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

Order Instituting Rulemaking Regarding Policies, Procedures and Rules for California Solar Initiative, the Self-Generation Incentive Program and Other Distributed Generation Issues.

Rulemaking 06-03-004  
(Filed March 2, 2006)

**ASSIGNED COMMISSIONER'S AND ADMINISTRATIVE LAW JUDGE'S  
RULING APPROVING SOLAR WATER HEATING PILOT PROGRAM**

This ruling approves, with minor modifications, the solar water heating pilot program submitted by the San Diego Regional Energy Office (SDREO) in May 2006. This ruling makes minor modifications to SDREO's pilot proposal and directs SDREO to submit a revised program description of its pilot program to the Energy Division within 30 days of this ruling. Further, SDREO may commence operation of the pilot program, as modified by this ruling, no later than July 1, 2007.

**1. Background**

In Decision (D.) 06-01-024 that established the California Solar Initiative (CSI), the Commission noted that solar water heating may already be cost-effective and not require incentives. The Commission opted to provide solar water heating incentives as a pilot program for 18 months in the San Diego Gas & Electric Company (SDG&E) service territory only. To accomplish that goal, the Commission directed SDG&E to offer a contract to SDREO to administer a pilot program, following approval of a program implementation plan by Administrative Law Judge's (ALJ) ruling. Further, the Commission

directed that evaluation of the program should begin at the end of the 12<sup>th</sup> month, and should measure the effect of the pilot program on equipment prices, demand, and overall cost-effectiveness before the Commission would consider extending the program. (D.06-01-024, *mimeo.* at 13.)

On May 26, 2006, SDREO submitted an implementation plan for its solar water heating pilot. The 18-month pilot is designed to provide rebates to residential and non-residential customers of SDG&E who install qualifying solar water heating systems that offset energy used by an existing natural gas or electric water heater or boiler. The program strategy, as described in SDREO's proposal, is to provide financial incentives, and consumer information and education to overcome market barriers to solar water heating, such as high initial system costs, customer lack of information, and negative public perceptions of solar water heating technologies. SDREO proposes an incentive budget of \$1.2 million, and a total program budget of \$2.7 million for the 18-month pilot.

According to the proposal, SDREO will provide incentives of two types, depending on system size. Residential and small commercial systems may receive a maximum incentive of \$1,500 based on estimated system performance. SDREO calls this the "prescriptive method" of incentive payments. The incentive would be paid following final system inspection. Larger, non-residential systems may receive incentives based on what SDREO terms the "area method," wherein incentives are calculated using the system's square footage of solar collectors and other design factors. Systems would receive either \$15 or \$20 per square foot, depending on whether they are "open loop" or "closed loop." All large systems will be metered and one month of meter data is required to demonstrate system performance, with incentives paid after final

inspection and verification. Incentives for large non-residential systems are capped at \$75,000.

Other notable features of SDREO's proposal include a commitment by SDREO to inspect 100% of systems before payment of incentives, and a program design that directs payment of incentives to the installer of the solar water heating system, rather than the homeowner or customer, except upon special request to SDREO. SDREO explains that payments to installers should help ensure systems are functioning properly before incentives are paid. Withholding the incentive payment until the system is performing as designed should motivate the installer to do the job correctly.

Parties filed comments on the SDREO pilot proposal on June 23, 2006, and reply comments on July 10, 2006.<sup>1</sup> This ruling discusses parties' significant comments by issue area below.

## **2. Discussion**

### **2.1 Incentive Amount**

Both SCE and SDG&E/SoCalGas comment that SDREO has not provided sufficient justification of the incentive amounts it proposes. Energy Division staff queried SDREO on any support for its incentive proposals.<sup>2</sup> SDREO responded that incentives were designed to cover 30% of average system

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<sup>1</sup> Comments and/or replies were filed by the Americans for Solar Power (ASPV), California Solar Energy Industries Association (CALSEIA), City and County of San Francisco, Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), jointly by SDG&E and Southern California Gas Company (SoCalGas), Californians for Renewable Energy (CARE),

<sup>2</sup> SDREO provided responses to Energy Division Data Requests in memos dated October 16, 2006 and February 2, 2007.

cost, based on survey data showing average system cost of \$5,000 for smaller systems on single family homes. For larger systems, the incentives of \$15 and \$20 per square foot were based on CALSEIA recommendations and adjusted for recent increases in material costs, again with the aim of offsetting 30% of initial system cost. In response to inquires from Energy Division staff, SDREO provided analyses estimating that for a 2,000 square foot commercial system with an installed cost of \$140,000, incentives should cover 29% of total costs and provide a simple payback of five years on the investment.<sup>3</sup> SDREO notes that incentives paid to other distributed generation systems, including solar PV, through the Self-Generation Incentive Program and CSI, cover approximately 30% of installed system cost.

We agree that SDREO initially provided little analysis to support its proposed incentive payments. In response to Commission staff inquiries, SDREO provided additional analysis to support its incentive proposals. We will allow SDREO to commence the pilot with the incentives it proposes, although we direct SDREO to collect further data on system costs. This further data collection is essential for the Commission to analyze whether incentives for all size solar water heating systems are indeed in the range of 30% of system costs. The program evaluation portion of this ruling discusses the data SDREO should collect in greater detail so the Commission can determine through program evaluation the effect of the incentive amount on the solar water heating market in the San Diego region.

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<sup>3</sup> See SDREO data request response, February 2, 2007.

A second incentive issue involves whether the Commission should exclude incentives for solar pool heating from the pilot. SDREO proposes an incentive of \$5 per square foot for large pools owned or operated by public entities, based on the concern that public entities often lack the up front capital to make these investments. According to SCE, SDREO provides no factual support for the need for these incentives, particularly given SDREO's statement that solar pool heating for residential pools is already cost effective. ASPv disagrees with SCE and contends commercial and municipal pool heating should be included, but only where it is in combination with solar space heating and/or space cooling systems. ASPv reasons these combined systems are more costly to install and an incentive is required to get this important market underway. We agree with SCE that SDREO has not provided sufficient justification for why incentives are needed for publicly-owned pools, particularly if solar heating systems for residential pools are considered cost-effective. We direct SDREO to remove this element from its pilot program.

## **2.2 Incentive Recipients**

SDREO proposes to pay incentives to system installers, rather than to homeowners or customers, except upon special request by the homeowner. As described above, SDREO reasons that withholding the incentive payment will motivate installers to provide high quality installations. If system owners paid an installer in full and then were denied a rebate due to faulty installation, owners might be denied an incentive and have no recourse against the installer.

The Division of Ratepayer Advocates (DRA) and PG&E generally support this approach, claiming that rebates paid directly to installers will help maximize the system benefits for customers. DRA suggests that SDREO require an affidavit signed by both a licensed contractor and customer for each installed

system prior to payment of incentives. The affidavit should state contractor license number, installed system efficiency, system costs, and the amount of incentive payment. According to DRA, this affidavit will ease the process of verifying system cost for program evaluation purposes.

In contrast, SCE contends that paying incentives directly to installers, without customer knowledge or consent, may limit technology cost reductions and program transparency. SCE recommends the Commission require customer consent for an installer to receive the incentive, similar to what occurs now under SGIP guidelines.

It appears that all comments in this area propose a similar modification, namely that the Commission require customer consent, perhaps by affidavit, that the incentive will be paid to the installer following successful system installation. This is a reasonable suggestion, and should help counteract SCE's concerns with program transparency and technology cost reductions. The affidavit will ensure customer awareness that installers will receive the incentive payment. The data provided regarding system costs on the affidavits will also be useful for program evaluation. Therefore, we direct SDREO to require installers to submit an affidavit which provides state contractor license number, installed system efficiency, system cost, and the amount of incentive payment that will be paid to the installer.

To further increase price transparency and facilitate customer information on system costs, we will require SDREO to compile the information from these affidavits, particularly system size, cost, efficiency, and incentive amount, and make it publicly available throughout the duration of the pilot through either a website or other means.

### **2.3 Pilot Timeline**

In its proposal, SDREO states that it can begin the pilot program within 30 days of a Commission ruling. Given that today's ruling directs minor program modifications, this ruling directs SDREO to submit a revised program description to the Energy Division within 30 days of this ruling, and allows SDREO to commence the pilot program no later than July 1, 2007. The program shall run for an 18-month period from the start date, as set forth in D.06-01-024. SDREO should advise Energy Division of the pilot's actual start date.

### **2.4 Program Evaluation**

In D.06-01-024, the Commission stated that "evaluation of [the pilot's] impacts on equipment prices, demand, and overall cost-effectiveness, should begin at the end of the 12<sup>th</sup> month." (D.06-01-024, p. 13.)

In its pilot proposal, SDREO states it will evaluate the impacts of the pilot after the 12<sup>th</sup> month, including the program's effect on the industry and system costs, and whether the program results in the installation of quality systems. SDREO proposes to meter for "up to one year" all larger systems that receive incentives through the pilot, and to meter 100 smaller systems. Metered data will be used to evaluate system performance, incentive structures, and energy savings. Metering equipment will be determined by SDREO, with costs covered by SDREO through the pilot program budget in addition to any incentive payments. SDREO budgets \$95,000 for pilot metering costs.

In response to inquiries from Energy Division, SDREO explains that its staff will perform technical, performance, and cost evaluation of data collected during the course of the pilot, including system quality, energy production, cost trends, cost-effectiveness and return on investment. In addition, SDREO intends to contract with an outside firm to conduct further program evaluation using

data collected from project applications and participant surveys, and it budgets \$100,000 for this purpose. This outside evaluation will focus on system costs, marketing and outreach, participant satisfaction, free-ridership, and effects on suppliers and installers.

DRA, SCE, and SDG&E/SoCalGas urge the Commission to provide SDREO more detailed guidance on program evaluation. These parties suggest specific reporting and data gathering requirements over the course of the pilot, and independent program evaluation. They also suggest SDREO consult with Energy Division to ensure the proper scope and performance of program evaluation by an independent entity, rather than by SDREO.

Based on the parties' comments and the additional information supplied by SDREO, we agree that SDREO should hire an independent entity to perform program evaluation of the pilot. Given that we direct independent program evaluation, we will allow SDREO to budget a maximum of \$200,000 for this contract. SDREO should consult and work closely with Energy Division on the scope of evaluation work, the selection of the independent evaluator, and deadlines for completing program evaluation. Further, we direct SDREO to augment its pilot program evaluation plans as follows:

- SDREO shall submit a quarterly progress report to the Commission's Energy Division tracking expenditures against budget, as well as system commitments and installations.
- Program evaluations shall use information provided on customer affidavits, as discussed above, and data from SDREO provided meters.
- SDREO shall meter for the duration of the pilot, and at least 12 months post-installation, all larger systems that receive



incentives on the “area method” and no fewer than 100 smaller systems paid on the “prescriptive method.”

- The independent evaluator shall prepare detailed quantitative and qualitative program assessments including:
  - A market impact report for the first 12 months of the pilot that includes a review and analysis of project and participant characteristics, market changes, rebate effects, supplier and installer participation, market potential, and an empirical analysis of price elasticity of demand and barriers to increasing penetration.
  - An impact evaluation report to measure energy savings based on the metered data. This should include an analysis of the technical efficiency of installed systems, including reductions in billed kWh or therms, heat/energy transfer performance, and system degradation after one year.
  - Cost-effectiveness evaluations as directed by the Commission in a future order on a distributed generation cost-benefit methodology. -
  - An examination of customer satisfaction with system performance and program administration.
  - An analysis of system costs before and after the pilot program, including system payback period and return on investment and, as described in D.06-01-024, a comparison of solar water heating prices in regions with and without incentives over the course of the pilot program.

Completed program evaluation reports should be submitted to the Commission’s Energy Division within one year of contract finalization.

## 2.4 Budget

SDREO initially proposed a budget for the pilot program of \$2.68 million, with \$1.2 million, or 45%, of the total allocated for financial incentives. Approximately \$375,000, or 14%, of the budget is allocated to administration, i.e., labor, travel and unspecified “other direct costs.” Another 12% of the total budget, or approximately \$325,000, is allocated for education and outreach. In addition, the direct incentive portion of the budget includes \$500,000 for labor. All together, 44% of the budget is set aside for administration, labor, or education and outreach.

SCE recommends the Commission review this proposed budget carefully because the amount allocated to administration and outreach greatly exceeds the 10% limit imposed in D.06-01-024 for the general CSI program.

In response to Commission staff inquiries, SDREO submitted a revised budget of approximately \$2.2 million for the pilot, with labor costs of 29%.<sup>4</sup> This revised budget also reduces budgets for travel, marketing, and installer training. We find this revised budget more reasonable in that labor is now reduced to approximately 30% of the total budget. We will adopt this revised budget, as set forth below, although we will allow SDREO flexibility to increase the portion allocated to incentive payments up to \$1.5 million, with \$900,000 allocated to residential systems paid on a prescriptive basis and \$600,000 allocated to non-residential systems paid on an area basis. We increase the portion for non-residential systems because we hope to attain a larger sample of non-residential systems than SDREO’s initial proposal would have allowed.

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<sup>4</sup> SDREO data request response, February 2, 2007.

In addition, we direct an increase in the budget for program evaluation to \$200,000, we increase the metering budget to \$110,000 to ensure SDREO meters enough systems to provide the equivalent of a 95% confidence interval in its data analysis, and we will reinstate the initial \$12,000 budgeted for installer training because we want to insure quality installations.

**SDREO Solar Water Heating Pilot Program Budget**

Labor	\$ 638,430
Travel	5,000
Metering Equipment	110,000
Mileage	29,000
Incentives	1,500,000
Marketing Materials	96,300
Installer Training	12,000
Program Evaluation	200,000
Total	\$2,590,730

Several parties request clarification that funds for the pilot are derived from SDG&E's CSI funds. This ruling clarifies that the pilot will be funded from the CSI program funds collected by SDG&E.

SDG&E/SoCalGas suggest the Commission require SDREO to receive Energy Division approval before shifting any funds between the residential and non-residential incentive categories. We find this reasonable and we will require SDREO to obtain Energy Division approval before transferring funds from one customer category to another. Any such request to Energy Division must explain how the transfer of funds will not conflict with the pilot's primary goal of obtaining meaningful information on the impact of direct

incentives on both the commercial and residential markets for solar water heating systems.

## **2.5 Other Issues**

Despite the fact that D.06-01-024 directed an 18-month pilot in the San Diego region, several parties ask the Commission to expand the pilot statewide. It would be inappropriate to modify the prior order and expand the pilot through a ruling, particularly prior to examination of any pilot results. The full Commission may consider program expansion after it is able to review program evaluation results.

SDG&E and SoCalGas suggest the Commission encourage collaborative efforts between SDG&E and SDREO to minimize duplicative administrative structures. They recommend coordination of outreach for the pilot program with SDG&E's energy efficiency and demand response programs. This is a reasonable suggestion, although it may be difficult to implement over the course of this short, 18-month pilot program. We will direct SDREO and SDG&E to attempt to coordinate outreach with energy efficiency and demand response, to the extent possible over the course of this short pilot program, and provide an overview and review of any coordination efforts in the pilot's program evaluation.

Several parties comment on assuring quality installations. (See SDG&E Reply, p. 4.) SDREO proposes contractor training, and inspection of 100% of systems installed through the pilot. In addition, it will maintain a website providing public lists of licensed installers who are trained to fulfill rebate requests. SDG&E/SoCalGas recommend elimination of self-installations during the pilot, and only allow installations by licensed contractors. We will

allow self-installations as long as they are inspected by SDREO prior to receiving a rebate.

Therefore, **IT IS RULED** that:

1. The San Diego Regional Energy Office (SDREO) solar water heating pilot is approved as modified by this ruling.
2. Within 30 days from the date of this ruling, SDREO shall submit to the Director of the Commission's Energy Division a revised pilot program description, incorporating the modifications discussed in this ruling. Specifically, the revisions should remove incentives for public pools, incorporate language regarding affidavits, revise the pilot program budget and include the program evaluation details set forth in this ruling. The revised program description should include the information contained in the original SDREO proposal, and the additional clarifying information provided by SDREO in its October 16, 2006 and February 2, 2007 memos to Energy Division.
3. SDREO shall begin operation of the pilot program no later than July 1, 2007.

Dated February 15, 2007, at San Francisco, California.

/s/ MICHAEL R. PEEVEY

Michael R. Peevey  
Assigned Commissioner

/s/ DOROTHY J. DUDA

Dorothy J. Duda  
Administrative Law Judge

**INFORMATION REGARDING SERVICE**

I have provided notification of filing to the electronic mail addresses on the attached service list.

Upon confirmation of this document's acceptance for filing, I will cause a copy of the Notice of Availability to be served upon the service list to this proceeding by U.S. mail. The service list I will use to serve the copy of the Notice of Availability is current as of today's date.

Dated February 15, 2007, at San Francisco, California.

/s/ FANNIE SID

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Fannie Sid