# SOLAR ENERGY TECHNOLOGIES OFFICE FY 2017 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 American 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** supports the research and development of PV technologies to improve efficiency and reliability and to lower manufacturing costs to make solar electricity cost-competitive with other sources of energy by 2020.
- ✓ **Concentrating Solar Power (CSP)** supports research and development of CSP technologies that reduce the cost of solar energy with systems that can supply solar power on demand, even when there is no sunlight, through the use of thermal storage.
- ✓ **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.
- ✓ **Technology to Market** moves SunShot's groundbreaking and early-stage technologies and business models to the market.

## 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 beginning of 2016—five years into a 10-year initiative—the U.S. Department of Energy (DOE) has tracked progress at 70% toward 2020 goals. Progress includes (in 2010 dollars):

- CSP levelized cost of electricity of $0.13/kWh
- Utility-scale PV system price of $1.64/Wdc
- Commercial-scale PV system price of $2.00/Wdc
- Residential-scale PV system price of $2.87/Wdc

## FY 2017 Priorities

- Leveraging component level research in CSP in prior fiscal years that developed sub-systems, CSP Systems Integration will validate the technologies at the 1-10MW scale.

| (Dollars in Thousands) | FY 2015 Enacted | FY 2016 Enacted | FY 2017 Requested |
|---|---|---|---|
| Concentrating Solar Power | $46,400 | $48,400 | $43,000 |
| Photovoltaic R&D | $35,300 | $53,152 | $64,000 |
| Systems Integration | $43,700 | $52,447 | $83,000 |
| Balance of Systems/Soft Cost Reduction | $40,700 | $34,913 | $23,100 |
| Innovations in Manufacturing Competitiveness | $57,800 | $43,488 | $62,000 |
| Next Generation Renewable Fuels and Chemicals R&D | $0 | $0 | $10,000 |
| NREL Site-Wide Facility Support | $9,100 | $9,200 | $0 |
| **Total, Solar Energy Technologies** | **$233,000** | **$241,600** | **$285,100** |

- Investigate new concepts for PV cells and modules as well as cost reductions that have the potential to disrupt the PV market beyond the DOE SunShot Initiative.
- Focus on grid integration and business model innovation for utilities' management and ownership of solar.
- 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 market share for manufacturing value added commensurate with domestic market demand through focused investments in advanced manufacturing R&D such as low CAPEX and high throughput manufacturing technologies.

## Key Accomplishments

- **Commercializing CSP technologies:** Technologies developed with DOE investments have led to large scale commercial deployment of CSP systems in the U.S., totaling over 1.3 GW.
- **Leading in PV R&D:** Over the past 35 years, DOE R&D funding has resulted in over 50% of solar cell efficiency world records.
- **Enabling Greater Renewables Integration:** SunShot R&D programs helped inform the small generator interconnection procedures that are streamlining the interconnection of residential and commercial solar.
- **Cutting Red Tape:** SunShot works with state and local governments and businesses to make the process of going solar faster, easier, and more affordable. The first round of the Rooftop Solar Challenge cut permitting time by 40% and reduced solar installation fees by 12% in jurisdictions home to 47 million Americans.
- **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. Approximately $138 million invested has resulted in over $3 billion in follow on private capital financing.
- **Building a Skilled Solar Workforce:** Programs like the Solar Instructor Training Network and Solar Ready Vets help to meet the growing demand for solar workers, with a focus on recruiting transitioning military personnel as they exit the service veterans. Overall, SunShot programs have trained over 30,000 workers to enter the solar field, and counting.