BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

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OPENING COMMENTS OF THE CALIFORNIA ENERGY STORAGE ALLIANCE ON PERMANENT LOAD SHIFTING REPORT

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Pursuant to Rule 14.3 of the California Public Utilities Commission's ("Commission's") Rules of Practice and Procedure, the California Energy Storage Alliance ("CESA")[1] respectfully submits these Opening Comments on the *Assigned Commissioner and Administrative Law Judge's Ruling Setting Workshop on Cost-Effectiveness Protocols*, filed February 11, 2011 ("ALJ's Ruling").

I. INTRODUCTION.

CESA submits these comments on the report attached as Attachment 1 to the ALJ's Ruling and referred to therein as a "report on Permanent Load Shifting (PLS) activities required in Ordering Paragraph 32 of Decision (D.) 09-08-027, issued in the 2009-2011 Demand Response Applications proceeding, A.08-06-001, et al., ("PLS Report"). As requested by the ALJ's Ruling, CESA's comments discuss (i) the PLS Report's methodology and technical

[1] CESA is an unincorporated association, the membership of which consists of A123 Systems, Altairnano, Applied Intellectual Capital/East Penn Manufacturing Co., Beacon Power Corporation, Calmac, Chevron Energy Solutions, Debenham Energy, Deeya Energy, Inc., Enersys, Enervault, Fluidic Energy, General Compression, Greensmith, Energy Management Systems, HDR, Ice Energy, International Battery, Inc., Lightsail Energy, MEMC/SunEdison, Powergetics, Primus Power, Prudent Energy, RedFlow, Restore Energy Systems, Saft, Samsung SDI, SEEO, Silent Power, Suntech, Sumitomo Electric, Sunverge, SustainX Energy Storage Solutions, and Xtreme Power. The views expressed in these comments are those of CESA, and do not necessarily reflect the views of all of the individual CESA member companies.

accuracy, (ii) the policy options and recommendations contained in the PLS Report, and (iii) the relevance to and usefulness of the PLS Report in the Commission's review of the PLS proposals that the utilities included in their DR Applications. Further, CESA respectfully asks that the Commission issue guidance to the utility sponsors of the PLS Report as expeditiously as possible so that they may upwardly revise their 2012-2014 Demand Response Applications, filed on March 1, 2011 ("DR Applications") before public responses to the DR Applications are due.[2]

II. CESA SUPPORTS THE PLS REPORT RECOMMENDATION FOR THE IMPLEMENTATION OF TWO PLS PROGRAMS; ONE FOR "MATURE TECHNOLOGIES" AND ANOTHER FOR "EMERGING TECHNOLOGIES" WITH A MUCH LARGER PROGRAM BUDGET ALLOCATED TO PLS THAN THE UTILITIES' APPLICATIONS SUBMITTED ON MARCH 1, 2011.

The methodology of the PLS Report, for the first time, provides a framework for considering the cost-effectiveness of energy storage technologies. The PLS Report is timely, as a wide a wide variety of permanent load shifting technologies are commercially available today, including many types of advanced energy storage or "AES", which includes thermal, electrochemical and mechanical storage solutions that can be located on the customer side of the meter for load management purposes.

Key findings from the PLS Report support creation of a significant PLS program that would have built in necessary system capacity and flexibility to manage peak load growth and optimize California's existing electric power system and have no cost shifting impacts to non-participating ratepayers. In other words, such a program could be ratepayer neutral.

Based on a cost-effectiveness framework appropriate for load shifting, the lifecycle value of the avoided cost benefits of PLS technologies was estimated to be between $500/peak kW and - $2,500/peak kW, assuming a 15 year project life. Since PLS solutions are geared toward

[2] Responses to PG&E's DR Application are due April 1, 2011, and responses to the SCE and SDG&E Application are due April 2, 2011.

avoiding costly peaking generation and transmission and distribution assets, CESA recommends that the avoided costs the Commission should consider are the estimated avoided cost benefits for a 30 year project life, which is in the range of $650/peak kW to $3,250/peak kW depending on the number of hours the PLS system can shift load and what hour(s) the shifting occurs[3].

Based on these cost effectiveness findings, the study found that a PLS program could be designed so that it would be 'ratepayer neutral' – in other words, incentives could be paid to a specific ratepayer who invests in PLS without a 'cross-subsidy' from other ratepayers. Using a "generic tariff" to model ratepayer neutral incentive levels, the PLS Report found that ratepayer neutral incentives could be as much as $200-$800/kW, depending on the number of hours shifted. Using actual utility tariffs, the upper end of this range can increase to as much as $2,000/kW. By modeling the economics of commercially available PLS technologies with the ratepayer neutral incentive (~$500/kW), the PLS Report found that this level of incentive will likely be sufficient to commercialize a number of mature, large thermal PLS technologies going forward.

However, incentive levels closer to $2,000/kW would be needed to encourage adoption of smaller, emerging PLS technology. Emerging PLS technologies are commercially available today, and include small thermal systems and many different types of electrochemical and mechanical energy storage solutions. Collectively, these PLS technologies hold significant promise for California's electric power system by providing a diverse portfolio of assets that can be used to not only manage peak demand, but can also be easily sited on the customer side of the meter, deployed quickly, be remotely controlled and dispatched, and providing additional services such as frequency regulation in addition to peak load management.

[3] These avoided cost benefits are based on a 30 year project life estimate. Decreasing project life to 15 years would decrease lifecycle avoided cost benefits by ~ 30%, to $500-$2,500 per peak kW.

Market transformation for PLS technologies can be achieved by implementing two properly designed incentive programs, each sized at approximately $60 million: (a) larger "mature technology" program providing rate payer neutral incentives to encourage deployment of mature permanent load shifting technologies (technology neutral), and (b) smaller "emerging technology" program to encourage emerging PLS technologies, again, without preference for a particular technology solution. In other words, both of these programs should be technology neutral.

III. THE COMMISSION SHOULD PROVIDE ADDITIONAL GUIDANCE TO ENABLE THE UTILITIES TO REVISE AND AUGMENT THEIR DR APPLICATIONS.

On August 27, 2008, an ALJ's Ruling was issued in this proceeding that provided the following guidance to the utilities in preparing the DR Applications:

> "The utilities' 2012-2014 Applications shall contain proposals to expand the use of permanent load shifting that are informed by the December 2010 study, and should include discussion of the most effective ways to encourage an increase in cost effective permanent load shifting, for example through dynamic rates, future RFPs, or standard offer contracts." (ALJ's Ruling, p. 17).

On December 16, 2010, in D.10-12-024,[4] the Commission specifically addressed the application of new cost-effectiveness guidelines to PLS:

> "In the future the Commission may approve protocols or provide additional guidance for Permanent Load Shifting and Integrated Demand Side Management activities, as necessary and appropriate. The protocols acknowledge that some demand response programs may require some flexibility due to their specific characteristics, however, any modifications in the protocols, including those attempting to address particular subsets of demand response activities such as permanent load shifting, must be fully explained and receive Commission approval." (p. 24).

[4] Decision Adopting a Method for Estimating the Cost-Effectiveness of Demand Response Activities.

The Commission further explained:

> "These protocols shall be used for all activities included in the applications for which the utilities are requesting a set budget and for which load impacts can be estimated using the load impact protocols, with the exception of Permanent Load Shifting activities. Further guidance on calculations of cost effectiveness for Permanent Load Shifting Activities may be issued before the applications are filed." (p. 39).

What has been missing from prior Commission guidance is specific direction as to the goals, size and magnitude of any resulting PLS program. Since the three utilities each filed requests for budget for PLS in their DR Proposals on March 1, 2011, It is not surprising, that without the necessary guidance from the Commission, that the PLS program requests fall considerably short of their full potential. What has been requested thus far is set forth below:

PLS: IOU Demand Response Application Summary

Summary of data for the three IOU's proposed PLS programs:

IOU	**Program Size (MW)**	**2012-2014 Budget ($M)**		
		Admin	**Incentives**	**Total**
PG&E	27.0	3.1	12.0	15.1
SCE	18.8	1.5	12.7	14.2
SDG&E	4.0	N/A	N/A	3.1[5]
Total	**49.8**			**32.3**

PG&E

- A one-time incentive payment per Kilowatt (kW) of installed capacity for any PLS technology/equipment that PG&E deems reasonable and viable.
- Incentive payment based on the following schedule of project discharge duration:
  - Facilities that can discharge for 10 hours or more would receive $500/kW.
  - Facilities that can discharge for 8 to 10 hours would receive $450/kW.
  - Facilities that can discharge for 6 to 8 hours would receive $350/kW.
  - Facilities that can discharge for 4 to 6 hours would receive $250/kW.
- The incentive would cover up to 50% of the customer's project costs. The remaining project costs would be paid by the customer or the designated project sponsor.

SCE

- The PLS program will be divided between mature and emerging technologies
- Mature Technologies Program
  - The mature technologies program will provide a technology incentive of up to

[5] This does not include PLS portion of the Locational Demand Response ("LDR") Program budget of $433,000.

$545 per installed kW of PLS with additional customer incentives through TOU rate benefits. Funding of $9,703,160 in incentives is expected to provide 17.8 MW of PLS.

- Emerging Technologies Program
    - SCE proposes to support PLS market transformation through support of emerging PLS technologies in projects to be undertaken as part of the RFP process. SCE proposes a technology incentive of up to $3,000 per installed kW. Funding of $3.0 million is expected to provide 1 MW of PLS in the period 2012-2014.

SDG&E

- A non-recurring incentive for up to $500 per kW for the installation of technologies such as thermal energy storage ("TES") and deep cycle batteries to achieve a permanent load shift for the entire on-peak period (currently defined as 11 a.m. – 6 p.m.)
- Incentive payments are based on ratepayer neutral levels of $800 per kW to $1,600 per kW and TOU rate differentials as identified and recommended in the Statewide Joint IOU Study of Peak Load Shifting
- Incentive not to exceed 50% of project cost and assumes a 3-5 year payback
- Locational Demand Response Program
    - SDG&E will offer premium incentives to customers on the target circuit that install and use PLS technologies.
    - This premium incentive is an emerging technologies track for PLS and in order to qualify for this incentive the installed technology must fall within the definition of emerging PLS technologies; technologies like batteries and small thermal energy storage would qualify.
    - The $750/kW PLS incentive, $500/kW from the PLS program described in greater detail above and an additional $250/kW for an emerging technology, will be reduced to $300/kW for technologies that cannot shift load for the prescribed seven hours, but can deliver 3 hours of permanent load shifting within the 11 AM to 6 PM timeframe.
    - Total budget for the entire LDR program is $433,000.

Because of the value PLS provides to the electric power system as a whole and its strategic importance in facilitating early deployments of energy storage systems, CESA recommends that the Commission provide greater leadership, which includes directing the utilities to create two PLS programs, each $60 M in size.

IV. SUCCESSFUL PLS PROGRAM IMPLEMENTATION REQUIRES STATEWIDE CONSISTENCY ACROSS UTILITY SERVICE TERRITORIES.

Significant reductions in transaction cost and overhead can be saved if the utilities standardize their PLS programs. Standardizing core aspects of the PLS program in several

dimensions will facilitate market entry by PLS providers and reduce the overall cost of administration and implementation for all. These core aspects include:

A. Energy Neutrality.

CESA strongly opposes any requirements for energy neutrality, or requirements that the PLS technology chosen use as much energy as it displaces on peak, as was require by PGEE during the 2006 pilots. Requiring energy neutrality restrictions on any PLS program would prohibit many PLS technologies from participating, including some types of ice storage, all electrochemical and mechanical storage -- and would significantly limit the market for load shifting. PLS, as an emerging market will benefit from diversity in technological solutions. Further, many technologies that are not energy neutral provide diversity in services, for example, are able to provide not only load shifting but also emergency back up and/or ancillary services. Perhaps even more important are the considerations of the design community. Energy neutrality evaluations will require many hours of study and design evaluation by engineers to verify compliance. The engineers cannot devote this time to the project and effectively compete for jobs in their market.

B. Program Simplicity and Consistency.

The PLS program needs to be relatively simple for the architects, engineers, technology providers and end use customers for the purposes of project screening/viability. The application and documentation required for participation in the program must also be simple and as consistent as possible across utility service territories. Simplicity and consistency will make it easier for a broader set of customers to participate and will also help facilitate project viability screening and reduce overall transaction cost. CESA supports a separate incentive program to encourage engineers and designers to perform a feasibility study, as recommended in the report.

C. Consistency in Electric Rates.

Consistent electric tariff structures that promote shifting of demand and consumption by providing a consistent differential between peak and off peak rates over a number of years are absolutely key to greater PLS project deployment. Ideally, such tariffs or tariff riders should be simple to understand. Performing a life cycle analysis is part of any engineering design so it is natural that electric rates must be included. Rates that are difficult to understand will be hard to model. Rates that can be easily demonstrated to show simply the differential between day and night time rates would be helpful to storage implementation. Differentials can easily be demonstrated with the demand component of the tariff. However, for projects to be economically viable, such differentials must be bankable, for at least a 10-15 year period. Consistent, bankable differentials between peak and off peak also provide built-in an incentive for PLS technologies to perform as specified, since cash flows and savings will only be realized if peak electricity is actually shifted.

V. CONCLUSION.

CESA thanks the Commission for the opportunity to provide these comments on the ALJ's Ruling and the PLS Report, and looks forward to continued active participation in this proceeding.

Respectfully submitted,

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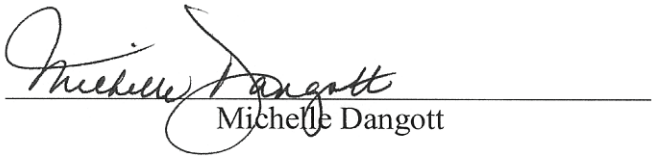
Date: March 7, 2011

CERTIFICATE OF SERVICE

I hereby certify that I have this day served a copy of the foregoing ***Opening Comments of the California Energy Storage Alliance on Permanent Load Shifting Report*** on all parties of record in ***R.07-01-041*** by serving an electronic copy on their email addresses of record and, for those parties without an email address of record, by mailing a properly addressed copy by first-class mail with postage prepaid to each party on the Commission's official service list for this proceeding.

This Certificate of Service is executed on March 7, 2011, at Woodland Hills, California.



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