Meeting the Nation’s Energy Needs

The U.S. aims to generate 80% of its electricity from a diverse set of clean energy resources, and to develop renewable energy technologies so that they are cost competitive with traditional sources of energy without subsidies.

Major Strategic Areas:

- Cost reduction and performance improvement
- Technology validation and risk reduction
- Addressing market barriers
Since 2008, the U.S. has doubled renewable energy generation from wind, solar, and geothermal. U.S. now has 86 GW of non-hydro renewable energy capacity.
Rapid U.S. Progress in Solar Power

- 60%+ annual growth rates
- 1.8GW installed in 2011, equivalent to almost 260,000 homes
- 7GW total capacity in 2012, equivalent to almost 1 million homes
- 80% price reduction last 4 years

Figure 1: Actual and Counterfactual PV Module Production Cost
SunShot Initiative’s goal is to reduce the costs of solar photovoltaic (PV) and concentrated solar power (CSP) energy technologies to be cost-competitive without subsidies with conventional energy sources by 2020.

**Portfolio**

- **Photovoltaic R&D** - Advances R&D that has resulted in US leadership in world records, scientific publications, and patents to provide US industry technology advantages
- **Concentrating Solar Power R&D** - Develops advanced thermal storage to enable CSP to provide dispatchable electricity.
- **Systems/Grid Integration** - Develops technologies to enable integration of solar power with the grid for reliability and resiliency
- **Soft Balance of Systems** - Work with state and local governments to reduce red tape and soft costs which now can be about 50% of residential costs
- **Innovations in Manufacturing** - Increase US market share for manufacturing value add commensurate with domestic market demand through manufacturing process R&D

**Challenges**

- Hardware cost advances have outpaced soft costs and soft costs have been difficult to reduce
- High penetration of renewables is coming, will the grid be ready?
- US based manufacturers are loosing ground in a very competitive global marketplace

**Opportunities**

- Creative ways to engage with stakeholders to realize reductions in soft costs
- Develop technologies to minimize integration costs
- Stronger partnerships with industry to assist US manufacturing competitiveness
SunShot Utility Scale Progress by Q4 2012

- **2010 Modeled System:** $3.80/W
- **Reductions by 2013:** $2.27/W
- **Power Electronics:**
  - Module: $1.95
  - Balance of Systems: $1.27
- **Balance of Systems:** $1.03
- **Module:** $0.18
- **SunShot Goal:** $1.00/W

**Reduction Opportunities**
Grid Integration Initiative