

**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.

R.10-12-007

**COMMENTS OF A123 SYSTEMS TO THE ENERGY STORAGE ORDER  
INSTITUTING RULEMAKING**

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A123 Systems respectfully submits these comments in response to the California Public Utilities Commission’s *Order Instituting Rulemaking Pursuant to Assembly Bill 2514 to Consider the Adoption of Procurement Targets for Viable and Cost-Effective Energy Storage Systems* (“OIR”). A123 applauds the CPUC for its proactive response to AB 2514, specifically, initiating policy for California utilities to consider the procurement of viable and cost-effective energy storage systems. A123 believes that the numerous operational environmental and economic benefits of energy storage can be delivered to California ratepayers if certain procedural and policy barriers can be removed.

**1. Background**

As a supplier of advanced battery-based energy storage systems, A123 has a positive interest in the CPUC’s new charge. Our comments are based on technical experience and lessons accumulated from assembling and deploying several multi-megawatt battery based energy storage systems. Over 40 MWs of our grid-connected storage systems have been delivered for commercial service worldwide. In California, 14 MWs are under development or currently in

operation. These experiences can help inform discussions of energy storage as applied to commercially viable, cost-beneficial applications.

## **2. Recommendations**

A123 suggests that the CPUC consider four areas within this rulemaking:

- (1) A resource-neutral methodology to compare solutions for California policy goals
- (2) Investment and valuation frameworks for new benefits enabled by storage
- (3) Simplification of technical interconnection procedures
- (4) Removal of asymmetrical market structures

### **Policy Solution Comparison**

California has set ambitious energy and environmental goals which will alter the composition of the state's generation resources.<sup>1,2</sup> At the same time, forthcoming Federal environmental actions could tack on operational discord.<sup>3</sup> In the context of policy-driven system transformations, the value of storage should not be evaluated as a solo resource, nor should it be viewed as simply an accompaniment to specific generators. Instead, storage should be heard in concert with all generation and load resources, with each grid instrument contributing the necessary functionality for economic and harmonic power system operations.

### **Investment and Valuation Framework**

While each unit of energy – the watt-hour – is clearly priced, metered, and billed, the value of other power system functions has not been as easy to gauge. Difficulties have surfaced for various reasons, such as transmission limitations (for reactive power in VARs) or the lack of

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<sup>1</sup> Sen. Bill No. 1078 (2002), *codified in* Pub. Util. Code § 399.15(b)(1)

<sup>2</sup> California ISO, "Operational Requirements and Generation Fleet Capability at 20% RPS," August 31, 2010

<sup>3</sup> North American Electric Reliability Corporation, "2010 Special Reliability Scenario Assessment: Resource Adequacy Impacts of Potential U.S. Environmental Regulations," October 2010

adequate metrics (for frequency response in MW/0.1Hz).<sup>4,5</sup> New storage technologies can supply these and other functions, when required, where required, and in the required quantity. To encourage new technologies to dive into the market, the CPUC should consider a valuation and investment framework that will allow utilities and merchants to finance these newly modularized grid functions.

### **Simplification of Interconnection Procedures**

In contrast to its name, the interconnection process has instead often delayed or prevented the connection of new technologies.<sup>6</sup> Standardized interconnection rules have previously been created for specific resource types, cutting fast tracks out of the procedural brush.<sup>7</sup> Previous experience has shown that the interconnection process causes delay that can be measured in years, causing unexpected project detours. Creation of a standardized storage interconnection process will help reduce interconnection delays.

### **Symmetrical Market Structures**

Some dispatch systems model a storage device as a load when charging and as a generator when discharging. Unfortunately, the same abstraction that smoothes operational implementation can create financial turbulence. In certain jurisdictions, a storage device may follow one set of pricing rules when charging and a completely different set of rules when discharging.<sup>8</sup> When

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<sup>4</sup> Federal Energy Regulatory Commission, "[Principles for Efficient and Reliable Reactive Power Supply and Consumption](#)," February 4, 2005, Docket No. AD05-1-000.

<sup>5</sup> Eto, J et al, "[Use of Frequency Response Metrics to Assess the Planning and Operating Requirements for Reliable Integration of Variable Renewable Generation](#)," LBNL-4142E, December 2010

<sup>6</sup> For examples of delays in HVDC and Dispatchable AC transmission, see Hsieh, E. and E Fisher, "Evaluating the Merchant Transmission Market," Proceedings of the Cigré Conference on Power Systems, Calgary, August 2007

<sup>7</sup> See, for example, Federal Energy Regulatory Commission, "[Small Generator Interconnection Procedures](#)," August 26, 2006; California ISO, "Interconnection Requirements For a Wind Generating Plant," Appendix H to the CAISO Large Generator Interconnection Agreement; and CPUC, "[Decision Adopting Interconnection Standards \[for Distributed Generation\]](#)," R. 99-10-025, October 21, 1999

<sup>8</sup> For example, in Texas, storage may potentially pay zonal prices as a load but receive nodal prices as a generator. See Texas Energy Storage Alliance, "[Whitepaper on Storage Participation in ERCOT](#)," January 3, 2011

ascending and descending rules differ, the asymmetry introduces financial risk that can be impossible to forecast, grounding new storage investments. Market participants who operate storage devices should have the option to take flight under consistent rules for both charging and discharging.

### **3. Conclusion**

A123 looks forward to continued input in this proceeding, including the proposed workshops. We will be pleased share experience-based insights regarding opportunities, obstacles, and the cost and benefits of selected energy storage applications. A123 thanks the CPUC for its initiative and work to start this proceeding, and looks forward to contributing to the process.

Respectfully Submitted,  
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/s/ Eric Y. Hsieh  
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January 21, 2011

CERTIFICATE OF SERVICE

I hereby certify that, pursuant to the Commission's Rules of Practice and Procedure, I have this day served a true copy of COMMENTS OF A123 SYSTEMS TO THE ENERGY STORAGE ORDER INSTITUTING RULEMAKING on all parties identified on the attached service list(s). Service was effected by one or more means indicated below:

- E-mail to all parties who have provided an e-mail address.
- First class mail will be used if electronic service is not available.

Executed on January 21, 2011, at Arlington, Virginia.

/s/ Eric Y. Hsieh

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