California Solar Initiative

California Public Utilities Commission
Staff Progress Report
January 2009

The California Public Utilities Commission (CPUC or Commission) Energy Division staff prepared this report to describe recent progress on the California Solar Initiative, the country's largest solar incentive program.

In January 2007, the State of California launched the Go Solar California campaign, an unprecedented $3.3 billion ratepayer-funded effort that aims to install 3,000 MW of new grid-connected solar over the next decade and to transform the market for solar energy by dramatically reducing the cost of solar. As part of the statewide solar effort, the CPUC initiated the investor-owned utility solar program, known as the California Solar Initiative (CSI) on January 1, 2007. The CSI Program has generated enormous new demand for solar in California. This report focuses exclusively on CSI program developments and consumer demand, and does not report on the other parts of the state's solar offerings, such as the California Energy Commission's (Energy Commission) New Solar Homes Partnership (NSHP) which funds solar installations on new home construction or the dozens of small solar programs administered by the state's 40+ municipal utilities (or publicly owned utilities, POUs). See Section 2 for additional background information.

Cover Photo Credits:
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EBay Headquarters
Location: San Jose, CA
System Size: 650 kW
Installer: SolarCity, installed May 2008

Executive Summary

Last year, Californians installed twice as many megawatts (MW) of distributed solar photovoltaics (PV) than the year before, and the state continues to have record demand for new solar projects.

The largest solar program in California, the California Solar Initiative (CSI), saw explosive growth in 2008 and it installed the majority of solar projects in the state.

As shown in Figure 1 and Table 1, homeowners, businesses and local governments in California's investor-owned utility (IOU) territories installed 158 MW of distributed, grid-tied solar photovoltaic (PV) projects, doubling the 78 MW installed in IOU territories in 2007. Since the early 1980s, California has installed a cumulative total of 441 MW of grid-tied solar PV statewide, as shown in Figure 1. More than a third of those MW were added in 2008 alone, largely as a result of the California Solar Initiative (CSI). In 2008, the CSI program installed 133 MW of grid-tied distributed solar PV capacity in the service territories of the three IOUs – Pacific Gas and Electric (PG&E), Southern California Edison (SCE) and San Diego Gas and Electric (SDG&E). An additional 21 MW were installed in IOU territories through the Self-Generation Incentive Program (SGIP) and 3 MW through the Emerging Renewables Program (ERP), which stopped accepting solar PV projects in December 2006. The total installed MW for IOU territories in 2008 is 158 MW, the sum of the CSI, SGIP, ERP and New Solar Homes Partnership (NSHP) programs. The current estimated statewide total for 2008 is 160 MW, including an additional 1.5 MW in publicly-owned utility (POU) territories.

The rate of installations is expected to remain strong in 2009 because demand for incentives under the California Solar Initiative surged in the fourth quarter of 2008, breaking the previous records for most applications in a single quarter and most applications in a single month. The CSI Program received 3,590 applications for new projects in the quarter spanning October, November and December of 2008, breaking the record for new applications set in the previous quarter by nearly 20 percent. As shown in Figure 2, the CSI program also set a new record for applications received in a single month, with December bringing in more than 1,300 applications for new projects.

Figure 1. Grid Installed PV Capacity in California, 1981 through 2008

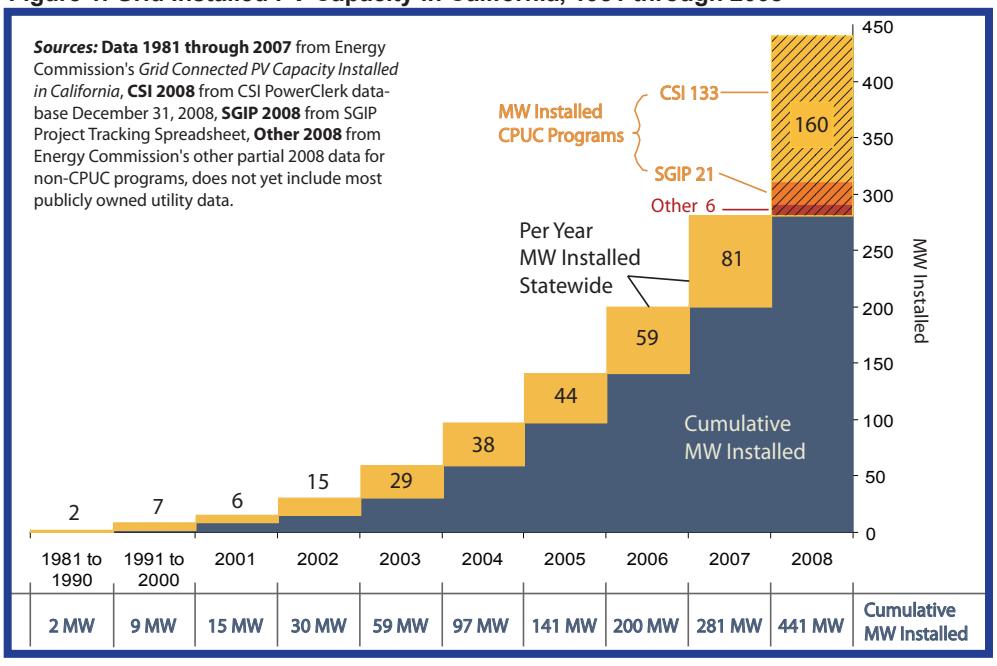


Table 1. Grid Installed PV Capacity in California, 1981 through 2008

Solar Programs	1981 – 2006, total	2007	2008
California Solar Initiative (CSI)	0 MW	19 MW	133 MW
Self-Generation Incentive Program (SGIP)	80 MW	33 MW	21 MW
New Solar Homes Partnership (NSHP)	0 MW	0 MW	1.4 MW
Emerging Renewables Program (ERP)	91 MW	26 MW	3.0 MW
Investor-Owned Utility territory subtotal	172 MW	78 MW	158 MW
Publicly-Owned Utilities (POUs)	27 MW	3 MW	*1.5 MW
Non-IOU territory subtotal	27 MW	3 MW	1.5 MW
Statewide Total	**198 MW**	**81 MW**	**160 MW**

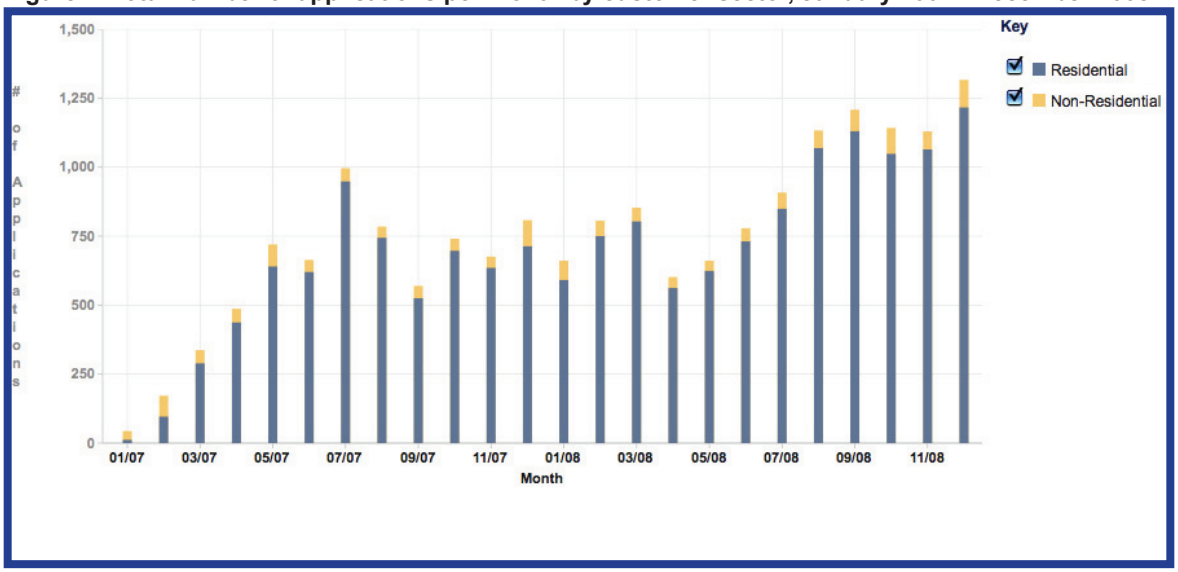
Sources: See notes for Figure 1. * POU data for 2008 is incomplete.

The large number of applications may have been sparked by the news in October 2008 that the Federal government extended tax credits for solar as part of the Economic Stimulus package. The tax credits had been slated to expire at the end of 2008, so a large number of projects pushed to come online in 2008 in order to secure the tax credit before expiration. When the tax credits were extended, they were also significantly expanded for residential system owners. The expansion spurred new demand in solar projects, especially in the residential sector. In addition, PG&E was approaching the end of the Step 4 Incentive Level (see next chapter for more information) for residential projects as the news of the tax credit expansion spread. The impending incentive change likely spurred some customers to act quickly to take advantage of the higher incentive step level while it was still available. PG&E lowered its residential incentive level in December due to program demand in accordance with CSI program rules.

The surge in applications occurring in the fourth quarter of 2008 is particularly noteworthy given the slowdown in the economy that occurred during the same time period. In addition to environmental benefits such as cutting greenhouse gas emissions and other pollutants, it appears that solar energy is benefitting California by serving as an economic bright spot in the economy.

The California Solar Initiative has spurred more than $5 billion worth of private investment in solar projects by California consumers. On average, for every $1 in incentive committed by the CSI Program, an *additional* $6 in private funds is invested in solar technology in California. To date, the CSI Program has paid or reserved nearly $775 million in incentives for total estimated project costs totaling over $5 billion. The CSI Program continues to support this important sector of California's economy.

Figure 2. Total number of applications per month by customer sector, January 2007 - December 2008



Source: www.CaliforniaSolarStatistics.ca.gov, data through December 31, 2008.

Table 2. All CSI Projects, January 1, 2007 through December 31, 2008

		All CSI Projects		Total
		CSI	CSI-SGIP Transition Projects	
Pending Projects	Applications	6,389	24	6,413
	MW	*160 MW*	*9 MW*	*169 MW*
	Incentive $million	$365	$23	$388
Installed Projects	Applications	11,810	67	11,877
	MW	*138 MW*	*14 MW*	*152 MW*
	Incentive $million	$352	$35	$387
Total	**Applications**	**18,199**	**91**	**18,290**
	MW	**298 MW**	**24 MW**	**322 MW**
	Incentive $million	**$717**	**$57**	**$775**

Source: CSI PowerClerk database December 31, 2008, CSI-SGIP Transitional Projects data from SGIP Spreadsheet January 2009. ***Notes:*** Total does not include cancelled or withdrawn projects.

The CSI Program remains roughly on target to meet the state's goal of 1,750 MW installed by 2017.

To date, the CSI program has received applications for roughly 322 MW of grid-tied, distributed solar PV projects, as shown in Table 2. This includes 322 MW of CSI Projects and 24 MW of CSI-SGIP Transition Projects (see page 10). Figure 3 displays each Program Administrator's applications as a percentage of the overall program goals and is normalized to compare the goals even though the per-utility goals vary because the size of service territories of the three utilities varies.

The CSI Program now has 18,290 active applications representing 322 MW of new solar capacity. Of these projects, 11,810 applications are complete, representing 152 MW of capacity that has come online in 2007 and 2008 under the CSI Program.

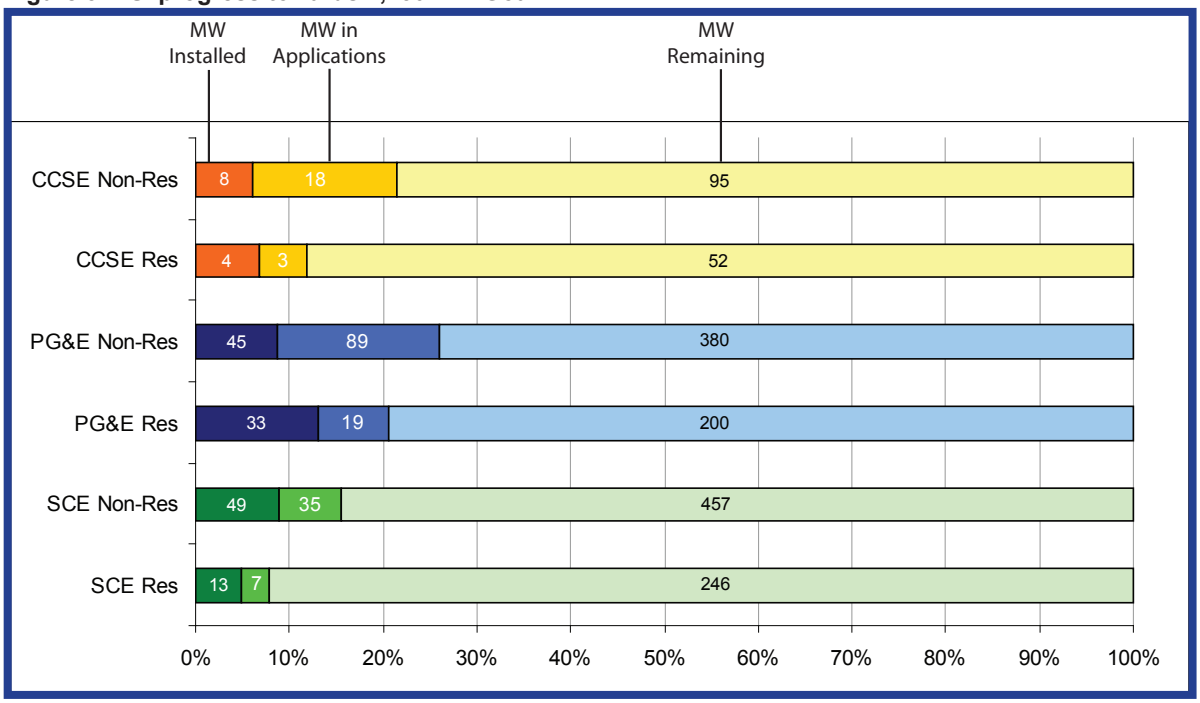
Customers in SDG&E territory who receive rebates via the California Center for Sustainable Energy (CCSE) have installed 4 MW of residential projects and 3 MW of non-residential projects; they have an additional 8 MW of residential and 18 MW of non-residential projects pending installation.

Customers in PG&E territory have installed 33 MW of residential and 45 MW of non-residential projects; they have an additional 19 MW of residential and 89 MW of non-residential projects pending installation.

Customers in SCE territory have installed 13 MW of residential and 49 MW of non-residential projects; they have an additional 7 MW of residential and 35 MW of non-residential projects pending installation.

Although each utility territory is progressing at different rates, the 322 MW both installed and in the pipeline represent 18 percent of the total program's goal of 1,750 MW. The program is about 20 percent complete (just finished year two in a ten year program) and so the CSI program appears to be roughly track to meet its goal by 2017. It is important to note that the California Public Utilities Commission (CPUC) did not establish annual targets for the program and did not expect that the program would install an equal number of projects each year, rather the expectation is that the market will increase the annual rate of installations each year.

Figure 3. CSI progress towards 1,750 MW Goal



Source: CSI data from www.CaliforniaSolarStatistics.ca.gov through December 31, 2008, CSI-SGIP Transitional Projects data from SGIP spreadsheet December 2009.

Introduction to the California Solar Initiative

The California Solar Initiative (CSI) is overseen by the California Public Utilities Commission and provides incentives for solar system installations to customers of the state's three investor-owned utilities (IOUs): Pacific Gas & Electric, Southern California Edison and San Diego Gas & Electric. The CSI Program provides upfront incentives for solar systems installed on existing residential homes, as well as existing and new commercial, industrial, government, non-profit and agricultural properties within the service territories of the IOUs. The CSI Program has a budget of $2.17 billion over 10 years, and the goal is to reach 1,940 MW of installed solar capacity by the end of 2016.

The CSI Program builds on nearly 10 years of state support for solar, including other incentive programs such as the Emerging Renewables Program (ERP) and the Self-Generation Incentive Program (SGIP), both of which closed to new projects at the end of 2006. In 2004, Governor Schwarzenegger widened state support for solar and announced the Million Solar Roofs Program. In 2006, the CPUC and Energy Commission collaboratively developed a framework for the CSI Program, and with the Governor's support and the statutory authority expressed by Senate Bill 1 (Murray, 2006), the California Solar Initiative was officially launched on January 1, 2007.

In addition to the CPUC's CSI program, Senate Bill 1 envisioned that the state would also have other programs to support onsite solar projects, including the Energy Commission's New Solar Homes Partnership, and through a variety of solar programs offered through publicly owned utilities. The statewide effort, known collectively as Go Solar California, has a statewide goal of 3,000 MW and a budget of $3.3 billion.

In addition to the general market rebate program, the CPUC portion of the California Solar Initiative has a research and development program, a single family affordable housing program, a multifamily affordable housing program, and a solar hot water pilot program.

Figure 4. Overview of the CSI Step Level Changes

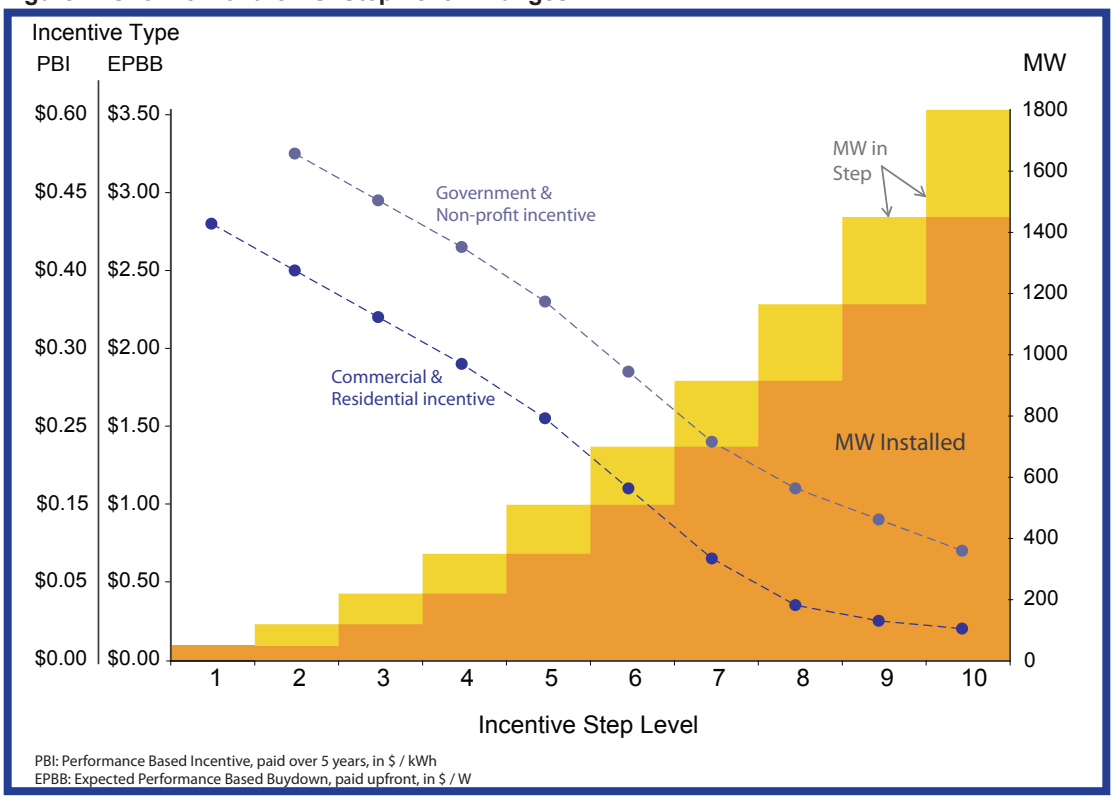
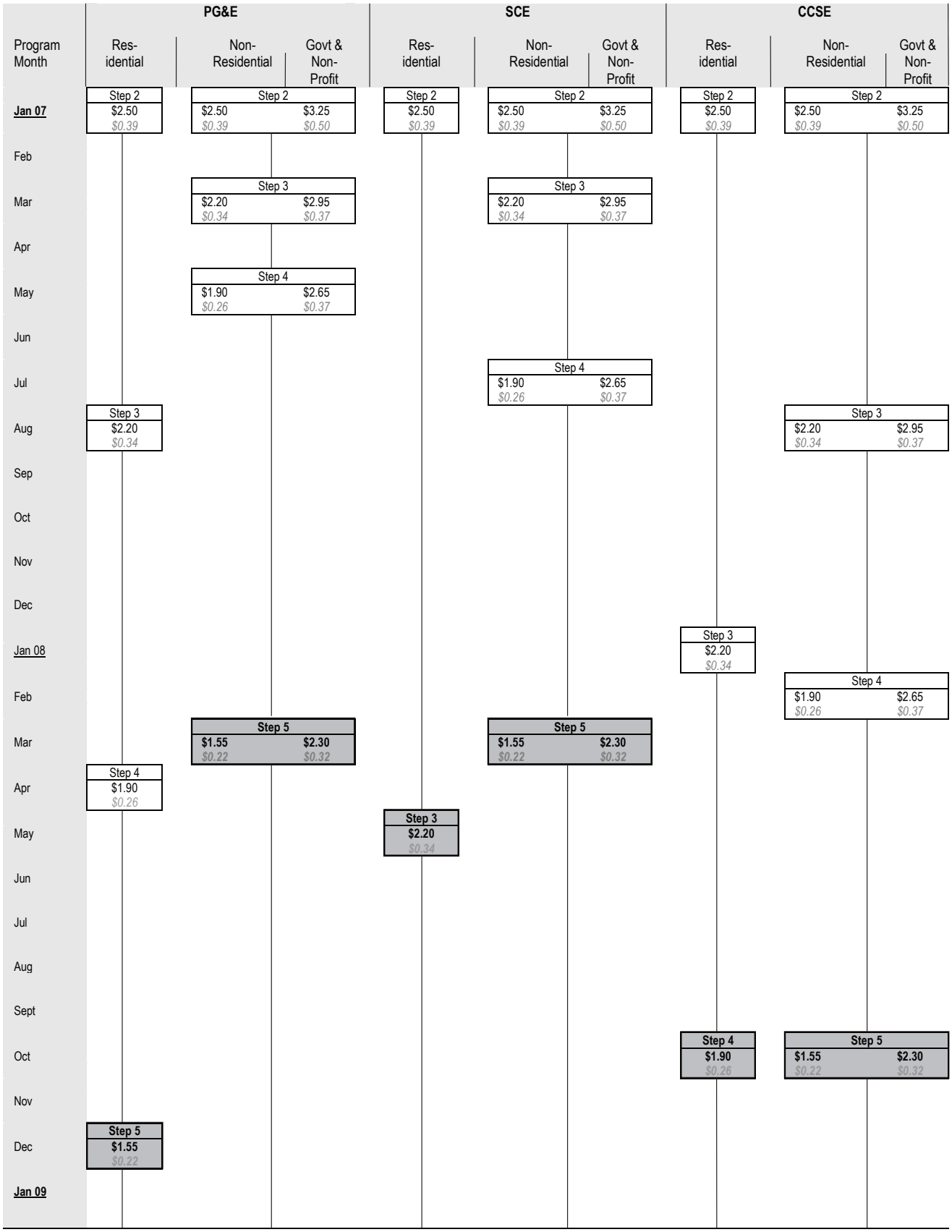


Figure 5. California Solar Initiative incentive levels, current and historic, January 1, 2007 to December 31, 2008



EPBB: Expected Performance-Based Buydown
PBI: Performance-Based Incentive
Shading denotes current incentive level

Incentive Level Design

The CSI Program is designed to be responsive to the growth of the California solar market – as the market grows the incentives offered through the program decline. The CPUC divided its portion of the overall megawatt goal for the incentive program into ten programmatic incentive level steps, and assigned a target amount of capacity in each step to receive an incentive based on dollars per-watt or cents per-kilowatt-hour. The MW targets in each incentive step level are assigned to particular customer classes (residential, commercial and government / non-profit) and allocated across the three IOU service territories, in proportion with each group's contribution to overall state electricity sales.

Once all the MW targets in a particular incentive step level are reserved via CSI application, which can occur at different times for each customer class in utility service territory, the incentive level offered by the CSI Program automatically reduces as the next programmatic incentive step level begins. This creates a demand-driven incentive program that adjusts with local solar market conditions.

Figure 4 on page 7 shows how CSI incentives decline as the program progresses through the ten steps and more MWs are installed. Figure 5, on the facing page, shows how CSI incentive levels have declined by customer class and utility, from January 2007 to the present. CCSE changed to residential Step 4 and non-residential Step 5 in October 2008, and PG&E recently changed to residential Step 5 in December 2008. The three PAs are currently in three separate incentive steps for residential customers and the same step (Step 5) for non-residential customers.

Incentive Types

The CSI Program pays solar consumers their incentive either all at once for smaller systems or over the course of five years for larger systems. Smaller systems receive an upfront, capacity-based incentive that accounts for expected system performance, called the Expected Performance-Based Buydown (EPBB). Larger systems receive incentives based on their actual performance over the course of five years, called the Performance Based Incentive (PBI). These two incentive tracks are explained in more detail in Table 3, below.

Table 3. CSI Incentive Types

Expected Performance-Based Buydown (EPBB) (Paid in dollars / Watt)	Performance-Based Incentive (PBI) (Paid in cents / kWh)
Intended for residential and small business customers	Ideal for large commercial, government & non-profit customers
Systems less than 50 kW	Mandatory for all systems 50 kW and greater Systems less than 50 kW can opt-in to PBI
Incentive paid per Watt based on your system's expected performance (factors include CEC-AC rating, location, orientation and shading)	Incentive paid based on the actual energy produced by your solar system, measured in kilowatt-hours
One-time, lump sum upfront payment	60 monthly payments over five years

CSI Program Data

Data Notes. *All references to capacity are reported as "CEC-AC", which is the industry standard for net electricity output (kW) based on the California Energy Commission's alternating current (CEC-AC) rating of solar panels. Additional CSI Program data and information can be found in the data annex to this report, available online at www.GoSolarCalifornia.ca.gov. In addition, this report considers program data through December 31, 2008, but additional program demand data is refreshed weekly and is available online at www.CaliforniaSolarStatistics.ca.gov.*

The CSI program is the largest solar program in the state; however, CSI data does not reflect statewide totals. The CSI data needs to be combined with other program data, namely SGIP, ERP, and NSHP data, to determine the total amount of solar installed in investor-owned utility territories. Further, all the investor-owned utility territory program data needs to be combined with the publicly-owned utility data to determine the statewide solar data.

This report reports on all CSI projects contained in CSI's online program database known as Powerclerk. The CSI data is filtered to remove applications with data entry errors in accordance with the filters used to display data at www.CaliforniaSolarStatistics.gov.

In addition, this report considers CSI-SGIP Transition Projects as part of the CSI totals because the incentives for these projects were funded by the CSI incentive budget. These projects were received prior to January 1, 2007, but reserved after January 1, 2007. Based on their reservation date, they are "CSI Projects". The CSI-SGIP Transition Projects have previously been included in the SGIP Project Tracking spreadsheet – and are identified on that spreadsheet. The CSI Program Administrators are working on including all of these transition projects in the CSI Powerclerk database. This Staff Progress Report data totals vary slightly from Powerclerk (and www.CaliforniaSolarStatistics.ca.gov) due to the fact that CSI-SGIP Transition Projects are shown here, but not yet in Powerclerk. It is also important to note that the MW and application counts associated with these CSI-SGIP Transition Projects are distinct from the total SGIP numbers reported for the SGIP Program in Figure 1 and Table 1. This Staff Progress Report accounts for the CSI-SGIP Transition projects in CSI data and removes them from the SGIP data to avoid double counting.

The CSI Program installed 152 MW in 2007 and 2008.

Just two years into the program, 152 MW were installed in the CSI program, 19 MW in 2007 and 133 MW in 2008. There are an additional 170 MW of projects in the pipeline, not yet installed. At this point, installed projects comprise slightly less than half of the capacity all active projects in the CSI program to date.

Installed Applications. There are 11,810 projects for 138 MW that are in processing Step 3 and are considered installed. An additional 67 projects representing 14 MW are called "CSI-SGIP Transition" projects and are also installed. Together, there are 11,877 projects for 152 MW that have been installed under the California Solar Initiative. Some installed projects have not yet received payment, either because payment is under review, in process, or expected to be paid out over five years under the terms of the program.

Pending Applications. Applications move through a two step (residential) or a three step (non-residential) application process. As shown in Table 4 on the facing page, 6,318 applications are in application processing Step 1 and 71 projects are in Step 2. There are an additional 24 "CSI-SGIP Transition" projects—these projects are part of the CSI budget. Together, there are 6,413 pending CSI projects for a total of 170 MW.

Table 4. CSI applications by PowerClerk Database status, January 1, 2007, through December 31, 2008

	Application Status	Number of Applications				Total MW	Total Incentive
		CCSE	PG&E	SCE	Totals		
Step 1	Reservation Request Review	7	258	79	344	9.3 MW	$ 15,681,156
	Suspended-Reservation Review	16	115	115	246	5.5 MW	$ 11,214,866
	Reservation Reserved	34	29	24	87	18.8 MW	$ 43,501,530
	Confirmed Reservation	598	3,677	1,366	5,641	104.8 MW	$ 244,748,632
	Subtotal, Step 1	**655**	**4,079**	**1,584**	**6,318**	**138.4 MW**	**$ 315,146,183**
Step 2	PPM Review	-	15	2	17	3.1 MW	$ 7,235,352
	Suspended-Milestone Review	-	7	12	19	6.2 MW	$ 17,656,016
	Pending RFP	-	31	4	35	12.1 MW	$ 25,206,926
	Subtotal, Step 2	**0**	**53**	**18**	**71**	**21.5 MW**	**$ 50,098,293**
Step 3	ICF Review	6	230	47	283	14.6 MW	$ 35,395,072
	Suspended, ICFReview	27	201	185	413	20.7 MW	$ 54,316,159
	ICF Submitted	22	197	27	246	2.6 MW	$ 5,350,642
	Pending Payment	38	169	125	332	11.8 MW	$ 32,224,199
	Completed	923	7,047	2,315	10,285	51.2 MW	$ 111,219,201
	PBI-In Payment	47	87	117	251	37.1 MW	$ 113,508,939
	Subtotal, Step 3	**1,063**	**7,931**	**2,816**	**11,810**	**138.0 MW**	**$ 352,014,213**
CSI Projects received after 1/1/07	**Subtotal, CSI post-1/1/07**	**1,718**	**12,063**	**4,418**	**18,199**	**297.9**	**$ 717,258,689**
CSI - SGIP Transition Projects	Active Projects	1	19	4	24	9.4 MW	$ 22,567,375
	Pending Payment/ Completed	0	40	27	67	14.2 MW	$ 34,689,930
	Subtotal, CSI – SGIP Transition Projects	**1**	**59**	**31**	**91**	**23.6 MW**	**$ 57,257,305**
Inactive Projects	System Removed (Reserved Projects only)	-	-	-	-	0.0 MW	-
	Withdrawn (Reserved Projects only)	11	74	97	182	20.3 MW	$ 49,438,864
	Cancelled (Reserved Projects only)	27	242	37	306	25.1 MW	$ 57,700,918
	Subtotal: Reserved Inactive Projects	38	316	134	488	45.3 MW	$ 107,139,782
	All Projects	**1,757**	**12,438**	**4,583**	**18,778**	**369.5 MW**	**$ 881,655,776**
	All Active Projects	**1,719**	**12,122**	**4,449**	**18,290**	**321.5 MW**	**$ 774,515,994**

Source: www.CaliforniaSolarStatistics.ca.gov, data through December 31, 2008, CSI-SGIP data from SGIP Project Database January 2009.

Table 5. CSI incentive payments and total solar project costs (including incentives), January 1, 2007, through December 31, 2008

(all figures in $millions)	Residential		Non-Residential		Total CSI Applications	
	$ CSI Incentives	$ Total Project Costs	$ CSI Incentives	$ Total Project Costs	$ CSI Incentives	$ Total Project Costs
Pending Projects						
PG&E	$33.2	$163.0	$195.5	$3,230.0	$228.7	$3,393.0
SCE	$16.6	$74.1	$87.8	$282.6	$104.4	$356.7
CCSE	$5.7	$25.2	$49.1	$154.8	$54.8	$180.0
Subtotal, Pending	$55.5	$262.4	$332.4	$3,667.0	$387.8	$3,929.0
Installed Projects						
PG&E	$70.1	$317.6	$114.2	$331.6	$184.4	$649.2
SCE	$30.5	$119.9	$138.7	$354.0	$169.2	$473.8
CCSE	$10.0	$39.8	$23.2	$52.8	$33.2	$92.6
Subtotal, Pending	$110.6	$477.2	$276.2	$738.4	$386.7	$1,216.0
Total, All Projects	**$166.0**	**$739.6**	**$608.5**	**$4,405.0**	**$774.5**	**$5,145.0**

Source: CSI PowerClerk Database, December 31, 2008, CSI-SGIP Transition Project data from SGIP Project Database January 2009.

CSI Program leads $5 Billion Investment in California's Solar Industry

As shown in Table 5, above, the CSI program is supporting $5,145 million worth of investment in Solar PV systems since the inception of the CSI.

The program has already installed systems that are valued at $1,216 million, that received (or will receive) incentives of $387 million. The program has an additional $3,929 million worth of solar systems pending installation, which will receive an additional $388 million in incentives.

Considering both pending ($262 million) and installed ($477 million) projects, the residential market represents a $740 million investment in solar in the California economy. The residential market is 15 percent of the total solar market in terms of project value.

Considering both pending ($3,667 million) and installed ($738 million) projects, the non-residential market represents a $4,405 million investment in solar in the California economy. It is 85 percent of the total solar market in California in terms of market value.

CSI Received over 18,000 solar applications for 322 MW of new solar in the first two years of the program

As shown in Figures 6 & 7 on the facing page, in its first two years the CSI received 18,290 applications, totaling 322 MW. Of those applications CSI applications, 152 MW are installed – a 31 percent increase across all three territories from Q3 2008.

Demand for solar rebates is strongest in PG&E's territory.

Additionally, as shown in Table 6, PG&E's territory demonstrates the highest demand for solar, both in terms of residential applications and non-residential applications. In April 2008, PG&E and SCE were nearly even in terms of capacity of applications in the non-residential sector; however, many projects dropped out in SCE territory and few projects have joined the program to replace the dropouts

PG&E. The capacity of PG&E's applications tripled in the residential sector between September 2007 and December 2008, rising from 15 MW to 52 MW. PG&E's total capacity of applications in the non-residential sector is now 134 MW, up 22 percent since April 2008 (and up 71 percent since September 2007).

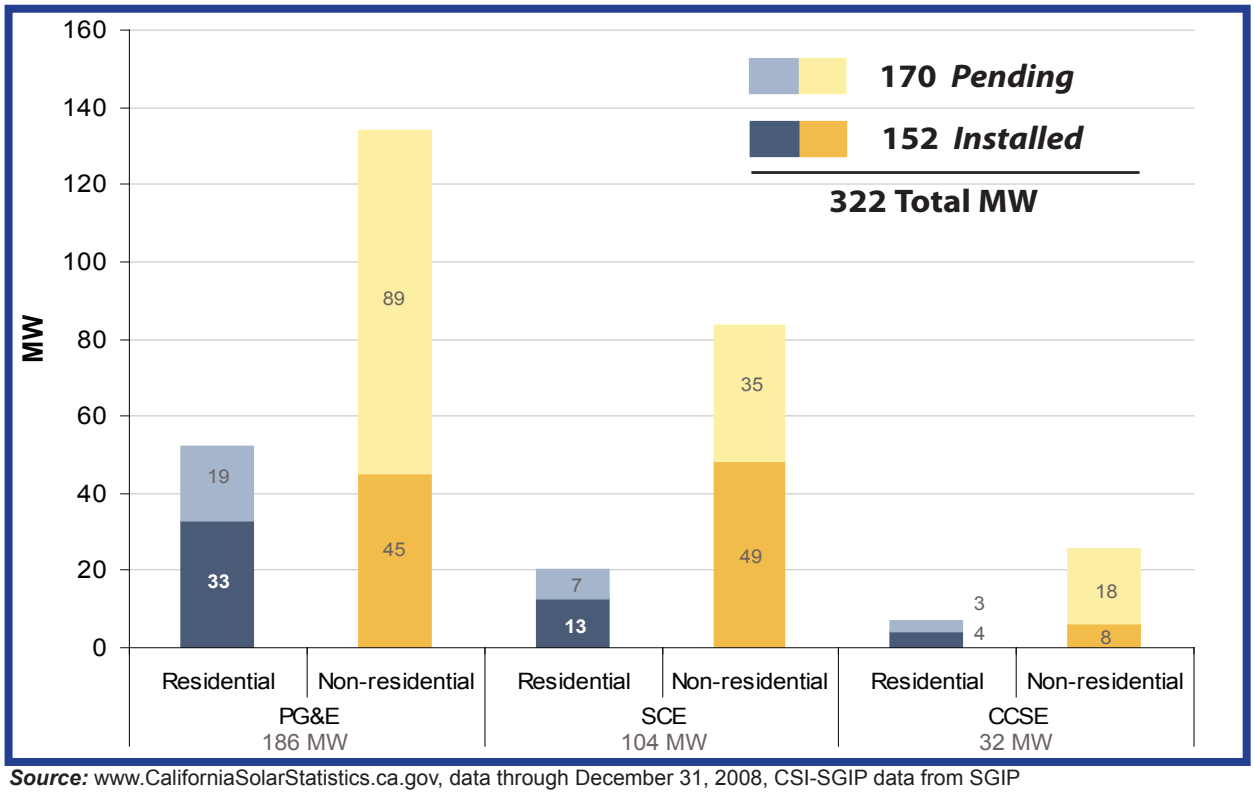
SCE. SCE's territory has seen continued demand in the residential sector, albeit at a much lower rate than in PG&E's territory. SCE's demand in the non-residential sector has declined substantially. SCE has seen a net decline of 23 percent in the total number of non-residential applications, down to 84 MW in December from 102 MW in April 2008. SCE now has four times the residential applications it had in September 2007, growing from 5 MW to 20 MW.

Table 6. Historical CSI Program demand as measured by cumulative application capacity

	September 2007	April 2008	December 2008
Residential			
PG&E	15 MW	29 MW	52 MW
SCE	5 MW	10 MW	21 MW
CCSE	2 MW	3 MW	7 MW
Non-Residential			
PG&E	85 MW	110 MW	134 MW
SCE	75 MW	102 MW	84 MW
CCSE	18 MW	20 MW	26 MW

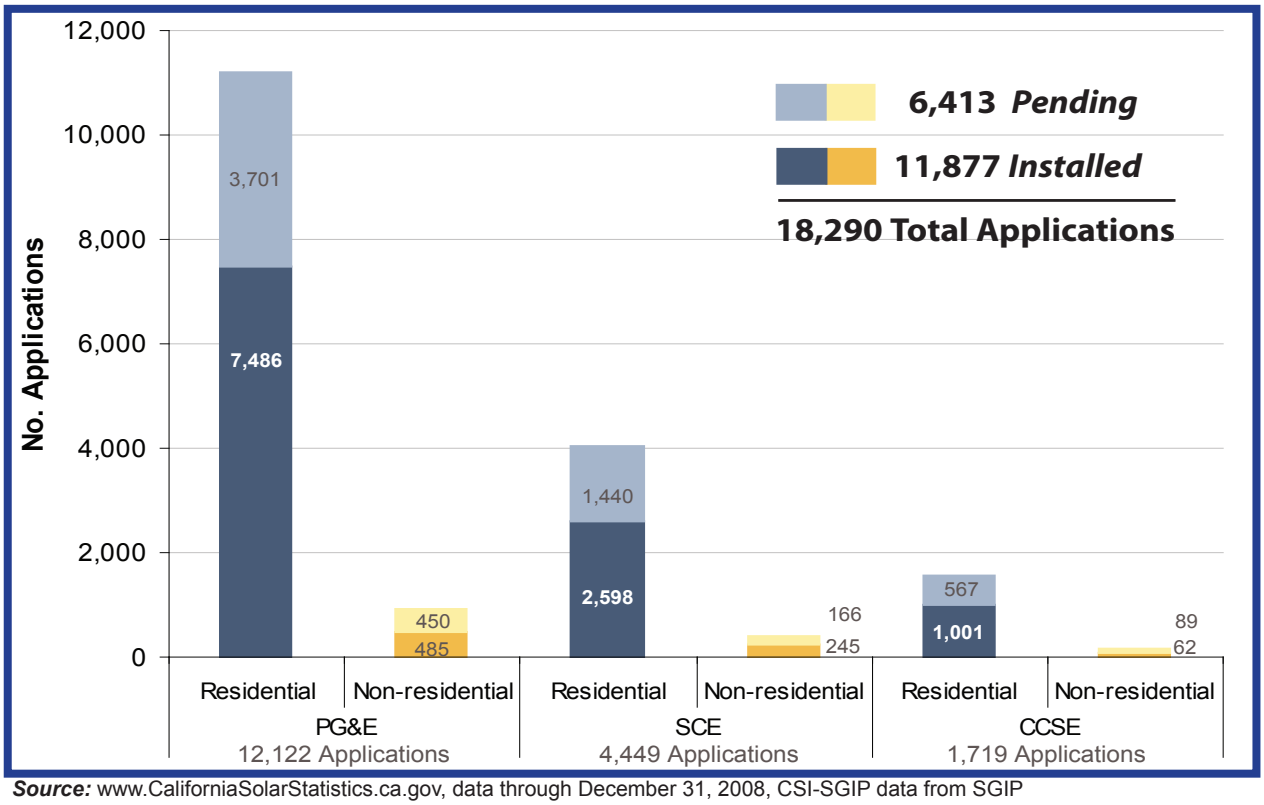
Source: CPUC Staff Progress Reports September 2007, April 2008, PowerClerk database December 31, 2008, and CSI-SGIP Transitional Project data from SGIP Database January 2009

Figure 6. Total Capacity of CSI Applications by Program Administrator, in MW



Source: www.CaliforniaSolarStatistics.ca.gov, data through December 31, 2008, CSI-SGIP data from SGIP Project Database January 2009.

Figure 7. Total Number of CSI Applications by Program Administrator



Source: www.CaliforniaSolarStatistics.ca.gov, data through December 31, 2008, CSI-SGIP data from SGIP Project Database January 2009.

Table 7. Number of applications and MW by customer type and Program Administrator, January 1, 2007 to December 31, 2008

Customer Class	Data	Program Administrator			Total
		CCSE	PG&E	SCE	
Residential	# Of Applications	1,568	11,187	4,038	16,793
	Applications %	8.60%	61.50%	22.20%	92.30%
	MW	7	52.1	20.2	79.3
	MW %	2.30%	17.50%	6.80%	26.60%
Commercial	# Of Applications	92	614	284	990
	Applications %	0.50%	3.40%	1.60%	5.40%
	MW	17.8	75.3	58	151.1
	MW %	6.00%	25.30%	19.50%	50.70%
Government/Non-Profit	# Of Applications	58	262	96	416
	Applications %	0.30%	1.40%	0.50%	2.30%
	MW	7.5	42.7	17.3	67.5
	MW %	2.50%	14.30%	5.80%	22.70%
All Customer Classes	**Total # of Applications**	**1,718**	**12,063**	**4,418**	**18,199**
	% of Applications	**9.40%**	**66.30%**	**24.30%**	
	Total MW	**32.3**	**170.1**	**95.5**	**297.9**
	% of Total MW	**10.90%**	**57.10%**	**32.10%**	

Source: www.CaliforniaSolarStatistics.ca.gov through December 31, 2008. Does NOT include CSI-SGIP Transitional Projects.

CCSE. CCSE is the program administrator in San Diego Gas & Electric's territory, and demand in that area has continued to grow in all sectors. CCSE capacity of applications has more than tripled in the residential sector and increased by 39 percent in the non-residential sectors.

Program Participation By Service Territory

Table 7, above, offers a closer look at the geographic and customer demand patterns in the first two years of the CSI. In Q4 2008, the number of residential applications made up 92 percent of all CSI applications (up 1 percent from Q3), while the capacity of non-residential applications decreased to 73 percent (down 4 percent from Q4) of all MW in applications.

Programmatic dropout rate estimated at 15%

Applicants to the CSI Program sometimes do not move forward with a reservation and are considered "dropouts". Reasons for dropouts vary, and include but are not limited to lack of site suitability, changing business conditions, and project financing constraints. The CPUC hosted a workshop on CSI Program dropouts and their effects on the CSI budget in July 2009. Since that time, CPUC staff has continued to monitor and report on both the CSI Program dropout rate and the amount of incentive dollars unreserved when projects drop out and are added back in to the program at lower incentive level. As of December 31, 2008, about 15 percent of reserved MWs have dropped out of the Program, which also represents 15 percent of reserved incentive dollars. By comparison, the CSI Program's predecessor, the Self Generation Incentive Program, experienced dropout rates for solar projects at or above 50 percent.

When CSI projects drop out of the program and their associated MWs are added in at a lower incentive rate, there is a surplus of money created by the fact that the MWs are funded at a lower level than that at which they were originally reserved. As of December 31, 2008, the sum of all these "unreserved incentive dollars" was approximately $35.2 million, as reported on January 12, 2009 by the Program Administrators. More information on the calculation of this overall number can be found in the Program Dropouts section of the Data Annex, available online.

Third Party Information

Third party ownership is a common business arrangement in the solar project development world, but it is not directly tracked by the CSI database. However, there is a reasonable proxy of the frequency of third-party ownership based on looking at projects that have a "Host Customer" that is different from a "System Owner". Similarly, the CSI database does not include information on whether a "System Owner" has a Power Purchase Agreement (PPA) with the "Host Customer" because that information is not part of the CSI application process. While PPA arrangements do exist as part of third-party owned projects, there could be other financial or management arrangements between the two entities.

Table 8 on the facing page shows that just 450 projects (2 percent of all projects) where the "Host Customer" is known to

Table 8. Third party-owned projects

	Program Administrator			Total
	CCSE	PG&E	SCE	
No. applications with different Host Customer / System Owner	60	246	144	450
No. applications – all CSI projects	1,719	12,122	4,449	18,290
Total capacity – applications with different Host Customer / System Owner (MW)	13.5	66.5	48.5	128.5
Total capacity – all CSI projects (MW)	32.0	186.0	103.0	121.0

Source: PowerClerk database through January 14, 2009.

be different from "System Owner", however these projects make up 40 percent of total capacity.

Net Energy Metering

Net Energy Metering (NEM) provides an important benefit to solar customers by allowing the energy generated by their solar systems to offset their energy usage at the retail rate. Public Utilities Code currently limits the availability of NEM generation in each utility territory to 2.5% of "aggregate customer peak demand".[1] Solar customers make up the majority of NEM customer-generators. The CPUC is monitoring NEM generation in each utility territory to stay aware of when the NEM caps may be reached. PG&E has an additional 108 MW of capacity in pending applications, and while all of those projects would fit under the NEM cap, if there was an additional 150 MW of projects, beyond the current applicants – those projects would come close to filling the existing NEM availability for PG&E. Table 9, below, shows information on NEM customer-generators in each utility service territory.

1 Public Utilities Code 2827 (c) (1) states, "Every electricity distribution utility or cooperative shall develop a standard contract or tariff providing for net energy metering, and shall make this standard contract or tariff available to eligible customer-generators, upon request, on a first-come-first-served basis until the time that the total rated generating capacity used by eligible customer-generators exceeds 2.5 percent of the electricity distribution utility or cooperative's aggregate customer peak demand.

Table 9. Net Energy Metering (NEM) participation to date, by utility service territory

	PG&E	SCE	CCSE/SDG&E
Total NEM Customer-Generators	27,225 customers	9,088 customers	5,933 customers
Total NEM SOLAR Customer-Generators	27,156 customers	8,894 customers	5,907 customers
Total rated generating capacity of all NEM customer-generators (MW)	265 MW	123 MW	49 MW
Total rated generating capacity of all NEM SOLAR customer-generators (MW)	264 MW	114 MW	48 MW
Percentage of "aggregate customer peak demand" accounted for by all NEM customers	1.27%	0.51%	0.59%

Source: CPUC Data Request to the Program Administrators, dated December 16, 2008. Data current as of December 31, 2008.

Program Implementation Updates

The California Solar Initiative's general market incentive program launched on January 1, 2007. The Initiative's other program components, including the solar water heating pilot and low income programs, launched more recently. This section provides an update on the CPUC's program progress and program changes made in the last quarter.

Program components

Solar Water Heating Pilot Program. The California Center for Sustainable Energy (CCSE) recently issued the Solar Water Heating Pilot Program (SWHPP) Interim Evaluation Report, which was prepared by Itron, Inc. The report contains a detailed account of program activities to date, as well as market research on solar water heating in California, the United States generally and selected international markets. The report's findings include:

- Current California solar water heater owners tend to be conservative users of energy and water; therefore, expanded adoption of the technology is likely to produce greater savings and cost effectiveness within the remaining population of high-use consumers.
- The SWHPP has been relatively effective at increasing adoption of SWH systems by customers with natural gas water heaters. This is important since any program funded by AB1470 would focus on gas customers.
- A number of barriers must be overcome to enable widespread adoption of SWH systems, including permitting processes and cost, initial system cost, lack of customer awareness of the technology and benefits, and a shortage of experienced installers.

The evaluation will serve to inform the CPUC in the development of a program under Assembly Bill 1470 (AB 1470), which instructed the CPUC to consider information from the Pilot during the development of a $250 million statewide solar water heating program[1].

Single-Family Low Income Program. In December 2008, GRID Alternatives, a non-profit solar organization, finalized its contract to be the statewide manager of the CSI Single Family Low Income Program. Grid Alternatives is finalizing its program implementation plan and is preparing for its first installations. For questions about the California Solar Initiative Single-Family Low-Income Program, including eligibility information, please contact GRID Alternatives toll-free at (866) 921-4696 ext 802, by e-mail at sfli@gridalternatives.org, or visit their website at www.gridalternatives.org.

Multi-Family Affordable Solar Housing. The Program Administrators for the Multi-Family Affordable Solar Housing (MASH) Program have submitted Program Handbook changes for the MASH program. Once the Program Handbook changes are approved, MASH incentive applications are expected to be available in the first half of 2009.

On Thursday, January 8, 2009, the Energy Division hosted a workshop to discuss Virtual Net Metering (VNM) for individually-metered multifamily affordable housing properties in California's three large investor owned utility service territories. Virtual Net Metering for Multifamily Affordable Housing was adopted by the CPUC in D. 08-10-036, and is designed to overcome the challenge of allocating benefits from a single solar energy system to tenants in multifamily housing whose units are individually metered. Virtual Net Metering is not required to be in place for the MASH program to move forward (not all applications will need to use it), but nonetheless progress on VNM is continuing.

Research, Development & Demonstration. Itron finalized its contract to be the Program Manager for the CSI Research Development and Deployment Program in November 2008. Itron is working on making final program implementation plans and grant-making strategy, which should be available by the end of the second quarter of 2009. The program is expected to issue its first grant solicitation in 2009.

Non-PV Solar Technologies. The CSI Program offers incentives for other, non-PV, solar technologies that either generate electricity or displace electricity usage. In November 2008, the CSI Program modified its Expected Performance Based Buydown (EPBB) calculator to allow one type of non-PV technology, concentrating PV (CPV), to calculate estimated annual production for the purposes of making a performance based incentive (PBI) reservation request to the non-PV component of the CSI Program. The EPBB Calculator will not be changed for other non-PV technologies,

1 The report is available at the CPUC's solar website: http://www.cpuc.ca.gov/PUC/energy/DistGen/solarhotwater.htm

and calculations for those are on a case-by-case basis in accordance with the CSI Program Handbook. In December 2008, PG&E received the CSI Program's first non-PV incentive application from SolFocus, a CPV solar company.

General Market Program Changes

Weekly Public Reporting of CSI Data Available at www.CaliforniaSolarStatistics.ca.gov. In November 2008, the CSI program launched a new website, www.CaliforniaSolarStatistics.org, to provide the public with current data about the program. The website takes data from the CSI PowerClerk database weekly export, filters the data for common data entry errors, and makes available a wide array of data about the program in tables and charts. The data presentation, mirroring the presentation in the quarterly staff reports, includes the number of applications received, status of applications and progress toward program goals. The online reporting website will be enhanced over time to include more charts and tables. The CPUC and Program Administrators are considering how the reporting tool may be enhanced to include other data from other sources in the future.

Program Handbook Changes. A new version of the CSI Program Handbook was released on January 27, 2009, to reflect changes associated with the launch of the MASH Program, additional metering rules, and the ability to transfer a CSI reservation from one site to another (though with some limitations). The CSI project site transferability was approved via Commission Resolution E-4197 on December 18, 2008.

An earlier version of the CSI Program Handbook was released in November 2008. This version updated the Handbook to include a number of changes adopted as a result of Program Administrator Advice Letters to the Commission. These changes include but were not limited to a revised application fee schedule, clear and standardized inspection requirements, and modifications to Performance Data Provider protocols.

Program Forum. The next program forum will be held on January 30, 2009 at the Grand Long Beach Event Center.

The CPUC established the CSI Program Forum as a quarterly public meeting intended to allow stakeholders to learn about program updates and discuss solutions to implementation issues. Program Forums were previously held in April, June and October of 2007 and January, April, July and October of 2008[2].

Marketing & Outreach. The CSI program has launched an online tutorial that takes potential applicants step-by-step through the program application process. The online tutorial is a quick and easy way to ensure that applications are completed correctly so that they can be processed as quickly as possible. [3]

In addition, CSI program administrators and CPUC staff have created a new consumer guide to the CSI program. The guide contains an abundance of information useful to those considering installing solar PV systems, including how solar energy works, how much solar PV systems cost and how to apply for state incentives. [4]

The CSI Program Administrators filed Interim Marketing and Outreach plans on December 15, 2008. These plans are currently under review by the CPUC.

EPBB Calculator. In November 2008, the CSI Program modified its EPBB calculator to allow concentrating PV (CPV) technologies to calculate estimated annual production for the purposes of making a performance based incentive (PBI) reservation request to the non-PV component of the CSI Program.

The CSI PAs and the CPUC are assessing how the hourly photovoltaic production calculation requirements in the CEC's "Guidelines for California's Solar Electric Incentive Program Pursuant to Senate Bill 1" will necessitate future changes be made to the CSI Program's EPBB calculator.

Other solar program issues

AB 2466 Workshop. On Thursday, January 8, 2009, the Energy Division hosted a workshop to discuss implementation issues related to AB 2466 (Laird, 2008), the Local Government Renewable Energy Self Generation Program. AB 2466, which was passed by the Legislature and signed into law by the Governor in 2008, authorizes a local government to receive utility bill credits for electricity generated from an eligible renewable resource and supplied to the utility grid.[5]

Metering Accuracy and Performance Monitoring. In November 2008, the CPUC approved the final Performance Data Provider (PDP) protocols for performance-based incentive reporting. The new PDP protocols were enshrined in an updated version of the CSI Program Handbook released the same month. The new protocols describe the process and qualifications for a non-utility entity to become a PDP and details the data reporting requirements.

2 Program Forum presentation are available online under "Program Forum" at: http://www.cpuc.ca.gov/PUC/energy/Solar/

3 The CSI Program Applicant tutorial can be found at www.cpuc.ca.gov/puc/energy/solar

4 The Consumer Guide is available for download at: http://www.cpuc.ca.gov/PUC/energy/Solar/.

5 Workshop related materials are available online under at "Staff Workshops" at http://www.cpuc.ca.gov/PUC/energy/Solar.

Meanwhile, the CSI metering sub-committee is continuing to work on the development of a metering accuracy testing for inverter integrated metering systems accurate to +/- 5%. A proposed plan for metering accuracy certification requirements and testing procedures was submitted to the CPUC by Advice Letter (PG&E AL 3239-E) on March 28, 2008. The metering sub-committee is also now working with a nationally recognized testing laboratory and a number of inverter manufacturers to test the metering accuracy certification requirements on actual inverter integrated meters.

Compliance with Senate Bill 1. In December 2008, the California Energy Commission (Energy Commission) approved their Guidelines for California's Solar Electric Incentive Program's (SB 1 Guidelines). The SB 1 Guidelines requires the CSI Program to adopt, no later than July 1, 2009, a set of modified field verification requirements that includes a new methodology for assessing the impact of shading. The CSI Program Administrators are required to file an Advice Letter to update the CSI program to conform to a few identified areas where the CPUC's CSI program is not already in alignment with the Energy Commission's guidelines.

CSI Program Measurement & Evaluation Plan. On July 29, 2008, the Commission approved an Assigned Commissioner Ruling establishing an evaluation plan for the CSI Program. The ruling recommends a Measurement and Evaluation (M&E) plan composed of quarterly progress reports, annual program assessments to the Legislature, and evaluation reports looking at five elements of the CSI program.

The CPUC staff is making progress on four initial Measurement and Evaluation (M&E) contracts in accordance with the Assigned Commissioner's Ruling on Program Evaluation. On January 12, 2009, the CPUC selected Itron as winning bidder to conduct the CSI Impact Evaluation. Energy Division is currently evaluating proposals for its Process Evaluation, Program Evaluation Project Coordinator, and Cost-Effectiveness evaluation contracts.

Contact Information and Other Useful Sources of Information

For press inquiries about the CPUC portion of the California Solar Initiative, contact:

Terrie Prosper, Press Office
California Public Utilities Commission
505 Van Ness Ave.
San Francisco, CA 94102-3298
Email: **tdp@cpuc.ca.gov or 415-703-2160**

For policy or program development questions about the CPUC portion of the California Solar Initiative, contact:

California Solar Initiative and Distributed Generation
Information Line: **energy@cpuc.ca.gov or 415-355-5586**

The CSI **statewide consumer website**, includes information on the CPUC, CEC, and POU programs, including the CSI Program Handbook	www.GoSolarCalifornia.ca.gov
The CSI Program Administrators use an online tool to calculate the up-front Expected Performance Based Buy down (EPBB) incentive, known as the **EPBB Calculator**	www.csi-epbb.com
The CSI Program Administrators use 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
California Solar Statistics, a data reporting website that draws directly from the CSI database and is updated weekly	www.CaliforniaSolarStatistics.ca.gov
Information about the **CPUC regulatory** proceeding that deals with the CSI Program	www.cpuc.ca.gov/PUC/energy/solar/
Pacific Gas & Electric Company	www.pge.com/solar
Southern California Edison	www.sce.com/CSI/
California Center for Sustainable Energy (CCSE) – offering Solar Rebates in San Diego Gas & Electric Territory and the Solar Hot Water Pilot Program	www.energycenter.org
GRID Alternatives, Program Manager for the Single Family Low Income Program	www.gridalternatives.org