

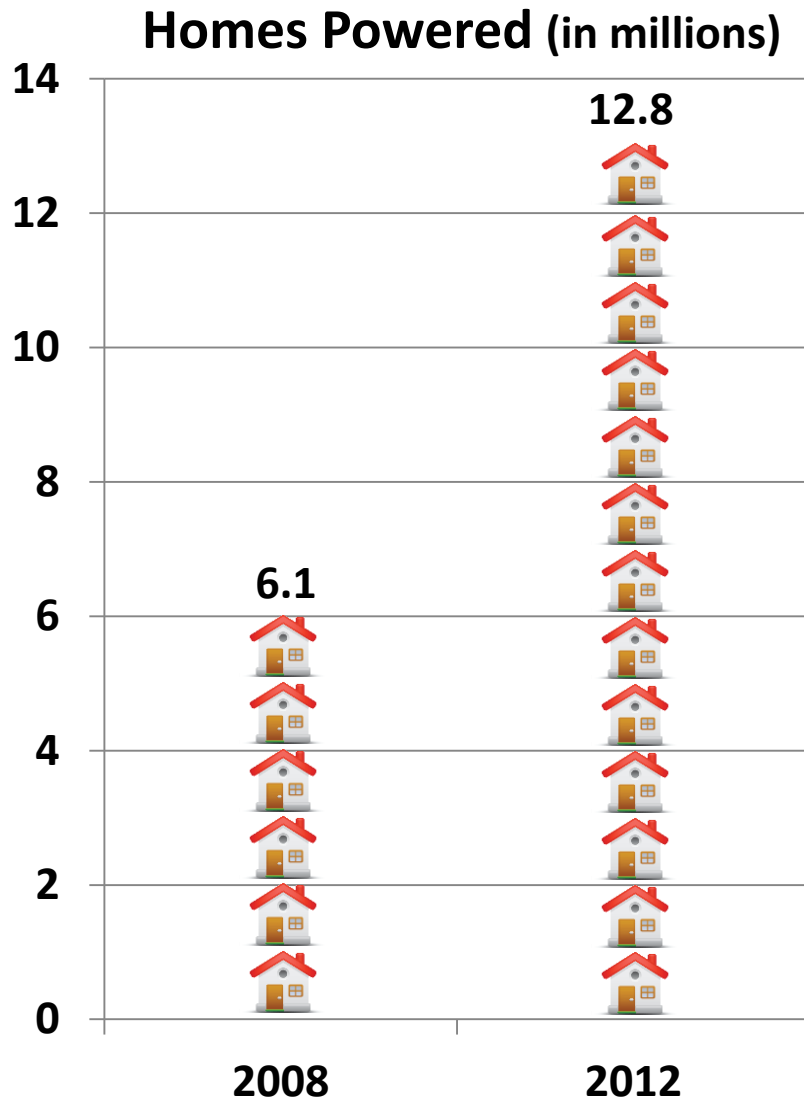
Meeting the Nation's Energy Needs

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

Doubled Renewable Generation



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

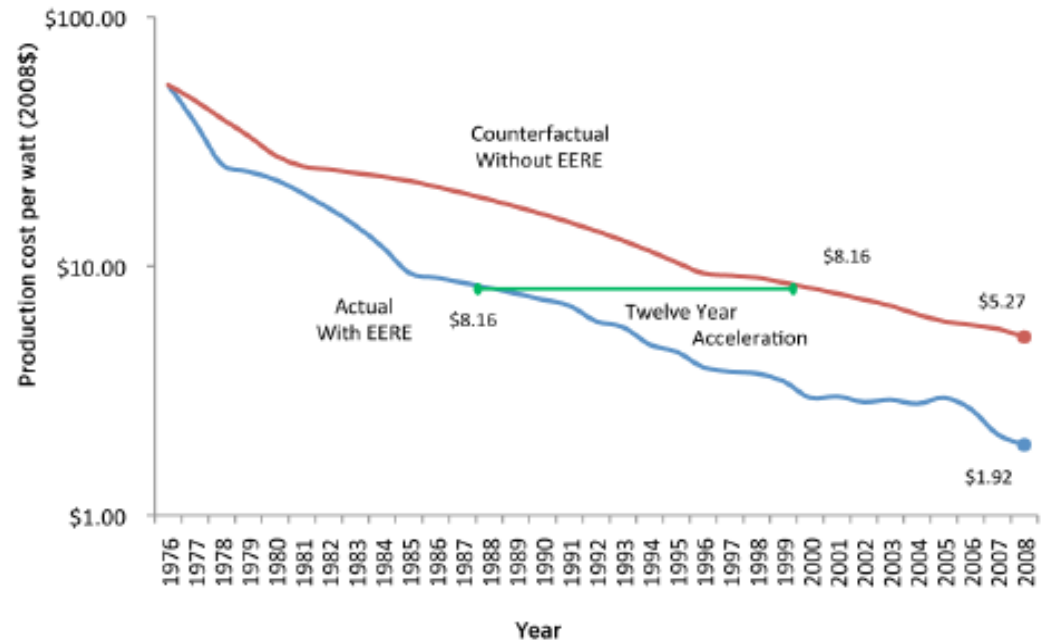


Figure 1: Actual and Counterfactual PV Module Production Cost

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



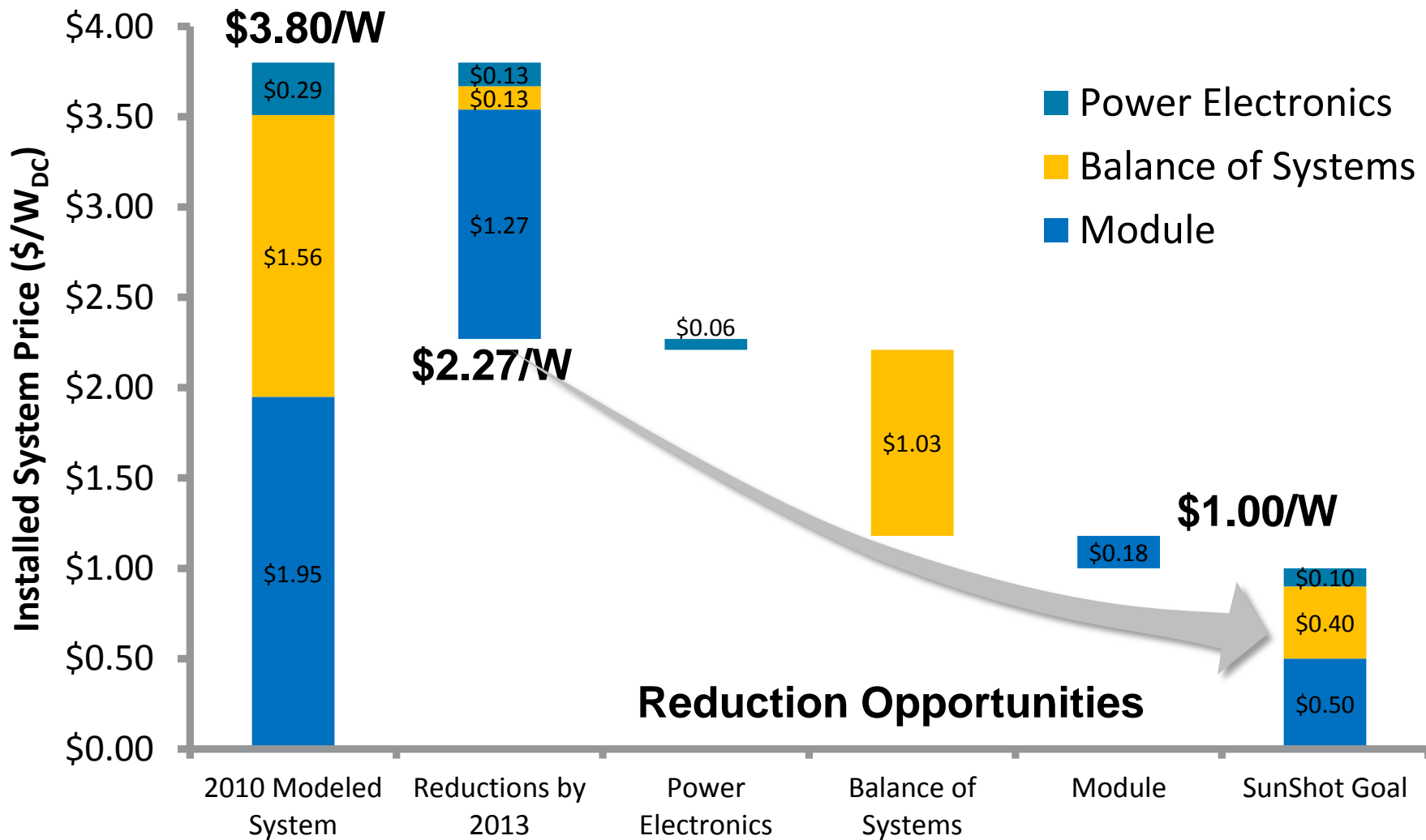
Challenges

- 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 losing 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



Grid Integration Initiative

