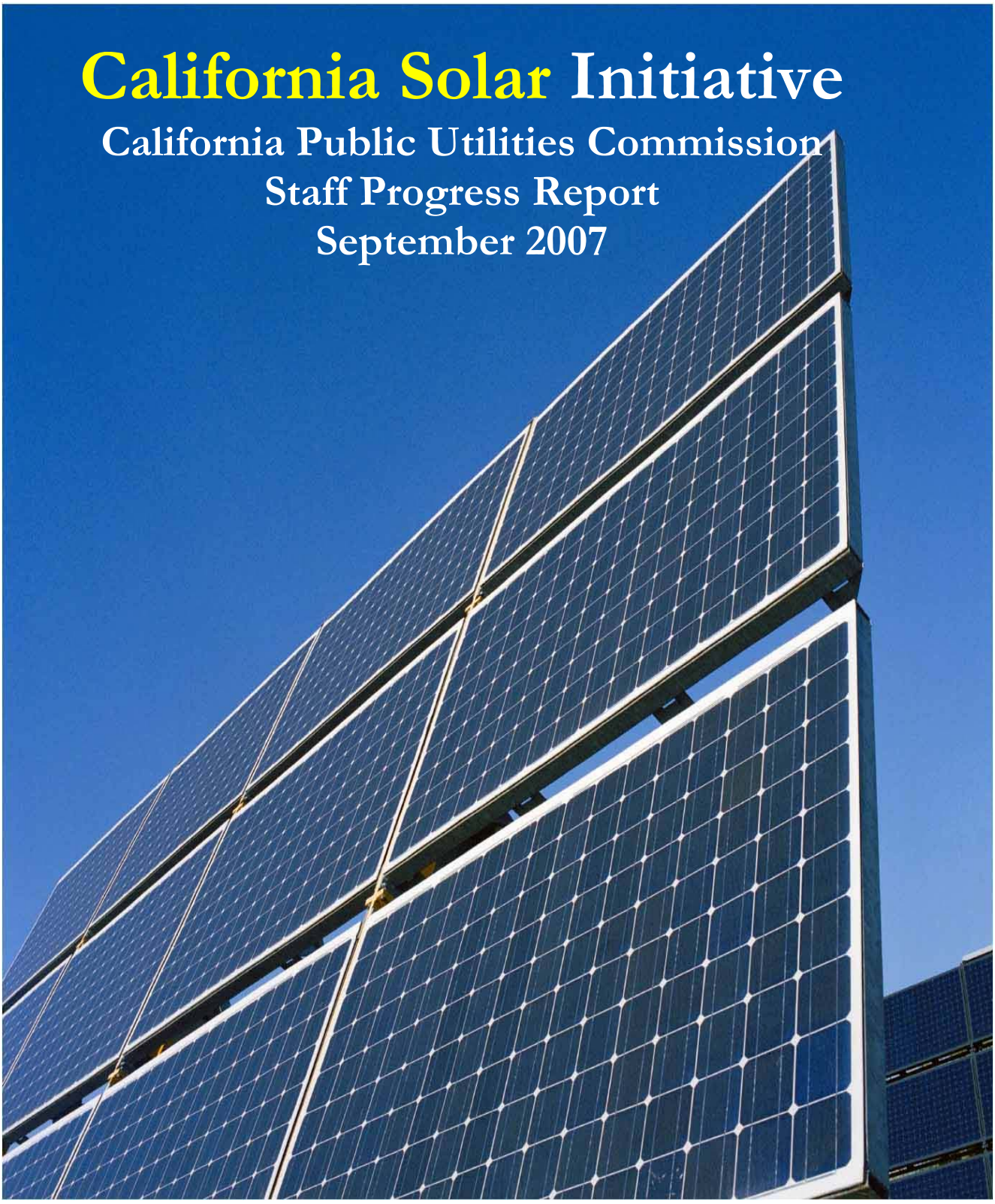
California Solar Initiative

California Public Utilities Commission

Staff Progress Report

September 2007



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1. Executive Summary

This report describes early progress on the California Public Utilities Commission (Commission or CPUC) portion of the California Solar Initiative, the second largest solar incentive program in the world.

The CPUC launched the California Solar Initiative (CSI) on January 1, 2007, and the new program has already generated enormous new interest for solar in California. On January 1, the majority of the California solar market underwent two important transitions: (1) the state moved from capacity-based incentives (and a higher level for small systems) to fluctuating incentives based on performance factors and an entirely new application process; and (2) the state's two largest incentive programs reorganized into two new programs, switching from administration based on system size to one based on building type.

Despite the transition to a new program, demand is booming. In the first nine months alone, requests for CSI incentives are on track to exceed California's total installed solar from the previous 26 years. Since 1981, California installed 198 megawatts (MW) of grid integrated solar statewide.[1] From January through September 18th, the CSI program has applications for 160 MW of new solar. Disregarding applications that have been withdrawn or rejected, the program has received 5,109 applications, worth $320 million in incentives. The program received over 1,200 applications in August alone. Residential applications dwarf all others (4,564 applications) and comprise 13% of the total MW in the active applications. The 666 non-residential applications from commercial, government, and non-profit applicants make up 87% of the total MW in the active applications.

This report mainly describes progress in the CPUC-managed CSI incentive program based on program data generated on September 18, 2007. This report provides some insight into the Commission's attention and response to program roll-out issues, includes an update on upcoming program plans and presents program demand statistics. Sections 2 and 3 of this report provide general background information on the program. Section 4 provides information on the CSI program's early activities and explains how the CPUC moved to resolve a number of early implementation issues. Section 4.1 highlights some of the areas where the Commission has plans to modify or expand the CSI program. Section 5 provides program demand statistics based on demand through September 18, 2007.

The demand for solar incentives started slowly in early 2007, in a manner similar to that of prior years after an incentive level decline, and as the state transitioned to the new performance-focused incentives. However, demand for the CSI program incentives is now robust. Although the number of solar application requests from all customers in the first nine months is currently lower than the 2006 (full year) results of the California Energy Commission's Emerging Renewables Program (ERP) and the CPUC's Self-Generation Incentive Program (SGIP), the CSI program's applications are nearly 40% higher than that of ERP and SGIP in terms of capacity.

[1] California Energy Commission, April 18, 2007. "Amount (MW) of Grid-Connected Solar Photovoltaics (PV) in California, 1981 to Present", available at: http://www.energy.ca.gov/renewables/emerging_renewables/

The CSI program has 160 MW in the project pipeline as of September, compared to the ERP and SGIP programs that have a combined total of 116 MW in pipeline from all of 2006.

CSI-funded solar installations are already producing electricity. As of September 18th, there are 1,157 projects installed, operating, and have been either received payment or about to be paid. The installations add 9.4 MW of new solar capacity for $25 million in rebates. However, the bulk of the 5,109 applications and megawatts are still in the pipeline. A small number of applicants have dropped out (121), albeit worth a substantial number of megawatts (14.8 MW). While it is too early to gauge certain program metrics such as the risk of high drop-outs or the impact of the CSI program on PV system costs in California, it is clear tat the program is off to an exciting start.

As noted in Section 4, the CPUC has responded to early implementation concerns, reducing the initial application paperwork and increasing information about the program through improved marketing and outreach activities.

- In September, the Commission approved a Resolution to streamline paperwork and improve the application process.
- In May, the Commission approved an Interim Marketing and Outreach program.
- Throughout the year, the Program Administrators have offered training classes on the program. Since January, 554 companies and 1,646 installers have signed up for the monthly training classes, where they can learn about the program requirements and application process, as well as receive training on tools and calculators (e.g. shading calculation methods) to assist in the development of incentive applications.
- The CSI Program Handbook was reissued in September to reflect approved administrative streamlining measures and keep the Program Handbook current with recent CPUC decisions.
- Program Administrators are working on a new proposal to further streamline program administration, such as further reducing application paperwork and shortening the program application and contract.
- An online application database launched in August, and the data reporting side of the database launched in September. The database functionality will be further expanded later in 2007.

The CPUC expects to issue future versions of this Progress Report to inform stakeholders of program developments, as well as provide updated information about program demand and other program administration metrics.

2. Statewide CSI Goals and Program Overview

- The California Solar Initiative has a goal to create 3,000 MW of new, solar-produced electricity by 2017 - moving the state toward a cleaner energy future and helping lower the cost of solar systems for consumers. The CSI statewide budget is $3.3 billion over 10 years.
- With a 10-year commitment for solar incentives, and under legislative direction, California aims to build a self-sustaining solar industry free from ratepayer subsidies after 2016.
- The California Solar Initiative has **three distinct program components**, each with a portion of the statewide budget and solar installation goals, as shown in Table 1:
  - The ***CPUC*** directs solar incentives to customers in investor-owned utility territories (about 75-80% of electric use) for existing homes and existing and new commercial, industrial, and agricultural properties. This program component is allocated $2,167 million over 10 years, and the goal is to reach 1,940 MW by 2016. This goal includes 1,750 MW from the mainstream incentive program and 190 MW from the forthcoming low-income resident incentive program. This Progress Report focuses on the CPUC program, with an emphasis on the mainstream incentive program.
  - The ***California Energy Commission*** advances solar in new home construction, through its New Solar Homes Partnership. This program component is authorized $400 million over 10 years, with a goal of 360 MW.
  - The ***Publicly Owned Utilities (POU) component requires*** each municipal utility to offer an equivalent incentive program, an aggregate commitment of $784 million over 10 years, toward a goal of 660 MW.

Table 1. California Solar Initiative by Program Component, 2007-2016

Program Authority	California Public Utilities Commission	California Energy Commission	Publicly Owned Utilities (POU)
Budget	$2,167 million	$400 million	$784 million
Solar Goals (MW)	1,940 MW	360 MW	700 MW
Scope	All systems in IOU areas except new homes	New homes, IOU territories	All systems in POU areas
Audience	Various	Builders, home buyers	Various
Begins	January 2007	January 2007	January 2008

2.1 CPUC CSI Program History

- The CSI program builds on nearly 10 years of state solar incentives. Prior to January 1, 2007, the state solar incentive programs were organized according to the size of the system: for small systems (residential and commercial under 30 kW), the California Energy Commission managed the Emerging Renewables Program (ERP) since 1998, and for larger systems, the CPUC managed solar incentives through its Self-Generation Incentive Program (SGIP, for systems over 30 kW) since 2001.
- In August 2004, Governor Schwarzenegger affirmed his support for solar energy, and announced the Million Solar Roofs program.
- In January 2006, the CPUC collaborated with the CEC to develop the framework of the CSI program through 2016, resulting in Decision (D.) 06-01-024.
- In March 2006, the CPUC initiated a new distributed generation Rulemaking (R.) 06-03-004, to implement the CSI program.
- In April 2006, the CPUC divided the CSI program decision-making on the many elements into three phases:
    - **Phase I** addresses nine core CSI program design issues, including performance-based incentives, incentive adjustment mechanism, federal tax incentives, non-photovoltaic solar incentives, energy efficiency standards, program administration, solar system metering, system size cap, and developing a program handbook.
    - **Phase II** addresses four additional CSI elements: incentives and financing assistance for low income projects, marketing and outreach, research, development and demonstration (RD&D), and program evaluation.
    - **Phase III** addresses Self Generation Incentive Program (SGIP) rules and management, participation by small multi-jurisdictional utilities in the CSI program, and net metering for community choice aggregators (CCA).
- In August 2006, the CPUC adopted D.06-08-028 that established the CSI program incentive schedule, program budgets, system performance and metering requirements, and other fundamental program design decisions.
- In August and September 2006, Governor Schwarzenegger signed SB1 and AB 2723, which authorized the CPUC's CSI program and introduced a number of new program requirements related to the mainstream incentive program and the low-income program.[2]
- In December 2006, the CPUC revised the CSI program requirements and design features to comply with the new laws, and adopted D.06-12-033. Also, the CPUC issued the CSI Program Handbook for the first time.
- In January 2007, the CPUC determined that distributed generation system owners (including CSI systems) retained ownership of their Renewable Energy Credits (RECs) in D.07-01-018.

[2] Chapter 132, Statutes of 2006 (SB 1, Murray) and Chapter 864, Statutes of 2006 (AB 2723, Pavley).

3. CSI Solar Incentive Program Basics

- In January 2007, the CPUC's CSI program launched with a budget of $2.167 billion (2007-2016) as detailed in Table 2.

Table 2. CPUC California Solar Initiative Budget, 2007-2016

Program Category	**Budget** ($ Million)
General Market Program Subtotal	**$1,897**
Direct Incentives to Consumers	*$1,707*
Program Administration, Marketing & Outreach, Evaluation (10%)	*$190*
Low-Income Program (10%)	**$217**
Research, Development, Deployment and Demonstration (RD&D)	**$50**
San Diego Regional Energy Office Solar Hot Water Pilot	**$2.6**
Total CPUC CSI Budget	**$2,167**

- The CPUC designated three Program Administrators to administer the general market program (mainstream incentive program) that provides solar incentives to consumers. The three Program Administrators are:
    - Pacific Gas & Electric (PG&E),
    - Southern California Edison (SCE), and
    - California Center for Sustainable Energy (CCSE, formerly known as the San Diego Regional Energy Office) in San Diego Gas & Electric's territory.
- The CSI Low-Income Program and the CSI Research, Development, Deployment and Demonstration (RD&D) Program have separate budgets and administration plans.

3.1 CSI Incentive Program Resources

- The statewide consumer website: www.GoSolarCalifornia.ca.gov.
- The CSI Program Handbook includes eligibility information and application information: www.GoSolarCalifornia.ca.gov/documents/index.html.
- The CSI Program Administrators developed a tool to calculate the up-front EPBB incentive, known as the EPBB Calculator: www.csi-epbb.com
- The CSI Program Administrators launched an online application tool and reporting database, known as Powerclerk: csi.powerclerk.com.
- Up-to-date information about the program's current incentive level, or "step" can be found on the online CSI Trigger Tracker: www.csi-trigger.com.
- Information about the CPUC regulatory proceeding that deals with the CSI program can be found online at: www.cpuc.ca.gov/static/energy/solar/_index.htm.

3.2 CSI Incentive Levels

- The CSI Program pays incentives for solar installations, and the program is structured such that the incentive level decreases over ten steps to zero as the total installed capacity of solar energy systems grows. To ensure equity for ratepayers supporting this program, the CPUC divided the overall goal of 1,750 MW[3] by Program Administrator and by customer class, residential and non-residential (commercial and government/non-profit). Once the total number of MWs for each step is reached within a particular customer class, the Program Administrator moves to the next step and offers a lower incentive level for that class. Therefore, high commercial demand in SCE's territory will not lower the incentive offered to PG&E's residential customers, and so on.

- Budgets and megawatt goals are divided among the three IOU territories by electricity sales. Table 3 shows the MW goals of the program are divided by PG&E, SCE, and CCSE according to the following ratio: 43.7%, 46.0%, 10.3%, respectively.

- As each Program Administrator receives applications for solar incentives, it tracks the total MWs reflected in the applications received. Table 3 shows the CSI program targets by Program Administrator and customer segment. It also shows the current step for each Program administrator and each customer segment, based on CSI program demand as of September 20, 2007.

Table 3. CSI MW Targets by Program Administrator and Customer Class

Note: Shading Denotes Current Step as of September 20, 2007

		PG&E (MW)		SCE (MW)		CCSE/SDG&E (MW)	
Step	**MW in Step**	**Res**	**Non-Res**	**Res**	**Non-Res**	**Res**	**Non-Res**
1	50	--	--	--	--	--	--
2	70	10.1	20.5	10.6	21.6	2.4	4.8
3	100	14.4	29.3	15.2	30.8	3.4	6.9
4	130	18.7	38.1	19.7	40.1	4.4	9.0
5	160	23.1	46.8	24.3	49.3	5.4	11.0
6	190	27.4	55.6	28.8	58.6	6.5	13.1
7	215	31.0	62.9	32.6	66.3	7.3	14.8
8	250	36.1	73.2	38.0	77.1	8.5	17.3
9	285	41.1	83.4	43.3	87.8	9.7	19.7
10	350	50.5	102.5	53.1	107.9	11.9	24.2
Subtotal		252.4	512.3	265.6	539.5	59.5	120.8
Totals		**764.8**		**805.0**		**180.3**	
Percent		**43.7%**		**46.0%**		**10.3%**	

- The CPUC program's two incentive paths are PBI and EPBB.
    - **Performance Based Incentive, or PBI**: Incentives for all systems over 100 kW are paid monthly at a set incentive rate based on the actual energy produced for a period

[3] The goal for the CPUC portion of the CSI program is 1,940 MW, divided into 1,750 MW for the mainstream incentive program, and 190 MW for the low-income program.

of five years. By 2008, all systems over 50 kW must take the PBI, and by 2010 all system over 30 kW must be on PBI.

- **Expected Performance-Based Buy-down, or EPBB:** In 2007, systems small than 100 kW can receive a one-time, up-front incentive based on expected performance, and calculated by equipment ratings and installation factors (geographic location, tilt and shading). EPBB is available for systems under 50 kW after January 1, 2008 and for systems under 30 KW after 2010. Systems eligible for EPBB can choose to opt-in to the PBI system described above.

- Table 4 and Table 5 show the current incentive payment for each incentive path and each Program Administrator, according to the current step and customer segment.
  - PG&E and SCE are in Step 2 for Residential (Res) and Step 4 for Non-Residential (Non-Res) incentives. CCSE is in Step 2 for Residential and Step 3 for Non-Residential incentives.
  - Due to PG&E's high residential demand, PG&E will soon move into the Step 3 residential incentive level. See Table 6 below for PG&E's residential demand statistics.
  - The majority of commercial incentives are going to private sector commercial properties rather than non-profits and governments, except in the San Diego territory. The CPUC is monitoring how the combined commercial and non-profit targets are affecting incentive levels.
  - For a complete listing of all incentive amounts for all steps and all customer types, see the Program Handbook.

Table 4. Currently Applicable Performance Based Buy-down (PBI) Incentive Levels by IOU Territory, as of September 20, 2007 (per kWh)

	Step	Residential	Non-Residential	
			Commercial	Government/ Non-Profit
All 3 IOU Territories	2	$0.39		
CCSE in SDG&E Territory	3		$0.34	$0.46
SCE and PG&E Territory	4		$0.26	$0.37

Table 5. Currently Applicable Expected Performance-Based Buy-down (EPBB) Incentive Levels IOU Territory, as of September 20, 2007 (per Watt)

	Step	Residential	Non-Residential	
			Government/ Non-Profit	Commercial
All 3 IOU Territories	2	$2.50		
CCSE in SDG&E Territory	3		$2.95	$2.20
SCE and PG&E Territory	4		$2.65	$1.90

4. CPUC CSI Program Implementation

The CPUC's mainstream incentive program launched on January 1st, and the CPUC has been carefully monitoring CSI program implementation. As program implementation issues have arisen, the CPUC has taken action to address them to ensure the program's success. The CPUC will consider additional program modifications, as necessary, some of which are already identified and discussed below.

Some of the important activities and developments for the first eight months of the mainstream incentive program include:

- ***Program Forum:*** The CPUC established the CSI Program Forum as a quarterly public meeting intended to allow stakeholders to learn about program updates, discuss program implementation issues and discuss potential solutions. If the discussion results in a set of proposed program changes, one of the Program Administrators formally proposes the changes through the CPUC comment process.[4] CSI Program Forums were held in April and June, and the next Program Forum will be held on October 12, 2007 in San Diego.
- ***Administrative Streamlining***: In the spring of 2007, the solar industry voiced concern with a number of new program requirements and the amount of paperwork linked to rebate applications. In response, at the June CSI Program Forum, the Program Administrators proposed over a dozen changes, which met with a positive response from the industry. The Program Administrators submitted the proposals to the CPUC in July via an Advice Letter, and the CPUC approved changes via Resolution E-4114 on September 6, 2007. The Program Administrators are working on a new set of streamlining proposals, which will be discussed in the October Program Forum. At the same time, they are working to reduce the residential contract and incentive application, potentially to a total of three pages.
- ***Program Handbook*:** The CSI Program Handbook was released in December 2006, and it serves as a key resource, providing a compendium of all program rules and eligibility information. In April 2007 and September 2007, the CPUC revised the CSI Program Handbook to reflect relevant CPUC decisions.
- ***Application Processing*:** The Program Administrators experienced a significant rise in the number of new applications in the second and third quarters of 2007. (See Program Demand Statistics below.) The spike in residential application has particularly affected PG&E's administration: PG&E is processing over three times as many applications as SCE, for roughly the same amount of MW. All Program Administrators have staffed up to meet increased demand.
- ***Program Data and Online Application Tool:*** In August, the CSI Program launched the online CSI Application tool to facilitate online submission and tracking of all CSI applications. In September, the program released program data for the first time from the

[4] Proposed changes may require an Advice Letter or a Petition to Modify, depending on the nature of the proposed change.

program application database. Later in 2007, the application database features will be expanded to provide real-time program data to the public, including preset progress reports.[5]

- ***Shading Calculations that Affect Incentive Levels:*** The CSI program incentive calculator considers the reduction of solar performance due to shade. Early inspections of installed systems revealed that some installers face challenges providing accurate shading estimates. Program Administrators are revising shading calculation methodologies and providing training to installers later this year to help installers prepare their estimates.

- ***Solar System Installation Inspections*:** The CSI program requires inspection of most large installations prior to paying the incentive. In order to gauge how the new performance requirements were faring, Program Administrators inspected many systems before moving to sampled inspections (1 in 7) for systems under 30 kW in July. Early inspections resulted in high failure rates, mostly due to minor errors in estimating tilt, orientation, or shading. However, some inspections also revealed significant estimation errors, inoperable equipment, and substantial unreported shading. The Program Administrators realized that minor errors can pass without damaging program effectiveness, and therefore the Program Administrators redeveloped their inspection training protocols. Moreover, the Program Administrators are conducting at least one installer training class per month on key program requirements, tools, and the application process.

- ***Time-of-use (TOU) Rates*:** SB 1 requires all solar incentive recipients to go on TOU rates. An unintended consequence of this legal requirement was that a number of solar customers in desert climates who have high peak demand would have had higher electricity bills after reducing demand with solar than on "flat" electricity rates without solar. On June 6, 2007, the Governor signed AB 1714[6], an emergency bill which delays the TOU requirement until the next general rate case establishes new electricity rates. On June 7, 2007, the CPUC approved D.07-06-014 with the same purpose.

- ***Metering Accuracy and Performance Monitoring Requirements*:** The CSI program requires that participants meet thorough metering and monitoring requirements to receive incentives. In July, the CPUC approved D.07-07-028 to modify metering requirements by: (1) allowing consumers that participate in the EPBB path to install meters that are accurate within +/- 5%; (2) requiring that all consumers that participate in the PBI need to install meters that are accurate to within +/- 2% of actual system output; (3) clarifying that PBI recipients cannot exempt themselves from Performance Monitoring and Reporting Services (PMRS) requirements, but that all EPBB recipients can be exempt if bid estimates surpass a specified cost cap. The CPUC is still considering another metering related request which seeks to remove the requirement that PMRS providers be independent of solar manufacturers and installers.

- ***Building Integrated Photovoltaics (BIPV):*** Initially, the CSI program could not allow applicants using BIPV products to apply for the up-front EPBB incentive, because the state

[5] The online application tool and program data are available from csi.powerclerk.com.
[6] Chapter 11, Statutes of 2007 (AB 1714, Levine)

could not accurately predict temperature influences on performance. In July, the Commission adopted D.07-08-007 which approves BIPV products for the incentive program based on the fact that the Commission now has satisfactory data to use in modifying the incentive calculator.

- ***Expected Performance Based Buy-down (EPBB) Calculator*:** In early 2007, the CPUC launched the EPBB Calculator for applicants to calculate their expected solar incentive based on system design characteristics. Industry expressed concerns over some of the calculator's reference location (Orange, California), formulas, and methods of calculating shading.[7]

- ***Marketing and Outreach Activities:*** In early 2007, Program Administrators expressed a desire for interim CPUC direction on marketing and outreach. In May, the Commission adopted interim budgets for CSI marketing and outreach in D.06-05-047. In June, the CSI Program Administrators submitted proposed Interim Marketing and Outreach proposals to the CPUC Energy Division, focusing on a range of facilitative outreach, including installer trainings, applicant training tools, monthly administrative updates (electronic newsletter), and basic program fact sheets. The CPUC approved plans in September, and the Program Administrators will launch the CSI newsletter and other activities throughout the remainder of the year.

4.1 Major Upcoming CPUC CSI Programmatic Activities

For the remainder of 2007, and into 2008, the CPUC will continue implementation of key portions of the CSI program. These include:

- ***Additional Refinements to Mainstream Incentive Program***: As noted within some of the bullets above, the CSI program plans the following activities in late 2007 and early 2008:
    - **Administrative Streamlining** – The Program Administrators are working on a new set of streamlining proposals, which will be discussed in the October Program Forum. At the same time, they are working to reduce the residential contract and incentive application, potentially to a total of three pages.
    - **Program Handbook** – The CSI Program Handbook may need to be released again later this year to keep up to date with Commission decisions and to reflect implementation of any administrative streamlining proposals approved by the Commission.
    - **Program Data** – The CSI database features are currently in development to allow the public access to real-time information for program data.
    - **Shading and Inspections** – Later this year, the Program Administrators will revise the methodology for calculating minimal shading, which will covered in the monthly training classes for installers. The training will help improve the shading estimates that feed into the incentive calculations, as well as installers' general understanding of

[7] The EPBB Calculator is available at www.csi-epbb.com.

the incentive program requirements. Administrators have also increased training to program inspectors to help them pass minor inaccuracies on applications.

- **Metering** -- The CPUC is still considering another metering related request which seeks to remove the requirement that PMRS providers be independent of solar manufacturers and installers. Parties provided comments on a Ruling related to this request in late September, and the Commission will be reviewing the comments to prepare a Proposed Decision.
- **Marketing and Outreach:** In adopting an Interim Marketing and Outreach plan in May 2007, the Commission indicated that it would consider a long-term marketing and outreach plan at a later date.
- **CSI Program Measurement and Evaluation Plan*:*** CPUC staff is reviewing various proposals for a cost-effectiveness methodology for solar and other distributed generation technologies. After the CPUC adopts a Cost-Effectiveness Methodology applicable to the CSI program, staff will propose a program Measurement and Evaluation plan.

- ***RD&D***: On September 20, 2007, the Commission approved D.07-09-042 to enact the $50 million Research, Development, Deployment and Demonstration (RD&D) solar grant program that will focus predominantly on demonstration projects and grid-integration initiatives. The Commission approved a RD&D Plan that identifies the goals and objectives of the program, sets forth allocation guidelines for the RD&D funds, and establishes criteria for solicitation, selection and funding RD&D projects. It also establishes RD&D program administration and RD&D program evaluation. The CPUC will hire a RD&D Program Manager, and develop a draft RFP to solicit grant proposals.
- ***Solar Incentives for Low Income Residents*:** In April 2007, the CPUC staff recommended key design features for a low-income *single-family* housing incentive program. The Assigned Commissioner and Administrative Law Judge are considering the comments and drafting a proposed decision on this program. In July 2007, the CSI Program Administrators submitted a *multifamily* housing incentive proposal, which was discussed in a CPUC workshop in August 2007. Agreement or further Commission action is expected in 2007 or early 2008.

5. CPUC CSI Program Demand Statistics

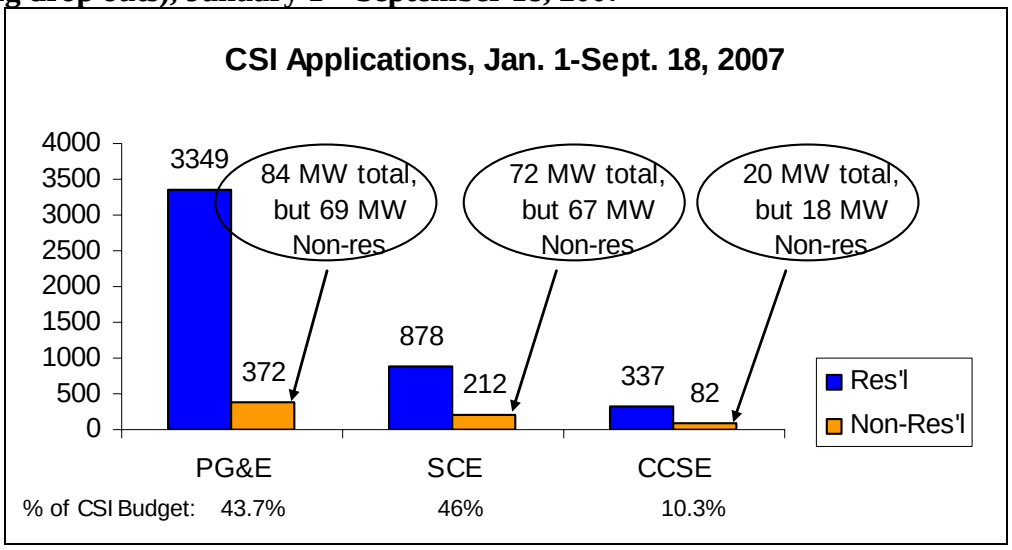
*Important Note: This section provides analysis from newly generated data from the program database on September 18th, including **all applications that are under review and have not yet received an incentive reservation**. Note that program data that was posted to the statewide CSI Trigger Tracker and Database websites on September 18th includes **only applications with reservation letters**, due to complications with the data for applications pre-reservation stage. The data compiled for this report includes **all applications**. As a result, the following statistics will not match the data file posted to the CSI Trigger Tracker. However, Program Administrators are working to rectify the information and reissue the database report with all information shortly.*

5.1 Program Demand is Robust

The CSI program currently has 5,109 applications for 160.5 MW of demand and $320 million in incentives. An additional 121 applications were received but have been withdrawn or rejected from the program (referred to as drop outs throughout this document). In total, the CSI has received 5,230 application for 175.3 MW and $363 million in incentives. Figure 1 shows the number of applications by Program Administrator and MWs.

- PG&E received the largest number of applications in the residential sector – 3,349 residential applications for 15 MW since January, including 914 applications in August alone. PG&E's 372 non-residential applications are for 69 MW, for a total of 84 MW.
- SCE received roughly the same amount of applications in terms of MWs for the non-residential sector – 67 MW in 212 applications. However, SCE has received far fewer residential applications – 878 since January, for 5 MW.
- CCSE received 337 residential applications for 2 MW and 82 non-residential applications for 18 MW.

Figure 1. Total CSI Applications, Number and MWs by Program Administrator (including drop outs), January 1 – September 18, 2007



Source: CPUC CSI Program Database, September 18, 2007. Note: Total **includes** Drop Outs to illustrate the comprehensive impacts on Program Administration, although they do not count as progress towards CSI goals.

5. 2 Program Demand Varies by Geography

A closer look at the application requests per program administrator in Table 6 reveals more about the geographic and customer demand patterns, as well as administrative challenges.

Table 6 shows that 87% of the applications are smaller, residential projects (4,564 application requests). However, the fewer non-residential applications -- commercial is 10% of the total and government/non-profit sector is 3% of the total – comprise the bulk of the MWs in the application pool – 154.1 MW (120.6 MW in commercial and 33.5 MW in government/non-profit).

As seen in Table 6, PG&E is managing 71% of the program's applications, and SCE is managing 21%, for roughly the same amount of total capacity. Nearly all of PG&E's applications are residential. Although residential applications contain slightly less paperwork and a shorter, two-step application process, reviewing the applications still requires significant administrative time. In July, PG&E was handling a reported 50 to 90 applications a day, and it received another 958 applications (residential and non-residential) in August. This increase in administrative burden may explain why PG&E's review period to provide a reservation rose from two weeks in March to seven weeks in September. (See also demand statistics by month in Section 5.4 below.)

Table 6. Number of Applications and MW by Customer Type and Administrator

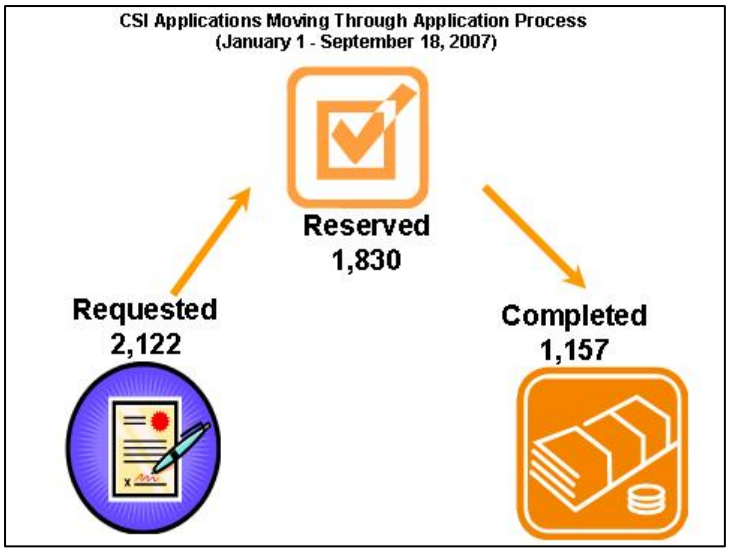
Customer Class	Data	CCSE	PG&E	SCE	Total
Residential	# of Applications	337	3349	878	4564
	Applications %	6%	64%	17%	87%
	MW	1.6 MW	15.1 MW	4.6 MW	21.3 MW
	MW %	1%	9%	3%	12%
Non-Residential - Commercial	# of Applications	58	264	176	498
	Applications %	1%	5%	3%	10%
	MW	14.0 MW	50.6 MW	56.0 MW	120.6 MW
	MW %	8%	29%	32%	69%
Non-Residential - Government/ Non-Profit	# of Applications	24	108	36	168
	Applications %	0%	2%	1%	3%
	MW	4.4 MW	17.9 MW	11.1 MW	33.5 MW
	MW %	3%	10%	6%	19%
Total Applications		**419**	**3721**	**1090**	**5230**
Applications %		8%	71%	21%	
Total MW		**20.0 MW**	**83.5 MW**	**71.8 MW**	**175.3 MW**
MW %		**11%**	**48%**	**41%**	

Source: CPUC CSI Program Database, September 18, 2007. Note: Total **includes** Drop Outs to account for impacts on Program Administration, although they do not count as progress towards CSI goals.

5.3 Projects are Proceeding through CSI Application Steps and Reaching Completion

Applications proceed through several stages before payment - from Requested to Reserved to Completed, as shown in the graphic on the next page. Residential and small commercial applicants can apply through an abbreviated two-step process, whereas larger commercial projects have a milestone review and second, confirmed reservation stage, in their three-step

process before payment. The data below includes all applicants – those with a two-step process as well as those with a three-step process.



As shown in Table 7, the vast majority of applicants are still in the "Requested" or "Reserved" stage in the CSI application process, although a large number of applicants (yet a small number of MWs) have moved to the "Completed" stage.

- There are 2,122 applicants in the "Requested" stage being reviewed for eligibility and complete applications – which includes the application status categories of “Reservation Requested” and “Documentation and Review”.
- Another 1,830 applications are "Reserved" and have been granted an official reservation letter that locks the applicant in at the incentive level. The applicant proceeds with the installation, an inspection if required, and submits the final required paperwork into the Incentive Claim Package.
- There are 1,157 projects "Completed", valued at 9.4 MW and $25 million. The "Completed" stage includes the Application Status categories of "Incentive Claimed" and "Completed". When the Incentive Claim Package is approved, the application makes its way to billing and payment (“Completed”).
- Another 121 solar projects have dropped out of the program (worth 14.8 MW), having been either rejected for ineligibility or withdrawn due to unfavorable economics.

Table 7. CSI Application Status, MW and Payments, January 1-September 18, 2007

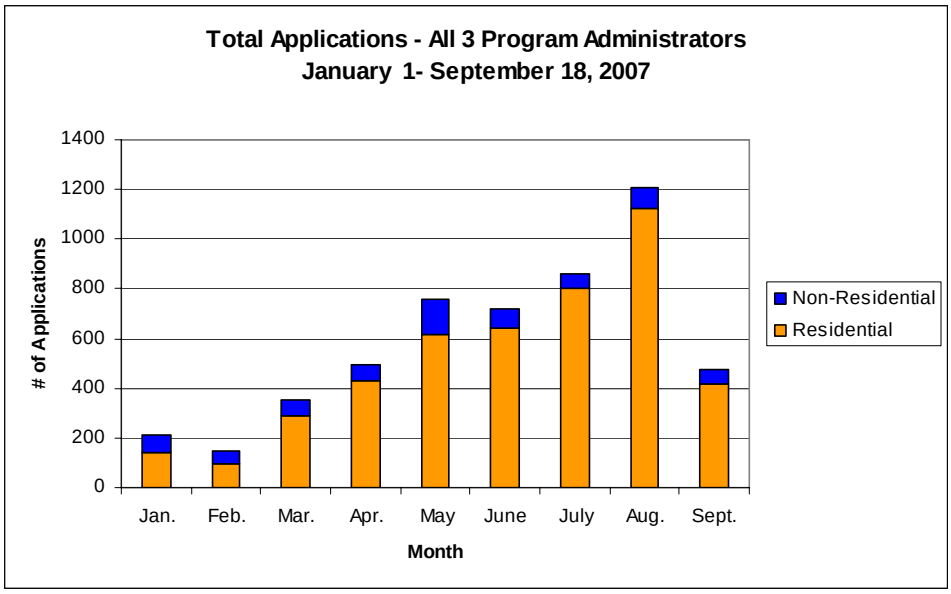
	Number of Applications				Total		Total Incentive
Application Status	**CCSE**	**PG&E**	**SCE**	**Totals**	**MW**		**$**
Reservation Requested	70	1489	352	1911	45.6	MW	$109,771,006
Documentation and Review	26	129	56	211	61.9	MW	$53,243,410
Reservation Confirmed	165	1324	341	1830	43.6	MW	$132,184,266
Incentive Claimed	21	216	163	400	5.2	MW	$14,251,000
Completed (PAID)	130	511	116	757	4.2	MW	$10,349,611
Drop Outs	*7*	*52*	*62*	*121*	*14.8*	*MW*	*$43,580,544*
Total	**419**	**3721**	**1090**	**5230**	**175.3**	**MW**	**$363,379,837**
Total w/o Drop Outs	**412**	**3669**	**1028**	**5109**	**160.5**	**MW**	**$319,799,293**

Source: CPUC CSI Program Database, September 18, 2007.

5.4 Program Demand has been Growing throughout the Year

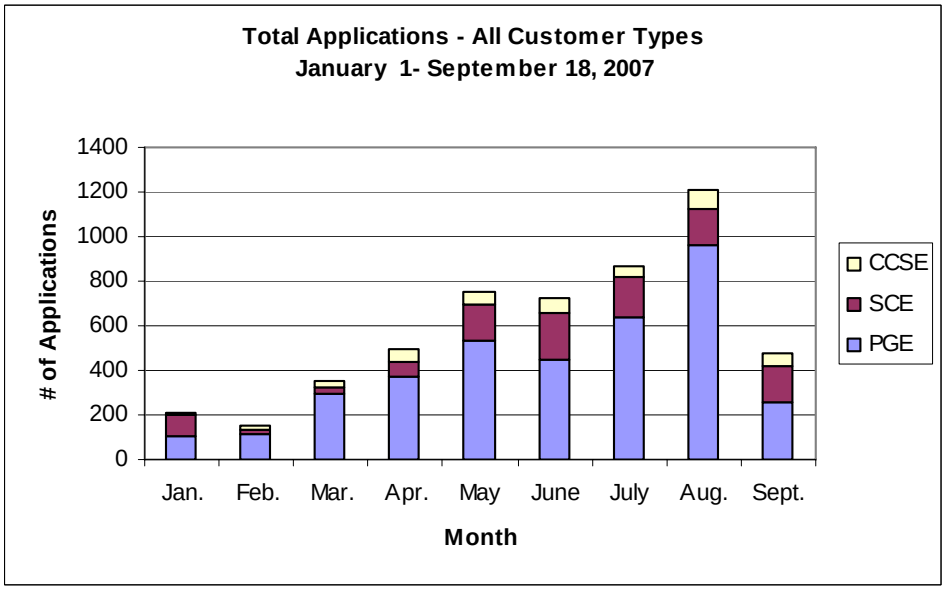
Interest in the CSI Program interest has grown stronger since January. The program began with just over 200 applications in January, and received over 1,200 applications in August alone. Figure 2 shows the applications by customer segment and Figure 3 by Program Administrator.

Figure 2. Total Applications – By Customer Segment, Jan. 1 – Sept. 18, 2007



Source: CPUC CSI Program Database, September 18, 2007. The data for September reflects a partial month.

Figure 3. Total Applications – By Program Administrator, Jan. 1 – Sept. 18, 2007



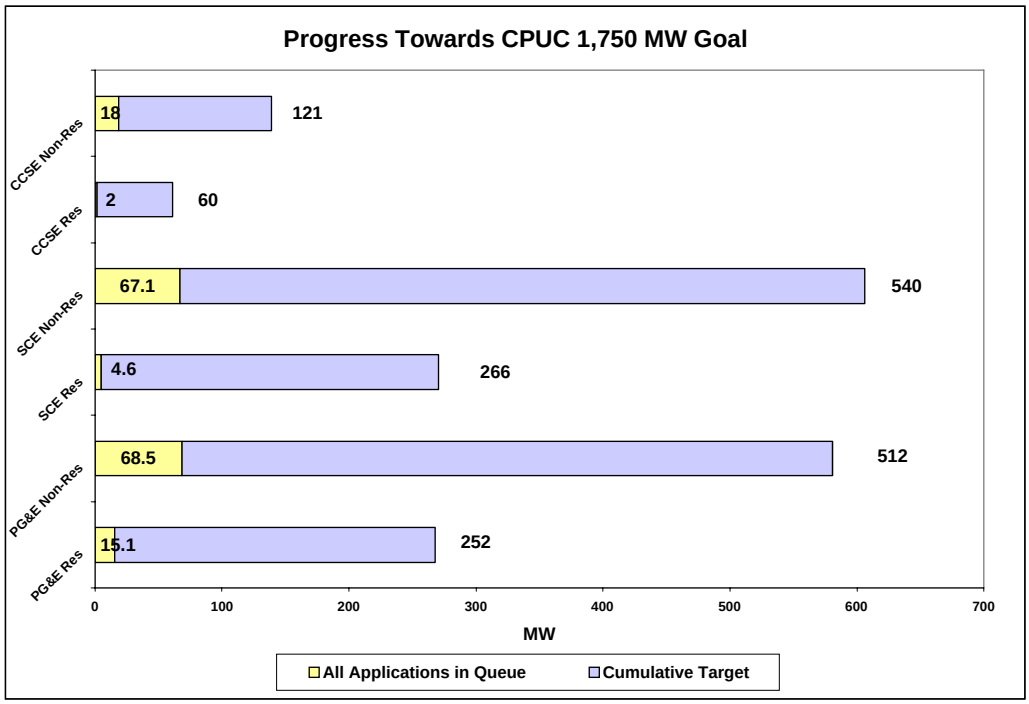
Source: CPUC CSI Program Database, September 18, 2007. The data for September reflects a partial month.

5.5 Program Making Progress to Reach Overall CSI Goals

A CPUC CSI objective is to grow solar installations to reach 1,750 MW by 2017. Demand for the program is robust statewide: total applications since January amount to 160.5 MW.

As shown in Figure 1, each Program Administrator is making progress towards its portion of the program's MW goals. Figure 4 shows the goals per Program Administrator per sector (residential or non-residential) that are based on Table 3 above. Figure 4 shows the progress towards the goal based on MWs in applications that are currently in the queue (and does not include drop outs).

Figure 4. Progress Towards CPUC Ten-Year 1,750 MW Goal



Source: CPUC CSI Program Database, September 18, 2007.

5.6 Program Administrators are Identifying and Overcoming Early Transition Issues under a New Performance Paradigm.

The CPUC is also tracking key areas that signal how the performance paradigm is faring. In this section of the report, we focus on key administrative metrics, the rate of "drop-out" projects, and interest in the PBI incentive.

In the future, we will also be analyzing the scope of reservations held by large applicants and trends in installation costs to gauge whether cost per installed watt is declining. The CSI program

tracks installer bids at the beginning and at the completion of the installation. A thorough analysis requires a stronger data set of completed projects across a full year. [8]

As shown in Table 8, the CPUC is tracking a number of administrative benchmarks in order to monitor potential issues. The initial key metrics are: duration from application to payment, time to review applications, percentage of applications that are incomplete or incorrect, inspection timelines and findings, drop-outs and reasons for dropouts, installers trained, etc. The data was provided to the CPUC by the Program Administrators. The Program Administrators caveat that these responses represent fairly rough internal research, but they are nonetheless instructive as to what portions of the new application process require more time.

Administrator Time in the Application Process

Stakeholders are keenly interested in the time needed to review the final paperwork and issue the rebate.

- Program Administrators report that it currently takes 4-7 weeks to review the incentive claim form and get the check in the mail. The CPUC is investigating ways to speed that timeframe and is monitoring the staffing of the Program Administrators.
- Program Administrators report that a large percentage of applications have problems and need to be returned to applicants for further information. PG&E reports that figure at 35%, SCE at 60%, and CCSE at 40%. As installers gain more experience with the program and as Program Administrators provide better information and training about the program requirements, we expect to see that figure drop significantly.
- PG&E is reporting a comparatively longer period to perform the initial review of an application due to their higher residential interest, due to their extremely high residential demand. PG&E has added staff since July to attempt to meet that demand.
- At the same time, PG&E reports a shorter period to approve an interconnection than SCE and SDG&E (information received via CCSE's data request to the utility).

Applicant Installation Time in the Application Process

With the exception of paperwork review and interconnection, an applicant has a large amount of control of the overall start-to-finish timeframe. An applicant has 12-18 months to complete the installation and paperwork, and can request a six-month extension.

- The fastest applications have needed 4 months from start to finish. We expect that timeframe to decrease as the market gains more practice with the new performance paradigm and application process. This 4-month figure accounts for the earliest applicants in January, when the program did not yet have a final handbook or online application tool, and when the Program Administrators were inspecting more systems to review how the new performance requirements were being met. Because the CSI

[8] One reason to not look at the CSI program's cost per installed watt yet is because the pool of "Completed" projects is still small relative to the total size of the program, and the 2007 data is not yet robust enough to draw conclusions. The SGIP Program's "Sixth Year Impact Report" covering CPUC solar installations through 2006 provides some recent data about installation costs in the SGIP program. It can be downloaded from: http://www.sdreo.org/uploads/SGIP_M&E_Sixth_Year_Impact_Evaluation_Final_Report_August_30_2007.pdf

Program Administrators have reduced paperwork and initiated sampling for inspections in July, the timeframe from start to finish could continue to diminish.[9]

Inspections

Nine months into the program, inspections are revealing fewer problems than in the first few months. As discussed above in Section 4, early inspections failed mostly due to minor estimation errors, for example on tilt and orientation. Since the Program Administrators' inspectors began training more inspectors and the inspectors began using new tolerance levels, the number of failed inspections has dropped.

- In July, 60% of PG&E's inspections uncovered issues; the figure is now 30%.
- SCE's inspections found issues in 40% of the early inspections, but in only 10% today.

Training

Also shown in Table 8, the CPUC is monitoring outreach to the field through training on the new program. On January 1, the state transitioned from capacity-based payments to payments that vary according to performance-based factors, and the application process changed dramatically. Installers needed to be trained on the new program. As the CPUC and CSI Program Administrators learned about particular transition issues, such as accurately calculating shading impacts, the program began ramping up specific issue-focused installer training.

- Since January, 554 companies and 1,646 installers have signed up for Program Administrator's monthly training classes, where they can learn about the new program requirements and application process, shading calculation methods, and other solar performance tips.

Drop Out Rate

The CPUC is closely monitoring the risks that "drop-out" projects pose to the incentive levels, since those withdrawn or rejected project megawatts and dollars are reintroduced at the current incentive step offered by the affected administrator.

- At this time, 121 projects have dropped out, worth 14.8 MW.
- It does not appear that the CSI program drop-out rate is higher than under SGIP and ERP. SGIP had up to 50% of projects "drop out" in 2006. ERP had an estimated average drop-out rate of 13-15%, according to the California Energy Commission. CSI dropouts are currently 2% of total applications by number, and 8 % of applications by megawatt value.
- Of the 121 projects that were withdrawn or dropped out, 50 took place in the non-residential sector at an incentive value just over $30 million, and 71 in the residential sector with an incentive value of approximately $800,000.
- The CPUC will continue to closely monitor the drop-out rate, the source of drop-outs, and the potential impacts to incentive levels.

[9] As noted in Section 4 above, the Program Administrators reduced a host of required application documents and paperwork requirements in August. The Program Administrators are now working on more paperwork reductions and shortening the program application and contract.

Table 8. Administration Snapshot

	PG&E	SCE	CCSE
Duration: application to payment[1]	117 days	135 days	113 days
Reviewing applications:[1]	49 days	16 days	8 days
% of applications with problems:	35%	60%	40%
Scheduling inspection:	2 weeks	1-3 weeks	1-3 weeks
Inspection time:	½-1 hour Res; ½ hour Non-Nes	1-2 hours Res, 2-3 hours Non-Res	1 hour- Res 1-4 hours- Non-Res
% of "failed" inspections: [2]	30%	10%	14%
Time from Claim Form Submission to Mailing Checks	28 days	60 days	33 days
Drop-outs since 1/1/07: [3]	62 app'ns, 11.6 MW	37 app'ns, 2.7 MW	7 app'ns, 0.15 MW
Reasons for drop-outs	Poor or vague economics	Customer lost interest in project	Customer lost interest due to economics
Time from interconnect application to authorization to interconnect [1]	12 days (Interconnection application deemed complete to author. to interconnect issued)	39 days	36 days per SDG&E
Administrative burn rate	TBD	TBD	TBD
Number of installers trained since January in classes	400 companies 850 Installers	68 companies 129 installers	86 companies 667 installers

Source: CPUC. Information provided by the Program Administrators.
Notes:
1: For applications with no issues that require clarification or further information from the applicant.
2: Inspectors are now passing inspections that reveal minor inaccuracies.
3: The discrepancy in number of drop-outs is probably due to a difference in analysis dates; the CPUC requested this data at least a week before the September 18 analyses that are given throughout this paper.

Voluntary Interest in the PBI Incentive

The CPUC is also monitoring the extent to which customers are taking the PBI incentive payment even if they are not required to do so. This information will help inform the planned phase-down of PBI to 50 kW in 2008 and to 30 kW systems by 2010.

As shown in Table 9, the PBI incentive path is somewhat attractive to some small and medium-sized systems, ahead of the planned phase-down. Four percent of systems that could have chosen the EPBB incentive path voluntarily elected to take the PBI path.

Table 9. Systems Below 100 kW that Opt into PBI, January 1 – September 18, 2007

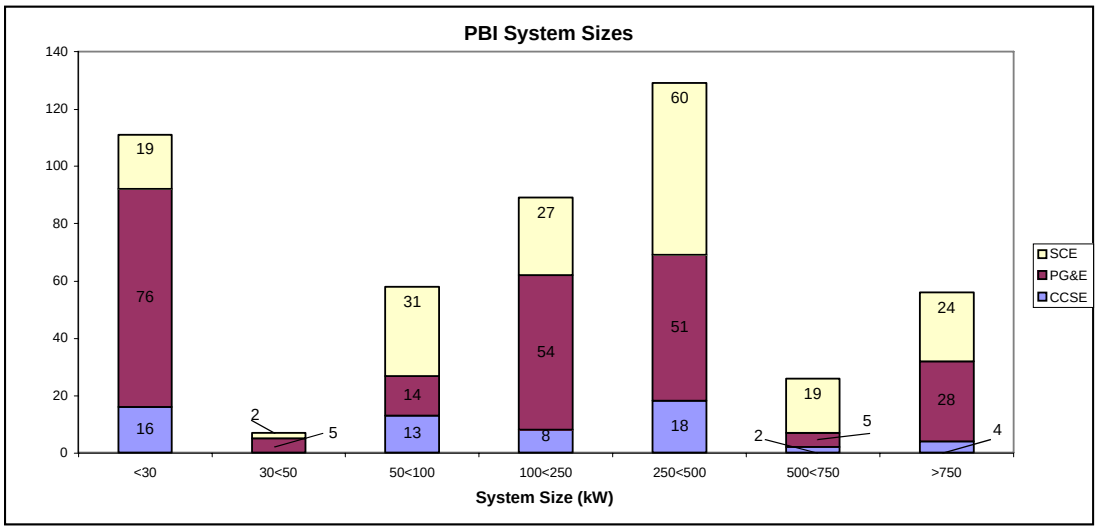
System Size	CCSE	PG&E	SCE	Total
<30 kW	16	76	19	111
30<50 kW	0	5	2	7
50<100 kW	13	14	31	58
Total	**29**	**95**	**52**	**176**
# of Systems <100kW	*381*	*3573*	*959*	*4913*
% of Syst. <100kW in PBI	*8%*	*3%*	*5%*	*4%*
% of Syst. <100kW in EPBB	92%	97%	95%	96%

Source: CPUC CSI Program Database, September 18, 2007.

Size of PBI Systems (Size of Commercial Systems)

Figure 5 shows the breakout of the number of PBI systems (generally large commercial systems) grouped according to system size. The larger number of PBI applications in PG&E's territory that are under 30 kW leads to questions about whether that set of customers understand the costs and rigor of the PBI monitoring and metering requirements.

Figure 5. Number of PBI Systems by System Size by Program Administrator, January 1 – September 18, 2007



Source: Source: CPUC CSI Program Database, September 18, 2007.

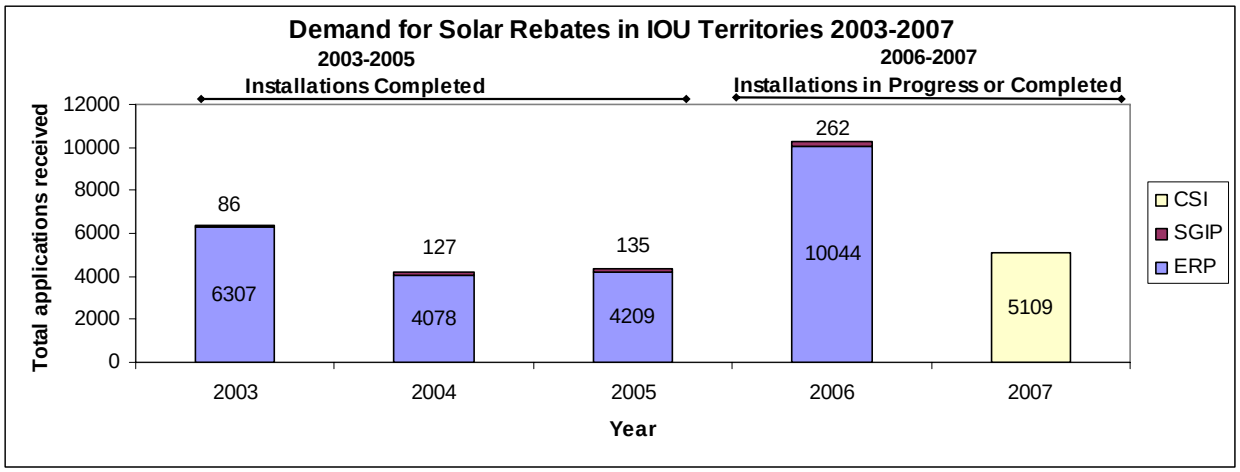
5.7 Program to date has Fewer Applications, but More Megawatts, than Prior Programs

The CPUC is interested in monitoring the comparison of the CSI program with the programs that it replaced. In terms of solar capacity, demand for the program is surpassing that of earlier rebate programs, despite the transition to performance-based incentives and the new application process.

Focusing on the total applications received to date (including the drop outs), the CSI program has received roughly half the number of applications as the former SGIP and ERP programs combined in 2006, but the CSI program already has 40% more megawatts than the previous programs.

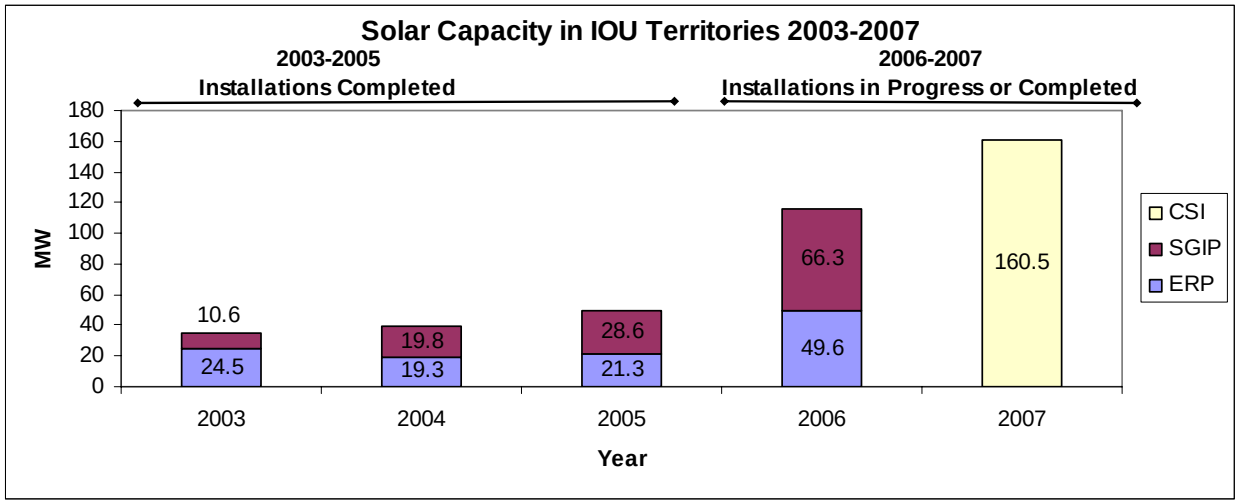
- Compared to *all* solar applications under the former ERP and SGIP programs, the number of all CSI applications (residential, commercial, and government) is currently lower than those in the former ERP and SGIP programs. Figure 6 shows that for 2006, the SGIP program has 262 applications and the ERP program has 10,044 – for a total of 10,306. To date, the CSI program has 5,109 applications (partial year data only).
- However, applications to the CSI program already surpass ERP and SGIP when viewed by capacity (160 MW requested in 2007 year to date compared to 116 MW of requested incentives in 2006). Figure 7 shows that for 2006, the SGIP program has 66.3 MW requested in applications, and the ERP program has 49.6 MW – for a total of 115.9 MW. To date the CSI program has 160.5 MW in applications (partial year data only).

Figure 6. Demand for Solar Rebates in IOU Territories, 2003-2007



Sources: CEC ERP database through June 2007. CSI-SGIP Trigger Tracker database through May 7, 2007. CPUC CSI Database, September 18, 2007.
Notes: 2003-2005 data represents ERP & SGIP projects that have been completed; 2006 data represents ERP & SGIP projects that have been reserved, advanced, pending payment, under review, approved, received claims or have been completed. 2007 data represents CSI applications in all stages of installation, excluding dropouts, through 9/18/2007.

Figure 7. Solar Capacity in IOU Territories, 2003-2007



Sources: CEC ERP database through June 2007. CSI-SGIP Trigger Tracker database through May 7, 2007. CPUC CSI Database, September 18, 2007.
Notes: 2003-2005 data represents ERP & SGIP projects that have been completed; 2006 data represents ERP & SGIP projects that have been reserved, advanced, pending payment, under review, approved, received claims or have been completed. 2007 data represents CSI applications in all stages of installation, excluding dropouts, through 9/18/2007.

5.8 Program's Residential Demand Tracks ERP's 2006 Demand

The previous section looked at the difference in overall demand between the CSI and previous programs. The CPUC is also monitoring the demand for incentives by sector. For the residential sector, the CPUC has looked at quarter by quarter comparisons of the CSI program and the residential portion of the ERP program.

It is critically important to remember that the ERP program funded both residential and small commercial installations under 30 kW. The CEC's program did not categorize applications by residential versus non-residential systems. Therefore, in the residential analysis below, we follow the Energy Commission practice of considering the bulk of applications under 10 kW to be residential, and we compare those ERP systems against CSI residential system applications.

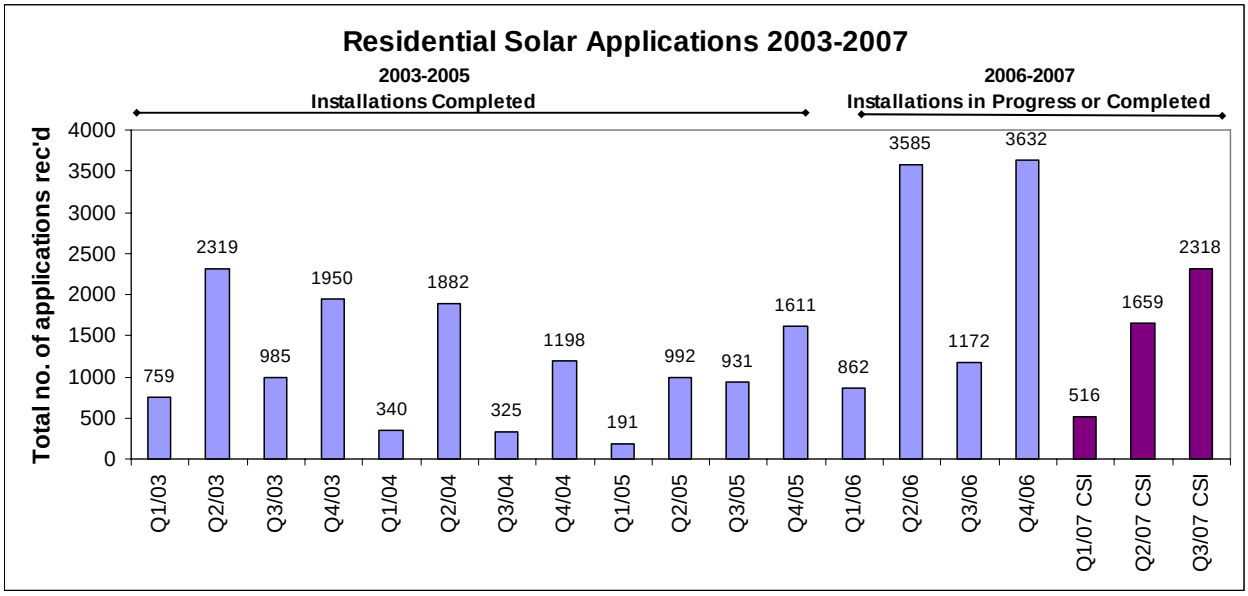
- For residential demand, Figure 8 shows that the CSI program experienced the same first-quarter dip as any other year in ERP after the incentive dropped annually on January 1st.
- The ERP program received 10,044 applications in 2006, and 9,251 were applications for systems under 10 kW. The ERP program demand was particularly strong in Q4 in anticipation of the program change—it received 3,632 applications for systems under 10 kW in Q4 2006. (See Figure 8.)
- As shown in Figure 8, there are 4,493 active CSI residential applications by September 18, compared to third-quarter cumulative residential ERP applications of 5,619. While the CSI applications are currently fewer than the ERP applications in the roughly comparable period, the CSI program's applications have grown significantly each quarter.

- By capacity, as shown in Figure 9, the CSI has requests for 21 MW (Q1 through September 18, 2007) compared to third-quarter 2006 ERP results of 20.3 MW (Q1 through Q3).[10] However, ERP had a strong Q4 2006, and ERP total demand in 2006 came to 35 MW, as shown in Figure 9.

In conclusion, it is too soon to tell whether CSI residential demand will continue to grow in Q4 2007, so that it might finish the year as strong as ERP in 2006. Comparing the first three quarters of 2006 with the first three quarters of 2007, the programs appear to be performing closely.

Most importantly, the demand for CSI in the residential sector in terms of MWs is strong and the number of applications and MWs has been growing each quarter. The CPUC will continue to closely monitor the CSI residential demand.

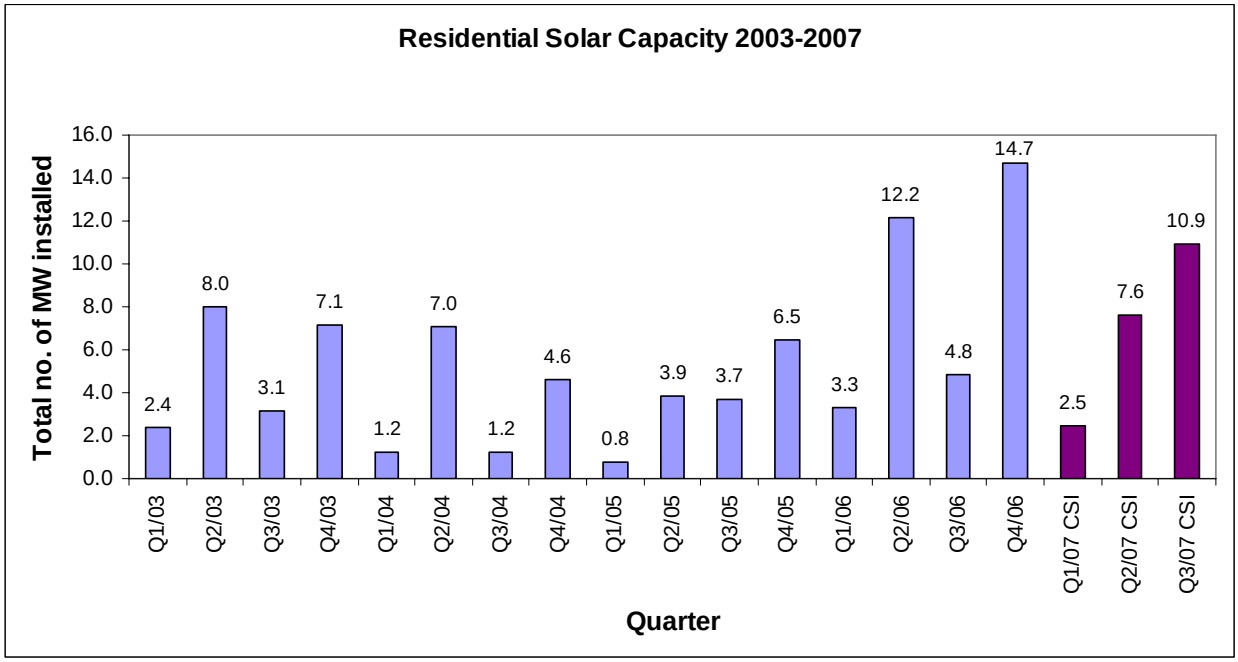
Figure 8. Residential Solar Applications, 2003-2007, by Quarter



Sources: CEC ERP database through June 2007, CPUC CSI Database, September 18, 2007.
Notes: 2003-2005 data represents installed capacity in ERP for systems under 10KW. 2006 data represents applications that have been approved, received claims or have been completed in ERP systems under 10kW. The ERP data in Figures 6 and 7 are for all ERP – and this data is only a subset of the ERP program. 2007 data represents all CSI residential applications received by 9/18/07, including those pre-reservation, but not include dropouts.

[10] The total number of residential applications received to date is 4,564 as noted in Table 6. The still active applications only number 4,493.

Figure 9. Residential Capacity, 2003-2007, By Quarter.



Sources: CEC ERP database through June 2007, CPUC CSI Database, September 18, 2007.
Notes: 2003-2005 data represents installed capacity in ERP for systems under 10KW. 2006 data represents applications that have been approved, received claims or have been completed in ERP systems under 10kW. The ERP data in Figures 6 and 7 are for all ERP – and this data is only a subset of the ERP program. 2007 data represents all CSI residential applications received by 9/18/07, including those pre-reservation, but not include dropouts.

5.9 CSI is on Track to Exceed the Impact of Earlier Programs

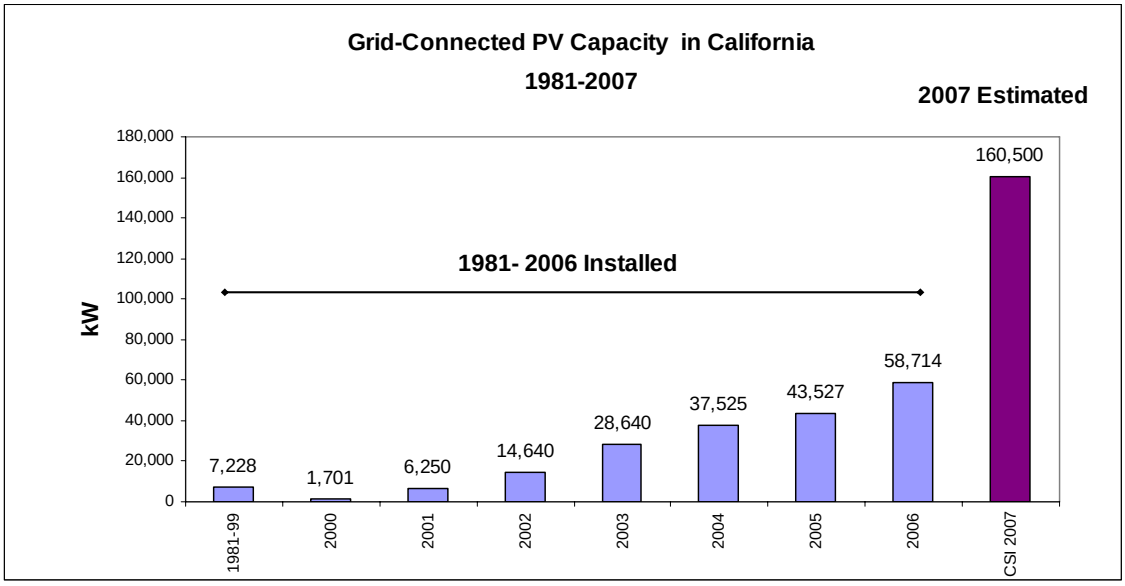
The ultimate metric for the CSI program will be the amount of installed MW of new grid connected solar in California. Because the program is only 9 months old, the data discussed in this progress report focuses primarily on applications to date. The CPUC will be closely monitoring the actual installations and eventually doing a thorough review of the annual growth under CSI.

The California Energy Commission tracks installed MW of grid connected PV since 1981. Although the ERP and SGIP programs have applications for more 116 MW of solar in 2006, the Energy Commission's database notes that there was 59 MW of PV actually installed in 2006 – statewide (including ERP, SGIP, and other, e.g. municipal utility, programs).

- Figure 10 shows the MW of grid-connected PV systems since 1981 and shows the estimated capacity in the CSI program, based on 2007 year to date.
- There is currently a total of 198 MW of grid connected PV in California. Figure 11 shows the cumulative MW of grid connected PV through 2006, and shows the estimated effect of the CSI program, based on 2007 year to date data.

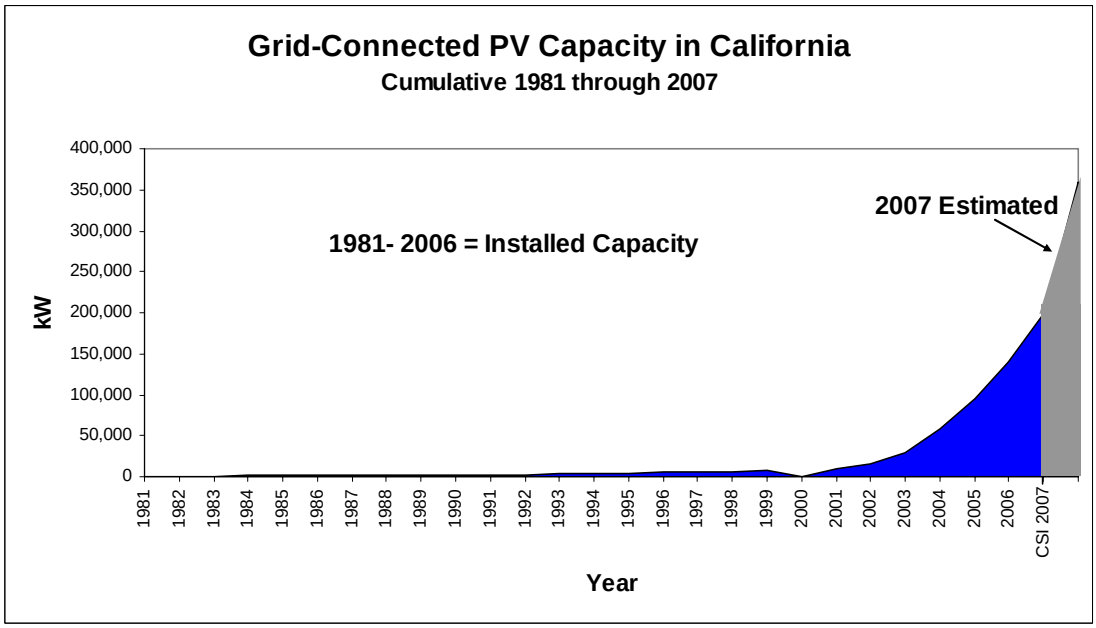
- Note that the 1981 through 2006 data is installed, statewide. The 2007 data is CSI applications to date, and as such it is largely not yet installed (but also not including drop outs) and not statewide.

Figure 10. Grid-Connected PV Capacity in California 1981-2006, 2007 Estimated



Source: 1981-2006 data from California Energy Commission's *Grid Connected PV Capacity Installed in California*, April 18, 2007. 2007 data is not statewide, only CPUC-CSI data in IOU territories. 2007 data is estimated capacity expected to be installed based on applications received through September 18, 2007.

Figure 11. Grid-Connected PV Capacity in California, Cumulative 1981 through 2006, 2007 Estimated



Source: 1981-2006 data from California Energy Commission's *Grid Connected PV Capacity Installed in California*, April 18, 2007. 2007 data is not statewide, only CPUC-CSI data in IOU territories. 2007 data is estimated capacity expected to be installed based on applications received through September 18, 2007