BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

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REPLY COMMENTS OF THE CALIFORNIA ENERGY STORAGE ALLIANCE ON PROPOSED POLICIES AND FINDINGS PERTAINING TO THE SMART GRID

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Pursuant to Ordering Paragraph Number 3 of the *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*, issued February 8, 2010 ("Joint Ruling"), the California Energy Storage Alliance ("CESA")[1] hereby submits these Reply Comments.

I. INTRODUCTION.

In its opening Comments, CESA strongly urged the Commission to open a new proceeding devoted entirely to energy storage. CESA also asked the Commission to address energy storage related to all of the policy matters assigned to the Commission by passage of SB 17, and development of energy storage policies to prepare California's electric infrastructure for the growing challenges posed by greater reliance on demand reduction, load management, and integration of renewable resources.[2] In these Reply Comments, CESA reinforces these fundamental recommendations with reference to the opening Comments filed by other parties,

[1] The California Energy Storage Alliance consists of A123 Systems, Altairnano, Beacon Power, Chevron Energy Solutions, Debenham Energy, Deeya, Enersys, EnerVault, Fluidic Energy, Ice Energy, Powergetis, Prudent Energy, PVT Solar, Suntech, SustainX and Xtreme Power. The views expressed in these Opening Comments are those of CESA, and do not necessarily reflect the views of all of the individual CESA member companies.

[2] *Comments of the California Energy Storage Alliance on Proposed Policies and Findings Pertaining to the Smart Grid,* filed March 9, 2010.

and highlights the importance of cost-benefit analysis, as one essential reason why a new proceeding devoted to energy storage should be a Commission priority.

II. THE COMMISSION SHOULD OPEN A NEW PROCEEDING TO ADDRESS ISSUES SPECIFIC TO ENERGY STORAGE, INCLUDING COST-EFFECTIVENESS ANALYSIS, IN A COMPREHENSIVE WAY IN ADDITION TO INCLUDING ENERGY STORAGE IN SMART GRID DEPLOYMENT PLANS.

CESA continues to strongly advocate for a new Commission proceeding focused on energy storage, and notes that the Interstate Renewable Energy Council agrees: "IREC believes the Commission should also initiate a rulemaking to determine which policies would best encourage the development of competitive markets for the deployment of energy storage infrastructure, similar to what the Commission has done with addressing policies needed to support alternative-fueled vehicle deployment in R.09-08-009."[3]

In its comments on Section 5.4 of the Joint Ruling, CLECA puts its finger on one of the key reasons that an energy storage proceeding is essential: "This section should, but does not, include load-shifting technology and peak-shaving technology, except for thermal storage air conditioning. Given the deteriorating load factors of California utilities, load shifting should be assessed as well. While the section focuses on end-use applications of storage, system applications are also likely to be of interest. *Our greatest concern is the lack of focus on the cost-effectiveness of storage*. The Commission should be very concerned about any implicit assumptions about the merits of storage applications without cost benefit analysis and, again, should not assume that more is better. It should also be concerned about technologies that are only viable with substantial subsidies. [Emphasis Added]"[4]

TURN's Comments appear to support energy storage, with or without the smart grid: "TURN agrees that storage can offer various benefits for renewable integration, peak shaving and reliability. TURN agrees that the development of reliable and cost-effective storage technologies could be a total "game-changer" for the grid. However, the possibility of electricity storage has been around for a long time, and pilots using batteries, flywheels and compressed air

[3] *Comments of Interstate Renewable Council on Proposed Policies and Findings Pertaining to the Smart Grid*, filed March 9, 2010, at page 11.
[4] *Comments of California Large Energy Consumers Association on Policies and Findings Pertaining to the Smart Grid*, filed March 9, 2010, at page 10.

have been built over the past several decades. TURN fails to see how the deployment of these Projects is somehow dependent on the smart grid. We acknowledge that any operation is obviously optimized through the use of digital technologies and communications technologies. But these seem to be more and more the standard for grid equipment, rather than some unusual beast that is only part of the "smart grid."[5] CESA agrees with TURN, that deployment of energy storage is not dependent on the smart grid *per se*, rather, the smart grid is dependent on energy storage as a key fundamental component of the smart grid. Energy storage may be deployed independent of the smart grid. However, the various benefits streams associated with energy storage will be realized and optimized if a smart grid is in place, allowing for the energy storage systems within the smart grid to absorb, dispatch or offset energy as needed via two way communications and real time price signals.

Energy storage encompasses a diverse range of technologies – mechanical, thermal and chemical storage. Within each of these broad categories of storage, there are many different types of storage technologies each with a unique set of cost and performance parameters. For example, storage technologies can differ according to capacity, duration, and discharge response time and charge rate. There is a role for all types of storage within California's smart grid, including multi-hour peak load reducing energy storage and as well as fast response, short duration storage. The range of possibilities and matches between commercially available technologies and potential applications is broad. While CESA is gratified that energy storage is part of this proceeding, to really do justice to the full capabilities and benefits of energy storage a new stand-alone proceeding is warranted.

In its proceeding approving 2009-2011 demand response program applications of the California Investor Owned Utilities,[6] the Commission highlighted the definitional limbo is in at the Commission with the following observations regarding one subset of energy storage known as "permanent load shifting":

> "In D.06-11-049, the Commission noted that permanent load shifting may not fit within the definition of energy efficiency if the technology used does not reduce overall energy consumption. Similarly, permanent load shifting is not like most demand response programs in that it is not usually dispatched on a day-ahead or

[5] *Comments of TURN on Policies and Findings Pertaining to the Smart Grid*, filed March 9, 2010, at p. 30.
[6] *Application of Southern California Edison Company for Approval of Demand Response Programs, Goals and Budgets for 2009-2011, A.08-06-001*, filed June 2, 2008 (consolidated with PG&E, A.08-06-002 and SDG&E, A.08-06-003).

> day-of basis, nor does it respond to short-term price fluctuations. Still, permanent load shifting, like demand response, can reduce summer peak demand and is reasonably considered in the context of demand response programs that produce a similar end result. The Commission recognizes that permanent load shifting could "reduce the likelihood of shortages during peak periods and lower system costs overall by reducing the need for peaking units."[7]

As noted by CLECA, it is very clear that there exists no appropriate Commission proceeding to address the best way to conduct cost-effectiveness analysis of energy storage in its many forms.[8] This chronic policy gap can only become more problematic as the role of energy storage expands exponentially over the next few years. As discussed in CESA's opening Comments, energy storage is potentially a key technology solution for other energy policy areas under the Commission's purview, such as RPS implementation, the CSI program, and long-term procurement. While energy storage should definitely be a key component of the smart grid deployment plans required by SB 17, a new proceeding devoted exclusively to energy storage will be able to holistically look at the myriad benefits of storage in a crosscutting way so that the Commission's policy goals can be prioritized and optimally addressed in relation to the array of different energy storage technology solutions available today. Energy storage needs to be considered broadly across many energy policy areas, and a new proceeding can inform and provide a framework for how it is addressed in other Commission proceedings.

III. SMART GRID DEPLOYMENT PLANS SHOULD INCLUDE INTEGRATION OF ADVANCED ENERGY STORAGE AND PEAK SHAVING TECHNOLOGIES, INCLUDING PLUG-IN ELECTRIC AND HYBRID ELECTRIC VEHICLES, AND THERMAL STORAGE AIR CONDITIONING.

CESA continues to advocate for the Commission to require smart grid deployment plans that will enable the state to modernize its infrastructure to meet future growth in demand and achieve rapid deployment and integration of cost-effective advanced electricity storage and peak-

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[7] D.09-08-027, issued August 20, 2009, at page 167.

[8] The Commission has addressed cost-effectiveness methodology in its Distributed Generation proceeding (R.08-03-008, filed March 13, 2008), with D. 09-08-026, issued August 20, 2009. It has yet to squarely address cost-effectiveness methodology in its Demand Response Rulemaking (R.07-01-041, filed January 25, 2007), but has essentially adopted a *de facto* methodology with the *Joint Comments of CLECA, DRA, Energy Connect, Enrnoc, Ice Energy, PG&E, SDG&E, SCE, and TURN Recommending a Demand Response Cost-Effectiveness Evaluation Framework,* filed November 19, 2007. It has never addressed the correct cost-effectiveness for energy storage *per se* in any of is proceedings to date.

shaving technologies, including plug-in electric and hybrid electric vehicles, and thermal-storage air conditioning.

DRA makes a very strong case in support of CESA's view:

> "It is prudent to consider the impact of storage integration in the design of the Smart Grid. This proceeding should focus on broad design of the Smart Grid with compatibility and interoperability with storage projects in mind.
>
> The integration of storage facilities into the operation of the grid will require the ability of the grid operator to engage in two-way real-time communications directly with storage devices. The storage device can be relied upon for generation in times of need as well as excessive "load" when too much generation is available. Storage can substitute for transmission or generation in some cases; increase the value and dispatchability of intermittent renewable generation; improve grid stability and safety, as well as defer upgrades; maintain power quality and reliability; and provide "emissionless" energy regulation. Use of storage would also be advantageous in other ancillary services, such as reactive power and voltage support that are more effective when utilized locally instead of bringing them through long distance transmission lines. Some storage capabilities, such as flywheels, can also perform black start capability.
>
> There are various storage options available, and the choice among options depends on the goal for utilizing the storage facility. The Commission should consider the following matters in integrating storage into the design of Smart Grid:
>
> It would be preferable to place the energy storage facility at or near the load, and equip it with two-way remote communication capability accessible by the grid operator. Placing energy storage at or near the load would reduce potential line losses, saving money for the ratepayers. It would also save money by avoiding larger transmission and distribution lines.
>
> In addition to placing storage close to the load, it would also be prudent to place it at or near the source of generation. In the case of wind and solar generation, storage would reduce the need for large capacity transmission lines, saving money for ratepayers;
>
> Thermal energy storage can be used in buildings to lower the peak electric demand caused by large users during peak daytime hours (*e.g.,* air conditioning), saving money for large customers directly and ratepayers indirectly.
>
> Finally, in DRA's view, another important use of the Smart Grid is for renewables integration, which storage helps facilitate. For example, DRA did not oppose the first stage of PG&E's proposal for a Compressed Air Energy Storage research and development project (Application A.09-09-019/D.10-01-025) because the project would examine the feasibility of smoothing out wind intermittency through in-state compressed air storage. Thus, DRA supports the inclusion of storage under

> the Smart Grid umbrella, and does not believe that Smart Grid proposals should limit the storage options for consideration. Storage options should be adopted based on the usage intended for them, as well as their cost-effectiveness and technological feasibility in meeting those needs."[9]

CESA agrees with DRA's entire statement, with the caveat that energy storage placed at or near load may be accessible by the grid operator, but this should not be a precondition for distributed energy storage.[10] For example, energy storage sited on the customer side of the meter that is cost-effectively used for load management and power reliability purposes may not need to be directly controlled by the grid operator. CESA strongly urges the Commission, in shaping the market rules and protocols for the use of grid-connected energy storage, to consider all ownership models (utility-owned, customer-owned and third party-owned) of energy storage and to be open to innovative new market mechanisms for capturing the various benefit streams associated with new energy storage capacity on the grid.

CEERT is similarly supportive of focusing the Commission's attention on energy storage:

> "One of the advantages of many [energy storage] technologies is their relatively small physical footprint that offers opportunities for the deployment of location specific distributed energy storage (DES). The Smart Grid has the potential not only to dynamically manage installed storage systems on an individual basis, it could eventually aggregate DES resources into the equivalent of highly responsive "virtual" massive bulk storage systems (VMS) with capacities and discharge times similar to either compressed air energy storage or pumped hydro. The distributed nature of the DES resources means that these virtual massive bulk storage systems would come with the added advantages that they would be safer, more secure, more flexible, more reliable (since VMS should avoid the grid constraints associated with traditional massive bulk storage), and more competitive."[11]

CESA strongly agrees with CEERT's assessment and vision for how energy storage can play a key role in California's future smart grid.

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[9] *Comments of the Division of Ratepayer Advocates on Policies and Findings Pertaining to the Smart Grid*, filed March 9, 2010, at pages 23-24.

[10] It is also important to recognize that energy storage need not be located at or near load for purposes of providing frequency regulation.

[11] *Comments of CEERT on Policies and Findings Pertaining to the Smart Grid*, filed March 9, 2010, at pp. 25-27.

IV. CONCLUSION.

CESA appreciates this opportunity to submit these Reply Comments, and looks forward to continuing to work with the Commission and the parties to this proceeding.

Respectfully submitted,

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Date: April 1, 2010

CERTIFICATE OF SERVICE

I hereby certify that I have this day served a copy of the ***Reply Comments of the California Energy Storage Alliance on Policies and Findings Pertaining to the Smart Grid*** on all parties of record in proceeding ***R.08-12-009*** by serving an electronic copy on their email addresses of record and by mailing a properly addressed copy by first-class mail with postage prepaid to each party for whom an email address is not available.

Executed on April 1, 2010, at Woodland Hills, California.

Michelle Dangott

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