

# California Solar Initiative

The CPUC  
Portion of a  
Robust State  
Incentive  
Program



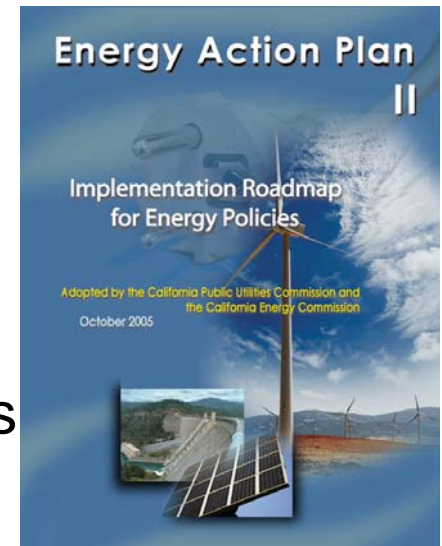
California Solar Initiative  
Go Solar California!

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California Public Utilities Commission  
**International PV Trade Mission to California**

June 11, 2007  
San Jose, California

# Energy Action Plan II

- Summarizes California's energy goals
  - Identifies specific actions to implement goals
- Loading order
  - Energy efficiency
  - Demand response and advanced metering infrastructure programs
  - Renewable generation
  - Cleanest available fossil resources
- Climate change, RD&D, and transportation





# California Solar Initiative (CSI)

- Goals:

- State: 3000 MW of new distributed solar generation by 2016
  - CPUC: 1940 MW

- Self-sustaining solar industry free from ratepayer subsidies after 2016

- Incentives optimally-sited and maintained systems to ensure performance, maximize ratepayer ROI

- 10-year commitment



# CSI Replaces Earlier Rebates

- CEC Emerging Renewables Program (small pv)
- CPUC Self Generation Incentive Program (large pv)
- 2004: Governor launches Million Solar Roofs Initiative
- Fall 2005: Governor asks CPUC President to create CSI; CPUC adopts CSI framework jointly with CEC
- August 21, 2006: SB1 signed, differs from CPUC program
- December 14, 2006: CPUC adopts revised, \$2.17 bn CSI program design per SB1
- Now the 2<sup>nd</sup> biggest incentive program in world



# CSI Structure

Program Authority	CPUC	California Energy Commission	Publicly Owned Utilities
<b>Budget</b>	\$2.167 billion	\$400 million	\$784 million
<b>Pro-rata MW Solar</b>	1940 MW	360 MW	700 MW
<b>Scope</b>	All in IOU areas except new homes	New homes, IOU areas	All in POU areas
<b>Audience</b>	Various	Builders, buyers	Various
<b>Begins</b>	January 2007	January 2007	January 2008

## 3 CPUC Program Administrators:

**PG&E**

**Southern California Edison**

**California Center for Sustainable Energy**



California Solar Initiative: Structure

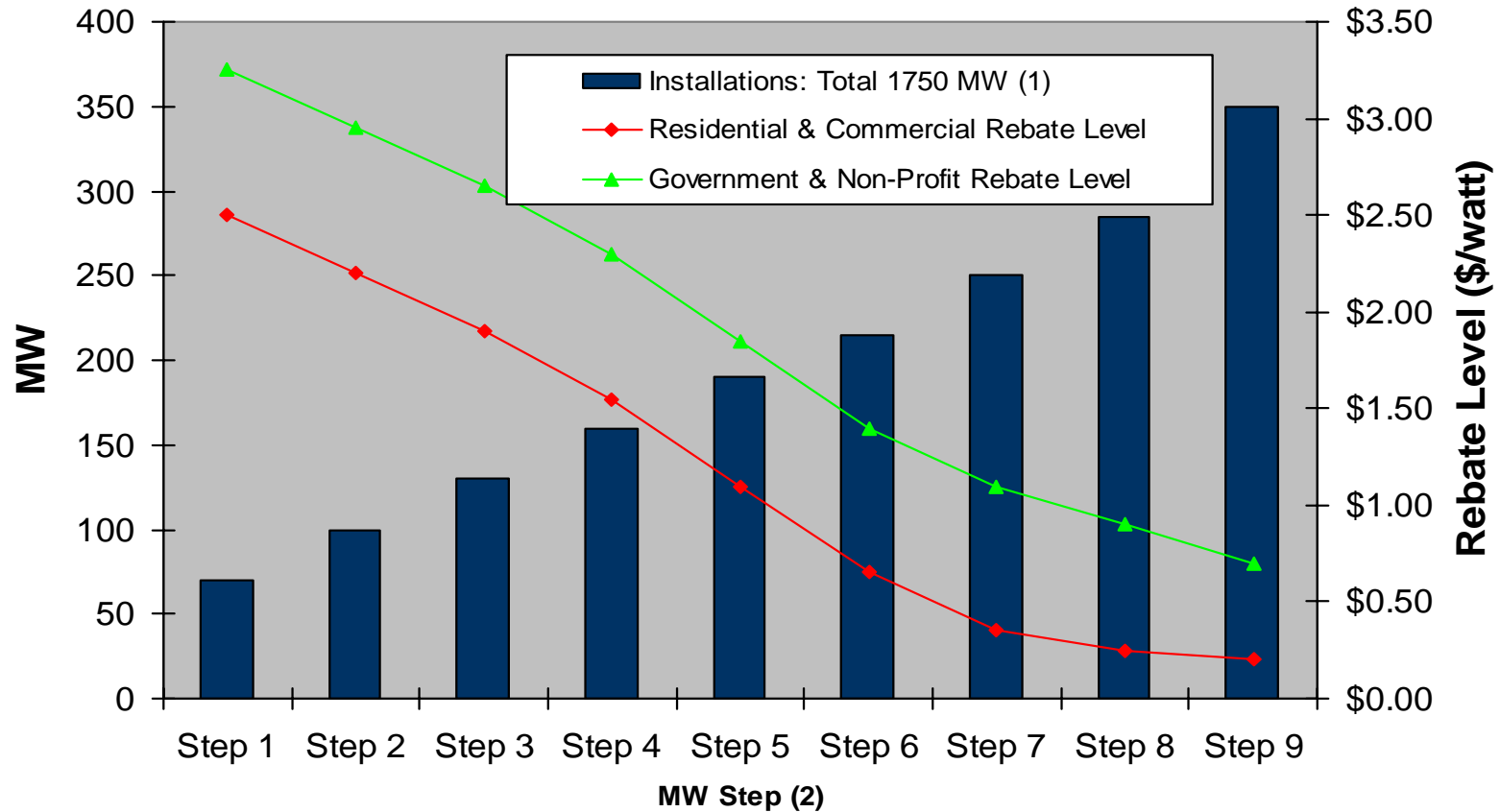


# CPUC CSI Budget 2007-2016

<b>Program Category</b>	<b>Budget (\$ in millions)</b>
<b>General Market Program</b>	<b>1,897</b>
Administration, Marketing, Evaluation (10%)	<b>190</b>
Direct Incentives	<b>\$1,707</b>
<b>Low Income Budget (10%)</b>	<b>217</b>
<b>Research, Development, Demonstration &amp; Deployment</b>	<b>50</b>
<b>San Diego Regional Energy Office Solar Hot Water Pilot</b>	<b>3</b>
<b>Total CPUC CSI Budget</b>	<b>\$2,167</b>



# CPUC Incentives Decline As Market Grows



<sup>1</sup>The total refers to the MW goal of the program not including the MW that will be installed under the low-income program.

<sup>2</sup>Rebate reductions are triggered by MW steps, such that the incentive declines once the capacity installed reaches a pre-specified level, rather than on an annual basis.



# CSI Improves Incentive Design

- Ratepayer subsidy declines to zero by 2017
- Lowers effective solar energy cost via:
  - Improved or new technologies
  - Enhanced solar system efficiency or performance
  - Lower sales & installation costs
- Incentive design principles:
  - Cost-competitive with retail energy purchases
  - Break-even to match customer investment hurdles
  - Rewarding for optimally-sited and maintained systems.
- Pay for expected or actual solar performance, not installed capacity, not percent of cost
  - Driven by metering, reporting, and incentive design





# Two CSI Incentive Paths

## Common Incentive Base starting at:

- \$2.50/watt residential & taxable commercial (+ 30% federal tax credit)
- \$3.25/watt government & non-profit entities (no tax credit eligibility)

## #1 Performance-Based Incentive (PBI):

- Initially systems >100 kW; phase-in smaller systems by 2010
- Paid monthly over 5 years based on metered output
- Can return higher incentive than EPBB

## #2 Expected Performance Based Buydown (EPBB):

- Initially <100kW
- Paid up-front based on site-specific installation aspects

## Objectives achieved:

- Predictable
- Market-driven pace of incentive decline
- Recognize break-even needs of different market segments
- Reflects Federal tax credits; higher incentive for non-taxable entities



# EPBB Payments Vary

**Example for 4 kW residential system in San Francisco**  
**EPBB Incentive = \$2.21/W x 4,000 W x 85% = \$8900**

	Reference System	Actual System	Site's Design Factor
	(1)	(2)	
<b>Location</b>	Orange, CA	San Francisco, CA	(2)/(1) Installation x
<b>Tilt</b>	20 Degrees	15 Degrees	(2)/(1) location
<b>Azimuth</b>	South	Southeast	
<b>Shading</b>	None	5%	
<b>Summer Output (kWh/kW-AC CEC)</b>	4244	3978	88%
<b>Incentive</b>	<b>\$10,078</b>	<b>\$8,913</b>	



*Systems with better expected performance will get paid more.*

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# CSI Resources

- CPUC core decisions and resources:
  - Program design guidelines: Decision August 24, 2006 (revised December 2006)
  - Website info and program announcements: [www.GoSolarCalifornia.ca.gov](http://www.GoSolarCalifornia.ca.gov)
  - [Program Handbook](#) (April 2007, revised)
  - [EPBB Calculator](#)
  - Incentive Trigger Tracker: [www.sgip-ca.com](http://www.sgip-ca.com)
  - On-line Application Tool: Summer 2007



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# Upcoming CSI Decisions

- Solar Incentives for Low Income Residents
- Research and Development grant program
- Cost-Benefit Methodology
- Program Measurement and Evaluation
- Marketing and Outreach Plan
- Energy Efficiency Requirements (CEC and CPUC)
- Non-PV Solar (electric-displacing)



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# Market Opportunities

- Greater interest in 3rd-party financing to provide upfront capital & match cash flow to utility bill savings
- Bundling with efficiency retrofits for better financial returns
- The performance paradigm requires:
  - Guarantees
  - Demand for new business services
  - Demand for advanced technology







**Thank You!**

**Polly Shaw**

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**For Additional Information:**

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**[www.GoSolarCalifornia.ca.gov](http://www.GoSolarCalifornia.ca.gov)**

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