

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**



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Application of Pacific Gas and Electric Company (U 39-E) for Approval of Demand Response Programs, Pilots and Budgets for 2012-2014.

Application 11-03-001
(Filed March 1, 2011)

Application of San Diego Gas & Electric Company (U902M) for Approval of Demand Response Programs and Budgets for Years 2012-2014.

Application 11-03-002
(Filed March 1, 2011)

Application of Southern California Edison Company (U338E) for Approval of Demand Response Programs, Activities and Budgets for 2012-2014.

Application 11-03-003
(Filed March 1, 2011)

**OPENING COMMENTS OF CALMAC MANUFACTURING COMPANY TO
ALTERNATE PROPOSED DECISION ADOPTING DEMAND RESPONSE
ACTIVITIES AND BUDGETS FOR 2012 THROUGH 2014**

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April 9, 2012

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**OPENING COMMENTS OF CALMAC MANUFACTURING COMPANY TO
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ACTIVITIES AND BUDGETS FOR 2012 THROUGH 2014**

CALMAC Manufacturing Company (“CALMAC”)¹ hereby submits these opening comments on the Alternate Proposed Decision of Commissioner Mark J. Ferron Adopting Demand Response Activities and Budgets for 2012 through 2014 filed on March 20, 2012 (“Alternate”).

I. INTRODUCTION.

Much credit is due to the Commission, the investor owned utilities (“IOUs”), and all parties involved in addressing the contribution of energy storage to peak load management, and

¹ CALMAC has been a leader in shifting building cooling comfort (air conditioning) loads as a manufacturer of ice thermal energy storage equipment, for more than 30 years CALMAC has nearly 4,000 installations using its IceBank™ storage tanks worldwide, including over 100 installations in California.

we applaud the Commission's leadership in these efforts. A well designed and fully funded Permanent Load Shifting ("PLS") program will be of great benefit to California and its citizens.

California has an energy supply issue on hot, summer afternoons and early evenings. The peak demand for electricity in the summer creates stress on the generation, transmission and distribution infrastructure. As California grows out of this slow economic cycle the ability to shift electric loads to night time hours will help the state to get more from the existing electrical infrastructure without building new power plants and related components. Energy storage, including PLS, will allow California to use existing infrastructure most efficiently and avoid or delay the construction of new generation, distribution and transmission facilities.

II. THE COMMISSION SHOULD SUBSTANTIALLY INCREASE THE BUDGETED AMOUNT OF FUNDING FOR PERMANENT LOAD SHIFTING.

In comments filed by the California Energy Storage Alliance ("CESA") on March 7, 2011, it was recommended that the utilities budget \$120 million for the PLS program. We agree that this would be the beginning of a reasonably funded program. In order for the PLS program to work it must be sufficiently funded. Without adequate funding the PLS program will not achieve the desired results. CALMAC products are generally used on medium and large buildings and in some campus applications. The cost of these comfort-related cooling plants can range from \$100,000 to several millions of dollars. Because of the size of these projects thermal energy storage has the ability to significantly impact the peak electric load. However, to move more projects from conventional cooling systems to cooling systems that utilize energy storage by installing PLS will require an investment from the state. A significant investment by California will result in a substantial movement of electrical demand from peak times to off-peak times.

III. THE COMMISSION SHOULD STANDARDIZE AND SIMPLIFY ALL ASPECTS OF PERMANENT LOAD SHIFTING PROGRAMS.

CALMAC is strongly in favor of standardized and simplified PLS programs. Architecture and engineering firms work on projects in all areas of California and throughout the country. The most important point is to *keep it simple*. The PLS program will be miss valuable and cost-effective PLS resources if the program is difficult and time consuming for the designers to implement. The application and documentation related to the incentive program must also be simple. Complicated incentive programs limit the consulting engineer market to only a few of the larger firms while most will simply not even propose the program to potential clients. The engineers will not be able to compete effectively for projects with other engineering firms who are offering the standard solutions. Consultants will be discouraged by a complicated program because it would require significant amounts of extra analysis and this may not necessarily be in their "comfort zone."

CALMAC recommends standardizing and simplifying the PLS program as follows:

- A. The PLS program is focused on shifting load (kW) from peak to off-peak time periods, thus it's all about kW. Clearly define the time period. For example, PG&E and SCE have peak summer rate period from noon to 6 pm while SDG&E's is 11 a.m. to 6 p.m.
- B. In larger applications cooling towers are used to provide cooling for the condenser portion of the chiller. This should be included in the calculations for the load shifted since the electric loads related to the cooling tower are also moved from the peak period to the off-peak period.
- C. Measurement and verification should be kept simple also. It is very easy to prove that the cooling equipment is not running or turned down when the energy storage

components are operating. It is also easy to measure the capacity provided by the PLS system by measuring flow rates and temperatures to and from the equipment.

D. Thermal energy storage tanks should be covered for parts and labor by the manufacturer for 5 years or even 10 years. Other components of a typical PLS system are not the responsibility of the energy storage tank manufacturer. However, the tanks should be covered by the manufacturer to avoid potential problems with unproven technologies. It would be important to incorporate standards into a PLS program that would help to ensure that the systems installed have a proven track record or at least a guarantee of performance.

E. Extra, never mind extensive, energy modeling should not be a requirement for the PLS program. Building modeling is required by the California building code if applying the “performance approach” to demonstrate that the building is exceeding California’s building code. The PLS program is focused on proving that we are shifting demand from the peak load periods and this can be easily measured and verified. However, other utilities have used an analysis subsidy to encourage engineers and designers to perform a feasibility study. They typically set aside \$2,000 to \$3,000 for the feasibility study to encourage the design community to develop the energy storage market

IV. THE COMMISSION SHOULD SUBSTANTIALLY INCREASE THE INCENTIVE LEVELS PROPOSED FOR PERMANENT LOAD SHIFTING.

PLS incentive levels must be large enough to make it economically viable for building owners to install load shifting equipment. So, what will help to transform the market? Based on our knowledge of rate design in California and experience with building owners and designers, a reasonable incentive would be at least \$1,000 per kW shifted from the peak electric rate period.

Incentives that are lower than this will not drive the market to install load shifting equipment. Thermal energy storage installations initially require more design time, more evaluation of options, more installation time, more equipment and more extensive controls. The important consideration here is the private market for energy storage. Public facilities are sometimes willing to install thermal storage equipment based on simple payback periods exceeding five years. The private market requires a higher rate of return on their investment. Incentive levels at \$1,000 per kW (or greater) shifted will help to create opportunities in the private market. Over time these added costs will minimize or even disappear as designers, installers, and commissioning agents gain experience.

According to a KEMA study, *Market Evaluation for Energy Storage in the United States*, prepared for the Copper Development Association (February 2012), Thermal energy storage installed capacity in the United is over 1 GW.² That is twice as much pumped hydro and more than all other storage technologies combined. This confirms, in CALMAC's opinion, that PLS is a reliable, high performing solution for the utilities and ratepayers. The study further suggests that with incentives the market that includes thermal energy storage could increase from its current projected growth rate of 222 MW in five years to nearly 1000 MW, almost five times the current projected growth.

V. **CONCLUSION.**

CALMAC thanks the Commission for the opportunity to submit these opening comments. The entire PLS and energy storage industries are excited about the prospects of a newly expanded and improved PLS program – both because it will bring online needed cost-effective peak-managing long-lived resources and because it will help California and the Commission gain valuable experience with finding the right roles for energy storage in the

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California electric power fleet. If it is properly funded at the right incentive levels and the program targets PLS it will be a very successful investment for California. CALMAC looks forward to providing any assistance in the Commission's efforts to support greater deployment of PLS.

Respectfully submitted,



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