



Overview of the CPUC's California Solar Initiative and DG Programs:

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www.cpuc.ca.gov/PUC/energy/DistGen/





DG and Renewables Policies and Programs

DG Type	Programs
System-Side Generation or Utility-Side Procurement	Renewable Portfolio Standard (RPS) Program <ul style="list-style-type: none"> ▪ Feed-in Tariffs (Market Price Referent) ▪ Renewable Auction Mechanism (RAM) ▪ Utility Solar PV Programs ▪ Competitive Solicitations and Bilateral Contracts
	Combined Heat and Power (CHP) Programs <ul style="list-style-type: none"> ▪ Qualifying Facility (QF) Contracts
Customer-Side Generation or Self-Generation	Go Solar California: Solar Photovoltaic (PV) Rebates <ul style="list-style-type: none"> ▪ California Solar Initiative (CSI) -- CPUC ▪ New Solar Homes Program (NSHP) – CEC
	Other Customer-Side Self Generation Rebates <ul style="list-style-type: none"> ▪ Self-Generation Incentive Program (SGIP) (for non PV) – CPUC ▪ Emerging Renewables Program (ERP) – CEC





California Leads the Nation in Installed Solar

- Solar in California: 1,322+ MW installed PV at 126,567+ locations
- California is over 2/3rds of nation's solar market and nation's largest rebate program
- California supports solar self-generation with four interrelated state policies:
 - Rebates
 - Net energy metering (NEM)
 - Interconnection policies and
 - Rate structures (e.g. tiered rates, time of use rates)





California Solar Initiative (CSI)

□ Key Aspects of CSI Program Design

- Launched in 2007, but built on related distributed generation rebate programs.
- Focus on Performance: Rebates paid on expected OR actual performance.
- Declining Incentives: **Rebates lower in 10 steps based on market demand:** Started at \$2.50/watt in 2007 and at \$0.20/watt in 2012. Higher rebates for non-commercial.

□ CSI Program Includes 5 Sub-Components

1. **General Market Program** : Provides incentives to all buildings except new homes, includes electric-displacing CSI-Thermal rebates
2. **Single-family Affordable Solar Homes (SASH) Program**: Provides rebates to low-income customers in deed-restricted single-family homes
3. **Multifamily Affordable Solar Housing (MASH) Program**: Provides rebates to multifamily affordable housing in deed restricted multi-family residences
4. **RD&D Program**: Provides up to \$50 million in a program for projects related to CSI goals
5. **CSI-Thermal Program**: Provides rebates for solar water heating and solar heating/cooling technologies





CPUC's California Solar Initiative (CSI) Budget

Two Sources of Funds

- CSI is funded separately by electric and gas ratepayers

Program Focus

- 5 program subcomponents fund solar PV and solar thermal (including solar hot water) technologies

	Budget (\$ Millions)	Goal
CSI Electric Budget (2007-2016)	\$2,367	1,940 MW
General Market Solar Program (includes PV and electric displacing CSI-Thermal program)	\$2,097	1,750 MW
Single-family Affordable Solar Homes (SASH)	\$108	~15 MW
Multifamily Affordable Solar Housing (MASH)	\$108	~30 MW
Research, Development, Demonstration, and Deployment (RD&D)	\$50	~
Solar Water Heating Pilot Program (SWHPP)	\$2.6	750 SWH systems
CSI Gas Budget (2010-2017)		
CSI-Thermal Program (Gas-Displacing solar thermal/hot water)	\$250	585 million therms
Total CSI Budget	\$2,617	

Note: CPUC D.06-12-033, FOF 15, p. 28 established goal of the general market program as 1,750 MW. The CPUC decisions on MASH and SASH did not explicitly adopt a 95 MW per program goal; however, the CPUC did adopt a total CSI program goal of 1,940 MW in D.06-12-033. In addition, D.10-01-022 established the CSI Thermal Program pursuant to AB 1470 and SB 1.





Program Issues: Administrative Efficiency

- **Take the paper out of paperwork: Automate administrative processes.**
 - **CSI has increased use of online interfaces and use of PDFs vs. paper submissions.**
- **Accountability and documentation vs. streamlining:**
 - **Over time, CSI has reduced the number of forms required**





Program Issues: Handling Confidential Data

- **CSI provides data at California Solar Statistics website – graphs, tables, and database**
- **We also share some data with researchers – only government-affiliated, often with NDAs**
- **CSI strives to show as much information as possible, but must maintain customer confidentiality – i.e. name and address.**





Program Issues: Third Party Owners (TPOs)

- **Issues with TPOs were unforeseen when we designed the program in 2006**
- **These applications require different kinds of documentation**
- **Identifying the “system cost” for TPO systems is challenging**





Program Issues: Book Keeping and Databases

- **CSI faced complications/challenges:**
 - **Transition from the SGIP program to CSI in 2006 → 2007**
 - **Operating in tandem two databases, because of program's organic history. Trigger Tracker (for MW) and PowerClerk (for \$).**





Program Issues: Adequate Admin Budget

- **The Commission order (Decision 06-12-033) establishing the CSI budget capped the administration budget at 10% of the total program cost.**
- **Admin includes evaluation and marketing.**
- **Program Administrators have been squeezed for resources.**
- **Allow flexibility, and some buffer, in administrative budgeting.**





Back Up Slides





What is Distributed Generation (DG)?

A broad term that includes:

- Size: DG is generally considered 1 kW to 20 MW
- Definition: Distributed power plants (generation) connected throughout the system at *distribution* voltage, but occasionally at *transmission* voltage
- Benefits: Voltage support, reduce transmission & distribution, local reliability, procurement portfolio diversity, demand reduction, flexible siting options, quick development timelines
- Ownership: DG can be customer-owned, utility-owned, or third-party owned
- Types of Technologies: Solar PV, solar thermal, wind, CHP (including ICE, micro-turbines, gas turbines), fuel cells, distributed storage (if coupled with generation)
- Types of Fuel: All (sun, wind, natural gas, biogas, biomass, etc.)





Go Solar California Campaign

Goals of Go Solar California

- Senate Bill 1 set goal of 3,000 MW of new customer-owned solar DG
- SB 1 set goal of a “self-sustaining” solar industry

Statewide Budget

- \$3,551 million budget (2007-2016) from electric ratepayers (sub-portion of budget = \$2,367 million overseen by CPUC)
- \$250 million budget (2010-1017) from gas ratepayers

	California Public Utilities Commission	California Energy Commission	Publicly Owned Utilities (POU)	Total
Program	California Solar Initiative (CSI) Programs	New Solar Homes Partnership (NSHP)	Various	Go Solar California
Budget	\$2,367 million – electric \$250 million - gas	\$400 million	\$784 million	\$3,551 million – electric \$250 million – gas
Solar Goals (MW)	1,940 MW – electric 585 million therms (gas)	360 MW	700 MW	3,000 MW 585 million therms
Scope	All solar in IOU areas <u>except</u> PV in new homes	Solar on new homes in IOU territories	All solar in POU areas	All of California

Note: The electric budgets are for 2007-2016, and the gas budgets are for 2010-2017.





CSI General Market Program (2007-2012)

- Program is 73% of the way towards its goal of 1,750 MW
- Pending projects have 12-18 months to come online or their funding is made newly available to other projects.
- Incentives have declined up to 10 times in five and half years
 - Started at \$2.50/watt (or ~25% of installed cost)
 - Now at \$0.20/watt in most territories (or ~3% of installed cost)
 - Due to declining incentive levels, the CSI budget supports the installation of more MWs as incentives decline.

	Installed	Pending	Remaining	Total Goal
Capacity (MW)	839 MW	348 MW	563 MW	1,750 MW
Goal (% of Total)	48%	20%	32%	100%
Projects (Number)	73,586	14,180	~~	~~
Incentives (\$ Million)	\$1,355M	\$262M	\$331M	\$1,948 M

Data includes only CSI General Market Program.
Data through June 4, 2012.





CSI Program Totals, Installed by Year

	Number of CSI MW Installed (MW)	Number of CSI Solar Projects Installed	CSI Incentives Awarded (\$) Million
2007	28 MW	3,376	\$72 M
2008	121 MW	8,330	\$315 M
2009	136 MW	13,063	\$284 M
2010	152 MW	16,809	\$238 M
2011	261 MW	21,406	\$308 M
Total	698 MW	62,984	\$1,217 M

CSI program installs more MWs each year with less incentive funding.

Data includes only CSI Genera Market Program.
Data through June 2012





Track Our Solar Market Progress

- Go Solar California Portal: Online Consumer Information
www.gosolarcalifornia.ca.gov
- Annually: Reports to CA legislature
<http://www.cpuc.ca.gov/PUC/energy/solar/apa2011.htm>
- Quarterly: Public “CSI Program Forums” – in person meetings
www.cpuc.ca.gov/PUC/energy/Solar/forum.htm
- Monthly: Go Solar California! Newsletter
www.gosolarcalifornia.ca.gov/news/
- Weekly: All program data available each Wednesday
www.CaliforniaSolarStatistics.ca.gov





Net Surplus Compensation

□ Net Surplus Generators

- Net energy metering customers who produce electricity in excess of their on-site load are eligible for compensation at the end of a 12-month true-up period (AB 920, 2006)
- The net surplus compensation rate is a rolling 12-month average of each utility's avoided cost derived from an hourly day-ahead electricity market price between the hours of 7am to 5pm, when most surplus generators produce electricity (D.11-06-016)

□ Renewable Energy Credits (RECs)

- AB 920 stipulates that utilities will receive the renewable energy credits (RECs) associated with those excess kilowatt hours for which they have provided compensation to customers





CSI Project Costs Declining

- CSI System costs have declined in five years on a CPI Adjusted basis

Size of System	Systems Less than 10 kW	Systems Greater than 10 kW
Quarter/Year		
Q4 2007	\$10.23/watt	\$9.90/watt
Q4 2008	\$10.40/watt	\$9.65/watt
Q4 2009	\$9.37/watt	\$7.79/watt
Q4 2010	\$8.41/watt	\$7.32/watt
Q4 2011	\$7.39 /watt	\$6.47/watt

Date: June 3, 2012

