SOUTHERN CALIFORNIA EDISON
An *EDISON INTERNATIONAL* Company

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May 16, 2006

Docket Clerk
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, California 94102

RE: R.06-03-004

Dear Docket Clerk:

Enclosed for filing with the Commission are the original and five copies of the **COMMENTS OF SOUTHERN CALIFORNIA EDISON COMPANY (U 338-E) ON STAFF PROPOSAL FOR CALIFORNIA SOLAR INITIATIVE DESIGN AND ADMINISTRATION 2007-2016** in the above-referenced proceeding.

We request that a copy of this document be file-stamped and returned for our records. A self-addressed, stamped envelope is enclosed for your convenience.

Your courtesy in this matter is appreciated.

Very truly yours,

Amber E. Dean

AD:as:LAW-#1280584
Enclosures

cc: All Parties of Record
(U 338-E)

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE

STATE OF CALIFORNIA

Order Instituting Rulemaking Regarding Policies, Procedures and Rules for the California Solar Initiative, the Self-Generation Incentive Program and Other Distributed Generation Issues.	))))	Rulemaking 06-03-004 (Filed March 2, 2006)

COMMENTS OF SOUTHERN CALIFORNIA EDISON COMPANY (U 338-E) ON STAFF PROPOSAL FOR CALIFORNIA SOLAR INITIATIVE DESIGN AND ADMINISTRATION 2007-2016

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Dated: **May 16, 2006**

TABLE OF CONTENTS

TABLE OF CONTENTS (cont'd)

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I.

INTRODUCTION

Pursuant to ALJ Duda's April 25, 2006 Ruling Requesting Comment of Staff Proposal for Performance Based Incentives and Other Elements of the California Solar Initiative, Southern California Edison Company (SCE) submits the following comments on the Energy Division's Staff Proposal for California Solar Initiative Design and Administration 2007-2016 (Staff Proposal). The Staff indicates that its proposal is based on a number of principles designed to ensure ratepayers receive the fair value of their contribution and that California Solar Initiative (CSI) program goals are met. In particular, the Staff Proposal seeks to establish an incentive structure that rewards system output, and reduces subsidies over the program duration to encourage performance gains and expected cost reductions. SCE supports these principles.

A number of the Staff's recommendations further these objectives, such as moving to Performance-Based Incentives (PBI) for larger systems and establishing expected performance installation criteria for smaller systems; requiring revenue grade metering for program measurement, evaluation, and incentive payment; and reducing incentives by ten percent each year. SCE supports these recommendations, and is also encouraged that the Staff has expressed

interest in reviewing the costs associated with Net Energy Metering (NEM). SCE offers the following recommendations to further advance the value of the program and ratepayer interests:

- The Commission should reduce the 100 kW threshold between the Expected Performance Based Buydown (EPBB) and PBI incentive structures to 30 kW to ensure that a meaningful percentage of CSI systems receive incentives based on actual system performance.
- The Commission should include geographical location in the EPBB assessment to encourage the installation of systems with maximum value to ratepayers.
- The Commission should retain a declining incentive structure based on both MWs reserved and on the passage of time to avoid the "start and stop" of incentives and ensure that the finite CSI budget is preserved over the ten-year life of the program.
- The Commission should enlist the utilities to administer all aspects of the CSI in their territories to leverage existing infrastructure and coordinate program administration with energy efficiency program requirements, marketing and outreach, accounting and rate recovery for funding shifts, system inspection and approval for interconnection, and NEM billing. Utility administration will also avoid certain legal and regulatory hurdles previously identified by the Commission in the energy efficiency context.
- The Commission should not adopt set asides or funding allocations based on customer contributions to rates. Rather, if necessary, the Commission should adopt simple funding allocations based on project size utilizing a 30 kW cut-off.
- The Commission should allow the utilities to determine best fit metering to ensure cost-effective administration and limit stranded costs.

II.

INCENTIVE MECHANISM

A. Summary of SCE's Recommendations

In pre-workshop comments on performance based incentives, SCE recommended that the existing up front capacity-based incentives for solar photovoltaic (PV) systems be replaced with PBI. For residential customers, SCE proposed the combination of an upfront installed capacity incentive payment and a periodic additional payment based on subsequent performance verification. For commercial customers, SCE proposed an incentive payment tied to kilowatt-hour performance. SCE supports the basic approach described in the Staff Proposal: to utilize a kWh-based PBI payment for larger systems and an EPBB incentive payment for smaller systems. SCE also supports the Staff's selection of a five-year incentive payout period, a 20% annual capacity factor standard[1] for system performance,[2] and a lower incentive for commercial customers eligible for the 30% federal tax credit.

SCE recommends a few changes to the Staff Proposal concerning incentive structure to ensure that ratepayers obtain the best practical value from the CSI program and achieve the goals described in the Staff Proposal and D.06-01-024. In particular, SCE recommends that the Commission lower the proposed 100 kW threshold between EPBB and PBI to 30 kW so that a meaningful percentage of CSI systems receive rebates based on actual system performance. SCE further recommends that the Commission move to a full PBI structure in 2007, rather than adopt a hybrid EPBB/PBI structure that phases in performance-based incentives over the first three years of the program, as suggested in the Staff Proposal. SCE also provides a number of suggestions to improve the design of the EPBB incentive structure, as described further below.

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1 Annual Capacity Factor is defined as system AC energy output in kWh produced within a 12 month period divided by the quantity; system AC rating in kW times 8760 hours. For example, a 3 kW AC system held to a 20% annual capacity factor standard should produce 5,256 kWh per year: (20/100x 3 x 8760) or 1752 kWh/kW.

2 Although not contained in the Staff Report, the Staff clarified at the May 4, 2006 Workshop on the Staff Report (May 4 Workshop), that their proposal adopted a 30 percent capacity factor standard for system performance for those systems that operate on a tracker.

Lastly, SCE recommends retaining the size restriction adopted in D.06-01-024 based on 100% of peak load for residential customers, but returning to the previous 200% of peak demand size restriction for commercial customers.

B. The Threshold Between EPBB and PBI Should Be Lowered

The Staff proposes to establish a 100 kW threshold for participation in the EPBB vs. the PBI incentive structure. At the May 4, 2006 Workshop, the Staff indicated that this threshold was established based on the assumption that customers would obtain commercial financing for systems sized at 100 kW or greater, but that any smaller system would likely be financed through a home equity line of credit or similar financing mechanism. SCE is unaware of the basis for this assumption. It is worth noting, however, that a 100 kW system costs approximately $800,000.[3] Thus, it would appear that commercial funding would be necessary for systems that are far smaller than 100 kW. More importantly, the Commission has placed a high value on providing incentives based on actual metered output, yet the threshold set by the Staff would result in PBI for only about 1% of the solar PV systems in SCE's service territory, assuming that future systems have a size distribution similar to what has been installed to date. Based on the size distribution of SCE's existing NEM customers with solar PV systems, it is clear that the 100 kW threshold will fail to set adequate performance incentives for the vast majority of future installations.

The figure below shows the size distribution of 3,933 active solar PV projects in SCE's service area.[4] ***Based on the information in this database, there are only 50 solar PV projects in SCE's service above 100 kW – only 1*****% of the total solar PV projects***. However, approximately 11% of the projects in this database (430 projects) are at or above 10 kW, and these projects represent about 60% of the total solar kW.

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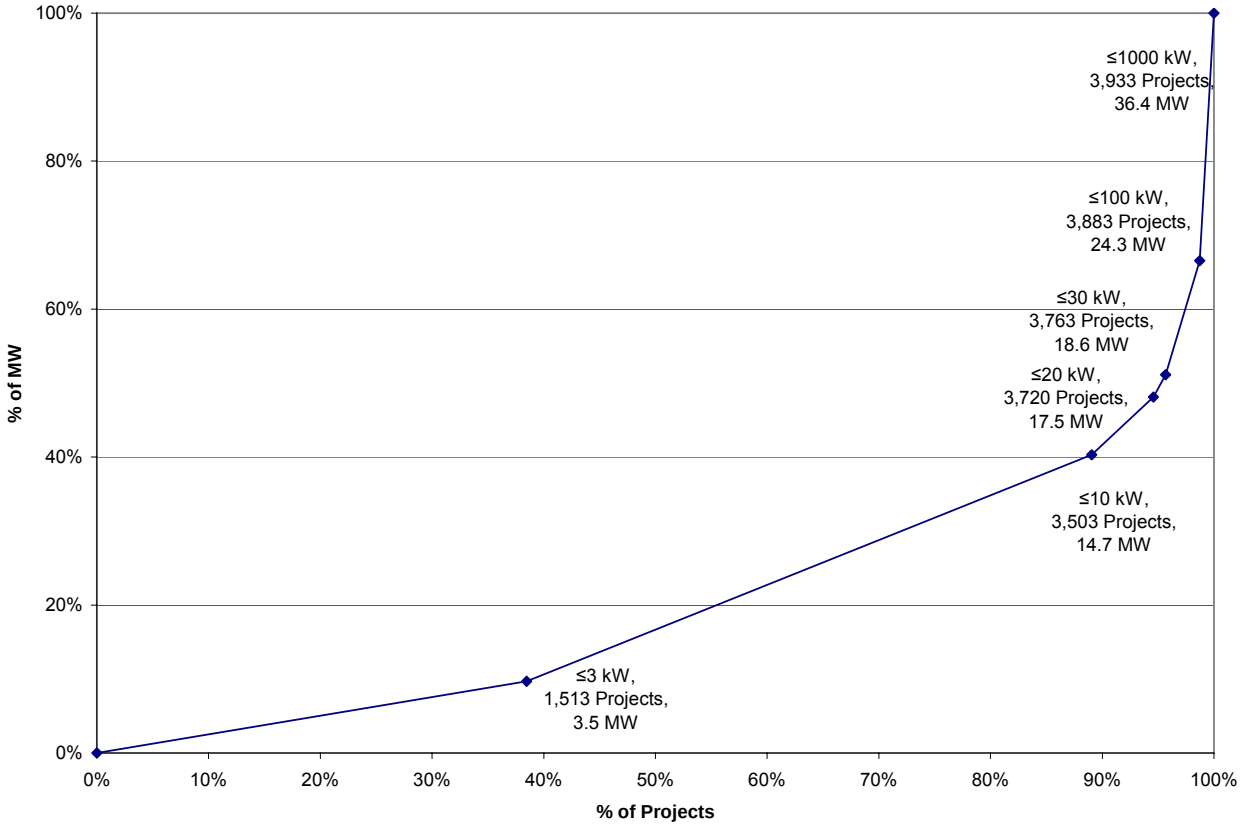
[3] This figure is based on an $8.00/W system cost.

[4] These projects take service under SCE's NEM Tariff. Solar installations that do not participate in NEM are not included in these figures.

Figure 1. Size Distribution of SCE Active Solar Net Energy Metering Projects[5]



Based on historic figures, it appears that PBI could be extended to more than one-half of the eligible kW in SCE's service area with only a modest-sized PBI program. A logical cut-off between the modified capacity-based incentives and PBI would be between 10 kW and 30 kW. As reflected above, a threshold of 10 kW would result in PBI for approximately 10% of the systems and 60% of the kW. A threshold of 30 kW would result in PBI for approximately 5% of the systems and 50% of the kW. A threshold around of 10kW – 30 kW would also correlate generally with a split between residential and non-residential customers as proposed by SCE.[6] For these reasons, and to ensure a meaningful transition to PBI, SCE recommends that the Staff Proposal be modified with a lower threshold between PBI and EPBB. For the remainder of these Comments, SCE will assume a 30kW cut-off, as this is the size most often utilized as a point of demarcation between small and large systems.

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[5] *See* the Declaration of Carl Silsbee supporting this figure.

[6] Based on SCE's experience administering the SGIP program, residential projects rarely, if ever, exceed 30 kW.

C. A Transitional "Hybrid" PBI is Unnecessary

The Staff Proposal suggests that the Commission adopt a hybrid PBI mechanism for the first two years of the CSI, transitioning to a full PBI in 2009.[7] The Staff Proposal reasons that there will be a "learning curve" in the marketplace, and a direct movement to PBI will be a hardship for those who install poorly functioning systems. Under the circumstances, SCE does not see the need for transitional PBI. Presumably, applicants already in the pipeline and those who apply before January 1, 2007 will receive a capacity-based incentive. Skilled installers should already be aware of the factors that promote maximum effectiveness of the systems they install, and customers already have a stake in effective performance in order to maximize the NEM benefits they receive. The concept of PBI is itself simple and easy to explain. As such, there should be no "learning curve" which necessitates a delay in full application of PBI. If anything, a transitional hybrid system will only serve to increase the administrative burden and complexity of the CSI program and cause confusion among CSI program participants.

D. Design of the EPBB Program

Design Factors. In pre-workshop comments, SCE proposed that residential customers receive one-half of the capacity-based incentive up front, with the remainder paid in installments over five years after an annual inspection verifies that the PV system is still operating. The Staff Proposal goes beyond what SCE recommended to incorporate an analysis of expected performance into the process of determining the incentive payment. SCE supports this refinement, and suggests a few modifications to the specific elements of the EPBB proposal.

The Staff's EPBB proposal uses project orientation, tilt and shading as grading factors to determine whether a PV project receives 100% of the applicable incentive or a pro-rated amount. SCE supports using orientation, tilt and shading as grading factors, with the modifications described in this section. SCE, however, is troubled that location is not a grading factor as well. The Staff Proposal suggests that because funding will come from "all ratepayers of the state's

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[7] Staff Proposal, p. 15.

investor owned utilities without regard to geography, we believe that the EPBB incentive structure should be designed so as not to reward or punish customers according to their location."[8] The notion that reduced incentives for systems installed in a poor location is somehow a "punishment" fails to appreciate that the objective of an EPBB is to encourage the installation of systems with maximum value. The Staff Proposal fails to recognize that the purported benefits of the CSI program – including lower costs of future solar systems, reductions in greenhouse gas emissions, contribution to peak energy production, and decreased reliance on fossil-fired generation – accrue to all customers, regardless of which customers install the solar PV systems. If the CSI program does not distinguish between the value of a PV installation in a foggy coastal area from one in a sunny inland desert area, then all ratepayers will lose by the program's failure to achieve the "best bang for the buck." Including a locational factor in the EPBB assessment is appropriate and the Staff Proposal should be modified accordingly.

It is not clear to what extent the EPBB method in the Staff Proposal will be subject to further refinement, but SCE is concerned that the method described may not accurately capture optimal system performance in light of the goals of the CSI. For instance, the EPBB examples in the Staff Proposal appear to favor a southward orientation. While this may maximize the annual energy output of a PV system, a system with a more westward orientation may produce more output in the mid-afternoon when utility demand is at its greatest. The performance specification should be sufficiently broad to take into account both potential energy production and potential reduction in peak demand in calculating the EPBB-adjusted incentive level. Thus, SCE suggests that solar PV systems be assigned maximum value for positioning their systems in either a southern or southwestern direction.

System Verification. The Staff proposes performing a system verification of output to confirm the accuracy of installer data submitted in the original application for all systems 30 kW-100 kW.[9] As stated previously, performance-based incentives are appropriate for all

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[8] *Id*., p. 22.
[9] *Id*., p. 24.

systems greater than 30 kW. If incentives for these systems are based on the actual measured output, the extensive modeling and "verified rating" proposed by the Staff will be unnecessary. SCE maintains that applying performance-based incentives to these systems is not only more appropriate, but also simpler to administer from a verification perspective. For those systems under 30 kW, SCE would propose affidavit certifications and "spot inspections" as suggested in the Staff Proposal,[10] as well as simplified annual inspections to ensure the systems are operating.

E. Treatment of the Federal Tax Credit

SCE previously recommended that the Commission consider the appropriateness of providing ratepayer-funded subsidies to both residential and business customers at the same rate per installed kilowatt during years in which the federal tax credit is available.[11] The Staff proposes an initial incentive of $2.25/watt for solar PV installations by entities not eligible for the full 30% federal tax credit and an initial incentive of $1.50/watt for entities eligible for the 30% federal tax credit. SCE supports this differential which appears to represent a reasonable proportion of the benefits of the federal tax credit. Moreover, SCE supports the Staff Proposal to revisit the incentive levels should the federal tax credit be reduced. SCE further recommends that the Commission seek an IRS ruling as to whether a non-profit third-party can offer non-taxable incentives to utility customers as a utility program.

F. Restrictions on System Size

Under previous SGIP program guidelines, the maximum system size eligible for an incentive payment was 200% of a customer's peak demand. This was reduced to 100% in D.06-01-024, which has resulted in a situation where higher load factor customers cannot receive an incentive for a system sized large enough to displace their entire on-site consumption. The Staff

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[10] SCE would further recommend that the CSI Program Handbook detail the ramifications and disciplinary actions that will be taken if system installers repeatedly fail spot inspections or are shown to knowingly misrepresent an installation's design characteristics.

[11] *See* SCE's Pre-Workshop Comments (February 24, 2006).

suggests changing from a system size limit based on PV system capacity to one based on expected energy output.

SCE supports retaining the 100% of demand limit for small PV installations receiving incentives through the EPBB mechanism. As recommended above, SCE would use EPBB for customers who install PV systems below 30 kW. Most customers installing smaller systems have a low load factor, perhaps in the range of 15% to 20%, so the 100% of demand limitation should not preclude offsetting the customer's full electrical output, assuming a reasonably situated system.[12] The 100% limit has the additional system advantage that the maximum "outbound" electricity flow should be no greater that the maximum "inbound" flow for which the grid interconnection was presumably designed. SCE would support waiving the 100% limitation if the customer submits a study to the CSI administrator showing that the system is not oversized in comparison to the customer's annual consumption.

For systems larger than 30 kW, SCE supports returning to the 200% of peak demand standard. This standard accounts for these customers' higher load factors, while minimizing the administrative complexity involved in setting a size limit based on historical energy usage and expected system output. SCE does not support using a size limitation based on expected energy output because it will put the program administrator in the position of estimating the capacity factor of the customer's solar PV system. Because the capacity factor will vary based on panel performance, location/orientation, and maintenance, it is quite likely that size limitation guideline (capacity-based limit) is not easily translated into a matching system annual energy output level (energy usage-based limit), and an energy output limitation could embroil the program administrator in disputes with the rebate recipients. For these reasons, SCE supports returning to the 200% of peak demand standard for larger systems.

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[12] For instance, a single-family residential home might have a 10 kW peak demand with a central air conditioner and various appliances running, but might only consume 1080 kWh per month, a 15% load factor (15% x 720 hours x 10 kW = 1080 kWh). An 8 kW solar PV system operating at 20% capacity factor would produce about 1152 kWh, slightly oversized relative to the customer's consumption).

III.

INCENTIVES FOR NON-PV SOLAR TECHNOLOGIES

SCE supports the fair treatment of all solar technologies that produce electricity and therefore recommends that other solar technologies receive the same incentive as PV technologies. The Staff Proposal recommends that incentives be provided for certain non-PV concentrating solar technologies including concentrating solar PV, parabolic dish/engines, parabolic troughs and power towers, but that this list should not be exhaustive. In fact, at the recent PBI workshop, the Staff noted that systems utilizing Compact Linear Frensnel Reflectors or Holographic Optical Elements are included in the broader "concentrating solar PV" description. SCE recommends that the Commission remain flexible in its consideration of new solar technologies that are commercially available.[13]

IV.

INCENTIVE LEVEL TRIGGER ADJUSTMENT MECHANISM

The Staff Proposal recommends a declining incentive structure whereby incentives are reduced by 10% each year, and the CSI budget is maintained by closing the program when the funding is exhausted in any program year. The Staff Proposal appears to eliminate the MW trigger mechanism adopted in D.06-01-024. The Staff further proposes that if system costs are not reduced in any particular program year, incentive levels may remain steady for two years in a row. SCE supports the Staff's recommendation to reduce incentive levels throughout the program term. However, the Staff Proposal does not do enough to ensure incentive reductions and program continuity. SCE supports the general structure of a declining incentive payment tied to both a MW-based and time-based trigger, as adopted in D.01-06-024. Having a clear MW-based trigger prevents the CSI funds from being depleted before the end of the 10-year

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[13] Consistent with current SGIP guidelines, SCE recommends that incentives only be provided to those generating systems that are "commercially available" and acquired through conventional procurement channels. SCE recommends that generating systems utilizing new technologies critical to their operation should have at least one year of documented commercial availability to be eligible. *See, e.g.*, 2006 SGIP Handbook, section 2.5.15.

program period, and lessens the need for temporary suspension of the program if demand exceeds current year funding.

A. The Commission Should Maintain a Combined MW and Time-Based Trigger

It is imperative that the Commission maintain a combined MW and time-based trigger mechanism in order to preserve the CSI budget and to give the solar industry incentives to lower costs. The original trigger mechanism detailed in D.06-01-024 had several important benefits: (1) it was designed to ensure that the finite CSI budget is preserved over the ten year life of the program; (2) the nature of the incentive level ramp down over time created incentives for the solar industry to lower costs; and (3) it rewarded customers who would purchase solar systems sooner rather than later to assist in keeping the program on track to reach the MW goal. A MW-triggered reduction in incentives also allows for program continuity and avoids the "start and stop" of incentives that so many solar PV installers complained about when SGIP funding was exhausted.

SCE recognizes that it is difficult to precisely gauge demand for solar PV rebates, and that a MW trigger will require active communication between program administrators to ensure that impending incentive reductions are as transparent as possible and openly communicated. SCE also recognizes that a reduction in the incentive level may require a contractor to revise the pricing provided to a customer, and that contractors may find this disruptive. SCE proposes two solutions to these challenges. First, in order to lessen the potential for disruption due to an incentive level reduction, the incentive reductions should be smaller, and occur more frequently than the current program design. Rather than reduce the incentive 10% once each year, SCE proposes that each incentive reduction occur twice a year. Thus, a 5% incentive reduction would take place every six months, or when the corresponding MW equivalent is reached. This way, there is less financial impact if a contractor quotes a project based on one assumed incentive level, and the level is subsequently changed.

Second, to prevent sudden incentive level reductions or "retroactive" incentive reductions due to delayed implementation of the trigger, SCE proposes to implement a "grace period"

which would last throughout the semi-annual period in which an application is submitted. Thus, if a MW trigger is reached during the first period of a program year, the incentive would not be reduced until the second period in any event. However, if two MW triggers are reached in the first period (*e.g.*, if there is a substantial run on program funds such that two MW triggers are reached), the second period's incentive level would reflect the full reduction in incentives based on the reserved MWs achieved in the previous period. The grace period would allow applicants, installers, and program administrators alike to adjust the incentive level and communicate the reduction in incentives. The CSI budget will still be preserved by funding limitations in each program year. However, the trigger mechanism described by SCE will reduce or possibly eliminate the "start and stop" incentives that will doubtless be encountered under a straight time-based incentive reduction.

B. The Commission Should Reduce Incentives Even if Installation Costs Remain Constant

The Staff proposes an "option to retain an incentive at the same level for a second year if market factors have not produced a lower cost per kWh."[14] SCE is concerned that this language provides a disincentive to manufacturers and installers to reduce system costs. Manufacturers will have an incentive to maintain higher solar costs to maintain a higher incentive level. This will discourage the goals of the CSI to promote project innovation and cost reduction. In essence, the language in the Staff Report may unwittingly cause the price of solar to stay at an unnecessary, escalated level.

Research on the solar industry in California supports this concern. This research has shown that historic pre-rebate installed costs for PV have tracked the level of the rebate itself, and that system retailers or installers have been able to capture some of the rebate themselves through higher prices. For example, the Lawrence Berkley National Laboratories (LBNL) report "Letting the Sun Shine on Solar Costs: An Empirical Investigation of Photovoltaic Cost Trends

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[14] *See* Staff Proposal, p. 33.

in California"[15] provides a detailed statistical analysis of PV system costs in California based on 18,942 grid-connected PV systems that were part of the Self Generation Incentive Program or the CEC's Emerging Renewable Program (ERP). The LBNL report analyzed policy incentives and the impact of rebate levels on pre-rebate installed costs of solar PV systems. LBNL found that the level and design of the CEC's ERP rebate appears to have had a significant impact on installed system costs.[16] LBNL further found that the higher the incentive level available to consumers, the higher the installed cost of solar. The direct correlation between installed system costs and the level of incentive available indicates that the Commission should not maintain incentive levels in the face of constant or rising system costs.

V.

FUNDING LEVELS

The Staff Proposal recommends that the annual budgets for the CSI program should follow the revenue requirement schedule adopted in D. 06-01-024, and that the program budget amounts available to the utilities will be based on the prorated share of the funding collection as adopted in that Decision. The Staff Proposal also generally recommends setting aside funds based on customer class and establishing fund-shifting protocols between customer classes.[17] In addition, the Staff recommends that the program administrators should be allowed to "borrow ahead" up to 15% of the next year's budget if demand exceeds the current year's funding. SCE supports the Staff's proposal to base the annual budgets on the adopted revenue requirement schedule adopted in D.06-01-024 and also agrees that it is appropriate to make the program budget amounts available based on the funding allocation adopted in D.06-01-024. Further, SCE's CSI Program Balancing Account recently approved by the Commission staff accommodates the "borrow forward" concept as stated in D.06-01-024. SCE would not oppose

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[15] "Letting the Sun Shine on Solar Costs: An Empirical Investigation of Photovoltaic Cost Trends in California" by the Ernest Orlando Lawrence Berkeley National Labs (LBNL) (http://eetd.lbl.gov/ea/ems/reports/59282.pdf).

[16] *Id*., p. 22.

[17] The Staff Proposal does not provide details concerning how funding allocations by customer class or fund-shifting between customer classes should be implemented.

setting aside separate CSI funds for smaller and larger installations, respectively, but SCE does not believe that funds should be allocated or set aside based on customer class.

First, SCE does not track expenditures or budget variances by customer class, and SCE has never maintained accounting detail at the customer class level. Creating new accounting based on customer rate class would be an unnecessary administrative burden. Second, the purported benefits of the CSI program – including lower costs of future solar systems, reductions in greenhouse gas emissions, contribution to peak energy production, and decreased reliance on fossil-fired generation – accrue to all customers, regardless of which customers install the systems. Presumably, the shared benefits of the CSI will be the same whether the program results in fewer large installations, or many small installations. Third, nearly all other aspects of the Staff Proposal (including incentive design, administration, metering requirements, etc.) appear to be driven by system size rather than customer class. It will be difficult to reconcile funding and accounting with other program design aspects. For these reasons, SCE does not support set asides based on customer class contributions to rates or strict protocols concerning funding shifts between set-aside groups.

Although SCE does not believe it is necessary, SCE would not oppose a simple funding allocation based on system size (*e.g.*, <30kW and ≥30kW), so long as program administrators have sufficient flexibility to shift funds in accordance with program demand to ensure the greatest number of solar installations. As mentioned above, a 30 kW threshold correlates generally with a split between residential and non-residential customers, and would result in approximately 50% of the installations above 30 kW in installed capacity, and 50% below 30 kW in installed capacity.

VI.

INCENTIVE ADMINISTRATION

The Staff Proposal recommends that the current SGIP administrators continue to administer the CSI for all systems larger than 100 kW, and that systems smaller than 100 kW should be administered by a yet-to-be-determined third party administrator. The Staff Proposal

also indicates a preference for on-bill incentive payments and performance data, but does not adopt this as a program requirement at this time. SCE does not support the Staff's proposal for third party administration of installations sized smaller than 100 kW and maintains that the utilities are in the best position to administer the CSI program in their territories, as described below. SCE also briefly addresses the Staff's proposal concerning on-bill incentive payments and advocates for flexibility to provide incentive payments and system performance data through the most efficient and cost-effective medium.

A. Utilities Should Administer All Aspects of the CSI

The Staff Report indicates that a yet-to-be-determined third party will administer all CSI installations smaller than 100 kW. The Staff reasons that this structure is preferable because in D.06-01-024, the Commission indicated that it would consider expanding non-IOU program administration to the residential retrofit portion of the CSI program. The staff further reasons that utility program administrators do not have current experience or infrastructure prepared to handle large numbers of applications for small system incentives. Both of these rationales are flawed. SCE does not dispute that in D.06-01-024, the Commission considered moving to third party administration on a limited pilot basis for the residential retrofit portion of the program only.[18] ***However, by proposing a 100 kW threshold for utility administration, the Staff is moving far beyond residential installations, and instead is proposing third party administration for 99% of the systems that would be installed under the CSI.***[19] ***Moreover, the utilities are in the best position to administer all aspects of the CSI program, particularly as described in the Staff Proposal.***

Contrary to statements in the Staff Proposal, SCE does in fact have extensive experience in handling large numbers of applications and incentive administration. In addition to the SGIP program administration, SCE currently administers its energy efficiency, demand response, and

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[18] D.06-01-024, p. 36 ("We expect to explore, over the next year, a pilot approach using third party administration initially only for the residential retrofit portion of the program.")

[19] *See* Figure 1 above.

CARE programs. In 2005 alone, SCE administered energy efficiency rebate and audit programs for more than 340,000 participating customers, and provided energy efficiency incentives totaling more than $150 Million. SCE received and processed more than 474,000 CARE applications. In addition, SCE currently manages more than 164,000 customers in the Summer Discount Plan and enrolled more than 44,000 customers in 2005 alone. Thus, SCE has both the infrastructure and experience to process large numbers of project applications, complete system inspections and verifications, and process incentive payments. Additionally, the utilities are in the best position to leverage existing delivery infrastructure to coordinate program administration with energy efficiency program requirements, marketing and outreach, accounting and rate recovery for any program funding shifts, system inspection and approval for interconnection to the utility grid, and Net Energy Metering (NEM) billing. These efficiencies will be lost with a third party administrator.

Indeed, the Commission recently looked at third party administration in the context of Energy Efficiency and rejected that model in favor of utility administration. The Commission found that there are wide ranging benefits to utility administration, especially given the utility's role in integrated resource planning. The Commission also found that utility administration circumvented several legal and regulatory hurdles that could not be avoided with third party administration. For example, the Commission recognized that any third party administrator would be subject to contractual management requiring monthly invoice review in order to maintain effective oversight of program expenditures – a task for which the Commission does not have adequate resources.[20] The Commission further noted that a program administrator would not be subject to the Commission's jurisdiction, and any remedy for unsatisfactory performance would consist of terminating the program administrator's contract and litigating in Superior Court – a highly disruptive and costly solution.[21] The Commission also highlighted legal concerns regarding the Department of Finance's and Attorney General's position that

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[20] D.05-01-055, pp. 70-71
[21] *Id.*, p. 60.

ratepayer monies can be held by the IOUs and spent under Commission direction, but that in the absence of specific legislation, those monies cannot be moved to an outside trust account or bank account for purposes of third party administration.[22] The Commission also voiced concerns regarding possible violation of California Government Code section 19130(b)[23] and the legal uncertainty involved in litigating the Commission's interpretation of that statute.[24]

Here, the Commission can add the uncertainty surrounding the CSI's status as a non-taxable "utility program" should administration of the program be handled by a non-utility third party. As the Commission stated in D.05-01-055, "in contrast to proposals for independent administration, [utility administration] is an approach that can be put in place without new statutory authority, and without substantial start-up costs, uncertainty, or delays." For all the reasons described above and because utility administration is a proven and efficient means of program administration, SCE requests that it administer all aspects of the CSI in its territory.

B. Program Administrators Should Have Flexibility to Provide Incentive Payments and System Performance Data in the Most Efficient and Cost Effective Manner

The Staff Report states that ideally, the customer's incentive payment would be applied to the customer's monthly utility bill. The Staff does not require this, however, and instead asks the utilities to provide information concerning the feasibility of on-bill payments by January 1, 2007. In SCE's pre-workshop comments dated February 24, 2006 concerning implementation of a performance-based incentive mechanism, SCE proposed providing the customer a quarterly statement of energy production and an incentive payment check.

In order to accommodate on-bill payments, SCE would need a clear understanding of the modifications needed to its customer service systems. While SCE's customer service systems can provide an additional line item on the customer's bill, SCE's billing system would have to be modified to account for line item changes and calculations, all applicable tariffs would have to be

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[22] *Id.*, p. 68

[23] This statute states that civil servants must perform the work of the State. The Commission distinguished between specialized activities such as EM&V, and ongoing administration of a state program.

[24] *Id.*, p. 73.

modified to allow PBI payments to offset appropriate charges, and procedures would need to be developed to handle billing and credit adjustments in accordance with billing tariffs. These system modifications, once the definite requirements are known, can require anywhere form three to five months to implement and can be very costly. As such, SCE has not run cost calculations for providing on-bill payments and system information. For these reasons, SCE continues to advocate for the flexibility to determine the most cost-effective and efficient mechanism to provide customers information concerning system performance and their incentive payment.

VII.

METERING REQUIREMENTS

A. Metering and Data Collection Requirements

In pre-workshop comments, SCE recommended that the Commission require all systems receiving an incentive to install a meter socket, which would give utilities flexibility to chose an appropriate metering system compatible with program data collection needs and the utilities' existing business processes. This will minimize the cost of metering, and allow utilities to better integrate the CSI metering requirements with the AMI roll-outs expected to occur in the next few years.

The Staff Proposal suggests that all CSI systems have a revenue grade meter, and that any systems over 30 kW should have a meter capable of remote communication with internet-based reporting. SCE supports the Staff's recommendation to require revenue grade metering for all CSI participants. This requirement will facilitate gathering reliable data on system performance and assist in future reporting requirements on the operational impacts of the program and progress assessments. Such reliable data may also provide the basis to make needed changes to the CSI program to ensure the program results and the Commission's goals continue to be aligned. However, SCE does not support detailing rigid communication specifications (such as web-based communication capabilities) at this time. Rather, SCE maintains that the utilities

should be able to determine the best fit metering that will serve the data collection and incentive payment needs of the program, while also minimizing any stranded costs that will occur when the utilities role out their respective AMI programs.

Currently, SCE measures the electricity consumption of its retail customers using simple watt-hour meters for the majority of its smaller customers, and interval meters for customers served on time-of-use schedules. Based on the marginal cost study submitted by SCE in its most recent GRC, the annual cost of the watt-hour and interval meters (the annualized cost of the meter investment plus meter reading and related expenses) is around $50 and $200, respectively. These meters are fully capable of meeting the requirements of the CSI program, and cost little in comparison to the cost of a solar system. SCE does not support substituting internal metering contained within a system's inverter for revenue grade metering. Such internal metering is not revenue grade and it is incompatible with utility metering and data collection processes.[25]

SCE understands that the Staff's proposal requiring web-based communicating capabilities is intended to facilitate the customer's awareness of his or her system's performance on a real time basis.[26] While SCE supports efforts to increase customers' awareness of their energy production and consumption, SCE does not believe there is an urgent need for a mandatory real time communication package that would justify the increase in program expenses and the risk of installing incompatible metering technologies and creating stranded costs. SCE therefore recommends that web-based reporting and internet communication features be purely

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[25] Although small solar systems will not be paid incentives based on performance, the accuracy of system data is nevertheless key for purposes of program assessment. Some inverters only retain metering information for short periods of time, and inverters can trip off, thereby losing any data recorded. Revenue grade meters are engineered, constructed, and operated to very rigid peer reviewed National and International Standards. Internal inverter meters have no such standards applied to them unless the manufacturer chooses to comply with UL and IEE standards. Revenue grade meters also have been carefully engineered and constructed, and installation standards exist that ensure they can withstand the usual outdoor operating environment. Inverter-based meters may or may not be as durable. Finally, in contrast to internal inverter meters, revenue meters are manufactured in the hundred of millions of units. This makes repair, replacement, and upgrades fairly inexpensive.

[26] The Staff also indicated that it was interested in using this functionality to implement on-bill incentive payments at some future time. SCE previously recommended that the utilities have the flexibility to issue off-bill statements of energy usage and performance-based incentive payments. SCE continues to advocate that off-bill statements and incentive payments would be the most cost-effective method of communicating with customers and administering PBI payments. SCE provided further detail on this subject in its responses to the Staff's questions. *See* Appendix A, SCE Responses to CSI Questions and Unresolved Issues.

optional for customers at this time. Should customers request more advanced metering, SCE will work with customers to install a meter that meets the customer's communication and information needs.[27]

In the near future, communicating functionality will be integrated into the overall AMI metering requirements in the utilities' pending AMI proceedings. SCE is currently involved in the design and development phase for its AMI meter. The design requirements for SCE's AMI meter will encompass the types of communication capabilities included in the Staff's recommendations. When approved by the Commission, SCE expects to begin deploying the systems for the AMI communication infrastructure as early as 2009. When SCE moves to an AMI-based metering and communication infrastructure, SCE could replace the then-existing CSI metering to maintain compatibility with its business practices and enhance metering capabilities at that time.

B. Net Energy Metering Subsidies

The Staff Proposal states that setting the level of California ratepayer subsidy must take into consideration the combined effects of all subsidies and financial benefits enjoyed by the solar system owner, including the retail price of energy purchases saved by the solar system owner.[28] SCE agrees, and commends the Staff for requesting an analysis of the costs that shift to ratepayers due to the NEM subsidy enjoyed by solar system participants. To date, no cost-benefit analysis of the NEM subsidy has been conducted as mandated by the Legislature.[29] At the same time, separate subsidy programs such as the SGIP, the ERP, and now the CSI subsidize installations which increase the overall NEM costs incurred by non-participating ratepayers. The costs and benefits of NEM and other subsidy programs must be examined and transparent so that policymakers can make informed choices concerning proposed legislation and future incentive

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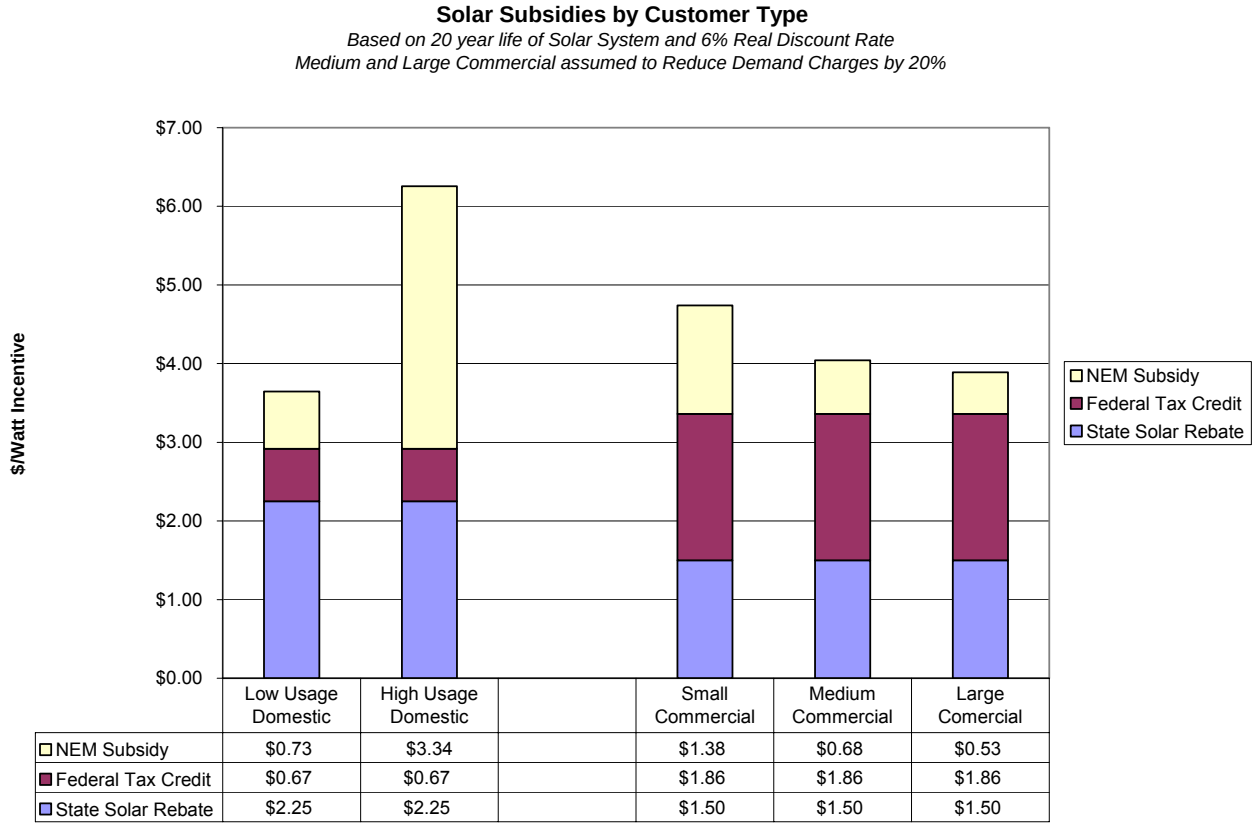
[27] Any costs for an extraordinary metering or communication package would be borne by the customer.
[28] Staff Proposal, p. 10.
[29] Public Utilities Code section 2827(n).

design to ensure the best use of ratepayer funds. SCE is encouraged that the Staff has proposed to take this step.

The solar PV systems provided incentives under the CSI program will typically participate in a net energy metering (NEM) program. NEM allows the customer to fully offset the energy and demand charges that would otherwise be charged to the customer but for the output of the solar PV system, without the imposition of any standby service charges. A considerable portion of the energy and demand charges on a typical tariff represent fixed charges that are not avoided by the customer's installation of a solar PV system, such as the cost of maintaining a service drop and transformer to serve the customer's premise. As a result, the NEM program provides a hidden subsidy to the NEM customer which results in these fixed costs being spread to other utility customers. This NEM subsidy is substantial.

It will be somewhat challenging for the utilities to precisely quantify the magnitude of the NEM impact because the utilities typically do not have separate generation output metering on many NEM-eligible systems on which to base bill savings and NEM subsidy calculations. For example, the NEM impact for a residential customer varies substantially based on whether the system is displacing upper-tier energy usage, or an average of all rate tiers, including the lower-priced baseline usage tier. For larger customers, tiered usage blocks are not as significant an issue, but time-use-delivery variations and the potential for a solar PV system to displace a portion of the customer's monthly demand charge introduce measurement complexity. Figure 2 below summarizes the various subsidies received by customers installing solar PV systems, including the NEM subsidy, the impact of the federal tax credit, and the CSI incentive.

Figure 2: Subsidies Received by Customers Installing Solar PV Systems



	Low Usage Domestic	High Usage Domestic		Small Commercial	Medium Commercial	Large Comercial
NEM Subsidy	$0.73	$3.34		$1.38	$0.68	$0.53
Federal Tax Credit	$0.67	$0.67		$1.86	$1.86	$1.86
State Solar Rebate	$2.25	$2.25		$1.50	$1.50	$1.50

As shown above, the magnitude of the combined incentives potentially available to customers is substantial, and can in some cases come close to the total cost of a solar PV system. The NEM subsidy is calculated by subtracting the avoided cost savings associated with a typical solar PV system from the bill savings a typical customer would receive from the operation of the system.[30] The "low usage" residential customer is assumed to fully offset the bottom two rate tiers with the solar output; the "high usage" residential customer is assumed to offset only the top two tiers. A 3 kW system is assumed for residential customers, so the effect of the $2,000 cap on the 30% federal tax credit reduces the benefit of this credit. The commercial customers are assumed to offset energy charges and avoid 20% of the demand charges. These customers are assumed to be eligible for the federal tax credit. The NEM subsidies are substantial, in the range of $1 per watt, and in some instances above the level of the CSI incentive.

[30] These calculations do not reflect the results of SCE's recently approved Phase 1 GRC or the associated Phase 2 GRC rate design proposals.

SCE looks forward to refining this analysis in the NEM report requested by the Staff. Such a report will help develop an understanding of what costs are being avoided by PV systems in California and the additional benefit NEM customers are currently enjoying through the NEM program. Due to the importance and complexity of this analysis, SCE requests that a reasonable amount of time be allowed for completion of the report. SCE suggests that this report be submitted on September 1, 2006.

VIII.

ENERGY EFFICIENCY REQUIREMENTS

The Staff proposes that certain Energy Efficiency requirements must be met to receive a solar incentive. In particular, the Staff proposes that all program participants must obtain a building audit through an online, telephone or onsite utility program, or through a non-utility provider. The Staff recommends waiving the audit requirement if the home or building already is energy efficient as demonstrated through LEED-certification, Energy Star-certification or having a previous acceptable energy audit report during the past three years. SCE supports the Staff's recommendation to require an energy efficiency audit as a condition to receiving a CSI incentive. This requirement will assist the Commission in meeting its energy efficiency goals and encourage energy efficiency measures which will improve the overall cost-effectiveness of the program and allow for smaller PV installations. SCE recommends that all buildings constructed under current Title 24 standards should be exempt from the CSI program audit requirement as these buildings are already energy efficient.

Under the Staff Proposal, CSI participants are encouraged, but not required, to make the recommended energy efficiency improvements.[31] SCE supports this proposal at this time, but asks that the Commission revisit this issue during the first CSI program evaluation in 2009. If it appears that CSI applicants are receiving energy efficiency audits merely to "check the box" on their CSI applications without any intention of implementing any energy efficiency measures,

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[31] Staff Proposal, p. 53.

the Commission may want to consider reducing the CSI incentive when applicants have not undertaken recommended efficiency measures that have a simple payback of less than three years.

The Staff Proposal states that the audits will be funded and performed by the utilities. To the extent that all audit requests can not be accommodated by the utilities, the Staff Proposal allows non-utility audits. The utilities maintain particular audit standards and protocols. To the extent that a third party is performing an audit as a condition of the CSI program, that third party should conform to the audit standards and protocols of the particular utility. The utilities should consolidate this information within the CSI Handbook. SCE recommends that, in addition to the meeting the certification and audit protocols included in the CSI Handbook, the non-utility audit providers should also be required to register with the CPUC in the same manner as Energy Service Providers.

IX.

CONCLUSION

SCE appreciates the opportunity to comment on the Staff Proposal and looks forward to implementing the CSI. The Staff Proposal is a step forward in ensuring program success and ratepayer value. SCE respectfully requests that the Staff and Commission make the following changes to the Staff Proposal to further ensure the CSI program goals are achieved:

- The Commission should reduce the 100 kW threshold between the EPBB and PBI incentive structures to 30 kW to ensure that a meaningful percentage of CSI systems receive incentives based on actual system performance.
- The Commission should include geographical location in the EPBB assessment to encourage the installation of systems with maximum value to ratepayers.
- The Commission should retain a declining incentive structure based on both MWs reserved and on the passage of time to avoid the “start and stop” of incentives and ensure that the finite CSI budget is preserved over the ten-year life of the program.

- The Commission should enlist the utilities to administer all aspects of the CSI in their territories to leverage existing infrastructure and coordinate program administration with energy efficiency program requirements, marketing and outreach, accounting and rate recovery for funding shifts, system inspection and approval for interconnection, and NEM billing. Utility administration will also avoid certain legal and regulatory hurdles previously identified by the Commission in the energy efficiency context.
- The Commission should not adopt set asides or funding allocations based on customer contributions to rates. Rather, if necessary, the Commission should adopt simple funding allocations based on project size utilizing a 30 kW cut-off.
- The Commission should allow the utilities to determine best fit metering to ensure cost-effective administration and limit stranded costs.

Respectfully submitted,

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May 16, 2006

DECLARATION OF CARL SILSBEE

I Carl Silsbee, declare:

1. I am Manager of Regulatory Economics in the Regulatory Policy and Affairs Department. In this position, I am responsible for marginal cost studies and related studies to support rate design, performance based ratemaking, and a variety of special projects. I have held the position since November 1985.

2. I received a Bachelor's degree in Engineering from Harvey Mudd College in 1974 and a Master's degree in Engineering-Economic Systems from Stanford University in 1975. I joined Southern California Edison in 1981. Prior to my present position, my responsibilities have included coordinating and preparing operating and maintenance expense forecasts for general rate cases, preparing revenue requirement analyses in support of Certificate of Public Convenience and Necessity (CPCN) applications, and filing, avoided cost pricing for qualifying facilities and supporting wholesale rate case applications before the Federal Energy Regulatory Commission. I have previously testified before this Commission.

3. Section II.B of SCE's comments contains a chart examining the size distribution of active solar Net Energy Metering (NEM) projects in SCE's territory. This analysis was prepared under my direction and is true and correct to the best of my knowledge.

4. Section VII.B of SCE's comments contains a chart examining the level of solar subsidies, including NEM. This analysis was prepared under my direction and is true and correct to the best of my knowledge.

5. To the extent that SCE's comments include factual statements, those statements are also true and correct to the best of my knowledge.

6. To the extent that SCE's comments reflect opinions, those opinions represent my best professional judgment.

I declare under penalty of perjury that the foregoing is true and correct and that this declaration was executed in Rosemead, California on May 15, 2006.

_____

Carl Silsbee

Appendix A

RESPONSES TO CSI QUESTIONS

AND UNRESOLVED ISSUES

Appendix A
SCE Response to CSI Program Questions and Unresolved Issues

A. Factoring the Federal Tax Credit

1. It remains an unresolved issue whether the IRS would determine that a program administered by a non-profit entity under contract to one or more utilities would be able to offer non-taxable incentives to the residential recipient as a "utility program."

SCE recommends that the Commission seek an IRS ruling on this issue.

B. Performance Based Incentives for Large Solar PV Systems >= 100 kW

1. Alternative PBI approach: Instead of a hybrid approach, do parties believe we should start immediately with 100% PBI for large systems (100 kW or more), paying the PBI over 5 years?

As discussed in Section II.C. of SCE's Comments, a transitional PBI is not needed, because the concept of PBI is, itself, simple and easy to explain. There should be no "learning curve" which necessitates a delay in full application of PBI. If anything, a hybrid system will increase administrative burden and complexity of the CSI.

2. Should new construction projects receive a LOWER incentive than retrofits to reflect the likely lower costs of installing solar as part of a new building?

At this time, SCE does not recommend that the program take into consideration lower incentive levels for installations as part of a new building. Such a requirement would add a layer of complexity for a benefit that is not yet ascertained or quantified.

3. What alternative approach could be taken to reward even higher performance solar systems, while still managing the incentive funds budgeted, and not paying excessive incentives relative to the solar owner's economics?

The ability to reduce electricity consumption and thus achieve electricity bill savings should be a significant incentive for customers to install high-performance systems. SCE supports both PBI and EPBB, since these mechanisms tend to focus the customer and the PV solar installer on well-designed system. In particular, a well-designed set of EPBB criteria can provide valuable insight to customers that may not be transparent today.

4. Parties have questioned if the staff recommendation utilizes data from the CEC's pilot PBI program. Which data from the pilot program would be useful for CSI development? Please reference the specific data and indicate its application to the CSI development.

The Commission's CSI program should be developed independent of the CEC data as the CEC's pilot PBI program is different in structure than the Commission's CSI program. One important distinction is that participation in the CEC pilot PBI program was voluntary and was a less attractive alternative (for most customers) to a capacity-based incentive.

C. Expected Performance Buydown Incentive Small Solar PV Systems < 100 kW

1. What performance estimation tools would be most appropriate for EPBB calculations?

As discussed in Section II.D., of SCE's Comments, SCE supports a performance estimation tool that utilizes panel orientation, panel shading, panel tilt, geographical location and/or any other condition that might impact system performance. One additional factor that could be considered for inclusion in the EPBB criteria after additional study would be the potential for "air gap" cooling. High temperature degrades panel (cell) performance. SCE's understanding is that panels which rest directly on a roof tend to be hotter than those which provide for air circulation under the panels. However, SCE is not prepared to offer a specific measurement protocol at this time.

2. Would that be unduly restrictive for BIPV systems?

Such an estimation tool would not be unduly restrictive as new construction provides more flexibility to develop installations in more optimal locations and conditions that provide maximum efficiency.

3. Is the verification protocol described above administratively feasible?

The verification protocol described in the Staff Proposal is administratively feasible; however, SCE maintains that the approach presented is not optimal. Rather, performance-based incentives should be implemented for all systems greater than 30 kW. If incentives for those systems are based on the actual measured output, the extensive modeling and "verified rating" protocol described in the Staff Proposal will be unnecessary.

4. Must the verification be done on-site, or is it possible to arrange for remote data collection to determine system performance, adjusted for weather factors?

Currently, under the SGIP program SCE does on-site verification for all solar installations and recommends its continued use for incentive purposes.

5. Can the cost of on-site verification be accommodated within the 10% limit for program administration and evaluation?

SCE maintains that the on-site verification can most likely be accommodated within the 10% limit for program administration.

6. Should verification for small systems be available on an opt-in basis if an applicant believes their technology performs better than average?

Consistent with SCE's Comments in Section II.D., SCE recommends for smaller systems (under 30 kW) an affidavit certification, "spot inspections," and simplified annual inspections.

7. Are there additional actions that should be taken to address installer requirements?

SCE recommends that a state-recognized certification process be adopted by the Commission so that CSI program participants have systems that are installed in a safe and efficient manner.

8. Are there additional actions that should be taken to address equipment and warranty requirements?

SCE recommends requiring warranties on equipment in order to protect the consumer as well as the ratepayers. This measure is especially important for the PBI participants. The current warranty required for solar PV systems participating in the SGIP is five years. SCE supports this warranty period as reasonable, particularly in light of the five-year PBI term.

9. Should there be a minimum design standard for eligibility (*e.g.* 60% of optimal)? If so, what should that minimum be?

SCE does not recommend any minimal design criteria at this time.

10. Should CSI incentive payments be based on "CEC-AC" or "true system AC" or some other variation?

SCE maintains that the PBI program foundation must rest upon a sound method to determine a solar generating system's dependable peak AC capacity rating. The current use of the CEC created PTC rating system (CEC-AC) for solar panels continues to cause unnecessary confusion and misunderstanding among customers, installers, regulators, and solar equipment manufacturers. SCE recommends holding a workshop with all interested participants to determine whether a better method exists to determine the true system AC capacity rating.

11. The current draft proposal only talks about *reductions* to the base level of CSI payment based on variations relative to system installation facing due South tilted 30%. Tracking systems should be eligible for incentive payments which are higher. How should EPBB incentives be calculated for tracking systems or other high-performance solar technologies?

SCE recommends that the Commission not design an alternative EPBB incentive to accommodate higher performing solar technologies. Any higher performing solar technologies, like tracking systems, will have the opportunity to realize a higher bill savings, thus providing a benefit to the customer.

D. EPBB and PBI

1. For both forms of incentives, if the units of analysis are per watt CEC-AC, or per "true systems AC", do the staff's analyses use reasonable estimates of solar system cost for the comparable watts-AC that correspond to the solar system sizes in the examples?

SCE found two different costs in the Staff Proposal. One uses $6.50 per STC DC Watt (page 23, "Example EPBB Calculation"); the other uses $8.00 per CEC AC Watt (page 17, "Example of Proposed PBI…"). The $6.50 cost per STC DC Watt would result in $6.50 divided by 67% (per CEC's handbook recommendations) or $9.70 per AC Watt. The $8.00 per CEC AC Watt would result in approximately $8.00 times 85% (Clean Power Estimator) and divided by 67% or $10.15 per AC Watt. These costs appear to be within the range of contractor 'turn-key' installations for residential retrofit applications. The larger sized ground mounted systems are closer to $4.00 to $5.00 per AC Watt. There is no universal number because 30% to 50% of the system costs are installation specific and not linked to the solar panel costs.

2. Parties have stated that a .20 capacity factor is not accurate for PV systems. Please provide or reference data that supports this claim and make recommendations for a more appropriate capacity factor using supporting data.

The Itron Fourth Year SGIP evaluation study shows an average PV system capacity factor of 17%. Parties to this proceeding have stated in comments and testimony that solar PV installations typically perform at an 18%-22% capacity factor, and may even be as high as 65%. *See, e.g.*, ASPv Prepared Testimony on the Itron Report, Exh. LSS-8 (assuming a 20%-22% capacity factor based on a midpoint between the weighted capacity factor for the CPUC's Self Generation Incentive Program (18%) and the annual capacity factor for PV estimated by Wenger, et al. (22%)); ASPv Motion for Adoption of Performance Based Incentives (11/10/05) (assuming 21% capacity factor); Vote Solar Comments on Staff Solar Report (7/7/05), p. 15 (assuming an 18% capacity factor); ASPv & PV Now Joint Comments on Staff Solar Report (7/7/05), Att. A (assuming 65% capacity factor). A .20 capacity factor is within the range of figures identified by Itron and these parties. In addition, SCE expects that with greater attention to system performance created by a PBI structure, further improvements in panel orientation and location can be achieved. Thus, SCE maintains that the .20 capacity factor is reasonable for use in designing a PBI structure.

E. System Size Adjustment

1. With respect to non-solar SGIP projects, should the Commission retain the 100% of peak demand requirement, revert to the 2005 requirement of 200% of peak demand, or apply the same requirement as that proposed for solar of 100% of historical annual use?

Historically, only solar PV and wind projects could be oversized to 200% of peak demand. All other SGIP technologies were subject to the 100% of peak demand size limitation. For wind turbine projects, SCE would support a policy similar to the one SCE proposed for solar projects (i.e., 100% of demand size limitation for projects <30 kW and a 200% of demand size limitation for projects ≥30 kW). SCE does not support changing the size limitation on any other SGIP technologies, as the 100% of demand size limitation is consistent with historic and current SGIP guidelines.

F. Incentives for Non-PV Solar Technologies

1. Ways to integrate solar HVAC with the solar water heating program proposed by SDREO.

SCE does not have a recommendation on this topic at this time.

2. Technical solar HVAC specifications for inclusion in the CSI Program Handbook.

SCE recommends the workshop process as the most efficient process to consider including such specifications in the CSI Program Handbook.

3. Should a certification process be required for BTU-to-kWh equivalent conversion technologies, or for BTU ratings equivalent to solar PV ratings? Alternatively, should we establish the incentives for solar thermal on a per BTU basis?

SCE recommends a concept similar to that used for existing solar Qualifying Facilities. For those plants, the amount of fossil fuel displaced by the solar contribution to the plant is determined and compared to a standard. In the case of solar water heating, the measured useful thermal energy provided by the solar system would be 'normalized' to the fuel energy that would have been required by a new modern natural gas-fired heater to provide that same output. For example, assume a new gas-fired water heater is 95% efficient. The 'solar water BTU' is equal to 1.05 natural gas BTUs because that is the amount of natural gas energy displaced.

A similar concept can be used for solar cooling applications. Under this approach, the amount of useful chilling provided by a solar cooling system is measured and then this is compared to a new modern chiller's energy consumption to supply the same chilling. The electricity or natural gas displaced is determined to create a solar 'normalization factor'.

The standard systems to compare energy consumption should be new, modern equipment, rather than equipment that is old or obsolete.

4. Based on current CSP technology costs and performance levels, do we risk over-paying the incentives for CSP technologies? Do they need the same performance-based incentives as PV? Are there effective costs per kWh or BTU produced greater or lesser than solar PV?

There does not appear to be a risk in over-paying the incentives for CSP technologies at this time. This is because such complex technologies are perceived as more risky by investors as compared to solar PV technology. SCE does not object to providing CSP technologies the same performance-based incentives as the solar PV technology.

In terms of effective costs per kWh or BTU, solar thermal CSP is significantly more cost effective in larger sizes, but loses that advantage in residential or small commercial applications. Concentrating PV can be cost effective in small sizes and at any size when installation space is limited by site considerations and when the customer desires solar output beyond what can be achieved using tracking PV arrays.

5. How should we handle a combination renewable/fossil technology system?

To the extent the incentive is based on the output of the solar system (*i.e.*, PBI), the program administrator must have the means to distinguish the output of the solar generator from the output of the fossil-fuel fired generator. SCE recommends that interval meters be placed on both the CSI-eligible generator and the non CSI eligible generator to determine the source of energy output. Insofar as the incentive is provided through a modified capacity-based methodology (*i.e.*, EPBB), the program design must distinguish between incentive amounts available for the solar generator, and incentive amounts, if any, available for the fossil fuel fired generator. The Self Generation Incentive Program currently contains guidelines for providing incentives based on installed capacity to hybrid or combined technology facilities.

6. If solar water heating qualifies as an energy efficiency measure (under rules of the EE proceeding), should solar water heating receive similar treatment under CSI, especially if we will have "lost opportunities" to put solar water heating on buildings while awaiting the results of the SDREO pilot?

SCE does not understand this question and for that reason, cannot offer a response at this time.

7. Is 15% an appropriate number for automatically declining the incentive for CSP incentives? If not provide data to support an alternative method or percentage.

SCE does not oppose a 15% declining incentive for CSP technologies.

G. Incentive Level Trigger Adjustment Mechanism Over 10-Year Period

1. Parties are requested to submit comments regarding the options outlined above.

As stated in SCE's Comments in Section IV.A., SCE recommends a declining incentive structure utilizing a semiannual budget trigger.

2. If parties feel that an alternate approach is warranted, they are welcome to supply explicit, detailed proposals for setting the CSI incentive level and adjusting it over time.

As stated in SCE's Comments in Section IV.A., SCE supports the trigger adjustment mechanism adopted in D.01-06-024. SCE maintains that a MW-based trigger can prevent CSI funds from being depleted before the end of the program period, and can lessen the need for temporary suspension of the program. Consistent with recommendation in Section IV.A., of SCE's Comments, SCE recommends a semi-annual incentive reduction of 5% to minimize the impact of potential sudden delays associated with the implementation of the trigger adjustment.

3. Parties should include discussion of administrative feasibility for all options discussed.

As discussed in Section IV.A., of SCE's Comments, SCE maintains that the Commission's incentive level trigger adjustment mechanism as adopted in D.01-06-024 is administratively feasible. SCE has proposed refinements to this approach in order to mitigate some of the challenges associated with a trigger mechanism.

4. If an adjustment method other than the 10% per year method is proposed, do parties believe it will be necessary to apply such a trigger on a different basis or different schedule for residential versus non-residential solar systems, or for small versus larger systems, in response to potentially different market segment trends for solar system costs?

SCE does not propose a different MW-based and time-based trigger mechanism for residential versus non-residential solar systems, or for small versus larger solar systems. However, if the Commission proceeds with allocating or setting aside funds based on project size or customer class contribution to rates, presumably the Commission would set separate MW triggers for each separate group.

5. We welcome comment or thoughts on how alternate trigger adjustment approaches could take into consideration the following factors: Customers' different access to federal tax credits; changes in retail price of energy displaced – forecast; solar technology installed cost trajectory; solar technology innovation and performance trajectory; 2006-2016 budget of $2.4 billion maximum for incentive payments; 2006-2016 goal of 2600 installed MW for CPUC portion of CSI target; market response to CSI incentive levels.

As stated in SCE's Comments in Section IV.A., SCE supports the general structure of a declining incentive payment tied to both the MWs reserved and the passage of time, as adopted by D.01-06-024. Such a declining incentive structure and MW trigger will ensure that the finite CSI budget is preserved over the ten year life of the program; encourage the solar industry to lower costs; reward customers who purchase solar systems sooner rather than later; and allow for program continuity by avoiding the "start and stop" of incentives.

6. What administrative mechanism can oversee and make these adjustments? For example: a new CPUC proceeding each time; an ALJ ruling based on staff recommendation and public comment (possibly with Commission affirmation); delegation to the collective group of administrators, in consultation with CPUC staff.

Under the incentive reduction mechanism proposed by SCE, the program administrators can be delegated authority to reduce incentives at each 6-month mark, in accordance with the time-based schedule or MWs reserved in the previous six-month period.

This process would be open and transparent, in accordance with the incentive reduction schedule and MW reservation levels posted by program administrators. Any other change(s) to incentives should be handled through a Proposed Decision with the opportunity for public comment.

H. Funding Levels

1. Parties are invited to comment on whether and how incentive "buckets" could be reserved by type of customer or size of solar system.

As stated in SCE's Comments in Section V, SCE maintains that budgeting and accounting by "customer class" is unnecessary and administratively burdensome. If the Commission wishes to allocate or set aside incentives for small and large customers, SCE recommends a simple allocation by project size, dividing participants into two groups: below 30 kW and at or above 30 kW. This threshold corresponds generally with a split between residential and commercial customers and, based on historical numbers, would allocate program funds between each group equally (*i.e.*, approximately 50% of projects fall above and below the 30 kW threshold, in terms of system capacity).

2. Parties are invited to comment on how to maintain statewide uniformity of incentive levels offered, if solar applications reach their limits in one service area, but not in all, requiring the "depleted" utility area to borrow against the next year's funds and offer a lower incentive level. Alternatively, should we simply require those applications to wait until the following calendar year?

As stated in SCE's Comments in Section V, SCE's recently approved CSI Balancing Account mechanism addresses the "borrow forward" concept consistent with D.06-01-024. This is included in part U.2.a of SCE's Preliminary Statement.

I. Incentive Administration – Large Systems

1. Utilities should advise if on-bill payments of PBI could be in place by January 2007, or if an interim solution would require off-bill payments.

Implementing an on-bill payment system for PBI by January 2007 would be very challenging. SCE's customer service systems do not currently calculate performance payments, and as such, system changes would be necessary. SCE does not currently know how the incentive and performance data will be measured or reported, and these details must be

determined before SCE can design business requirements or system specifications. Once the definite requirements are known, system modifications can require three to five months to implement, and can be very costly. For these reasons, SCE maintains that program administrators should have the flexibility to provide incentive payments and system performance data in the most efficient and cost-effective manner.

2. On what frequency should solar PBI incentive payments, NEM credits, and system performance data be reported and/or paid? (monthly?, quarterly?, annually?)

As stated in SCE's Comments in Section VI.B., SCE recommends that PBI incentive payments be paid on a quarterly basis.

3. Utilities also should discuss feasibility and set-up costs for an on-bill PBI payment system.

SCE does not currently have an estimate of set-up costs for on-bill payment. Please see the response to Question I.1., and SCE Comments in Section VI.B regarding the process to establish on-bill payments.

J. Incentive Administration – Small Systems

1. At what intervals should the IOUs transfer administrative funds to the non-IOU administrator(s)?

As discussed in SCE's Comments in Section VI.A., SCE does not support the use of a non-IOU administrator for the CSI program.

2. Does non-IOU administration also require selection of an independent fiscal administrator?

As discussed in SCE's Comments in Section VI.A., SCE recommends utility administration for all aspects of the CSI.

3. **As described in Section 2.2, solar projects installed in 2006 and 2007 receive significant tax credits. IRS rules consider solar rebates received through a "utility program" as non-taxable income. Does the proposed non-IOU administrative structure jeopardize or restrict a program participant from taking advantage of federal solar tax credits? Could a utility-funded program administered by a third party be considered a utility program under IRS guidelines?**

   SCE recommends that the Commission seek an IRS ruling on these issues.

4. **Since we do not know how fast the IRS will make a determination of the tax status of incentives from a non-profit administrator, should we delay taking this approach?**

As stated in response to Question J.2., SCE recommends utility administration of for all aspects of the CSI.

5. **Are there reasons to re-consider the idea of a non-profit administrator, perhaps expanding consideration to utilities (if this would ensure better integration with energy efficiency programs) or to a for-profit administrator (if this would increase greater certainty of finding an administrator with the right skills and experience to operate this program as of January 2007)?**

As discussed in SCE's Comments in Section VI.A., SCE recommends utility administration for all aspects of the CSI.

K. <u>Metering and Data Collection Requirements – Large Systems > 100 kW</u>

1. **Utilities should advise if web-based on-bill reporting of incentive and performance data could be in place by January 2007, or if not, what kind of interim solution could be in place, such as a quarterly report that coincides with off-bill incentive payments?**

Please see SCE's response to Question I.1., as well as SCE's Comments concerning integration of CSI metering with SCE's AMI deployment. SCE recommends a separate customer check with a solar performance statement as a cost-effective long term solution that should be adopted by the Commission.

2. Utilities also should discuss set-up costs for web-based on-bill system data reporting.

As stated in response to Question I.3., SCE does not currently have an estimate of set-up costs.

3. How should CSI metering requirements be integrated with the Advanced Metering Initiative?

As stated in SCE's Comments in Section VII.A., SCE recommends that the issue of meter communications should be closely coordinated in each utility's pending AMI design. Rather than attempting to specify precise metering requirements, the Commission should allow the utilities to choose the best fit metering to meet the requirements of the CSI program while minimizing any stranded costs resulting from AMI roll-outs.

4. If inverters have "internalized meters", is their accuracy sufficient to avoid a separate "revenue grade" meter? Can communications systems remotely read and send the data from such an "internalized meter"? What happens if the inverter's internalized meter is not consistent with the "best fit" of meter(s) that a utility may specify to ensure data can be fed into their data recording and billing systems?

It is not simply a matter of metering accuracy. Inverter metering may not be readily accessible by the program administrator, may be subject to being "reset" by inverter operation or by the customer, and may be subject to tampering if used as the basis of PBI payments. For larger systems, there may be more than one inverter. Please refer to footnote 25 in SCE's comments for further detail. As discussed in SCE's Comments in Section VII.A., the utility should maintain the ability to determine the "best-fit" meter for its service territory.

L. Metering and Data Collection Requirements – Small Systems < 100 kW

1. ED would like feedback regarding the applicability of requiring meters capable of communicating remotely for solar systems sized between 10 – 30 kW, including cost information for these systems.

As stated in SCE's Comments in Section VII.A., SCE recommends such communication features be optional. SCE also recommends that these communication features be coordinated with each utility's pending AMI design.

M. Net Energy Metering Considerations

Where possible, SCE has provided preliminary responses to the questions asked below. Consistent with the Staff's proposal, SCE looks forward to providing refined analyses and further detail concerning the information sought.

1. What percentage of SGIP projects participate in net metering?

For SCE's SGIP program, virtually all of the solar projects participate in Net Energy Metering.

2. How much energy (versus their MW system capacity) is credited via the NEM mechanism for NEM participants? What % of renewable DG customer gross demand is credited back?

The energy credited to NEM participants via the NEM tariff mechanism is not directly related to their MW system capacity. The NEM mechanism for credit applies only to energy in excess of customer on-site use, which is exported to the utility distribution system. All of this energy is credited back to the participant, limited on an annual basis by the customer's on-site energy consumption. Energy produced by a particular solar system is obviously proportional to system capacity, but is also a function of a particular system's capacity factor, which is influenced by variables such as system orientation, weather, insolation, cleanliness of PV panel surfaces, etc. Renewable DG customers do not receive a demand credit, regardless of whether they are eligible for the NEM program (biogas), or not. They are able to offset demand by serving their own load, but do not receive a demand credit for exported power.

3. What does this amount to in terms of % of each utility's system wide retail sales?

SCE does not have metered data on total NEM credits at this time.

4. How critical is NEM to eligible projects? How does the credit mechanism affect a project's economics?

NEM allows the customer to fully offset the energy and demand charges that would otherwise be charged to the customer but for the output of the solar PV system, without the imposition of any standby service charges. A considerable portion of the energy and demand charges on a typical tariff represent fixed charges that are not avoided by the customer's installation of a solar PV system, such as the cost of maintaining a service drop and transformer

to serve the customer's premise. As a result, the NEM program provides a hidden subsidy to the NEM customer which results in these fixed costs being spread to other utility customers. This NEM subsidy is substantial, typically in the range of $1 per watt and in some instances above the level of the CSI incentive. Please refer to section VII.B. of SCE's Comments for further detail.

5. Provide estimated annual costs not paid by NEM customers since the maximum system capacity requirement was increased from 10 kW to 1 MW. Estimate the impact on other ratepayers if the NEM cap is increased to 2.5% and 5% of aggregate peak demand.

As stated in SCE's Comments in Section VII.B., the NEM subsidy can be substantial. Although SCE cannot at this time make an overall estimate of the NEM subsidy, based on the analysis shown, it appears that the NEM subsidy is in the range of $1 per watt or higher. SCE is concerned that it is not in the ratepayers' interest to add potentially $1 per watt of subsidy to the CSI program.

6. If the NEM cap were increased to meet the CSI goal of an additional 3,000 MW of solar capacity added in 2006-2016, what percentage of total gross peak electrical demand would be met by solar technologies and at what cost? Parties should include and identify assumptions regarding the percentage of CSI projects (1 MW or less) that would be eligible for NEM, and what portion of their gross solar production would receive a NEM credit.

SCE does not understand this question as it relates to the NEM Cap. However, the Itron Fourth Year SGIP evaluation study shows that each kW of PV system capacity offsets peak demand by about 0.39 kW.[1] SCE has not quantified the "going forward" impacts of the CSI program.

7. Taking the potential benefits of NEM-eligible DG into account, what is the net subsidy to NEM customers? Calculations should use E3's recently-updated avoided costs, and at minimum, should include transmission, distribution, peak energy production, and diversity.

As discussed in SCE's Comments in Section VII.B., SCE has not calculated the exact value of the NEM subsidy to participating customers. However, the ranges shown in this section show that the net subsidy to NEM customers is likely to be in the range of $1 per watt.

[1] Itron 4th Year Impact Report, Table 1-1.

SCE's calculations are based on an internal measure of avoided costs, rather than E3' updated avoided costs used for evaluation of energy efficiency programs. While SCE could recalculate the values in Section VII.B using the E3 updated avoided costs, we have not had time to do so.

N. Energy Efficiency Requirements Tied to Solar Incentives

1. What certification or audit protocol should we accept for acceptable energy audits by providers outside the utility audit programs?

As discussed in SCE's Comments in Section VIII., SCE recommends that the utilities' audit protocol(s) be incorporated into the CSI Handbook.

2. In the future, should the Commission consider reducing the authorized solar system size (e.g. to one-half the otherwise allowed size) if a building has not undertaken recommended efficiency measures that have a simple payback of less than 3 years?

As described in SCE's Comments in Section VIII., SCE recommends that the Commission consider reducing the authorized solar system size or reduce the incentive level if CSI program evaluation indicates that participants are not implementing recommended measures with less than a three year payback.

3. What standard criteria and qualifications should we specify for non-utility provision of energy efficiency audits?

As stated in SCE's Comments in Section VIII., SCE recommends that in addition to meeting the certification and protocol requirements, the non-utility audit provider should be required to register with the CPUC similar to the registration requirements for Energy Service Providers.

4. Should the CPUC also automatically exempt all new commercial construction, since by law this must comply with Title 24 energy efficiency codes?

As stated in SCE's Comments in Section VIII., SCE recommends that all buildings constructed under current Title 24 standards be exempt from the audit requirement.

CERTIFICATE OF SERVICE

I hereby certify that, pursuant to the Commission's Rules of Practice and Procedure, I have this day served a true copy of COMMENTS OF SOUTHERN CALIFORNIA EDISON COMPANY (U 338-E) ON STAFF PROPOSAL FOR CALIFORNIA SOLAR INITIATIVE DESIGN AND ADMINISTRATION 2007-2016 on all parties identified on the attached service list(s). Service was effected by one or more means indicated below:

- ☐ Transmitting the copies via e-mail to all parties who have provided an e-mail address. First class mail will be used if electronic service cannot be effectuated.
- ☐ Placing the copies in sealed envelopes and causing such envelopes to be delivered by hand or by overnight courier to the offices of the Commission or other addressee(s).
- ☐ Placing copies in properly addressed sealed envelopes and depositing such copies in the United States mail with first-class postage prepaid to all parties.
- ☐ Directing Prographics to place the copies in properly addressed sealed envelopes and to deposit such envelopes in the United States mail with first-class postage prepaid to all parties.

Executed this **16th day of May, 2006**, at Rosemead, California.

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Christine M. Sanchez
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