

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA



FILED

08-22-11
04:59 PM

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
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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 BRIEF OF ICE ENERGY, INC.

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August 22, 2011

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Pursuant to Rule 13.11 of the Rules of Practice and Procedure of the California Public Utilities Commission (“Commission”), the *Joint Assigned Commissioner and Administrative Law Judge’s Scoping Order and Memo* of Assigned Commissioner Michael R. Peevey and Administrative Law Judge Kelly A. Hymes, issued May 13, 2010 (“Scoping Order”), and *Administrative Law Judge’s Ruling Providing Guidance for Briefs*, issued by Administrative Law Judge Kelly A. Hymes, issued on August 1, 2011 (“Briefing Ruling”), Ice Energy, Inc. (“Ice Energy”) respectfully submits this Opening brief regarding the Investor-Owned Utility applications captioned above (“Applications”) with regard to the approval of each utility’s demand response (“DR”) programs, pilots and budgets. This opening brief is organized in a manner intended to comply with the Briefing Ruling. Although this opening brief does not offer comments on all issues, Ice Energy reserves the right to comment on additional issues in its planned reply brief.

I. INTRODUCTION.

Ice Energy's participation in this consolidated proceeding focuses on the direction the Commission should give Pacific Gas and Electric Company ("PG&E"), Southern California Edison Company ("SCE"), and San Diego Gas & Electric Company ("SDG&E"), collectively the "Utilities", to revise and resubmit their Applications to substantially increase the scope of their programs, the level of incentives, and the amount of their budgets targeted to promote Permanent Load Shifting ("PLS"). The record in this proceeding viewed as a whole, including Ice Energy's prepared written testimony and written comments submitted by Ice Energy, together with the prepared written testimony and comments submitted by the California Energy Storage Alliance ("CESA") and others, strongly argue for the Commission to immediately order the Utilities to expand and accelerate implementation of their PLS programs.

The *Statewide Joint IOU Study of Permanent Load Shifting* ("PLS Study")¹ that the Utilities were ordered to prepare by the Commission in D.09-08-027² establishes a solid framework for recommending substantial increases in statewide deployment of cost-effective PLS by the Utilities. But in their Applications, the Utilities propose to continue existing small PLS incentive programs with a modest total budget of approximately \$32.3 million over three years. It is clear, however, that the overarching public policies involved that recognize a pressing need for demand response ("DR") and PLS that is integrated with all of the other forward-looking elements of California's energy policy. In Ice Energy's view the Commission should therefore order the Utilities to submit revised Applications as detailed below. The record in this proceeding supports a total statewide budget for PLS several-fold larger than that proposed in the Applications, and with higher incentives per kW for several PLS technology types, including small-scale thermal energy storage.

The Scoping Memo for this proceeding³ states that ". . . the proceeding will look at the evolving nature of DR and the impact of its evolution on these current and future applications. The proceeding will determine the adequacy of the DR programs, looking at whether existing and proposed programs and pilots are sufficient to meet California energy goals in light of the

¹ *Joint IOU Study of Permanent Load Shifting*, submitted to the Commission on December 1, 2010 ("PLS Study").

² *Decision Adopting Demand Response Activities and Budgets for 2009 through 2011* issued August 20, 2009.

³ *Joint Assigned Commissioner and Administrative Law Judge's Ruling and Scoping Memo*, issued May 13, 2011.

changing nature of the energy grid and the 33% renewables requirement. The review will address specific activities including PLS. . .”⁴

The PLS programs of the Utilities must be evaluated in the context of California’s urgent need for all applications of energy storage, of which PLS is a strategically vital component, and one that is readily available. As more fully discussed in this opening brief, the Commission cannot afford to miss the one-time opportunity presented by this proceeding – at this time – to move the Utilities in the right direction regarding Permanent Load Shifting. California’s policy regarding the vital role of energy storage technologies as a class has changed dramatically since the Commission issued its August 2009 decision on the utilities’ DR programs for the years 2009-2011⁵. Most prominently, the Commission has opened a new rulemaking proceeding in December 2010 pursuant to Assembly Bill (“AB”) 2514 (“Energy Storage OIR”)⁶. PLS is cited as one important example of the energy storage procurement guidance that the Energy Storage OIR will address on both the utility and the customer side of the meter. PLS will remain important in that proceeding as it unfolds over the next few years, and immediately within the scope of this proceeding as it relates to customer-oriented DR programs.

II. THE PLS PROGRAMS PROPOSED IN THE APPLICATIONS ARE UNREASONABLY SMALL IN TOTAL SIZE AND IN INCENTIVE LEVELS, AND DO NOT ADEQUATELY DIFFERENTIATE AMONG TECHNOLOGIES, AND THUS WILL NOT MEET CALIFORNIA’S FUTURE ENERGY NEEDS.

The Utilities have proposed to carry forward small existing PLS programs essentially unchanged as part of their Applications, but the Applications are all very deficient because they do not comply with the original intent of the Commission,⁷ or D.09-08-027 and subsequent detailed program guidance provided by the Commission since then.⁸

A. The Applications Do Not Comply with the Commission’s Requirements

⁴ *Id.*, p. 8.

⁵ *See*, footnote 4, *infra*.

⁶ *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, issued December 16, 2010.

⁷ *See*, *Resolution No. E-4098*, issued July 30, 2007.

⁸ *See*, *Administrative Law Judge’s Ruling Providing Guidance for the 2012-2014 Demand Response Applications*, issued August 27, 2010; *Administrative Law Judge’s Ruling Providing Further Guidance for Permanent Load Shifting Activities in the 2012-2014 Demand Response Applications*, issued April 29, 2011.

The Commission has also provided both general and very specific program guidance to the Utilities, some of which is not reflected in the Applications. For example, the Utilities were reminded of the purpose of the PLS Study by an ALJ's Ruling issued in August 2010, which stated: "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."² (ALJ's Ruling, August 27, 2010,p. 17). As detailed below, the Applications do not comply with the Commission's decision D.09-08-027 or subsequent specific program guidance.

B. The Applications Propose PLS Programs That Are Unreasonably Small in Budget

The PLS Report instructs the Utilities that their PLS programs should conform to the following basic principles and parameters described in detail below. Properly designed, PLS programs should minimize transaction cost for all stakeholders, while allowing for individual utility flexibility and supporting many types of energy storage technologies to participate in the PLS program (including thermal energy storage).

The following program guidelines would apply to all PLS systems owned/operated by end use customers and/or third parties.

C. There Needs to Be an Appropriate Level of Differentiation of PLS Technologies

Ice Energy continues to strongly support the view put forward by several Utilities and parties that PLS resources should be differentiated and categorized to ensure that the incentives and program design meet the dual goals of, one, securing all cost-effective PLS resources for California and, two, of meeting cost-effectiveness requirements. The categorization of PLS resources for these purposes should reflect their specific properties, including technological maturity, the maturity of the specific marketplace they are in, the need for market transformation, their cost-effectiveness, and specific performance characteristics including product lifetime, product roundtrip energy efficiency, number of hours the product load shifts, etc.

Establishing two PLS categories, for technologically "mature" and for technologically

² *ALJ's Ruling Providing Guidance further 2012-2014 Demand Response Applications, Infra*, at p. 17. (Emphasis added.)

“emerging”, is a good start but inadequate to appropriately categorize the available PLS resources. At a minimum, a distinction must be made between products in mature PLS *markets* and those in emerging PLS markets. The latter will include those PLS resources (such as for example Ice Energy’s Ice Bear product) that are already technologically mature but are not in a market that is as yet mature, and thus warrant incentives that are market transformational.

D. Incentive Levels per Kilowatt of PLS Resource Need to be Higher.

Ice Energy agrees with the general avoided cost ranges presented in the PLS Study’s results. 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 PLS project life. However, since PLS solutions are geared toward avoiding costly peaking generation and transmission and distribution assets and energy storage technologies can be designed for much longer life-times than 15 years, Ice Energy recommends that the avoided costs the Commission should consider are the estimated avoided cost benefits for a 25 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 occurs¹⁰.

Ice Energy also generally agrees with the incentive levels and structures recommended within the PLS Study, particularly those recommendations that specify what level of incentive is required to stimulate adoption by end users by creating a sufficiently attractive economic value proposition, while again noting that a distinction need be made regarding the maturity of the particular PLS market, not just the PLS technology.

Ice Energy’s proposed increased incentive levels for emerging storage technologies represents a modest premium that is justified in light of the value in providing a meaningful incentive for these PLS types and California’s broad policy goals with respect to energy storage.

E. The Applicants’ 2012-2014 PLS Budgets Need to be Higher.

In contrast, current proposed budgets by the IOUs are very inadequate in that they are of the same size/magnitude as the original PLS pilots. While Ice Energy applauds SCE’s proposal

¹⁰ 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

to create an emerging category of PLS funding, SCE's proposed budget of \$3 million will not encourage energy storage stakeholders to invest the time and money required to build up a successful PLS business in California, and will not be market transformational. As filed, all of the Applications regarding PLS fall substantially short of the consistently stated intent of the Commission to expand and diversify PLS program offerings, and of the appropriate and cost-effective contribution that PLS can make to the California electricity grid. That significant shortcoming is clearly and forcefully informed by the PLS Study and the experience with PLS to date.¹¹

For the reasons explained below, the Commission should therefore direct the Utilities to submit, by a date certain, revised Applications that provide for sufficient budgets to develop all cost-effective PLS resources. The budgets proposed in the three Applications are the same magnitude as the current PLS program budgets and thus will certainly not advance the Commission's goals for PLS.

III. THE FOLLOWING ELEMENTS OF PLS PROGRAM DESIGN ARE NEEDED TO ENSURE SUCCESSFUL AND COST-EFFECTIVE UTILITY PLS PROGRAMS.

In summation, Ice Energy believes that a successful PLS program should include the following features:

A. The Utilities should offer \$2,000/kW for PLS technologies such as small-scale ice storage that can maintain its cost-effectiveness at that level. This calculation is based upon the very thorough cost effectiveness analysis Ice Energy conducted of its PLS technology, utilizing the E3 DR Reporting Template and using many of the same assumptions developed by SCE and the other Utilities for the evaluation of their DR programs. Ice Energy found that its PLS resource passes a 1.0 TRC benefit/cost ratio assuming incentive levels of \$2,000/kW.

B. There is a cost-effective PLS resource in, for example, SCE's service territory that calls for an incentive budget of at least \$60 million over the 2012-2014 period, and perhaps considerably more than that. This calculation is based upon the experience of Ice Energy with other (municipally owned) southern California electric utilities.

C. As much uniformity in program design and implementation among the Utilities as

¹¹ *Joint IOU Study of Permanent Load Shifting*, submitted to the Commission on December 1, 2010 ("PLS Study").

is reasonable, which will ease the administrative burden on PLS end users, vendors and other market actors.

D. An approach that does not favor (or disfavor) specific energy storage technologies over others is essential to promoting a diverse array of potential PLS applications. That said, round-trip energy efficiency is a key component of the project's value proposition – the more energy efficiency provided by a PLS installation, the greater the value to the utility and the higher the incentive level that should be provided by the utility. For instance, as noted in the direct testimony of David Nemptow, an Ice Bear project provides valuable demand reductions and energy efficiency by avoiding the operation of customers' existing AC units during daytime, high temperature periods when AC unit efficiency is at its worst and replaces the cooling demand with ice made during nighttime, low temperature periods when the operating efficiency of the Ice Bear is high. An Ice Bear project provides energy savings of 50% (150% evident efficiency) as a natural outcome of its PLS operation without relying on the replacement of the customer's existing AC unit.^{12,13} The utility retains the benefits of energy efficiency as a direct results of its PLS program and thus should compensate Ice Energy for providing this additional value through appropriately higher PLS incentive levels.

E. PLS cost effectiveness is a function of the specific characteristics of each individual PLS technology. The technical and contractual performance of individual PLS offerings should be considered when setting incentive levels such that the maximum cost-effective incentive level for a specific PLS technology can be offered to the customer or vendor.

F. Per kilowatt PLS incentives that are based on generic or other inappropriate assumptions (e.g. tariffs, product lifetime, etc.) may be too low and thus will reduce PLS program participation as well as increase the per-unit cost of the PLS program. Similarly, using a single set of *consensus values* to evaluate PLS technologies does not recognize the unique performance of different PLS resources. For instance, the Ice Bear achieves an evident efficiency of 150%, which results in benefits to the utility, its customers, and participants that are higher than those modeled by the IOUs in this proceeding.

¹² Testimony of David M. Nemptow, Docket A.11-03-001, et al., Attachment B, page 7-8.

¹³ Ice Energy's Response to SCE Second Data Request, Question 2, Table: Calculation of Ice Bear Evident Efficiency.

- G. Significant PLS program cost savings from reduced administrative costs are attainable if a Utility increases the available funding and proposed size of its PLS program enrollment.
- H. PLS systems can, and should, be effectively and cost-effectively deployed if owned by utilities and help California achieve its PLS goals. Accordingly the Utilities should directly competitively procure PLS resources (that would then be utility-owned).
- I. PLS programs can and should be more actively integrated with other DSM programs – most notably energy efficiency – for two very important reasons. One, as established by the Commission with adoption of D.08-09-040, issued September 18, 2008, the “California Energy Efficiency Strategic Plan” in R.08-07-011, together with a recent update of the Plan in the “California Energy Efficiency Strategic Plan January 21 2011 Update”, the integration of DSM programs is a key goal of the Commission: “The CPUC should integrate the DSM programs within its jurisdiction...in order to enable offerings of integrated packages that will maximize savings and efficiencies of utility program overhead.”¹⁴ Two, optimally integrating certain PLS technologies, such as small thermal energy storage, with related energy efficiency efforts can lead to very significantly enhanced end results – both for PLS and for energy efficiency – *and* substantially lowered costs due to various synergies and economies.

IV. **CONCLUSION.**

For all of the reasons discussed in this opening brief, the Utilities should be ordered by the Commission to revise and resubmit their PLS proposals to comport with program design features and qualities detailed here.

Respectfully submitted,



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August 22, 2011

¹⁴ *California Energy Efficiency Strategic Plan: January 2011 Update*, page 67.