



Overview of the CPUC's Customer Generation Programs

Water/Energy Workshop
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Ehren Seybert
California Public Utilities Commission
Energy Division

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





Agenda

Overview of Customer Generation Programs:

- California Solar Initiative
- Self-Generation Incentive Program
- Net Energy Metering





DG 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 ▪ IOU Voluntary Programs ▪ 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 ▪ Feed-in Tariff (FIT) under AB 1613 (Blakeslee, 2007)
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/ Programs <ul style="list-style-type: none"> ▪ Self-Generation Incentive Program (SGIP) – CPUC ▪ Net Energy Metering (NEM) – CEC/CPUC/POU





Overview of Customer-Side Solar

- Solar in California: 1,400+ MW installed PV at 130,000+ locations
 - More than 1,000 MW installed in CSI Program
- 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)



Stone Brewing Co., North County San Diego
Courtesy: Stone Brewing Co.



San Diego County Water Authority
Courtesy: Borrego Solar





Go Solar California Campaign

Goals of Go Solar California

- SB 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 (2010-2017) 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





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





CSI General Market Program (2007-2013)

- Program is 79% of the way towards its goal of 1,750 MW
- Pending projects have 12-18 months to come online or their funding is made 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)	1,114 MW	318 MW	318 MW	1,750 MW
Goal (% of Total)	64%	18%	18%	100%
Incentives (\$ Million)	\$1,521 M	\$167 M	\$260 M	\$1,948 M

Data includes only CSI General Market Program.
Data through March 19, 2013





The Self-Generation Incentive Program





Introduction to the Self-Generation Incentive Program

SGIP provides incentives for DG technologies which have demonstrated a need for financial support in order to encourage customer adoption.

Goals of SGIP

- Reduce peak load demand (historical goal from inception in 2001)
- Reduce greenhouse gas emissions (per SB 412 in 2009)

Budget

- \$83 Million program budget per year
 - \$77 Million for incentives, \$6 Million for program administration
- SGIP Program authorized through 2016 per SB 412





Self-Generation Incentive Program History

History:

- Originally designed in 2001 as rebate program focused on larger projects to complement CEC's Emerging Renewables Program (ERP), which focused on similar technologies at a smaller scale
- Started in response to energy crisis in 2001

Policy Developments:

- 1/2006: SB1 moves PV from SGIP to newly created CSI
- 4/2008: D.08-04-049 raises 1MW cap on incentives to a tiered 3MW
- 9/2008: AB 2667 establishes 20% rebate incentive bonus for CA suppliers
- 1/2008: D.08-11-044 makes storage coupled with DG eligible for \$2/W
- 1/2009: SB 412 focuses SGIP on GHG reductions and extends program to 2016
- **9/2011: D.11-09-015 includes eligible wind, fuel cells, gas turbines, micro-turbines and internal combustion engines, waste heat capture, CHP, energy storage, and pressure reduction turbines in the program.**
- **9/2011: AB 1150 extends SGIP annual collections through 2014**
- 5/2012: D.12-05-037 consolidates ERP into SGIP





SGIP - New and Improved

	2010	2012
<i>Incentive Budget</i>	Split evenly between renewable and non-renewable	75% renewable/emerging and 25% non-renewable
<i>Incentive Design</i>	Upfront (tiered)	Upfront and Performance based (Tiered)
<i>Eligible Technologies</i>	Wind (> 30 kW), fuel cells (> 30 kW), energy storage (coupled with DG)	Wind, fuel cells, energy storage (coupled and stand-alone), pressure reduction turbines, internal combustion engines, microturbines, gas turbines.
<i>System Size Cap</i>	3 MW	None
<i>System Warranty</i>	5 years	10 years
<i>Other Program Changes</i>		Application fee, energy efficiency audit, incentive decline, manufacturer limit





Current SGLP Incentive Structure

	Fuel	Incentive (\$/W)
Renewable Fuels and Waste Heat Capture		
Wind	n/a	\$1.19
Waste Heat or bottom cycle CHP	n/a	\$1.19
Pressure Reduction Turbine	n/a	\$1.19
Gas Turbine – CHP	Renewable	\$2.28
Microturbine – CHP	Renewable	\$2.28
IC Engine – CHP	Renewable	\$2.28
Non-Renewable Fuels		
Gas Turbine– CHP	NG	\$0.48
Microturbine – CHP	NG	\$0.48
IC Engine – CHP	NG	\$0.48
Emerging Technologies		
Advanced Energy Storage	n/a	\$1.80
Fuel Cell – CHP or electric only	NG	\$2.03
Fuel Cell – CHP or electric only	Renewable	\$3.83





SGIP Installations by Technology Type

Technology	Projects	Capacity (kW)	SGIP Incentive (\$)
A.E.S.	2	1,600	\$3,200,000
Fuel Cell CHP	54	2,955	\$8,287,500
Fuel Cell Electric	155	75,280	\$264,711,273
Gas Turbine	11	30,845	\$7,164,285
Internal Combustion	253	154,889	\$93,219,411
Microturbine	143	25,029	\$22,117,026
Total	637	313,360	\$425,750,342

Date: March 19, 2013





2011/12 SGIP Applications

Technology	Projects	Capacity (kW)	SGIP Incentive (\$)
A.E.S.	630	33,115	\$62,941,876
Fuel Cell CHP	10	2,915	\$6,747,750
Fuel Cell Electric	66	34,267	\$90,028,000
Gas Turbine	4	19,530	\$6,118,000
Internal Combustion	21	24,462	\$35,669,010
Microturbine	14	7,498	\$6,392,000
Pressure Reduction Turbine	7	2,273	\$2,964,950
Waste Heat to Power	3	687	\$670,900
Wind Turbine	15	22,959	\$24,350,500
Total	767	147,142	\$233,281,986

Date: March 19, 2013. Includes completed projects.





SGIP Installations Using Onsite Biogas

Technology	Projects	Capacity (kW)	SGIP Incentive (\$)
Fuel Cell CHP	1	1,400	\$5,400,000
Fuel Cell Electric	9	6,400	\$23,625,000
Internal Combustion	14	8,614	\$7,946,146
Microturbine	23	4,607	\$5,405,070
Total	47	21,021	42,376,216

Date: March 19, 2013





2011/12 SGIP Applications Using Onsite Biogas

Technology	Projects	Capacity (kW)	SGIP Incentive (\$)
Gas Turbine	1	1,400	\$3,000,000
Internal Combustion	14	14,516	\$29,363,510
Microturbine	5	1,280	\$3,108,000
Total	20	17,196	\$35,471,510

Date: March 19, 2013





Net Energy Metering





Net Energy Metering (NEM)

- **Eligible Technologies**: Solar, wind, biomass, geothermal, renewable fuel cells, small hydroelectric generation, digester gas, municipal solid waste conversion, landfill gas, hydro technologies.
- **Onsite Load**: Facilities must serve onsite electricity needs.
- **Export/Import**: NEM customer-generator export to the grid, and import (consume) from grid → Only pay for the net on a billing period basis.
- **Program Cap**: 5% of aggregate (non-coincident) customer peak demand.

Variation of NEM

- **Bill Credit Transfer (BCT)** – Local government to install renewable generation up to 5 MW at one location within its geographic boundary. Credits can be used to offset charges at one or more other locations within same geographic boundary.





Thank you!
For Additional Information:
www.GoSolarCalifornia.ca.gov
<http://www.cpuc.ca.gov/PUC/energy/Solar/>
<http://www.cpuc.ca.gov/PUC/energy/DistGen/sgip/>
www.CaliforniaSolarStatistics.ca.gov
www.CalSolarResearch.ca.gov

