Update on the California Solar Initiative (CSI)

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California Public Utilities Commission
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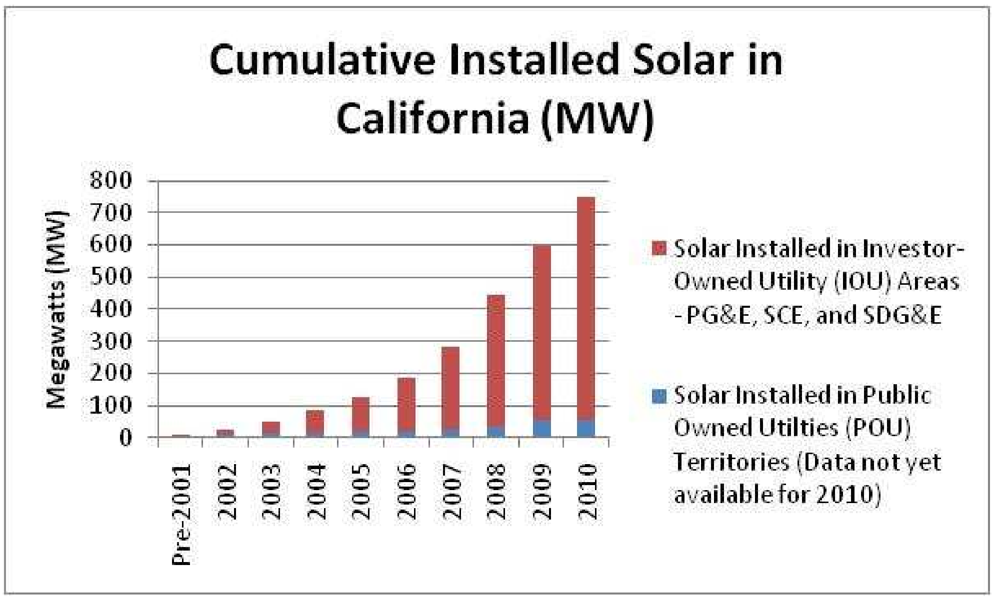
www.cpuc.ca.gov/PUC/energy/solar

California Leads the Nation in Installed Solar

- California has 790+ MW installed PV at 78,000+ locations
  - 61%+ of all California solar installed under California Solar Initiative (CSI)
- California comprises over 2/3rds of nation's solar market
- California supports solar self-generation with four inter-related state policies: rebates, net energy metering (NEM), interconnection policies, and rate structures (e.g. tiered rates, time of use rates)



Date: January 7, 2011. Data ONLY includes customer-side of the meter self-generation solar. Does not include RPS or wholesale-side solar projects that serve utility load.
Sources: IOU data based on CPUC collected interconnection reports, except 2010 data which is based on CSI Program Data only. POU data based on California Energy Commission data, available through 2009 only.

Go Solar California campaign

- SB 1 (Murray, 2006) and AB 1470 (Huffman, 2007) set broad solar goals
  - 3,000 MW of new customer-owned solar DG – electric
  - A self-sustaining solar industry
  - 200,000 solar water heating systems – gas

	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	**$2,167 million – electric $250 million - gas**	**$400 million**	**$784 million**	**$3,351 million – electric $250 million – gas**
Solar Goals	**1,940 MW – electric 200,000 Solar Hot Water systems - gas**	**400 MW**	**700 MW**	**~3,000 MW 200,000 Solar Hot Water systems**
Scope	**All solar systems in IOU areas <u>except</u> PV in new homes**	**Solar systems on new homes in IOU territories**	**All solar systems in POU areas**	**All of California**

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

CPUC's California Solar Initiative (CSI) Budget

Program Components

- Various program subcomponents fund solar PV and solar thermal (including solar hot water) technologies from electric and gas ratepayers
- Low-income solar programs serve affordable housing

	Budget ($ Millions)	Goal
CSI Electric Budget (2007-2016)	**$2,167**	1,940 MW
General Market Solar Program (includes PV and electric-displacing CSI-Thermal program)	$1,897	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	~
CSI Gas Budget (2010-2017)		
CSI-Thermal Program (Gas-Displacing solar thermal/hot water)	***$250***	*585 million therms*
Total CSI Budget	**$2,417**	

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.

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CSI Progress by Program Areas

Single-family Affordable Solar Homs (SASH) Program

- CSI's SASH program has installed ~331 projects (1 MW) and has another 469 (1.2 MW) underway.

Multifamily Affordable Solar Housing (MASH) Program

- CSI's MASH program installed 36 projects (2 MW) and has another 306 (20 MW) pending.

CSI Research, Development and Demonstration (RD&D) Program

- CSI RD&D program has awarded 18 grants for $34 million in funding (Projects leverage $17 million in matching funds.)
- Focus on grid integration, innovative solar business models, and improved solar production models.
- CPUC and U.S. Department of Energy collaborating on "High Penetration PV" projects, web portal and symposium.

CSI-Thermal Program (Solar Water Heating)

- Began accepting applications for Solar Water Heating applications in May 2010 (for residential) and October 2010 (for Commercial).
- Program has received ~200 applications evenly split between electric and gas displacing systems.

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CSI General Market Program Progress (2007-2011)

- Program is 51% of the way toward its goal in 4 years (27% installed).
- Pending projects have 12-18 months to come online or their funding is made newly available to other projects.
- Incentives have declined up to seven times in four years.
- The CSI budget funds more MWs per dollar with each incentive decline.
- CSI continues to see steady and increasing demand for incentives.
- Jan. 2011 – hit record for highest installs in a month – 25.2 MW and 1,786 projects.

	Installed	Pending	Remaining	Total
Capacity (MW)	479 MW	420 MW	851 MW*	1,750 MW
Goal (% of Total)	27%	24%	49%	100%
Projects (Number)	44,933	10,930	~~	~~
Incentives ($ Million)	$932 M	$542 M	$275 M	$1,748 M

Data includes only CSI Genera Market Program.
Data through February 23, 2011.

*There is 851 MW remaining in the CSI goals, but current budget availability will probably only fund 451 additional MW.

Key Aspects of CSI Program Design

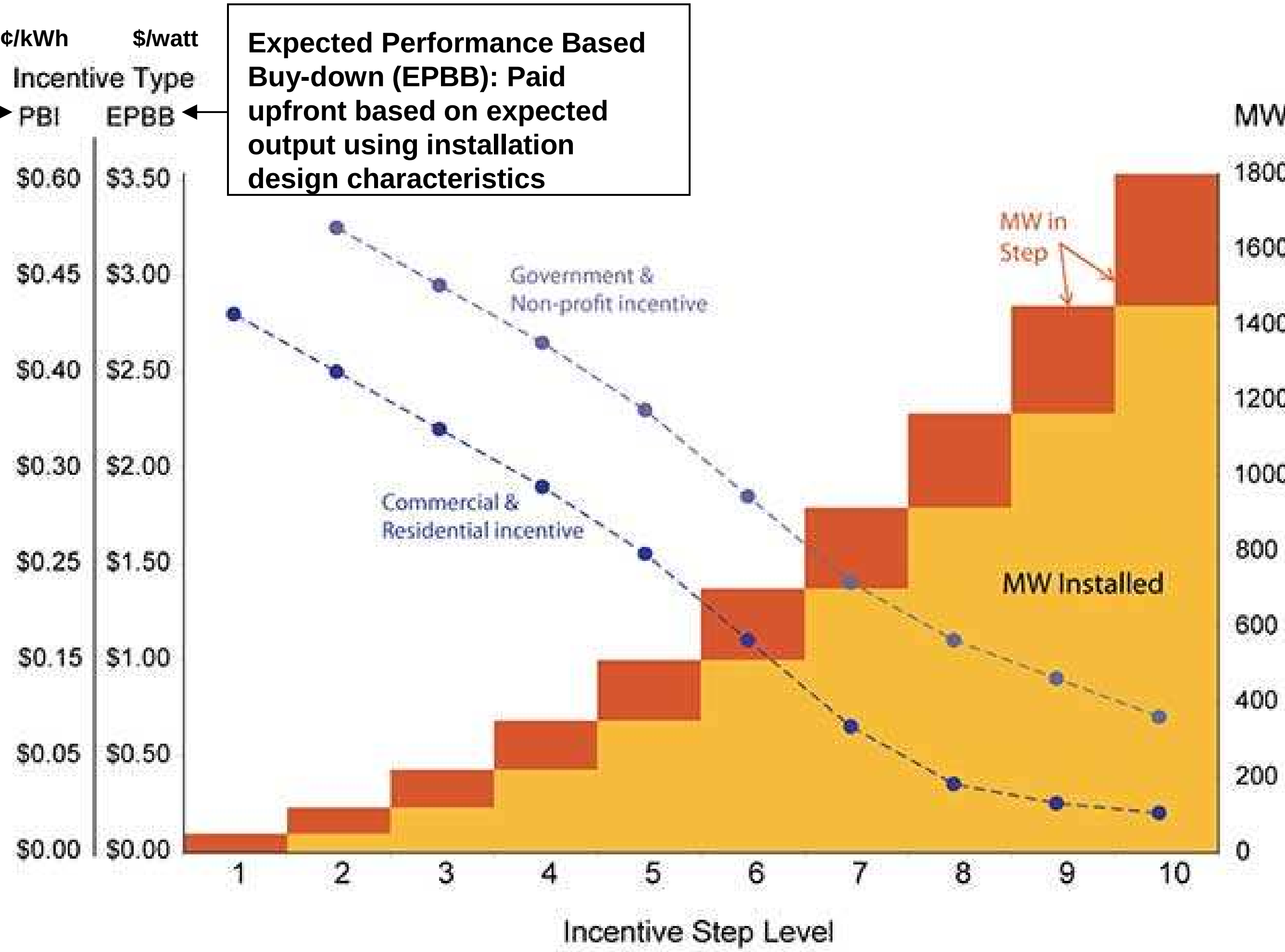
- History: Launched in 2007, but built on related distributed generation rebate programs available under auspices of CPUC and CEC since earlier in decade.
- Consumer Protection: Uniform statewide eligibility guidelines. Program requires warranties and eligible equipment. Program inspects large quantity of installations.
- Performance: Rebates paid on expected or actual performance, not just capacity. Rebates for large projects paid over five years.
- Transparency: Program and project price data is publicly available and available for comparison shopping by consumers:

  http://www.californiasolarstatistics.ca.gov/search/contractor/
- Making Industry Sustainable: Rebates lower in 10 steps based on market demand. Started at $2.50/watt in 2007 and have lowered seven times. Rebates now at $0.35/watt in 2011.

Incentives decline as demand grows: CPUC General Market Program has a goal of 1,750 MW

Performance Based Incentive (PBI): Paid based on actual output over 5 years

Expected Performance Based Buy-down (EPBB): Paid upfront based on expected output using installation design characteristics



PBI: Performance Based Incentive, paid over 5 years, in $ / kWh
EPBB: Expected Performance Based Buydown, paid upfront, in $ / W

CSI Program Totals, Installed by Year

	Number of CSI MW Installed (MW)	Number of CSI Solar Projects Installed	CSI Incentives Awarded ($) Million	Avg. $/watt
2007	28 MW	3,376	$73 M	$2.61
2008	121 MW	8,330	$304 M	$2.51
2009	136 MW	13,063	$270 M	$1.98
2010	152 MW	16,837	$230 M	$1.51
2011 to date	*42 MW*	*3,327*	*$56 M*	*$1.33*
Total	**479 MW**	**44,933**	**$932 M**	**$1.94**

- CSI program installs more MWs each year with less incentive funding.
- Average $/watt goes down each year; most incentives offered today are now just $0.35/watt.

Data includes only CSI Genera Market Program.
Data through February 23, 2011.

Ratepayer Support as a % of System Costs

- Average systems now cost btw. $7.50-$8.00/watt (reduction of ~20%+ in past 3 years).
- CSI Rebate has reduced faster than system cost, and now covers just 4-5% of system, on average.

Ratepayer Support as % of System Costs ($/watt)

Application Type	Ratepayer Funded CSI Rebate	Federal Investment Tax Credit (ITC)	Average System Cost
Residential	**$0.35**	**$2.39**	**$7.96**
Percentage	*4%*	*30%*	*100%*
Non-Residential	**$0.35**	**$2.26**	**$7.42**
Percentage	*5%*	*30%*	*100%*
Non-Tax Entity	**$1.10**	**0**	**$7.96**
Percentage	*15%*	*0*	*100%*

Date: January 6, 2011

CSI General Market Program Budget Status

- CSI Program estimated to be ~10% short of funding needed to meet goals.
- CSI Program expended funds faster than expected.
  - PBI projects are outperforming predictions →higher cost than budgeted.
  - PG&E and SDG&E have wait lists for new non-residential projects.
- Program budget cap likely to support 1,350 MW instead of 1,750 MW.
  - A budget cap increase of ~$200 M could achieve original goal.
  - Based on CSI's current (low) incentive levels, each additional $200 M in funding likely to stimulate ~400 MW of additional, new solar generation.
- Program Status
  - Residential Program - open and fully funded in all territories.
  - Non-Residential Program – open in SCE territory; all new projects now placed on wait list in PG&E and SDG&E territories (historically program experiences a 20% drop-out rate).
  - CSI-Thermal electric displacing – commercial projects also affected by budget shortfall since it shares budget with CSI general market program.

Go Solar California portal

Online consumer information for all types of solar customers.

Track Our Solar Market Progress

- Annually: Reports to CA legislature

  http://www.cpuc.ca.gov/PUC/energy/Solar/legreports.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 CSI program data available each Wednesday

  www.CaliforniaSolarStatistics.ca.gov