

**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 10-12-007
Filed December 16, 2010

**JOINT STEM, INC. SOLARCITY, AND TESLA MOTORS REPLY COMMENTS
RESPONDING TO THE ASSIGNED COMMISSIONER'S RULING PROPOSING
STORAGE PROCUREMENT TARGETS**

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July 19, 2013

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In accordance with the California Public Utilities Commission’s (“Commission’s”) Rules of Practice and Procedure, Stem, Inc, SolarCity Corporation, and Tesla Motors (hereafter “Joint Parties”) submit these reply comments on the *Assigned Commissioner’s Ruling Proposing Storage Procurement Targets*, issued by Assigned Commissioner Carla Peterman on June 10, 2013 (hereafter the “ACR”).¹

I. DESCRIPTION OF STEM, INC.

Stem is a developer, owner, and operator of grid-connected advanced energy storage systems. Stem was founded in 2009 in California and has a portfolio of projects in operation and in various stages of development around the state. Stem systems install and interconnect at customer sites behind the utility meter. The Company uses advanced analytics to send control signals to charge and discharge the storage devices therefore managing customer load for optimal economic benefit. Stem systems, when operated in aggregate, also provide a measurable, verifiable, and dispatchable grid resource located in congested load centers offering local capacity, flexible ramping, transmission congestion relief, and, if so desired by the host distribution utility, distributed voltage and reactive power management to assist in the delivery of high quality power to ratepayers.

¹ SolarCity filed a motion for party status on July 3, 2013. Tesla Motors is filing a motion for party status concurrent with these reply comments.

II. DESCRIPTION OF SOLARCITY CORPORATION

SolarCity is California's leading full service solar power provider for homeowners and businesses - a single source for engineering, design, financing, installation, monitoring, and support. Our company provides cost-effective financing that enables customers to eliminate the high upfront costs of deploying solar. SolarCity has more than 1,900 California employees based at 15 facilities around the state and has provided clean energy services to more than 26,000 California customers.

III. DESCRIPTION OF TESLA MOTORS

Tesla Motors is an American-owned, California-based manufacturer of battery electric vehicles ("EVs"), as well as battery and powertrain components. The Company was founded in 2003 with a mission to catalyze the mass market for EVs. Tesla Motors has successfully launched two vehicles (the Tesla Roadster and the Model S) into the marketplace and continues to pursue advancements in several areas, including battery density and storage applications. Tesla Motors employs more than 4,000 individuals at two facilities in California, including the factory operated by NUMMI, the former joint venture between General Motors and Toyota, in Fremont, CA.

IV. THE ACR SHOULD CLARIFY THAT THE PROCUREMENT BUCKETS REFER TO USE CASES, NOT TO THE POINT OF INTERCONNECTION OF A GIVEN STORAGE DEVICE.

To dispel any lingering questions or confusion regarding the nature of the proposed buckets, the ACR should clarify that each buckets represents a suite of use cases that address specific issues that affect the transmission system, the distribution system, or have impacts on the customer side of the meter, respectively. As drafted, the ACR appears ambiguous on this point and could be interpreted as requiring the IOUs to procure specific amounts of storage capacity based on where on the system those storage devices interconnect. This latter approach would be inconsistent with the Commission's general orientation toward technology neutral policies and would unnecessarily exclude

technologies that are capable of fulfilling certain use cases from doing so solely because they happen to interconnect at the “wrong” place on the grid.

V. THE ACR SHOULD REJECT THE SUGGESTIONS THAT THE IOUS MUST OWN 100% OF THE STORAGE SYSTEMS PROVIDING DISTRIBUTION SERVICES

In opening comments, PG&E, SCE, and SDG&E (together, the IOUs) each suggested that energy storage providing distribution services must be owned by the utility.²

The ACR should be modified to clarify that the Commission is not intending for third parties to own and operate storage projects that perform utility distribution reliability functions. Public utilities code 399.2(a)(2) requires that a utility to be responsible for owning and operating the distribution grid.³ There has been no evaluation in this proceeding of the implications of comingling ownership and responsibility of operation of the distribution system.³

While more work may need to be done to ensure energy storage can be integrated effectively to provide distribution services, Joint Parties believe there is a long history of 3rd party ownership of assets providing distribution services.

Specifically, the IOUs all have programs that both incentivize and penalize customers for reactive power management, which is measured by utility meters according to the power factor. Managing reactive power (VARs) is a critical component of maintaining a reliable and safe distribution grid.

For example, customers with power factor below 85% in PG&E are penalized, according to the E-19 tariff, and customers with power factor above 85% are credited for the reactive power support they are providing the distribution grid.⁴ To improve power factor, customers are encouraged to consider installing onsite capacitors behind the meter, which will compensate for poor power factor and supply the distribution grid with

² PG&E Opening Comments, p. 13; SCE Opening Comments, p. 9; SDG&E Opening Comments, p. 9-10

³ PG&E Opening Comments, p. 13

⁴ PG&E E-19 tariff, Section 7 on Sheet 9

reactive power.⁵ Without adequate supply of reactive power, the IOUs must purchase capacitors and install them on their distribution circuits to manage the system properly.

In this example, the distribution service of providing and managing VARs, which is a requirement of operating a reliable and safe grid, can be provided by a utility owned capacitor, or a 3rd party, customer owned capacitor.⁶ Based on the penalties and incentives offered by the utility, the customer has a choice of either buying their own capacitor to provide VARs or pay the utility, ultimately this is an economic decision that leads to the lowest system cost. Joint Parties also point out that these distribution services are provided from the customer side of the meter and reiterate the point in section IV of these comments that storage should be qualified based on the service it provides, not the point of interconnection.

Joint Parties believe that similar constructs as exist for reactive power management can be created for other distribution services, and therefore can encourage 3rd party ownership and least cost solutions.

VI. THE ACR SHOULD PRIORITIZE ADDRESSING BARRIERS THAT PREVENT THE FULL VALUE OF STORAGE FROM BEING RECOGNIZED.

Procurement targets can be useful by establishing demand for technologies and services that absent a procurement mandate would go underutilized, despite the real advantage or benefit these technologies may have over the entrenched options. Both the EPRI and KEMA models show that storage can be cost-effectively applied when soft costs are low. However, a procurement mandate is only part of the overall solution to transform the market for storage. As noted by CESA in opening comments⁷, the ability of storage to provide specific services has been slowed by regulatory barriers, which

⁵ PG&E whitepaper “The Economics of Power Factor Correction in Large Facilities” [http://www.pge.com/includes/docs/pdfs/mybusiness/customerservice/energystatus/power quality/power%20factor--revised-8-9-07.pdf](http://www.pge.com/includes/docs/pdfs/mybusiness/customerservice/energystatus/power%20quality/power%20factor--revised-8-9-07.pdf)

⁶ Joint parties also believe the example of distribution transformers, owned by customers and sited on customer premises, is another example of 3rd party ownership of distribution assets.

⁷ CESA Opening Comments, pg. 13

impede or prevent storage from being able to bring its services to market. This is a particularly salient issue for small scale storage systems. For example, despite its potential to provide resource adequacy value, current rules at the CAISO and the CPUC limit the ability of small scale storage systems from participating in the RA program despite the significant opportunity that aggregated systems could play if given the opportunity. Basic market access issues combined with ongoing challenges with interconnection effectively cut small scale storage out of the market for wholesale services, to the detriment of state policy and ratepayers. In recognition of these concerns, the ACR should include as a priority the identification and resolution of a number of regulatory and interconnection barriers that impede the ability of storage systems, including and especially small-scale and customer-side systems, to actively operate to provide full benefit to the grid.

VII. THE ACR SHOULD REJECT IREC'S SUGGESTION THAT THE CUSTOMER USE-CASE CATEGORY BE REDUCED OR ELIMINATED FROM THE OVERALL PROCUREMENT TARGET

As stated above, we advocate that the ACR adopt a technology neutral position with regard to what storage devices are eligible to fulfill a given use case. Customer-side storage is uniquely positioned, literally, to address the broadest set of use cases relative to storage interconnected at other locations on the electrical system. Challenges such as distribution voltage management and transmission constraints are all driven by end customer demand. IREC argues that because of their small scale, such systems are unlikely to be an economic solution and furthermore would pose a challenge for the utilities to manage, evaluate, measure, and verify as compared to large scale systems, and thus should be excluded from the procurement targets.⁸ There are a number of problems with this perspective.

First, the a priori assumption that small scale systems will be unable to provide services economically is pure speculation and fails to recognize the substantial opportunities for locally operated energy storage providing customer load management

⁸ IREC Opening Comments, pg. 7.

and the opportunity to aggregate small systems as a grid resource. A network of small systems could in fact have the ability to deliver more value than consolidated systems. For example, a small system could provide backup in a grid outage, reduce on-site loads or provide support to a particular feeder, and provide ancillary services such as frequency regulation. Given the growing interest and traction distributed energy solutions are gaining in the market, Joint Parties urge the Commission not to close the door on the ability to leverage these distributed systems to provide both behind the meter and grid-facing services.

Second, Joint Parties also believe the notion that these systems pose challenges to manage is misguided. There are contractual remedies to ensure that resources show up and perform as promised. In fact, as long as the compensation regime for providing grid-facing services is pay for performance, there would be no reason to believe that an aggregator would be any more likely to fail to deliver its contracted services than it would be for a power plan to be unavailable due to unplanned maintenance or fuel shortage. Additionally, projects are required to connect pursuant to the interconnection rules, designed to ensure they interacting reliably and safely with the electrical grid.

Lastly, ratepayers have spent billions of dollars to pay for millions of smart-meters that have now been installed throughout the state. This investment was predicated in no small part on the promise of AMI to facilitate a more dynamic energy system that enables widespread deployment and integration of distributed energy technologies. IREC's arguments regarding the difficulties of EM&V for small scale systems ignores this substantial investment in AMI already made by California ratepayers and the associated AMI capabilities.

VIII. THE ACR SHOULD PROVIDE FOR LIMITED FLEXIBILITY

The ability of a procurement program to affect meaningful market transformation is dependent largely on providing a set of incentives that signal to the market that there is a real and certain opportunity to invest. While some flexibility is appropriate, the IOUs should not be given unlimited discretion. With regard to the various types of flexibility discussed in comments, we are generally comfortable with the IOUs' suggestions regarding their ability to bank excess procurement. Joint Parties also believe the IOUs

should have the ability to procure in excess of the procurement targets based on demonstrated need. However, we are strongly opposed to allowing the utilities to delay or push out procurement to later years as this cuts against the catalytic purpose we believe this program is intended to have. Additionally, Joint Parties support some flexibility to shift procurement targets from one bucket to another based on periodic assessments of need, we caution against giving the IOUs unilateral authority to do so, as this could create uncertainty in the marketplace and undermine the ability of this program to drive investment.

IX. CONCLUSION.

The Joint Parties appreciate the opportunity to provide these reply comments and look forward to participating in the proceeding to further develop and refine this groundbreaking initiative.

July 19, 2013

Respectfully submitted,



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