully requests that the Commission include the following ten items in these requirements:

1. Formally confirm that deployment and use of storage is a form of energy efficiency and explicitly require that storage be ranked in the first category of the CA Loading Order under all CPUC jurisdictional actions.

Storage can be used to increase energy efficiency of generation, transmission and distribution and loads and is thus a form of energy efficiency. For example, storage can:

- reduce marginal losses on transmission and distribution systems by scheduling when power moves over the wires,
- reduce use of inefficient generating resources by timeshifting energy from more efficient generators,
- reduce reactive power consumption of loads, and
- reduce demand costs by smoothing consumption of loads.

Each of these applications qualifies storage as an energy efficiency resource. Under the CA Loading Order, storage should accordingly be ranked in the top category (energy efficiency). We encourage the Commission to formally acknowledge this ranking and to require that this ranking be used in all actions of the Commission.

2. Require that storage be explicitly evaluated as an alternative to new generation, transmission, distribution and demand/response. Require that storage be treated as a primary resource in all grid plans (including all smart grid plans mandated by SB17).

Despite the tremendous capabilities of storage, it is typically included in grid plans as an afterthought, or is entirely ignored. In order to give storage a fair hearing, the Commission should require that storage be evaluated as a primary alternative to new generation, transmission, distribution and demand/response. By "primary alternative", we mean a careful, full evaluation of whether storage is a viable alternative. We believe that part of the historical difficulty in getting storage deployed in California has been the lack of effort to plan a grid that incorporates storage. If storage isn't included in the plan up front, it is very difficult to add it later and still achieve its full benefits.

This recommendation will help drive the fair evaluation of storage against other alternatives. Note that we do not mandate that storage win, only that it be given a fair hearing. Failure to carefully consider the storage alternative should result in the Commission rejecting any generation, transmission, distribution or demand/response project until the storage option is fairly and fully evaluated.

The ratepayers of California deserve a fair hearing for all reasonable alternatives.

3. Require that evaluation of storage options must include all storage-related benefits, including explicit calculation of its optionality value.

The evaluation process for generation, transmission, distribution and demand/response projects have evolved to match the capabilities of each of these types of resources. Storage is new and brings capabilities that cover all these bases.

Storage is not given a fair evaluation when its benefits are artificially constrained to those benefits that are provided by the more limited incumbent technology. For example, in a

procurement for flexible, dispatchable resources, it would be unfair to limit the value calculation for storage to only those benefits that a fossil plant could also provide.

Yet this is the current procurement practice.

Storage can only receive a fair and just evaluation if each of its benefits in that project are valued. In our previous recommendation, we recommend evaluating whether storage is a viable alternative. In this recommendation, we are focusing on what additional benefits storage would provide, including careful assessment of these values, and explicitly including these values in the cost-benefit analysis.

For example, a flexible dispatchable storage project may have the following benefits that a fossil plant does not provide: transmission or distribution deferral benefits, reliability benefits, VAR management benefits, blackstart benefits, power quality benefits, ancillary service benefits, and other benefits. Moreover, since many forms of storage have zero emissions, zero water usage and are quiet, permitting is easier, increasing the probability of successful deployment.

Storage also has large optionality value. Storage can be deployed incrementally, as many MW per year as needed in that year, adjusting the deployment rate each year to the latest changes in grid needs. Storage can generally be deployed in under a year, providing quick response to need grid needs. In contrast, fossil plants take many years to permit and build and new transmission projects can take a decade or more. Many types of storage can be relocated. The optionality value of storage is especially valuable when the pattern of renewables is so uncertain and some are arguing for decade-long multi-billion dollar transmission projects to regions that may never reach their projected renewables outputs.

Evaluation of storage, including the full range of benefits (including explicit determination of the optionality value) ensures that CA ratepayers have the lowest costs. It also ensures CA ratepayers have maximum flexibility with grid infrastructure as the grid evolves from a just-in-time historical grid model to the future smart grid.

4. Embrace and support the pending legislation for a 5% mandate for storage by 2020 and 2.25% mandate for 2014 by requiring that grid plans (including SB17 mandated smart grid plans) include these mandated levels of storage.

Storage is an essential resource in reaching the CA RPS standards. By requiring that grid plans submitted to the Commission (including smart grid deployment plans mandated by SB17) explicitly include storage that meets the pending 5% / 2020 and 2.25% / 2014 mandates, the Commission will ensure that the plans developed will be relevant should this legislation, or similar such legislation, be passed.

This recommendation also supports our earlier recommendations by ensuring explicit consideration of storage in the smart grid planning process.

Furthermore, this recommendation helps ensure that storage is deployed in sufficient size to make a meaningful boost in capacity utilization of CA's transmission and distribution infrastructure, which is a key benefit of storage.

5. Require that procurement of storage and storage services be done through open procurement processes. Require that both storage and storage services be allowed to compete for all opportunities that could use storage.

The rapid deployment of storage will be a major factor allowing California to achieve its RPS goals. As with wind, solar and demand / response, independent developers are likely to move faster, with larger projects and at lower cost than utilities. Accordingly, we strongly urge the Commission to ensure that there is a level playing field that allows independently developed, owned and operated storage projects fair and equal access to all storage opportunities falling under the Commission's jurisdiction. Related to this, we urge the Commission to require that storage services be permitted to compete in IOU CPUC jurisdictional procurements directly and on a level playing field against direct IOU purchases of storage systems.

6. Require that storage be separately procured through open, competitive processes, and not be included as part of other projects.

Given the extraordinary promise of storage and the need for rapid development of a strong storage ecology, we request that the Commission mandate that the storage aspect of any projects be separately procured through an open, competitive process. For example, we believe that a substation upgrade that includes an electricity storage system as part of the upgrade should be divided into the storage part and the balance of improvements. The storage capabilities should be put out for open, competitive procurement, and per recommendation 5, should be structured to allow both storage system and storage service proposals to compete for the award.

Adopting this recommendation ensures that IOUs do not simply aggregate storage into larger projects, choking off the development of a healthy, competitive independent storage ecology.

A competitive market for storage is the best way to ensure competitive costs and deployment of the best technology for CA ratepayers.

7. Require explicit accounting for the greenhouse gases emitted by use of fossil plants when used for renewables integration.

The use of fossil plants to integrate (to smoothen) intermittent renewables (such as wind and solar) can result in higher overall emissions of some greenhouse gases compared to simply shutting down the renewables and running the fossil plants at their lower emissions settings[1]. The reason is that varying the output of fossil plants (as when smoothing renewables) can result in dramatically higher emissions.

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[1] "Air Emissions Due To Wind And Solar Power", Warren Katzenstein, and Jay Apt Environ. Sci. Technol., 2009, 43 (2), 253-258, DOI: 10.1021/es801437t, Publication Date (Web): 19 December 2008. Available at: http://pubs.acs.org/doi/pdf/10.1021/es801437t

As a result, the use of fossil plants to integrate renewables makes a mockery of RPS objectives unless the emissions from using fossil plants for integration are explicitly calculated.

In contrast, storage is a clean, green alternative. Many storage technologies have zero emissions.

In support of SB17 and the smart grid objectives outlined by the Commission, we request that Commission explicitly include the greenhouse gas impact of integrating renewables with fossil plants in any smart grid plans, procurements or models.

8. Require explicit accounting of the emissions of storage (if any).

While many storage technologies are zero emissions, not all are. CAES , in particular, generally uses a natural gas single-cycle generator when recovering the energy from the compressed air. Some CAES plant descriptions we have seen report heat rates significantly worse than a combined cycle natural gas plant.

Part of the promise of storage is a cleaner environment and this is a key objective that permeates SB17. If storage has emissions, they should be explicitly accounted for in comparing that particular storage solution against other alternatives.

9. Require that storage be allowed to connect to the grid under existing protocols and standards.

With respect to Section 3.5 of the Commission's February 8, 2010 document, we request that the Commission positively affirm that where storage (or other smart grid assets) are able to connect to the grid using existing legacy protocols, they be permitted to do so, and not have to wait for new standards (such as those called out in Section 8362 of SB17, such as NIST, GAC,

IEEE or NERO standards.). In other words, where the existing standards work, let's use them. We can refine and embrace the new standards as they get approved.

Our experience with standards is they often take years longer than initially expected to get approved in final form. It is in the interests of CA ratepayers to not allow standards development to be a critical path item that stands in the way of smart grid deployment and benefits.

10. Allow Smart Grid Deployment Plans to be used for baseline determination and reasonableness purposes, but not be treated similar to an approved procurement plan.

We agree with the Commission's proposal under 3.1 of the Commission's Feb. 8, 2010 document that an approved Smart Grid deployment plan be entitled to the first two potential uses listed in 3.1, but not the third.

However, we request that the Commission not approve a Smart Grid deployment plan unless it meets the earlier recommendations that MegaWatt has listed in this submission.

Summary

The above recommendations will help ensure that CA ratepayers get reliable power at the best possible rates. The recommendations are consistent with the objectives of SB17 Section 8366, including achieving the RPS standard, reducing greenhouse gases, achieving energy efficiency goals, modernizing the grid, meeting future needs with innovative technologies that use the existing assets more effectively, and ongoing improvements in grid safety, protection and productivity for all CA workers. Our recommendations improve overall grid efficiency, reliability and cost-effectiveness of electrical system operations, planning and maintenance, all of which are objectives of SB17.

Finally, we note that while many of our recommendations are directly applicable to Section 5.4 of the Commissions Feb. 8, 2010 document, it is our intent that they also be supportive and responsive to other parts of that document, as applicable.

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Dated March 9, 2010 at Woodside, CA

Respectfully submitted,

_____/s/_____

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PROOF OF SERVICE

I hereby certify that on March 11, 2010, in Woodside, CA, I have served a copy of **Comments Of Megawatt Storage Farms, Inc. On The Joint Ruling Amending Scoping Memo And Inviting Comments**, upon all parties listed on the Service List for this proceeding, R-08-12-009. All parties have been served by email or first class mail, in accordance with Commission Rules.

_____/s/_____

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