PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Item 10
Agenda ID # 12060

ENERGY DIVISION **Resolution E-4586**
May 9, 2013

R E S O L U T I O N

Resolution E-4586. Southern California Edison Company, Pacific Gas and Electric Company, and San Diego Gas and Electric Company.

Proposed Outcome: This resolution implements a standardized, statewide Permanent Load Shifting Program for Southern California Edison Company, Pacific Gas and Electric Company, and San Diego Gas & Electric Company.

Safety Considerations: The Permanent Load Shifting Program-participating technologies are subject the safety requirements set forth by Decision 12-04-045.

Estimated Cost: No additional cost is associated with this resolution.

By Advice Letters SCE 2837-E, PG&E 4177-E, and SDG&E 2445-E jointly filed on January 14, 2013.

SUMMARY

In Decision (D.) 12-04-045 (the Decision or PLS Decision), the California Public Utilities Commission (CPUC or Commission) approved a Permanent Load Shifting (PLS) program budget for 2012-2014, and directed the three investor-owned utilities (IOUs or Utilities)[1] to propose a statewide PLS program based on a standard offer with common design and rules. This resolution adopts the PLS program rules, budget, and implementation details proposed by the IOUs, with modifications to include: (a) energy efficiency standards requiring thermal energy storage technologies meet existing building codes for existing and new

[1] Pacific Gas and Electric Company (PG&E), Southern California Electric Company (SCE), and San Diego Gas & Electric Company (SDG&E).

construction; (b) an incentive level of $875/kilowatt (kW) in SDG&E territory; and (c) an incentive cap of $1.5 million per project in SDG&E territory.

BACKGROUND

PLS refers to the shifting of energy usage from one period of time to another on a recurring basis, often by storing energy produced during off-peak hours and using the energy during peak hours to support loads. Shifting peak loads can benefit the electricity grid by reducing the need for investments in additional capacity and peaking units, and by reducing the likelihood of shortages during peak periods.[2] Examples of PLS technologies include batteries and thermal energy storage (TES).

In D.06-11-049, the Commission directed the IOUs to initiate a process to solicit proposals from third parties for PLS programs in order to promote system reliability during the summer peak demand periods. The utilities subsequently issued bilateral contracts, and a four-year (2008-2011) pilot program was approved involving various PLS technologies. As the Utilities ran their pilots, the Commission issued D.09-08-027 in 2009, directing the Utilities to conduct a joint study of PLS cost-effectiveness, market potential, and strategies to encourage the adoption of PLS. The Utilities completed the study on December 1, 2010,[3] and used it as the basis for developing a proposed PLS program.

On April 30, 2012, D.12-04-045 approved a PLS program budget for 2012-2014, and directed the utilities to revise the cost-effectiveness analysis using incentive levels up to $1,000/kW with input from Energy Division, and propose a standardized, statewide PLS program for mature thermal energy storage technologies. As part of the PLS design process, the Utilities were directed to incorporate the findings from the updated cost-effectiveness analysis into the 2012-2014 PLS program design.

On July 30, 2012, the Utilities submitted a joint PLS program design proposal to Energy Division Staff, pursuant to D.12-04-045. Energy Division Staff sought feedback from interested parties by facilitating a PLS Workshop held on

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[2] D.06-11-049, Finding of Fact 21

[3] "Statewide Joint IOU Study of Permanent Load Shifting," conducted by Energy and Environmental Economics, Inc. on December 1, 2010. Source: http://www3.sce.com/sscc/law/dis/dbattach3e.nsf/0/DEAFA54DABFA3F2088257888007463B2/$FILE/A.08-06-001_2009-11+DR+App+_Errata+to+11-30-2010+Statewided+Joint+Utility+Study+of+PLS.pdf

September 18, 2012. As a result of the PLS Workshop and comments received from interested parties, Energy Division Staff provided the Utilities with program design feedback on November 9, 2012. The Utilities incorporated Energy Division's feedback in their final version of the statewide PLS Proposal (PLS Proposal), jointly filed by the IOUs in SCE Advice Letter (AL) 2837-E, PG&E AL 4177-E, and SDG&E AL 2445-E on January 14, 2013.

The PLS Proposal established the incentive levels and project cost cap, customer and equipment eligibility, summer peak hours, feasibility study requirements, metering and monitoring requirements, and the procedure for program modifications. Included with the PLS Proposal were the program budget details and revised PLS cost-effectiveness evaluation, pursuant to D.12-04-045.

NOTICE

Notice of Advice Letters SCE 2837-E, PG&E 4177-E, and SDG&E 2445-E was made by publication in the Commission's Daily Calendar. PG&E, SCE, and SDG&E state that copies of their respective Advice Letters were mailed and distributed in accordance with Section IV of General Order 96-B.

PROTESTS

Advice Letters SCE 2837-E, PG&E 4177-E, and SDG&E 2445-E were protested by the California Energy Storage Alliance (CESA) on February 4, 2013, in a timely manner. PG&E, SCE, and SDG&E replied to CESA in a timely manner on February 11, 2013.

Two issues were raised in protest: First, CESA states that the energy efficiency (EE) requirements included in the PLS Proposal would exclude certain thermal storage technologies from participating in the program, and requests that the EE standards be modified to require that the building chilled water system meet existing building codes for both existing and new construction. Second, CESA raises a concern regarding the proposed project cost cap language in Section 6.1 of the PLS Proposal.[4] CESA specifically takes issue with the direction in

[4] Section 6.1 of the PLS Proposal states "Eligible Project Costs may be reduced for incentives or rebates received through other programs available from the utility."

D.12-04-045 that excludes mature thermal energy storage technologies from participating the Commission's Self-Generation Incentive Program (SGIP).[5]

In their reply, the IOUs state that the intent behind the energy efficiency requirements in the PLS Proposal is to support ongoing integrated demand side initiatives, and to encourage customers to look at energy efficiency solutions as part of their TES system design. With regard to the project cost cap, the Utilities state that they fully encourage customers to seek other incentive and rebate opportunities to reduce their investment risk and lower their project capital costs, but are opposed to a "double dipping" policy that would overpay incentives and rebates for PLS-related projects.

DISCUSSION

The Commission has reviewed the ALs filed pursuant to D.12-04-045, CESA's protest, and the IOUs reply, and makes the following conclusions:

Protest 1a. Energy Efficiency Requirements

CESA argues that the EE requirements in the PLS Proposal would prohibit certain thermal storage systems from participating in the program. The 110 percent energy efficiency requirement was first introduced in the PLS Workshop, and was supported by ED Staff in their November 2012 feedback to the Utilities.

Section 5 of the PLS Proposal states:

> *Customers are required to address the following energy efficiency requirements in their feasibility study:*
>
> *a.) For existing facilities, we require that customers use no more than 110% of the energy they currently use…to meet the same cooling load in the course of a full charge-discharge cycle. Customers will be required to address energy efficiency savings during the TES design phase.*
>
> *b.) For new construction, customers will be required that their chilled water system use no more than 110% of the annual energy of a minimally compliant chilled water system without a TES.*[6]

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[5] CESA protest, footnote 3.

[6] PLS Proposal, Attachment A, Section 5 (pg. 6)

Energy efficiency and demand response are the first priority in California's loading order for energy resources.[7] As such, the integration of energy efficiency initiatives in all of Commission's ongoing integrated demand side management programs should be encouraged. However, in this case we agree with CESA that the main purpose of the PLS program is to shift demand away from peak load periods, and that many of the policy objectives of energy efficiency – such as improved grid reliability, cost-effectiveness, and greenhouse gas emission reductions – may be addressed by TES applications that would not be able meet the current 110 percent requirement.

In their proposed modification, CESA requests that the EE standards be modified to require that the building chilled water system meet existing building codes for both existing and new construction. This approach would take into consideration the time dependent energy characteristics of when thermal storage will be charging and discharging in conjunction with overall energy usage.

We believe CESA's recommendation will provide a reasonable screen against inefficient TES system designs while removing an unintended barrier for potential PLS applications. Therefore, we adopt CESA's proposed modification in protest 1a at this time, but direct the Utilities to monitor equipment and performance data as needed in order to help determine if future modifications to the energy efficiency requirement become necessary. The Utilities may file a Tier 2 Advice Letter with Energy Division with recommendations on alternatives or modifications to the energy efficiency requirement in the PLS program.

Protest 1b. Project Cost Cap

The incentive levels adopted in this resolution are designed to balance market participation and cost-effectiveness considerations. Therefore, in order to protect ratepayer interests and avoid overpaying incentives, we agree with the Utilities that as a general principal PLS participants should not be allowed to receive PLS-related incentives from other IOU funded programs.

With regard to CESA's specific request to allow mature thermal energy storage technologies to participate in the SGIP, per Section 5.2 of GO 96-B, a petition for

[7] The Energy Action Plan (EAP) established an energy resource loading order to guide energy decisions. According to the EAP, energy efficiency and demand response are considered the top preferred resources. The Energy Action Plan can be accessed here: http://docs.cpuc.ca.gov/word_pdf/REPORT/28715.pdf.

modification is the appropriate filing to modify a decision issued in a formal proceeding. The decision to exclude mature thermal energy storage from participating in the SGIP was established in D.12-04-045[8] and D.11-09-015,[9] and is therefore outside the scope of this resolution. Accordingly, we reject protest 1b.[10]

In a separate but related issue, D.12-04-045 states that emerging TES technologies shall be funded through the SGIP and mature TES technologies shall be funded through the PLS program.[11] We find that there is insufficient factual record at this time to decide whether any particular TES technology is not mature, and therefore should be considered emerging. Further, the Commission's use of the word "emerging" indicates that such development is subject to change in its characterization over time. Thus, a technology that is newly emerging and does not yet have a performance record may later be deemed mature as greater experience is gained. Given the limited factual record at hand, the determination of what constitutes an emerging TES technology is beyond the scope of decisions appropriate through an advice letter proceeding.

PLS Incentive Levels

D.12-04-045 directed the Utilities to revise the cost-effectiveness analysis using incentive levels up to $1000/kW with input from Energy Division. Following Energy Division's input on the revised cost-effectiveness analysis, and feedback from the PLS Workshop, Energy Division Staff recommended increasing the PLS incentive levels to $850/kW for SCE, $875/kW for SDG&E, and $900/kW for PG&E. Alternatively, ED Staff suggested that the IOUs consider an average incentive level of $875/kW across all three IOUs.[12]

In the PLS Program proposal, PG&E and SCE propose an incentive level of $875/kW based on ED's recommendations, while SDG&E proposes an incentive

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8 D.12-04-045, Section 7.7.3.3 (pg. 152)

9 D.11-09-015, Section 4.2.3.1 (pgs. 19-20)

10 General Order 96-B, Section 7.4.2 bars protests that would require relitigation of a prior order of the Commission.

11 D.12-04-025, Section 7.7.3.3 (pg. 151)

12 Energy Division Feedback on Recommended Changes to Joint-IOU Proposal for PLS Program, Submitted in Response to D.12.04-045, November 9, 2012.

level of $475/kW based on an anticipated future reduction in capacity and energy value of PLS programs.

Due to the omission of customer capital investments and non-energy/monetary benefits, the Commission found it necessary in D.12-04-045 to consider a broader context beyond the Total Resource Cost (TRC) test in the evaluation of PLS cost-effectiveness. In particular, the Commission determined that the Program Administrator Cost (PAC) test provided a valuable perspective, since all of the Utilities had a PAC ratio greater than 1 (PG&E had a PAC result of 1.84, SCE had a PAC result of 2.0, and SDG&E had a PAC result of 1.48). In the updated cost-effectiveness analysis submitted with the PLS Proposal,[13] we note that the Program Administrator Cost (PAC) test results are significantly higher (2.78) for SDG&E than for PG&E and SCE (1.79 and 1.68, respectfully). Adjusting SDG&E's PAC ratio to more closely align with the other Utilities would result in a higher PLS incentive. In addition, SDG&E was the only utility with a Participation Cost Test (PCT) value less than 1, indicating that the $475/kW incentive level may be insufficient to stimulate market adoption.

Given this broader context, we find SDG&E's deviation from the other Utilities' incentive levels and Energy Division input unjustified. We hereby adopt a standardized PLS incentive level of $875/kW across all of the Utilities.

Project Incentive Cap

In Table 2 of the PLS Proposal, regarding the maximum incentive amount per project, the Utilities propose an incentive cap of $1.5 million per project in PG&E and SCE territory, and $500 thousand per project in SDG&E territory. Given that this resolution adopts a standardized PLS incentive level across all three Utility territories, we see no reason why the per project incentive cap should not be consistent as well. A standardized project incentive cap will support program simplicity and consistency and will help encourage customer adoption of small- and large-scale TES installations. Therefore, we adopt a PLS incentive cap of $1.5 million per project across all three Utilities.

COMMENTS

Public Utilities Code section 311(g)(1) provides that this resolution must be served on all parties and subject to at least 30 days public review and comment

[13] PLS Proposal, Attachment C.

prior to a vote of the Commission. Section 311(g)(2) provides that this 30-day period may be reduced or waived upon the stipulation of all parties in the proceeding.

The 30-day comment period for the draft of this resolution was neither waived nor reduced. Comments on the draft resolution were submitted in a timely manner by PG&E, SCE, SDG&E and CESA on April 29, 2013.

PG&E and SCE stated their preference in comments for the 110 percent energy efficiency program requirement. PG&E, in particular, expressed concern that the Title 24 energy efficiency requirement is not specific for an overall thermal energy storage system, and recommends that if the Title 24 energy efficiency requirement is adopted in the resolution then the Utilities be allowed to evaluate whether this new requirement detrimentally affects the PLS program. If so, then PG&E recommends that Energy Division reconsider adding the 110 percent requirement back into the PLS program in the future.

The Commission understands the Utilities' concern that under certain circumstances the exclusion of some TES components and systems from Title 24 may lead to underperforming systems. In response to comments from PG&E, this resolution has been modified to allow the Utilities to propose an alternative energy efficiency requirement in the PLS program at a later time, if the PLS implementation data clearly demonstrates that the energy efficiency standards adopted in this resolution result in significant program or customer adoption issues. Specifically, the Commission directs the Utilities to monitor equipment and performance data as needed in order to help determine if future modifications to the energy efficiency requirement become necessary. Upon collection of PLS equipment and performance data, the Utilities may file a Tier 2 Advice Letter with Energy Division with recommendations on alternatives or modifications to the energy efficiency requirement in the PLS program, as noted above.

In comments, PG&E and SCE assume that the Title 24 standards apply to all TES technologies, and not just chillers. This is in line with the intent of the Commission, and we clarify here and elsewhere in the resolution that the Title 24 energy efficiency standards apply to all TES technologies – not just chilled water system technologies.

Finally, SDG&E states in their comments that the draft resolution incorrectly stated SDG&E's proposed per project incentive cap in the PLS Proposal as $550,000. However, the actual per project cap included in the PLS Proposal was

$500,000 in SDG&E territory, not $223,500 as argued in SDG&E's comments. The resolution has been modified to include this correction.

FINDINGS AND CONCLUSIONS

1. Commission Decision 12-04-045 directed Pacific Gas and Electric, Southern California Edison, and San Diego Gas and Electric to develop and propose a standardized, Statewide Permanent Load Shifting Program with budget details and a revised cost-effectiveness analysis within 90 days following the issuance of the decision.
2. Pursuant to Decision 12-04-045, on January 14, 2013, Southern California Edison Company filed Advice Letter 2837-E, Pacific Gas and Electric Company filed Advice Letter 4177-E, and San Diego Gas & Electric Company filed Advice Letter 2445-E to propose the Permanent Load Shifting program design proposal, program budget details and revised cost-effectiveness analysis.
3. It is reasonable to base the energy efficiency requirements in the Permanent Load Shifting program on current building codes for new and existing construction, as requested by the California Energy Storage Alliance.
4. Participants in the Permanent Load Shifting program should not be allowed to receive incentives from the program if they receive thermal energy storage incentives from other utility funded programs.
5. The Commission finds San Diego Gas and Electric's deviation from Energy Division's recommended incentive level of $875 per kilowatt unjustified.
6. A standardized per project incentive cap in the Permanent Load Shifting program will support program simplicity and consistency across the Utilities and will help encourage customer adoption of small- and large-scale TES installations.

THEREFORE IT IS ORDERED THAT:

1. Southern California Edison Company Advice Letter 2837-E, Pacific Gas and Electric Company Advice Letter 4177-E, and San Diego Gas and Electric Company Advice Letter 2445-E are approved as modified herein, effective January 14, 2013.

2. The energy efficiency requirements in the Permanent Load Shifting program are revised to state that all thermal energy storage technologies must meet current building codes for existing and new construction.
3. Southern California Edison Company, Pacific Gas and Electric Company, and San Diego Gas and Electric Company are directed to monitor equipment and performance data as needed in order to help determine if future modifications to the energy efficiency requirement become necessary. Upon collection of Permanent Load Shifting equipment and performance data, Southern California Edison Company, Pacific Gas and Electric Company, and San Diego Gas and Electric Company may file a Tier 2 Advice Letter with Energy Division with recommendations on alternatives or modifications to the energy efficiency requirement in the Permanent Load Shifting program.
4. The Permanent Load Shifting incentive level in San Diego Gas and Electric's territory is revised to $875 per kilowatt.
5. The Permanent Load Shifting incentive cap in San Diego Gas and Electric's territory is revised to $1.5 million per project.
6. Southern California Edison Company, Pacific Gas and Electric Company, and San Diego Gas and Electric Company shall file a Tier 1 Advice Letter within 30 days of the issuance of this resolution to modify the Permanent Load Shifting program in accordance with Ordering Paragraphs 2, 4, and 5.
7. Implementation of the Permanent Load Shifting program shall commence 90 days from the issuance of this resolution.

This resolution is effective today.

I certify that the foregoing resolution was duly introduced, passed and adopted at a conference of the Public Utilities Commission of the State of California held on May 9, 2013, the following Commissioners voting favorably thereon:

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Paul Clanon
Executive Director