

DRAFT

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

ENERGY DIVISION

I.D.# 7737

RESOLUTION E-4169

July 31, 2008

R E S O L U T I O N

Resolution E-4169. Southern California Edison's (SCE) proposal to establish the Smart Thermostat Field Research Pilot Study is denied.

By Advice Letter (AL) 2233-E. Filed on April 11, 2008.

SUMMARY

This Resolution denies SCE's proposal to establish the Smart Thermostat Field Research Pilot.

SCE's pilot research project will not provide results that justify the costs. Specifically the design of this research project, together with the late start (if it had been approved), make it extremely unlikely that SCE will obtain any useful results. The Commission suggests that SCE consider proposing a better-designed pilot in 2009 to test customer behavior in relation to Programmable Communicating Thermostats (PCTs) and Peak Time Rebate (PTR) rates.

BACKGROUND

On March 15, 2006, the Commission issued D. 06-03-024, which approved an all-party settlement and adopted demand response programs and funding for SCE, PG&E and SDG&E for 2006-2008. This decision authorized SCE to establish the Small Business Communicating Thermostat Pilot. The authorized pilot had a \$5.5 million budget and targeted 10,000 residential and small nonresidential customers. This pilot was proposed as a technology study to assess PCTs for the residential and small non-residential sectors to test PCT functions that enhance load impact benefits. The authorized pilot program did not pay incentives to participating customers. The decision authorized SCE to file an advice letter if they needed to propose newly developed programs, or to reallocate more than 50% of a program's funding.

SCE submitted AL 2233-E on April 11, 2008 to modify the Small Business Communicating Thermostat Pilot and to alternatively establish Schedule STFR, the Smart Thermostat Field Research pilot, for the summer of 2008. SCE proposed costs of \$1.236 million for the project, with \$220,000 of the total costs shifted from the Demand Bidding Program (DBP) to cover the Interval Data Recording (IDR) meters necessary for the pilot. STFR is intended for 500 residential customers, and the purpose is to research the effectiveness of automated temperature setbacks on PCTs. SCE intends to use the findings from this study for a follow-up pilot in 2009 (the details of which were not provided by SCE).

SCE would provide each of the 500 customers with a PCT, which controls a central air conditioning unit and an IDR meter to record usage in 15 minute intervals. The target time for the program was originally June 2008 to October 2008 with a maximum of ten load curtailment events called between peak weekday hours. SCE explained that customers would be placed in one of three setback groups: 4 degrees, 6 degrees or completely off.¹ Furthermore, customers would not be told which group they were in, only that during an event their AC unit could be cycled off for up to four hours. Customers would have the option to override the thermostat adjustment by calling SCE. During an event SCE would measure the number of customer overrides in each group.

Customers could receive up to \$375 in incentive payments for their participation in the program. An enrollment incentive payment of \$100 is provided to all participants. Additionally, participants that successfully self-install their thermostat and IDR would receive \$75. Finally, customers would receive \$20 for every event that they did not override (a total of 10 events are anticipated for the summer) which equates to an additional \$200.

Energy Division sought further clarification of SCE's advice letter through three data requests to SCE that were responded to on May 7, May 20 and June 6, 2008. Specifically, Energy Division asked how the pilot would expand on the results from AC cycling programs and existing studies of smart thermostats, as well as how it would inform SCE's planned rollout of advanced meter (AMI) technology. In addition, justification for the cost and incentive structure for the pilot was

¹ SCE response to Energy Division Data Request 1, dated May 7, 2008.

requested. Finally, Energy Division requested that SCE provide a research plan, which clearly states the research questions, hypotheses, methodology, timeline and other details of the study.

NOTICE

Notice of AL 2233-E was made by publication in the Commission's Daily Calendar. SCE states that a copy of the Advice Letter was mailed and distributed in accordance with Section 4 of General Order 96-B.

PROTESTS

SCE's Advice Letter AL 2233-E was timely protested by The Utility Reform Network (TURN) on April 30, 2008. SCE responded to the protests of TURN on May 8, 2008.

DISCUSSION

TURN states that shifting \$1.236 million to fund this research is an inefficient use of ratepayer money and recommends that the AL should be rejected. The Commission agrees with TURN that the proposed research study will not provide enough useful information on customer behavior to justify its cost, and therefore is an unnecessary use of ratepayer money.

SCE states that funds are not being shifted from other DR programs, but that the Smart Thermostat Pilot program has already been authorized in D. 06-03-024. SCE argues that the proposed pilot is consistent with the program approved by the decision with some warranted exceptions. In response to the questions from Energy Division, SCE submitted a revised budget. The revised budget now has an estimated a cost of \$890,000 instead of the original estimate of \$1.236 million.

The Commission agrees with TURN that even the revised budget is excessive for a study of 500 customers. The 2006 settlement approved a technical study with 10,000 residential and small commercial customers. Instead, SCE proposes a behavioral study to learn more about residential customers to prepare for future residential programs. The original pilot averaged a cost of \$550 per participant. In contrast this alternative proposal averages three times more, a cost of \$1780 per participant. Additionally, due to the late timing of this proposal, the 2008 study period would be two to three instead of five months, and SCE will still need to propose additional funding for a 2009 follow-up study.

TURN argues that SCE's pilot will not contribute useful results to the existing body of information from previous smart thermostat studies. The Commission agrees that SCE's pilot is unlikely to add any additional information that is not already available from other studies.

TURN specifically refers to SDG&E's 2005 Smart Thermostat Final Report to suggest that SCE is not proposing new research. TURN also argues that AL 2233-E lacks sufficient information on the relevance and reasonableness of this pilot project.

TURN explains that SDG&E's program included 5,000 residential customers from 2002-2005, compared to SCE's proposed 500 customers over one summer. TURN also noted that SDG&E's smart thermostat program was terminated in 2007 after concluding that the program is not fully reliable as a way to respond to statewide emergencies. SDG&E's research gave customers a total of \$75 at the end of the program. Five dollars were deducted off of the incentive every time a customer overrode the setback. In contrast, SCE proposes up to \$375 in incentives for customers.

In its response, SCE counters that SDG&E tested smart thermostats and customer responsiveness using statewide emergencies as the trigger. In contrast, SCE intends to examine load reduction impacts in response to various temperature setbacks with a soft trigger called at their discretion. Specifically, SCE explains that by using different setback options they can learn for example, if a 4 degree setback compared to a 6 degree setback provides the same reduction in load. Further, SCE explains that this pilot would inform them if \$20 is a large enough incentive to dissuade customers from overriding an event.

The Commission is not convinced by SCE's response that its pilot program will provide information that is not already available from other studies, or cannot be researched next summer. The Commission recommends that SCE look at the results of PG&E's SmartAC pilot program when they become available. There are two groups of customers in the PG&E study, customers with an AC shut off switch and customers with PCTs that have a 4-degree setback. SCE proposes to add one additional setback group, which may not be necessary to study depending on the results of the PG&E study. SCE also argues that this study is warranted because its customers are in hotter climate zones than the other utilities' territories. The Commission believes that if SCE cannot use this data to inform its future PCT and AMI rollout, then it can propose a pilot for 2009.

TURN argues that SCE's pilot should be revamped to provide information useful in forecasting its upcoming AMI deployment. The Commission agrees that the study as designed would not provide new information to inform the design of SCE's AMI related programs.

SCE agrees in response to the protest that the best use of this pilot is to link it with SmartConnect (SCE's AMI program), and in particular with the Peak Time Rebate (PTR) program. SCE argues, however, that it is not possible to directly study PCTs and how they will work with SmartConnect meters because the two-way communicating technology is not yet commercially available. Instead, this pilot would test what is available: one way communicating technology with an IDR. SCE explains that its pilot will allow them to determine future design features of PCTs. Further, SCE anticipates the self-installation portion of its pilot will inform them about whether they need to provide PCTs installation to customers when they deploy SmartConnect meters.

The Commission agrees with TURN that SCE's pilot should provide information relevant to the upcoming rollout of SCE's SmartConnect meters and its PTR program in 2010. While SCE claims that its pilot would provide valuable information which would inform the design of the PTR program, the Commission concludes this research will, in fact, provide little or no information about how customers will respond to being on a PTR program.

In SCE's proposed PTR program, customers will receive a bill credit of \$.75/kWh if they reduce consumption during called events, thus effectively lowering their electricity costs. All customers can receive this bill credit, but those who use an "enabling technology" such as a PCT will receive an additional \$.50 per kWh for their demand reductions². However, rather than providing customers with a PCT, offering them a per-kWh credit for reductions and then measuring their behavior, SCE has chosen to examine customer behavior through a proxy mechanism - paying customers a \$20 incentive if they do not call SCE and request an override during called events. In addition, customers will also receive an initial \$100 incentive for enrollment in the study.

² SCE's proposed PTR program is described in its 2009 General Rate Case, A.08-03-002

Even though the \$20 incentive is economically equivalent³ to the amount of money the customer might expect to save when a PTR event is triggered, from a behavioral point of view they are not equivalent. The entire design of SCE's proposed research is substantially different than the conditions customers would face in the PTR program. SCE's research would measure whether customers, after already receiving \$100, would be willing to make a phone call and forego receiving an additional \$20 to keep their air conditioners on during a called event. However, a PTR program would require customers to adjust their thermostats during called events to receive a bill credit, which would be their only compensation. The customer will not know the exact amount of the bill credit, although depending on how the program is marketed some customers may understand that this bill credit is likely to have a value of approximately \$20. In addition, in this study customers would not be told which control group they are in (4 degree offset, 6 degree offset, or turned off) so they have no way of determining when their air conditioning is likely to go back on. This scenario could impact their decision to override an event. In contrast a PTR customer could freely regulate the thermostat in any way, at any point during an event.

The above examples demonstrate that what SCE proposes to test is not the same behavior that SCE will have to depend on when it rolls out the PTR program. Research shows that human behavior with regards to incentives is not economically rational. For example, there is a large body of literature establishing that willingness to pay and willingness to accept compensation are not the same.⁴ In other words, someone's willingness to pay \$20 to receive a good or service is not generally the same as that person's willingness to accept \$20 to forego receiving that good or service. While that research is not precisely analogous

³ The \$20 proxy is based on the typical energy cost of an average size AC unit that is cycled off for 4 hours when the Peak Time Rebate and enabling technology credit programs are in place. The rebate and credit are proposed in SCE's pending General Rate Case. The incentive is computed as follows:

$$\begin{aligned} & \$0.75 \text{ (PTR)} + \$0.50 \text{ (Enabling technology credit)} = \$1.25 \\ & \$1.25 \times 16 \text{ kWh (kWh of a 4 ton unit cycled off for 4 hours)} = \$20.00 \end{aligned}$$

⁴ See, for example, Hanemann, W.M. "Willingness to Pay and Willingness to Accept: How Much Can They Differ?" *American Economic Review*, V.81 No.3 (1991)

here, it does indicate that the behavior SCE is measuring in this study is simply not the same as the behavior it will encounter in the future. Hence, it is difficult to believe that this research study, as designed, will provide enough useful information about customer behavior under a PTR program to justify spending \$890,000 of ratepayer funds.

SCE argued that there are two other warranted aspects to this proposed study. First, SCE wanted to collect data on load reductions, and use the information to influence software features for PCT's "with advanced features that appeal to SCE customers". SCE stressed the need for two summers worth of data, in case there was one cool summer. However, as noted above, the Commission believes that the study as designed would not provide accurate representations of what appeals to customers. Instead SCE should consider proposing a revamped pilot program with a revised research plan as a supplement to its 2009-2011 budget application. If SCE feels a second summer worth of data is needed they could do an additional pilot in the summer of 2010, as AMI rollout is scheduled to begin in 2010 and take 5 years to complete. Alternatively, SCE can use data from PG&E's Smart AC program in which shut off and 4-degree setbacks have been tested and compared to inform their software programming.

Second, SCE wanted to test customers' ability to self-install a PCT unit, to identify and remedy challenges the customers, contractors and utility would face. The Commission agrees that it will be beneficial to understand how to overcome hurdles with self-installation. However, without a program in which the customer will use the device it would be difficult to test self-installation. A study of this type would only require one season worth of data collecting. Therefore, SCE should also consider including this in a proposed pilot for 2009.

Finally, the Commission is concerned about the timeliness of this proposal. SCE submitted, in April, a vague proposal for a summer study. The protest and need for data requests resulted in a greatly shortened time frame to operate this potential study if it had been approved. To avoid losing research time in the future, SCE should strongly consider adding a proposed pilot for the summer of 2009 to its 2009-2011 budget application as soon as possible.

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

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. Accordingly, this draft resolution was mailed to parties for comments, and will be placed on the Commission's agenda no earlier than 30 days from today.

FINDINGS

1. In D. 06-03-024 the Commission approved a settlement agreement in which SCE was authorized to run the Small Business Communicating Thermostat Pilot (SBCT) to study load control and dynamic pricing with PCTs, and authorized SCE to file an Advice Letter to propose newly developed programs or to reallocate existing funds.
2. In AL 2233-E, SCE proposed a behavioral study of 500 customers in place of the SBCT.
3. The study proposed in AL 2223-E, lacks a solid research design to properly address SCE's research questions on customer behavior in the Peak Time Rebate program.
4. SCE is advised to submit a proposal and a well-designed research plan for a pilot program as a supplement to the 2009-2011 Demand Response Budget Application to study customer behavior questions relating to PCTs and the PTR program.

THEREFORE IT IS ORDERED THAT:

1. The request of the SCE to conduct a Smart Thermostat Field Research Study in the summer of 2008 as requested in AL 2233-E is denied.

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 July 31, 2008; the following Commissioners voting favorably thereon:

Paul Clanon
Executive Director

PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298



July 1, 2008

I. D. # 7737
RESOLUTION E-4169
July 31, 2008

TO: PARTIES TO SCE ADVICE LETTER 2233-E:

Enclosed is draft Resolution Number E-4169 of the Energy Division. It is in response to SCE 2233-E and will appear on the agenda at the next Commission meeting held 30 days after the date of this letter. The Commission may vote on this Resolution at that time or it may postpone a vote until a later meeting. When the Commission votes on a draft Resolution, it may adopt all or part of it as written, amend, modify or set it aside and prepare a different Resolution. Only when the Commission acts does the Resolution become binding on the parties.

All comments on the draft Resolution are due by **July 15, 2008**. Comments shall be served on parties, as outlined below.

1) An original and two copies, along with a certificate of service to:

Honesto Gatchalian

Energy Division
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102

2) Parties described above (attached).

3) Jennifer Caron
Energy Division
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102

Email: jc8@cpuc.ca.gov

Comments shall be limited to five pages in length plus a subject index listing the recommended changes to the draft Resolution, a table of authorities and an appendix setting forth the proposed findings and ordering paragraphs.

Comments shall focus on factual, legal or technical errors in the proposed draft Resolution.

Replies to comments on the draft resolution may be filed (i.e., received by the Energy Division) on **July 22, 2008**, and shall be limited to identifying misrepresentations of law or fact contained in the comments of other parties. Replies shall not exceed five pages in length, and shall be filed and served as set forth above for comments.

Late submitted comments or replies will not be considered.

An accompanying declaration under penalty of perjury shall be submitted setting forth all the reasons for the late submission.

Please contact me at 415-355-5499 if you have questions or need assistance.

Sincerely,

Jennifer Caron
Public Utilities Commission
Energy Division

Enclosure: Service List
Certificate of Service

CERTIFICATE OF SERVICE

I certify that I have by electronic mail this day served a true copy of Draft Resolution E-4169 on all parties on the service list for PG&E 2233-E, or their attorneys as shown on the attached list.

Dated July 1, 2008 at San Francisco, California.

Jennifer Caron

NOTICE

Parties should notify the Energy Division, Public Utilities Commission, 505 Van Ness Avenue, Room 4002 San Francisco, CA 94102, of any change of address to insure that they continue to receive documents. You must indicate the Resolution number on the service list on which your name appears.

Parties to SCE Advice Letter 2233-E

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