

Revised Joint Staff Proposal To Implement A California Solar Initiative

1. Introduction and Purpose

Earlier this year, in response to a request made by President Peevey and Administrative Law Judge Malcolm of the California Public Utilities Commission (CPUC), staff from the CPUC and the California Energy Commission (CEC) issued for public comment a proposal to implement a large-scale solar incentive program in California.¹ Today's revised report incorporates these comments to augment our earlier proposal. We recommend specific programmatic, implementation, and procedural measures we believe are necessary to jump-start the California Solar Initiative (CSI).

We assume readers are familiar with our June 14, 2005 recommendations, therefore this report does not summarize the earlier proposal. In general, comments submitted in response to that proposal expressed support for solar installations, research, and program development, particularly for efforts that complement other energy strategies. Stakeholders also supported measures to promote optimal program performance and cost-effectiveness.

Parties doubt the 3,000 MW goal proposed in Senate Bill 1 is attainable with reasonable levels of program funding, stating the cost to reach this goal could be considerably more than the \$1.8 billion funding level proposed by legislation. All parties emphasize the importance of certainty. Solar proponents require assured, long-term program funding, while utilities promote cost caps to minimize the impact on utility ratepayers. This report

¹ Joint Staff Proposal To Implement A California Solar Initiative, June 14, 2005, www.cpuc.ca.gov.

proposes measures to mitigate these concerns.

2. California Solar Initiative Overview

The proposed CSI has two main components, with one component centered at each energy agency. If adopted, the components will be coordinated with each other, and with energy efficiency, advanced metering, demand response, and building standards programs at the agencies. This approach will allow the agencies to address issues common to both components, while developing strategies to target specific, and quite different, market sectors. The proposal also includes measures to retain the single, unified solar program envisioned by SB 1.

Our proposal provides up to \$2.8 billion in incentives for solar project of many types and sizes over ten years, divided as follows:

- \$2.5 billion for commercial and existing residential customers, funded through revenues collected from gas and electric distribution rates.
- \$350 million targeted for new residential building construction, utilizing Public Goods Charge funds allocated to the CEC to foster renewable projects between 2007 and 2011.

Specifically, the proposal will:

- Provide incentives to all qualifying solar technologies under 5 MW capacity, except those owned or operated by investor- and publicly-owned gas and electric distribution utilities; the potential for utility-ownership may be further explored in a workshop later in this proceeding;
- Set initial incentive levels at \$2.80 per watt effective January 1, 2006, to be scheduled to be reduced by an average of approximately 10% annually, which may vary slightly in any given year depending on market conditions;
- Provide for a minimum set-aside of 10% of total annual program

funds for low-income customers or developers of affordable housing; staff will also further explore in 2006 offering a higher incentive level to low-income projects;

- Require an energy efficiency audit in existing buildings as a condition of receiving CSI incentives, and develop minimum efficiency standards;
- Require that new buildings participate in utility energy efficiency programs such as Savings by Design and Energy Star Homes in order to be eligible for solar incentives;
- Allocate no more than 5% of the total budget to be used for research and development to implement the CSI.
- Allocate a total of 10% of the CSI budget for program administration, program measurement and evaluation, and marketing and outreach activities.

The agencies' existing solar incentives programs would undergo scheduled transitional changes during 2006 in preparation for an orderly consolidation into the California Solar Initiative by January 1, 2007.

The one-year transition period and ten-year initiative are described in greater detail below.

3. 2006: Transition Year

During 2006, the CPUC would continue to oversee the Self-Generation Incentive Program (SGIP) and the CEC would continue to oversee the Emerging Renewables Program (ERP). A December CPUC decision increased the funding for the solar portion of the SGIP by \$300 million for 2006, while we work to finalize details of the CSI by January 2007. Similarly, the CEC plans to continue funding the ERP during 2006. The goal of the continuation of the existing programs in 2006 (with augmented funding) is to ensure program continuity and increased funding

to allow solar installations to continue while we are perfecting elements of the CSI program. In general, elements of the CSI that are being developed in 2006 will not apply during the transition period.

During 2006, we anticipate that the incentive level for the SGIP solar projects will be \$2.80 per watt.

We also anticipate that after the end of the 2006 transition year, the SGIP would continue to exist, but would no longer include funding for solar technologies. The SGIP budgets would therefore need to be adjusted downward accordingly beginning January 1, 2007.

Beginning January 2006, we propose to redistribute SGIP funds and technologies among incentive categories to optimize funding for all eligible technologies. The original SGIP budget of \$125 million will be allocated equally among the three levels, as authorized in D.01-03-073, while the additional \$300 million adopted in D.05-12-044 will be allocated solely to solar projects. Except as indicated in D.05-12-044, per-watt incentives would not change for other technologies, at least initially. Thus, we propose the budgets and levels for 2006 be modified as follows:

- Level 1 - Solar technologies: \$307.50 million
- Level 2 - Renewable fuel projects. This level includes wind turbines and projects currently categorized as Level 3R: \$37.50 million
- Level 3 - Non-renewable projects, such as fuel cells and those currently classified as Level 3N: \$37.50 million
- Administration - includes measurement and evaluation, marketing, and education: \$42.50 million

4. Commercial and Existing Residential Buildings (CERB) Program

The CPUC would have ultimate oversight authority over this program, but would collaborate with the CEC in the program's

development and oversight. This program would be available for all commercial, industrial, and agricultural customers in the territories of PG&E, SCE, SDG&E, and SoCalGas, for either existing facilities or new ones. In addition, the program would serve customers with existing residential buildings, but not residential new construction.

4.1 Oversight

We use the term program oversight to mean those activities that involve formal decision-making on program elements, funding levels and ratemaking. If the CSI is adopted, CPUC staff, in consultation with the CEC, will follow a specific procedural schedule to ensure all program elements are in place by January 1, 2007. The CPUC will:

- Select or develop a third-party nonprofit entity to administer the residential retrofit component
- Select and manage the work of an independent program evaluation consultant
- Review and approve educational materials developed by the program administrators
- Develop a program guidebook
- Develop a dispute-resolution process for participants and program administrators
- Devise a pay-for-performance incentive structure
- Evaluate ways to integrate incentives with federal tax credits
- Explore low-cost financing options
- Resolve metering issues.

4.2 Administration

Program administration involves day-to-day operations requiring little discretion and in compliance with state rules and decisions. The program administrator is the primary point of contact for program

applicants. We propose to limit its role to ministerial tasks, as follows:

- Coordinating with energy efficiency programs to assure each customer maximizes energy efficiency improvements prior to installing a solar system
- Collecting application fees to reserve space in program
- Receiving applications and verifying eligibility
- Verifying system installations
- Making payments for installed systems
- Providing information, application forms, and program instructions on websites and in more traditional formats
- Providing the Commission with monthly status reports on the program's progress
- Conducting education, outreach, and recruiting efforts for participants and contractors
- Coordinating with existing marketing efforts, such as Flex Your Power, and low-income and energy efficiency marketing
- Posting program information to the internet, such as funding levels, number and types of systems funded, production, and the number of applications in progress and on a waiting list
- Contracting with third parties as necessary for services.

To the extent practicable, we encourage web-based administrative options to facilitate quick and transparent transactions for applications and other activities. Collectively, the administrators would develop one statewide interactive database which allows applicants, evaluators and administrators to readily access project information and makes non-confidential project data publicly available.

Initially, the current SGIP administrators (PG&E, SCE, SoCalGas, and SDREO) would administer the non-residential segment of the program. This is consistent with how the SGIP is administered now. We recommend that

the residential portion be administered by a non-profit third-party entity beginning in 2007. In order to facilitate the development of a third-party/non-profit administrative model for the residential retrofit portion of this program, further work will be necessary in 2006. We anticipate that the CPUC and CEC staff will further develop a proposal for accomplishing this goal in 2006. This may include, but may not be limited to, issuing a proposal for comment, holding workshop(s) on this issue, and/or requesting that the utilities issue a joint Request For Proposal (RFP) to solicit contract proposals for non-profit administration of the retrofit residential effort statewide or regionally.

We propose to allocate a maximum of 10% of each administrator's utility's total CSI budget for program administration, measurement and evaluation, marketing, and education. See Table 4 in Section 4.5 for administrative and evaluation budgets for each utility territory.

4.3 Customer Eligibility

The CPUC-based component for commercial and existing residential buildings would accept applications from customers served under commercial, industrial, and agricultural rate schedules, and from residential retrofit customers. A minimum of 10% of the CPUC budget will be set aside for existing low-income and affordable housing projects. An additional component to assist with low-income financing may be developed after the initial program rollout.

If the 10% of funds set aside for low-income and affordable housing projects are not encumbered by November 1 of each program year, the

funds would be made available to commercial and residential retrofit projects.

Investor- and publicly-owned gas and electric distribution utilities in California would not qualify for CSI funds initially. Staff may conduct a workshop or other informal proceeding to explore whether utilities should be eligible for rebates in the future.

Residential new construction applications would not be eligible for this program component at all.

4.4 Qualifying Technologies

Photovoltaic systems of any kind would be included. The systems would be limited to the general purpose of offsetting on-site loads. Installed systems would be limited to a capacity size of no more than 100% of historic or typical annual onsite load.

Concentrating solar thermal electric technologies that generate electricity using the sun's heat, also would be eligible. These technologies have generally not been consistent with distributed residential or commercial applications due to inherent characteristics, such as size, noise level, and complex installation, but would be feasible as part of an industrial application. Central station plants would not be eligible.

The proposed minimum system size is 1 kW, the maximum is 5 MW. Installations over 5MW are likely to be wholesale projects for which investors already have opportunities for long term subsidies through supplemental energy payments in contracts as part of the utilities' Renewable Portfolio Standards solicitations.

We also propose that solar thermal water heating and associated heating and/or cooling that offsets natural gas and electricity use onsite be eligible for CSI incentives on a limited basis initially. Although solar water heating does not normally reduce electric demand since most hot water heaters are gas, the need for reductions in gas usage is increasingly critical given recent concerns regarding natural gas prices and supply nationwide. We also note that incentive dollars, in addition to coming from the electricity sector, will also derive from natural gas ratepayer funds. Consequently, funding natural gas-reducing solar applications is a natural fit with the program.

An earlier CPUC program during the 1970s provided incentives for installations of solar water heaters, and later determined that the incentives served mainly to increase the cost of the technology rather than to motivate sales. In order to avoid a recurrence of this problem, the proposed CSI includes incentives for solar water heaters as a pilot program, which can be monitored and modified as necessary.

Currently, the San Diego Regional Energy Office (SDREO) administers the SGIP program in San Diego and has already designed a program element that would provide performance-based rebates for solar water heating units. Staff proposes that SDG&E offer a contract to SDREO to administer a pilot program for solar water heater incentives. This pilot program would operate for a period of 18 months. Evaluation of its impacts on equipment prices, demand, and overall cost-effectiveness would begin at the end of the 12th month. The CPUC should consider extending the program before the 18-month program period is over if a preliminary evaluation suggests positive results.

We expect that SDREO, in consultation with Joint CEC and CPUC Staff, will refine and submit a program implementation plan to the agencies for approval, and ultimately for adoption by the CPUC. The program should provide upfront rebates following installation at levels that reflect a system performance index for thermal output, and an element for evaluating the market impact of the program, including a comparison of solar water heater prices in regions with and without incentives and over the course of the program term. SDREO should file the plan in the R.04-03-017 docket within 90 days of the effective date of a decision adopting the CSI.

4.5 Program Funding For Commercial And Existing Residential Customers

The commercial, agricultural, institutional, and existing residential customer component would be funded using distribution revenues from all gas and electric customers of PG&E, SCE, SDG&E and SoCalGas. Utility customers taking service on the California Alternative Rates for Energy (CARE) or FERA should be exempted from the costs of this program as a matter of equity, especially since these customers are the least likely to be beneficiaries of the incentives. Beginning in 2006, the total CSI revenue requirement would be allocated to the utilities based on their proportionate shares of energy efficiency funding adopted in D.05-09-043, as shown in Table 1 below. The CSI funds would be managed separately from the Self-Generation Incentive Program beginning January 1, 2007.

Table 1: IOU Share of CSI Costs		
	% Total budget	Budget (in millions)
PG&E	44%	\$1,100
SCE	34%	\$850
SDG&E	13%	\$325
SoCalGas	9%	\$225
Total	100%	\$2,500

The revenue requirement would be established to raise \$2.5 billion over 10 years. The revenues to support the program would be recovered in applicable ratemaking proceedings.

Annual revenue requirements will likely be higher in the early years, and decline in tandem with the rebate levels, as illustrated in Table 2 below. This also allows funding flexibility between program years, if program penetration is greater than anticipated in any given year. Figures in Table 2 below reflect funding collection, and not necessarily expenditures in any given year. Expenditures may be higher or lower depending on program uptake by projects.

Consequently, the utilities will require a cost recovery process which aligns cost recovery more closely to the time of actual program expenditures. Beginning 2006, the CPUC should authorize each utility to recover its share of the amount authorized for the SGIP and the CSI in the utility's next gas and electric rate change following the issuance of a final CSI decision. We intend that the cost recovery mechanism for CSI mirror that of the SGIP. Beginning in 2007, we recommend that the CSI costs be

tracked in a separate account, but that the utilities be allowed to collect the funds in the relevant program year, rather than waiting until the end of a program cycle.

Table 2: IOU Annual Revenue Requirements for CERB portion of CSI (in millions of dollars)

Year	PG&E	SCE	SDG&E	SoCalGas	Total
2007	\$154	\$119	\$45.5	\$31.5	\$350
2008	\$154	\$119	\$45.5	\$31.5	\$350
2009	\$154	\$119	\$45.5	\$31.5	\$350
2010	\$121	\$93.5	\$35.75	\$24.75	\$275
2011	\$121	\$93.5	\$35.75	\$24.75	\$275
2012	\$121	\$93.5	\$35.75	\$24.75	\$275
2013	\$77	\$59.5	\$22.75	\$15.75	\$175
2014	\$77	\$59.5	\$22.75	\$15.75	\$175
2015	\$77	\$59.5	\$22.75	\$15.75	\$175
2016	\$44	\$34	\$13	\$9	\$100
Total	\$1,100	\$850	\$325	\$225	\$2,500

We also believe that these funding levels, on average, will not result in rate increases for most residential customers. This is chiefly because the Rate Reduction Bonds authorized in AB1890 in 1996 (California's Electric Restructuring Law) are due to expire at the end of 2007, which will leave additional headroom in utility rates to allow the CSI to be funded without the need for substantial additional rate increases. Table 3 estimates the rate impacts for the 2006 revenue requirement, exclusive of potential headroom. The utilities may propose an alternative collection schedule, as described above.

Table 3: Estimated Average Annual Bill Impacts of 2006 CSI Revenue Requirement On Gas and Electric Rates

Customer Class	Electric	Gas
PG&E		
Residential	\$12.00	\$1.10
Commercial	\$480.00	\$8.00
Industrial	\$24,100	\$15.00
SCE		
Residential	\$12.00	
Commercial	\$480.00	
Industrial	\$24,100.00	
SDG&E		
Residential	\$12.00	\$1.40
Commercial	\$480.00	\$10.90
Industrial	\$24,100.00	\$20.05
SoCal/Gas		
Residential		\$1.40
Commercial		\$11.20
Industrial		\$21.00
Average Monthly Usage		
Electric	Gas	
Residential – 1,000 kWh	Residential – 500 therms	
Commercial – 40,000 kWh	Commercial – 4,000 therms	
Industrial – 2,00,000 kWh	Industrial – 7,500 therms	

In addition, the program administrators would require an administrative budget. Over the ten-year period of the CSI, a maximum of 10% of the total budget funding of \$2.5 billion would be allocated to administrative costs, which include basic administrative costs, program measurement and evaluation, marketing, and education/outreach efforts. These administrative costs by utility service territory are shown in Table 4 below.

Table 4: Administrative and Evaluation Budgets by Utility Territory (maximum budgets in millions of dollars)

Utility	Administrative Budget
PG&E	\$110.0
SCE	\$85.0
SDG&E	\$32.5
SoCalGas	\$22.5
Total	\$250.0

4.6 Incentive Levels

In 2005, SGIP solar projects qualified for incentives of \$3.50 per watt and ERP solar projects qualified for incentives of \$2.80 per watt. During the transitional year 2006, we propose that all solar incentives for new projects be set at \$2.80 per watt in January 2006. We propose to reduce incentives each year automatically by an average of at least ten percent.

As shown in Table 5 below, one of two events could trigger an incentive reduction in 2007: the first 50 MW reserved under the CSI, or the end of one calendar year, whichever occurs first.

Table 5: Triggers for Reductions in Rebate Levels

	Rebates would change at the earliest of these:		Starting at \$2.80/watt equivalent in 2006	
"Bin" or Year	Date	Incremental MW	Bin (\$/watt)	Total \$ (million \$)
0	1/1/06		2.8	
1	1/1/07	50	2.5	125
2	1/1/08	70	2.25	157.5
3	1/1/09	100	2.0	200
4	1/1/10	130	1.75	227.5
5	1/1/11	170	1.5	255
6	1/1/12	230	1.25	287.5
7	1/1/13	300	1.0	300
8	1/1/14	400	0.75	300
9	1/1/15	500	0.5	250
10	1/1/16	650	0.25	162.5
Totals:		2640MW		\$2.3 billion

As shown, incentives are automatically scheduled to be reduced each year by approximately ten percent, and faster if program participation exceeds a pre-determined capacity level. If costs decline and demand increases faster than expected, this structure lowers rebates earlier than on an annual basis.

To ensure optimal funding availability, the CPUC must act quickly to reduce the incentive level if it becomes apparent funds would otherwise be exhausted before the end of the funding cycle. When staff analysis shows this is the case, the CPUC could elect to reduce incentives ahead of schedule to align funding with program participation or other factors.

A rapid increase in rebate demand even as rebate levels decline may signal a need to consider further reductions. We will consider revising rebate levels if high demand causes rebate reductions twice within a single calendar year.

We recognize that commercial, new residential construction, and existing homes may not need to be treated alike. Members of each sector may have different motivations for investing and face different economic circumstances. For this reason, while we intend to coordinate incentive levels and incentive level reductions, incentive levels may vary by sector according to incentive demand and other factors.

4.7 Treatment Of Federal Tax Incentives.

The federal Energy Policy Act of 2005 provides for tax incentives for solar projects, mainly larger projects for systems installed in 2006 and 2007. The impacts of the legislation on solar incentives are unclear. In some cases, federal tax credits may not overcome the hurdle posed by the initial equipment cost. In others, they may obviate the need for some or all state-sponsored incentives. The impact of federal tax credits may vary according to the circumstances of the project developer, a proposal that accounts for impacts by project rather than one that would apply to all projects equally.

To achieve the most cost-effective program possible, the proposed CSI should not provide funding for projects that do not need it. Commission and CEC staff should conduct workshops no later than March 31, 2006 to discuss ways to reflect federal tax credits in how CSI payments are calculated.

4.8 Energy Efficiency

Making energy efficiency improvements a condition of solar incentives makes sense for two reasons. If the structure is energy efficient,

the solar installation can be smaller and more efficient. Moreover, energy efficiency improvements are almost always more cost-effective than solar installations given the current state of technology.

For these reasons, the proposed CSI would:

- Require existing commercial customers to benchmark and audit their buildings.
- Require existing residential customers to have energy efficiency audits performed prior to receiving CSI incentives.
- Make solar rebates on all new non-residential structures contingent on participation in utility new construction programs.
- Consider providing higher incentives for installations in new buildings with efficiency measures that exceed new building standards by a higher percentage than required in utility new construction programs. This could be tied to the Title 24, Tier II standards process and will be further explored in a workshop in 2006.

Other energy efficiency requirements may be included in the future in general or in defined circumstances.

4.9 Advanced Metering

Customer meters may have various uses in the context of the CSI. Currently, simple meters on residential and most small commercial sites installed for billing purposes measure net energy use by the customer and may "run backwards" if the energy produced by the solar installation exceeds energy use. These simple meters may be used where "net metering" is permitted.

System performance metering also permits the customer to determine the amount of energy produced by the solar installation and permits the customer to identify system problems requiring adjustments or repairs. Most solar systems already include an inverter with self-contained internal

metering and display equipment. The SGIP and the ERP both require a second meter separate from the main utility meter to allow measurement of the performance of the solar system installed. A revenue-quality meter is required in the Energy Commission's pilot performance-based incentive (PBI) program.

Interval or time-of-use meters are currently used in combination with "net metering" to reflect the value of solar output during peak and off-peak periods. Advanced metering infrastructure (AMI) takes the concept of time varying meters a step further to provide for two-way electronic communication between the metered site and a central information system. These systems provide utility operational benefits as well as opportunities for demand response programs. When connected at sites with solar, these AMI systems will allow maximization of the peak reduction benefits of solar, and could be an avenue for a variety of services associated with distributed solar systems, including centralized monitoring, fault identification, remote turn on and turn off, dispatch, etc.

Initially, CSI commercial participants would be required to take service on a time-of-use or a critical peak pricing tariff, and must install meters compatible with these tariffs. As AMI becomes available, the CPUC should incorporate this structure into the CSI metering requirements. We recommend the Rule 21 Working Group expand its current metering discussions to further explore solar metering issues. Among the issues we propose for discussion are:

1. What types of meters are appropriate and cost-effective for various types of installations, i.e., residential or other small systems vs. commercial projects?

2. What are the benefits and costs of interval metering compared to net metering?
3. Who should pay for new meters?

4.10 Research, Development and Demonstration

We propose to set aside no more than 5% of program funding beginning in 2007 to be used for the purpose of additional research and development for solar technologies. The exact level of funding to be set aside, as well as the purposes for which the funds may be used, will be further explored by staff in 2006 either through workshops or other informal means. Parties would be given the opportunity to comment on the amount of funding to be set aside for these purposes and the types of activities that should be funded through this mechanism.

4.11 Pay-For-Production Incentive Structure

Pay-for-production incentives (also known as performance-based incentives or PBI) recognize good project performance by paying the project owner on the basis of energy production levels. This approach promotes effective design and installation, as well as efficient operation and maintenance. It also accounts for factors impacting system performance, such as orientation of panels, amount of shading, and minimum level of annual sunshine.

A potential risk of a production-based system is that fewer projects will be built due to the upfront costs of installation and the need for financing.

To mitigate the upfront costs for commercial customers, we propose to establish a hybrid structure by 2007, with 50% of the rebate paid up-front based on estimated performance. The remainder will be held back for five to

seven years, and paid based upon actual demonstration of system performance.

Joint Staff will conduct workshops on these topics and prepare recommendations for the agencies to consider. We will also explore an auction mechanism in which prospective solar projects who bid the lowest receive incentive funding. Because of the administrative difficulties of managing such an auction, this option would be considered for large projects only.

The types of issues we propose to address in a workshop include:

1. What types of meters would be required for PBI applications? What other types of administrative activities would be required and how should they be implemented?
2. What kind of incentive structure would be most effective for different types of installations?
3. How long should the payback period be by project size and type?
4. Should low-cost financing necessary in conjunction with PBI as a way to offset the up-front costs?
5. Should PBI be combined with an up-front capacity payment to offset initial investment costs?
6. What types of auctions or bidding systems are possible for solar installations? How should they be conducted and for what types of projects?
7. How should a PBI program recognize state and federal tax benefits?
8. How should a PBI program be monitored and evaluated?
9. If the Commission adopts PBI, which, if any, site -related eligibility requirements should be implemented?

Until such time as the Commission makes a determination on PBI, which we intend to do in 2006, the SGIP and/or CSI would continue to provide incentives on the basis of installed capacity.

4.12 Customer Financing

A financing option may be essential if the Commission adopts a PBI program because of the extended payment stream. Combined with a utility “in-bill” payment, low-cost financing may be even more effective at attracting investors than higher incentives, and could promote more installations at a lower cost. We propose to explore financing options in conjunction with developing a PBI. These topics would be combined in a workshop, as discussed, held in 2006. Proposed workshop discussion items include:

1. Should the Commission provide a solar financing program? If so, how should it be administered?
2. Should financing be available to all types of installations and customers or only those that can demonstrate need?
3. How should the financing program be designed? What interest rates and repayment terms are reasonable? What types of standards should apply for borrower creditworthiness?
4. Should repayment of loans be included as part of utility bills as an option?

4.13 Education and Outreach

The proposed program allocates a portion of the CSI administrative budget for a marketing/education component to target existing residential, low-income, and commercial customers, particularly those whose energy use exceeds the class averages. The CSI program administrators would coordinate marketing and outreach efforts with energy efficiency program administrators, including Flex Your Power. At a minimum, marketing

efforts would provide information about program rules, and interface with energy efficiency requirements and vendors.

We encourage program administrators to coordinate and share educational materials when possible. The administrators should also develop materials which target low-income, non-English speaking, and hard-to-reach communities.

The program administrators, in consultation with Joint Staff and interested parties, should develop and submit an education and outreach plan to the CPUC by June 1, 2006.

4.14 Program Evaluation

A third-party consultant would conduct annual evaluations of the program effectiveness and the administrative efficiency. The Program Administrators, in consultation with Joint Staff, should issue Requests For Proposals for CSI program monitoring and evaluation, which would be decided and managed by CPUC staff. Monitoring and evaluation protocols for the CSI program should be based on or similar to those specified in R.01-08-028 for energy efficiency programs. The SGIP program administrators should file a proposed outline and evaluation schedule with the CPUC by March 31, 2006, for approval by the Assigned Commissioner or Assigned Administrative Law Judge.

4.15 Other Implementation Issues

This program structure does not require an implementation working group. As described, we propose to involve stakeholders in a series of workshops held during 2006. In addition, Joint Staff expects to convene regular periodic public meetings of stakeholders and any parties interested in discussing and resolving administrative or implementation problems and

identifying program opportunities. Policy and overall program design issues should be addressed at the CPUC level. We propose to convene a stakeholder meeting to develop a program guidebook for CPUC approval, using the SGIP handbook as a foundation document. We will also explore the development of a CPUC-sponsored dispute resolution process when issues arise between administrators and project proponents.

In addition, to discourage projects from submitting applications prior to projects that may not materialize, applicants should be required to submit a fee with their application. Any fee will be proportional to the installed capacity of the project, and will be specified in the CSI handbook.

5. Residential New Construction Component

This program component addresses the residential new construction market and would be primarily overseen by the CEC, with input from the CPUC. This component includes new single-family homes and multi-family buildings, and is focused on builders/developers. This program constitutes a completely separate market segment, and participants in this program would not be eligible for incentives in the CPUC's CERB program described above. The CEC would have separate authority to approve and manage this program component, in coordination with the CPUC staff.

5.1 Oversight

The CEC would establish and have oversight authority over the companion Residential New Construction Component (RNCC) of the CSI, covering solar installations in new residential developments. CEC staff, in consultation with the CPUC, would follow a specific and coordinated procedural schedule to develop the detailed program elements of the RNCC and ensure that duplication and overlap are minimized.

5.2 Program Scope

The RNCC would be targeted to foster installation of solar technologies in new residential single-family and multi-family homes in the investor-owned utility service areas in California. While all new homes that meet program protocols would be eligible, the program would be specifically targeted to areas with higher solar insolation and with greater need for peaking resources. A portion of the program would be set-aside for fostering solar installations in affordable housing developments. The CEC expects to coordinate program funding for affordable housing development with the Department of Housing and Community Development. The CEC anticipates coordinating the RNCC with the state's building standards and investor-owned utilities' new construction programs. The program would also encourage the development of and coordinate with similar publicly-owned utility programs to achieve a statewide focus on new construction solar installations.

5.3 Qualifying Technologies

The technologies covered would be grid-connected solar photovoltaic systems, solar-thermal electric generation systems, and solar heating and cooling systems, to the extent appropriate, and limited to the general purpose of offsetting on-site loads. Larger facilities that are co-located with a new residential development and serve to offset the development's loads may be included, if feasible, but central station plants that do not offset on-site load would not be eligible.

5.4 Funding

Funding for the proposed RNCC would come from the Public Goods Charge (PGC) funds collected pursuant to SB 1194 and transferred to Renewable Resources Trust Fund overseen by the CEC. Approximately \$350 million is proposed for the program, from PGC funds collected in 2007-2011. The CEC is developing an Investment Plan for the renewable PGC funds collected in these years, as required by SB 1194, and expects to adopt this plan in the first quarter of 2006.

Funding for the RNCC would largely or completely replace the Emerging Renewables Program (ERP) by 2007. The ERP would continue until the RNCC is established. Thereafter, the ERP would be cancelled or administered on a smaller scale to provide funding for non-solar systems, to the extent required by law. The ERP has largely funded solar photovoltaic projects less than 30 kW installed on existing residential homes and small commercial buildings, and funding for these types of projects would continue in the CPUC's component of the CSI.

5.5 Program Administration

The RNCC would be administered, in collaboration with the CPUC, according to program guidelines adopted and periodically updated by the CEC, following the Renewable Energy Program protocols for guidebook development. To the extent feasible and allowed by law, the CEC expects to award contracts to provide administrative services for the program. Public hearings and workshops will provide an avenue for stakeholder input, as in the current Renewable Energy Program.

5.6 Incentive Structure

In general, the RNCC would provide up-front rebates related to the installed capacity of the system, as this incentive structure is more consistent with a new construction setting than a performance-based incentive paid over time. However, performance of the systems installed would be ensured by adjusting the incentives paid to the specific insolation, shading, orientation, and installation characteristics of the systems. This adjustment would be established through third-party verification of installed systems, providing verification of installation quality and verification of performance.

This process would also foster targeting of incentive funding to higher insolation areas and better installation practices. A portion of the up-front rebate may be held for payment upon system performance verification over some time period.

Different incentive levels would be established for solar thermal electric and solar heating and cooling technologies, as appropriate. A different incentive structure may prove superior for these technologies, or over time for photovoltaics, as technologies and market familiarity change.

Rebates would decline over the expected eleven-year term of the program in coordination with the CPUC program's rebate structure. Emerging Renewables Program data indicate that installing photovoltaic systems in new productions homes is, overall, significantly less costly than in retrofit situations. Rebate levels will be established to reflect, as appropriate, the differential costs between new construction and retrofit applications of photovoltaic systems. Similar factors will be taken into

account for solar thermal electric and solar water heating and cooling systems.

Local ordinances and applicable statewide standards may affect the timing, scope, and structure of incentives.

5.7 Energy Efficiency Requirements

Applicants would be required to participate in utility energy efficiency programs for new construction, such as Energy Star Homes programs, or to achieve equivalent efficiency levels beyond applicable state building standards for new homes. Applicants that achieve efficiency levels beyond the Energy Star Homes level would receive additional incentives through a Title 24 Tier II standards process under development at the CEC. These enhanced incentives may be structured in one of the following ways:

- Incentives will increase by a percentage for every percentage of efficiency above the Energy Star level;
- Incentives will be increased to cover a percentage of the costs of additional energy efficiency measures.
- Incentives will be increased by a fixed percentage above the standard incentive level

The intent is to facilitate maximum feasible efficiency in homes with solar installations, leading to zero-energy homes.

5.8 Advanced Metering Requirements

In coordination with utility advanced metering rollouts, applicants would be required, where applicable, to include advanced metering infrastructure in the new homes where systems are installed, in addition to or as part of a separable system meter. Initially, these advanced meters will

allow time of use and critical period pricing structures to be deployed for homes that provide a significant portion of afternoon peak power on-site. In addition, these AMI systems will provide information about system status to utilities, facilitating coordination during blackouts and providing information about system performance over time. Eventually, these systems may facilitate a variety of ancillary services, blackstart support, and local dispatch support.

5.9 Program Evaluation

An independent third-party would provide periodic evaluation of program impacts and effectiveness, including recommendations for changes in program structure. Evaluation would be coordinated with evaluation of the CPUC program.

5.10 Marketing, Outreach, and Education

In coordination with energy efficiency marketing and the CPUC CSI program marketing efforts, the proposed RNCC includes a significant outreach and education component. Training and education efforts for builders of production homes will be included. Education and outreach efforts will be targeted to areas in the state that need near-term afternoon peaking resources.

5.11 Program Development

During 2006, the Energy Commission anticipates developing the details of the RNCC with the assistance of a program advisory group consisting of:

- Builder representatives

- Utility new-construction program managers
- Knowledgeable consultants
- Applicable state agencies
- Customer-owned utility program managers
- Local building departments and planners
- Solar technology manufacturers

Public workshops on specific program topics, such as energy efficiency requirements, will be conducted to achieve broader stakeholder input into program details.

Proposed 2006 Procedural Schedule

February-March

Workshops:

- PBI and federal tax interactions- Joint Staff, held at CPUC
- Program handbook development – Energy Division staff at CPUC
- Incentives for non-PV technologies – Joint Staff, held at CPUC
- Energy efficiency requirements – Joint Staff, held at CEC

April-May

Energy Division staff proposal regarding administration of the residential retrofit component submitted for public comments.

June-July

Proposed decision on workshop issues and residential retrofit proposal.

August-September

Workshops:

- Marketing and outreach proposals – Joint Staff, held at CPUC
- Advanced metering – Joint Staff, held at CEC
- RD&D proposals – Joint Staff, held at CPUC

October-November

Proposed decision on workshop issues.

(END OF APPENDIX A)