U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

SOLAR ENERGY TECHNOLOGIES OFFICE
FY 2016 BUDGET AT-A-GLANCE

The Solar Energy Technologies Office supports the SunShot Initiative goal to make solar energy technologies cost competitive with conventional energy sources by 2020. Reducing the total installed cost for utility-scale solar electricity by approximately 75% (2010 baseline) to roughly $0.06 per kWh without subsidies will enable rapid, large-scale adoption of solar electricity across the United States. This investment will help re-establish U.S. technological and market leadership in solar energy, reduce environmental impacts of electricity generation, and strengthen U.S. economic competitiveness.

What We Do

The Solar Energy Technologies Office uses an integrated, five-pronged approach to deliver results toward SunShot's objectives:

- ✓ **Photovoltaic (PV) Research and Development (R&D)** advancements have resulted in U.S. leadership in world records, scientific publications, and patents to provide the U.S. solar industry with technology advantages.
- ✓ **Concentrating Solar Power (CSP)** improves system efficiency and develops advanced thermal storage to provide dispatchable electricity.
- ✓ **Systems Integration** develops technologies to enable improved integration of solar power with the grid, including power electronics and systems level research on renewables integration.
- ✓ **Balance of Systems Soft Cost Reduction** works with stakeholders at the state and local levels to cut red tape; these soft costs can account for more than 50% of system costs.
- ✓ **Innovations in Manufacturing Competitiveness** invests in technologies that provide U.S. companies defensible competitive advantages focusing on segments of the solar value chain, such as equipment and process automation.
- ✓ **Incubator investments** support small businesses, rapidly commercialize products and services, and attract follow-on private capital.

Program Goals/Metrics

The Office's performance goals are designed to achieve the following targets by 2020:

- CSP levelized cost of electricity of $0.06/kWh
- Utility-scale PV system price of $1.00/Wdc
- Commercial-scale PV system price of $1.25/Wdc
- Residential-scale PV system price of $1.50/Wdc.

By the end of 2014—4 years into the 10-year SunShot Initiative—the U.S. Department of Energy (DOE) has tracked progress at 70% toward 2020 goals. Progress includes the following:

- CSP levelized cost of electricity of $0.13/kWh
- Utility-scale PV system price of $1.68/Wdc
- Commercial-scale PV system price of $2.38/Wdc
- Residential-scale PV system price of $3.12/Wdc.

FY 2016 Priorities

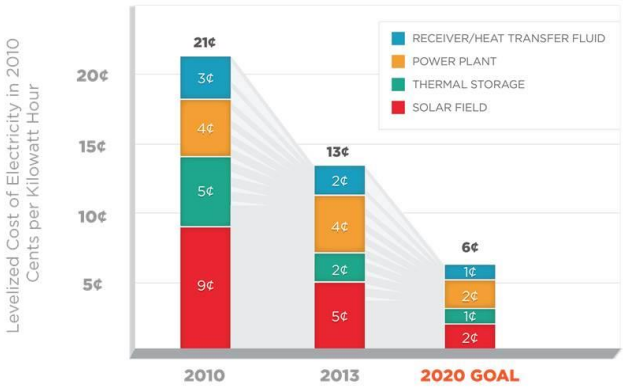
- Leveraging component-level research in CSP in prior fiscal years that developed sub-systems, CSP Systems Integration will validate the technologies at the 1-MW–10-MW scale.
- Investigate new concepts for PV cells and modules, as well as cost reductions that have the potential to disrupt the PV market beyond the SunShot Initiative.
- Focus on commercial-scale solar with an emphasis on installation quality and advanced workforce training standards.
- Develop cutting-edge approaches to reduce the cost and improve the reliability and functionality of power electronics associated with solar energy systems.
- Increase America's manufacturing market share to correlate directly with its market demand through focused investments in advanced manufacturing R&D (such as low capital expenditure and high-throughput manufacturing technologies).

(Dollars in Thousands)	FY 2014 Enacted	FY 2015 Enacted	FY 2016 Request
Concentrating Solar Power	48,571	46,400	48,400
Photovoltaic Research and Development	56,641	35,300	62,000
System Integration	52,816	43,700	76,500
Balance of Systems Soft Cost Reduction	42,558	40,700	67,300
Innovations in Manufacturing Competitiveness	44,472	57,800	73,400
NREL Site-Wide Facility Support	12,000	9,100	9,100
Total, Solar Energy Technologies	**257,058**	**233,000**	**336,700**

Key Accomplishments

- **Commercializing CSP technologies:** Technologies developed with DOE investments have led to large-scale commercial deployment of CSP systems in the United States, totaling more than 1.3 GW.
- **Leading in PV R&D**: Over the past 35 years, DOE's R&D funding at its national laboratories has resulted in more than 50% of solar cell efficiency world records.
- **Enabling Greater Renewables Integration:** SunShot R&D programs helped inform the Small Generator Interconnection Procedures that will streamline the interconnection of residential and commercial solar.
- **Cutting Red Tape:** SunShot works with state and local governments, as well as the private sector, to make the process of going solar faster, easier, and more affordable. Round one of the Rooftop Solar Challenge cut permitting time by 40%, reduced fees by 12%, and made it possible for more than 47 million Americans to install solar (permitting time was cut by one week across 40,000 systems, and 600MW of residential/commercial solar installed in the Challenge's first year).
- **SunShot Incubator:** Since 2007, SunShot's Incubator program has provided early stage assistance to small businesses to rapidly bring new products and services to the marketplace. The approximately $100 million invested has resulted in more than $2 billion in follow-on private capital financing.
- **Building a Skilled Solar Workforce:** DOE's Solar Instructor Training Network (SITN) of more than 400 community colleges in 49 states helps meet the growing demand for solar workers and focuses on recruiting returning veterans. SITN has trained more than 30,000 workers to enter the solar field, and it is on the way to training 50,000 workers by 2020.

The Falling Cost of Concentrating Solar Power



PV Utility-Scale System Pathway to SunShot