

RD&D = Research, Development, Demonstration and Deployment Program

Marking Solar Smarter, Stronger and Sustainable

The goal of the California Solar Initiative (CSI) Research, Development, Demonstration, and Deployment (RD&D) Program is to foster a sustainable and self-supporting customer-sited solar market. To achieve this, the California Legislature authorized the California Public Utilities Commission (CPUC) to allocate **\$50 million** of the CSI budget to an RD&D program focusing on:

- Reducing technology costs and increasing system performance
- Focusing on issues that directly benefit California
- Filling knowledge gaps to enable wide-scale deployment of distributed solar
- Supporting the integration of distributed power into the grid

Strategically, the RD&D program seeks to leverage cost-sharing funds from other state and federal research entities, and to target funding across four key stages of RD&D activities:

- **Research: 20%** - Fundamental research to improve performance of energy technologies. The research component of the CSI RD&D program (\$10 million) is dedicated to the Lawrence Berkeley National Laboratory Solar Energy Research Center (Helios Project).
- **Development: 10-15%** - Activities that convert research into working prototypes of improved technologies.
- **Demonstration: 45-55%** - Activities that bring promising technologies closer to market by demonstrating their real-world feasibility to manufacturers.
- **Deployment: 5-10%** - Aiding new technologies in gaining wide-scale adoption or to reach a "tipping point" into widespread commercialization.

Target activities across these four stages:

- Grid integration, storage, and metering: 50-65%
- Production technologies: 10-25%
- Business development and deployment: 10-20%

Target milestones for results:

- Results in 1-3 year horizon: 60%
- Results in 4-7 year horizon: 20%
- Results in 8+ year horizon: 20%



SEVEN KEY PRINCIPLES OF THE CSI RD&D PROGRAM

1. **Improve the economics of solar technologies** by reducing technology costs and increasing system performance
2. Focus on **issues that directly benefit California**, and that may not be funded by others
3. **Fill knowledge gaps** to enable successful, wide-scale deployment of solar distributed generation technologies
4. **Overcome significant barriers** to technology adoption
5. **Take advantage of California's wealth of data** from past, current, and future installations to fulfill the above
6. **Provide bridge funding** to help promising solar technologies transition from a pre-commercial state to full commercial viability
7. Support efforts to address the **integration of distributed solar power into the grid** in order to maximize its value to California ratepayers

2010 SOLICITATIONS AND AWARDED PROJECTS

Solicitation#1: The first solicitation sought to fund projects that advanced integration of PV into the utility grid. The awards were announced in March 2010 for a total of **\$8.4 million** in funding.

Planning and Modeling for High-Penetration PV

Advanced Modeling and Verification for High Penetration PV	Clean Power Research
Development and Analysis of a Progressively Smarter Distribution System	University of California, Irvine
Planning and Modeling for High-Penetration PV	SunPower Corporation
Improving Economics of Solar Power Through Resource Analysis, Forecasting and Dynamic System Modeling	University of California, San Diego

Testing and Development of Hardware and Software for High-Penetration PV

High Penetration PV Initiative	Sacramento Municipal Utility District
Analysis of High-Penetration Levels of PV into the Distribution Grid in California	National Renewable Energy Laboratory

Integration of Energy Efficiency, Demand Response, Energy Storage and PV

Beopt-CA (EX): A Tool for Optimal Integration of EE/DR/ES+PV for California Homes	National Renewable Energy Laboratory
Integrated Energy Project Model	kW Engineering

Solicitation#2: The second solicitation focused on improved PV production technologies and innovative business practices. The awards were announced in Aug 2010 for up to **\$14.6 million** in funding.

Testing and Demonstration of New Solar Technologies

PV and Advanced Energy Storage for Demand Reduction	SunPower Corporation
Improved Cost, Reliability, and Grid Integration of High Concentration PV Systems	Amonix, Inc.
Solaria: Proving Performance of the Lowest Cost PV System	Solaria Corporation

Testing and Demonstration of Innovative Business Models

Innovative Business Models, Rates and Incentives that Promote Integration of High Penetration PV with Real-Time Management of Customer Sited Distributed Energy Resources	Viridity Energy
Low-Cost, Smart-Grid Ready Solar Re-Roof Product Enables Residential Solar Energy Efficiency	ConSol

Cross Cutting

West Village Energy Initiative: CSI RD&D Project	University of California, Davis
Advanced Grid-Interactive Distributed PV and Storage	SolarCity
Reducing California PV Balance of System Costs by Automating Array Design, Engineering and Component Delivery	SunLink Corporation
Improved Manufacturing and Innovative Business Models to Accelerate Commercialization in California of Hybrid Concentrating PV/Thermal Tri-Generation (CPV/T-3G) Technology	Skywatch Energy, Inc.



LEARN MORE

- Visit California's one-stop shop for solar rebate and installation information:
www.GoSolarCalifornia.ca.gov
- To be added to the CSI RD&D outreach list
Info@CalSolarResearch.ca.gov
- **CSI RD&D website**
www.CalSolarResearch.ca.gov
- Sign up to receive the CSI newsletter:
www.cpuc.ca.gov/optin

CONTACT INFORMATION

Neal Reardon
neal.reardon@cpuc.ca.gov



Ann Peterson
ann.peterson@itron.com



Knowledge to Shape Your Future

Smita Gupta
smita.gupta@itron.com



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