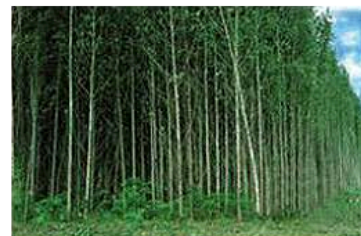
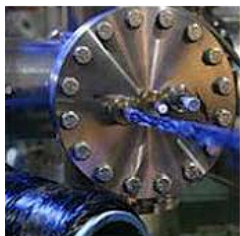


2013 Solar Industry Job Census Briefing

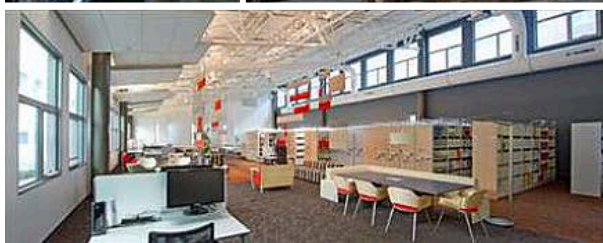
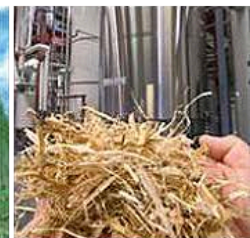
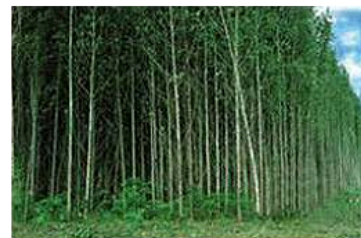
2226 Rayburn House Office Building



U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy

Jason Walsh, Senior Advisor
February 11, 2014

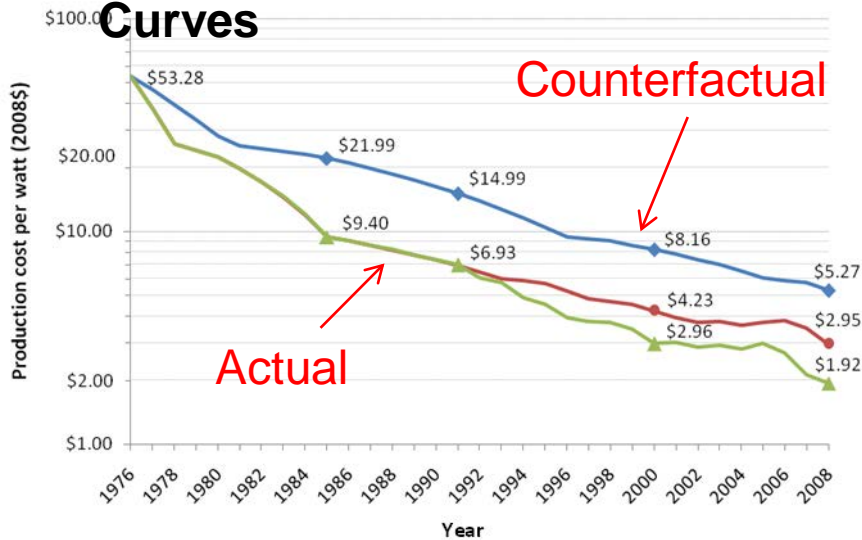


U.S. DEPARTMENT OF
ENERGY

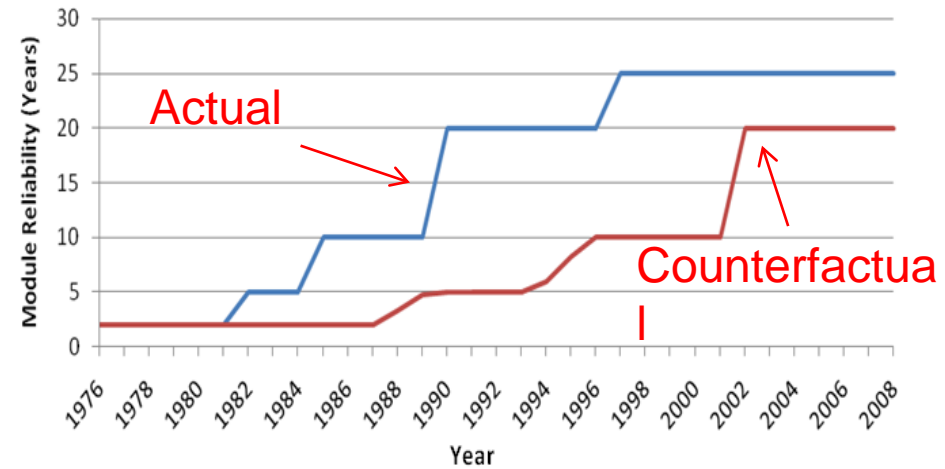
Energy Efficiency &
Renewable Energy

Impact of EERE Investments in Solar R&D

Actual vs. Counterfactual Cost Curves



Actual V. Counterfactual Reliability Curves



- EERE's \$3.7B investment in solar photovoltaic R&D from 1975 to 2008 resulted in a net economic benefit of \$15B (2008 dollars) due to module efficiency and reliability improvements.
- EERE R&D accelerated solar industry by 12 years

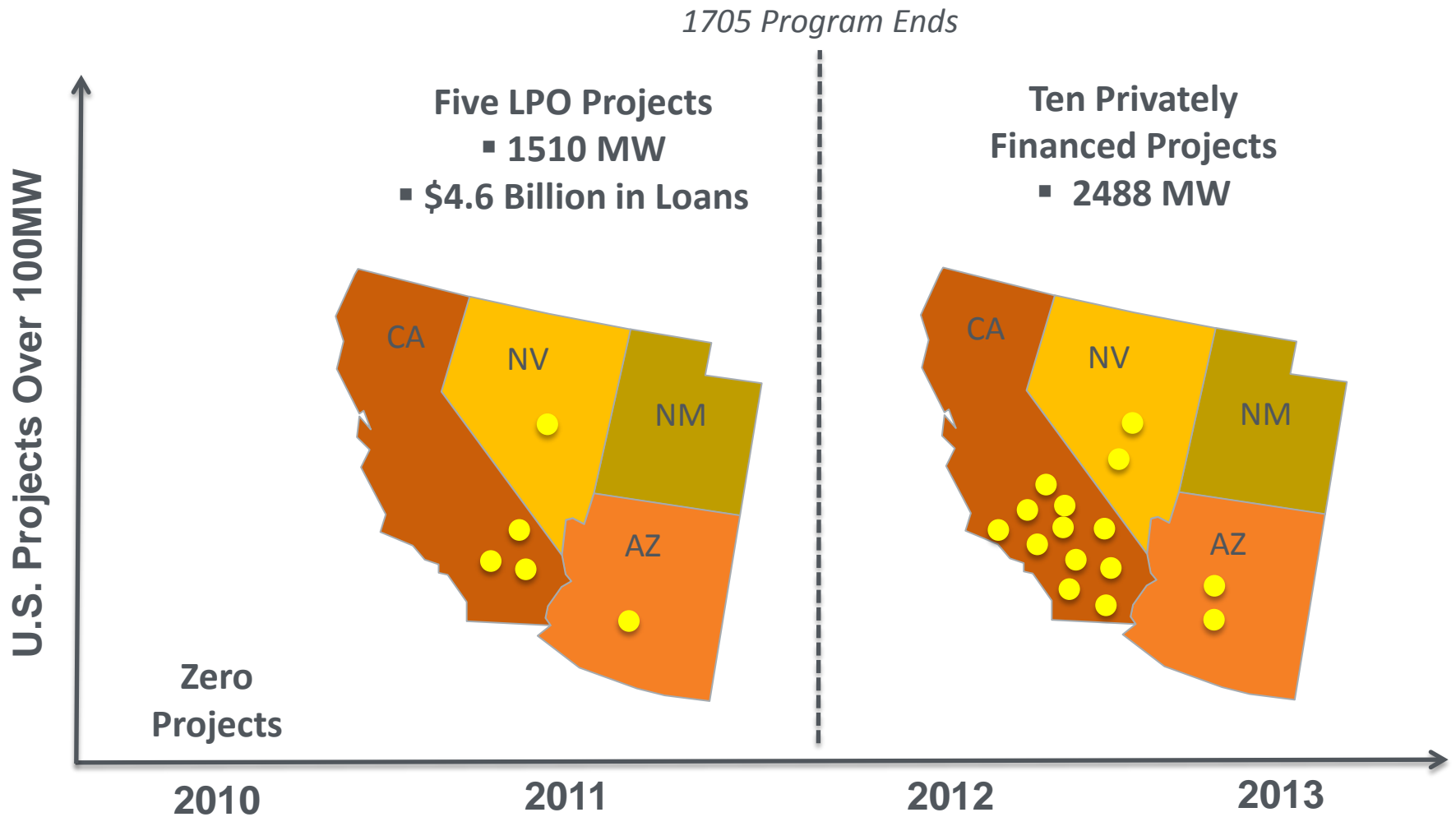
First Solar: Driving Innovation in Ohio's Factories

- **1990s:** DOE's NREL funding led to boom in start-up thin-film PV companies.
- Led to **First Solar LLC**, now a leading worldwide PV manufacturer based in **Ohio**.
- **2012:** First Solar installed its 10 millionth PV module in the 550 MW Desert Sunlight Solar Farm project in Riverside County, California
- By **2015**, Desert Sunlight Solar will be one of the two largest solar PV projects in the world



A First Solar associate handles photovoltaic materials at the company's Ohio manufacturing plant
Courtesy of First Solar

DOE LPO Launched Utility-Scale PV Market in the U.S.



Concentrating Solar Power Became a Reality in the U.S.



Ivanpah
California

- Completed in 2014
- 390 MW Concentrated Solar Project
- \$1.6 billion loan guarantee



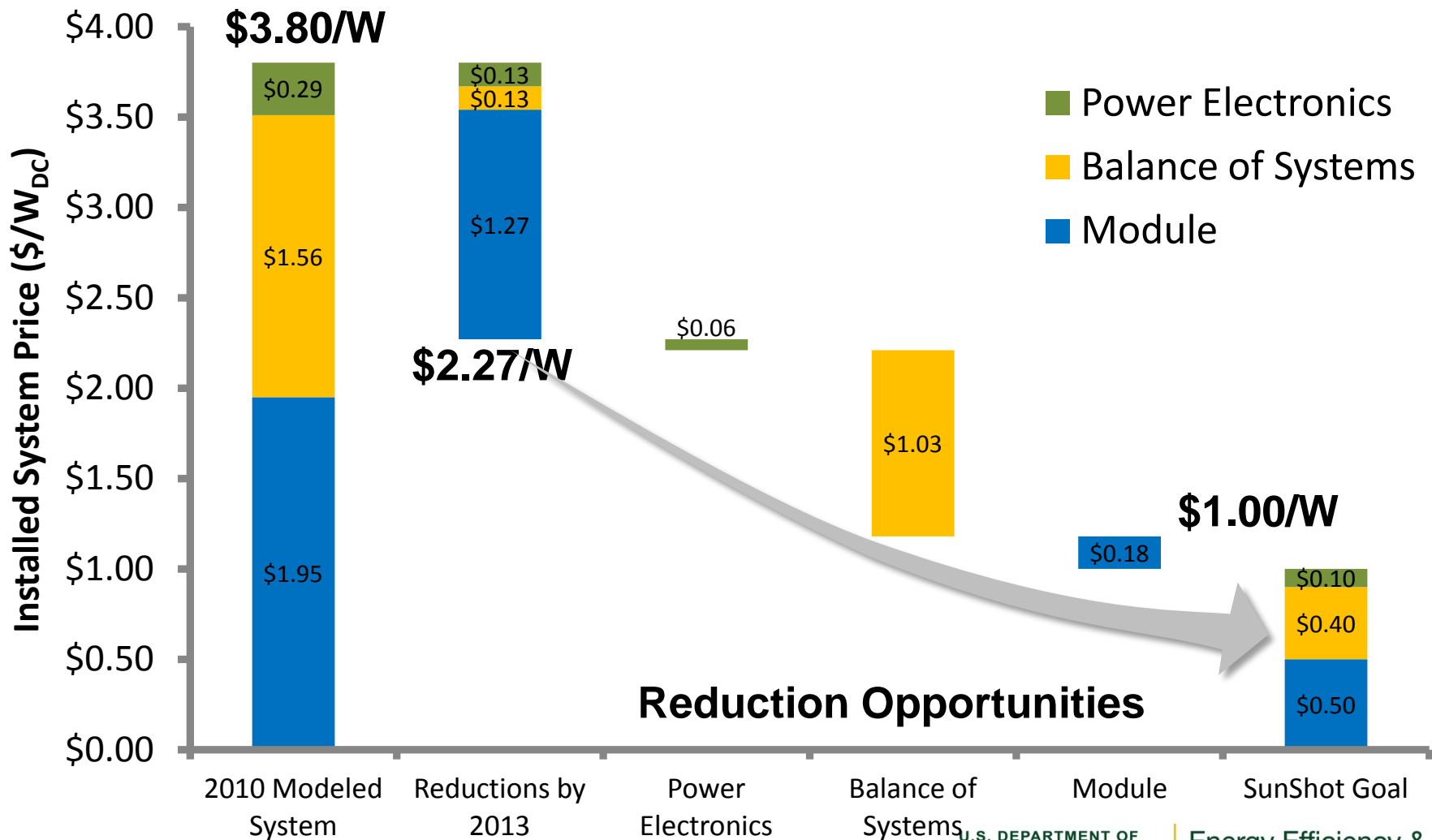
Solana
Arizona

- Completed in 2013 (250 MW)
- 'Nighttime Solar' - 6 Hours of Thermal Energy Storage
- \$1.45 billion loan guarantee

Tonopah
Nevada

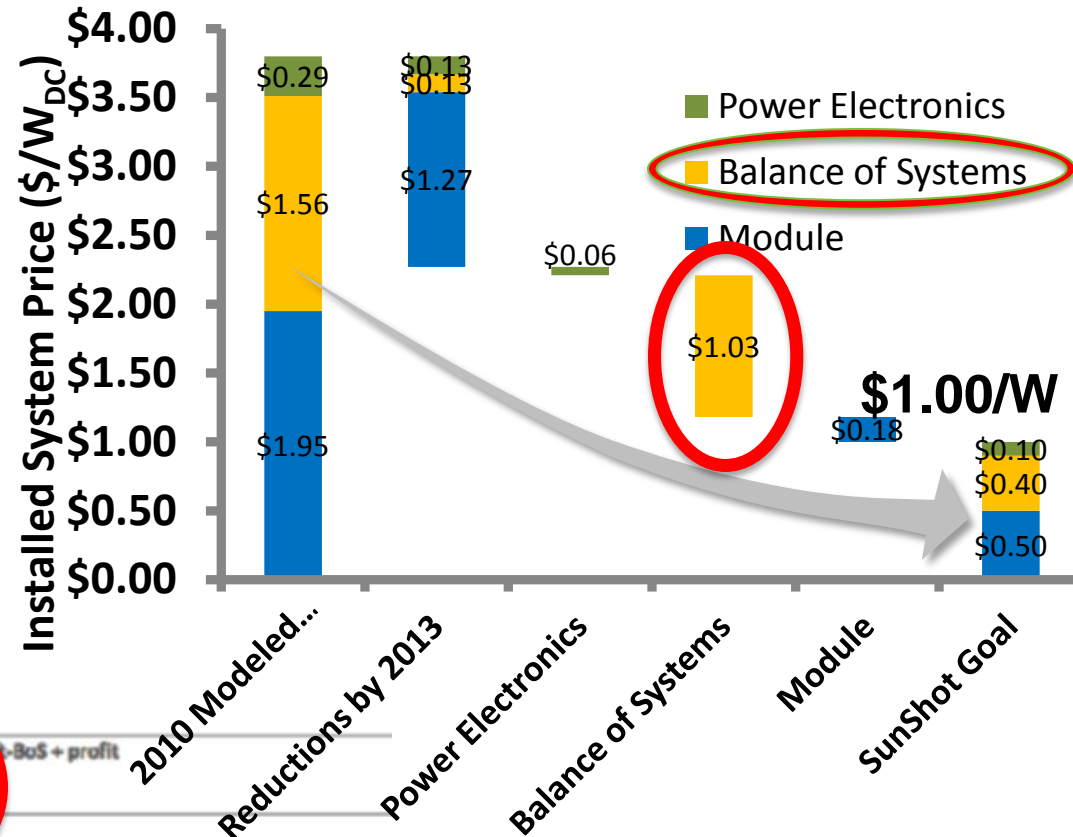
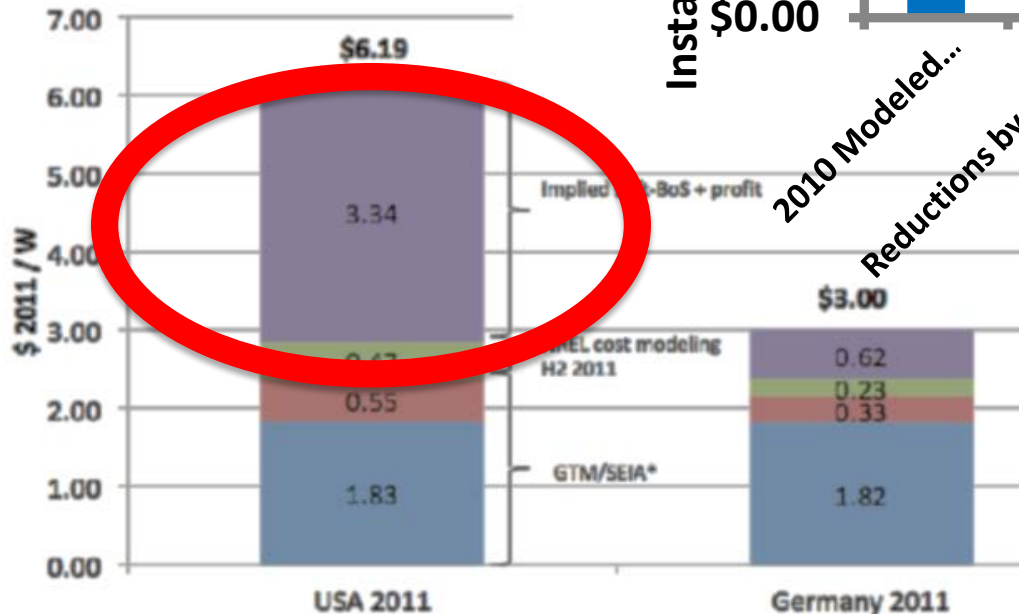
- 2014 - Expected Completion (110 MW)
- 'Nighttime Solar' - 10 Hours of Thermal Energy Storage
- \$737 million loan guarantee

SunShot Utility Scale Progress by Q4 2012



Largest Cost Reduction Opportunity: **Soft Costs**

LBNL and NREL analyses show balance of system costs, or “soft costs”, such as permitting, installation and inspection costs



Source: LBNL, <http://emp.lbl.gov/sites/all/files/german-us-pv-price-ppt.pdf>; NREL <http://www.nrel.gov/news/press/2012/2038.html>

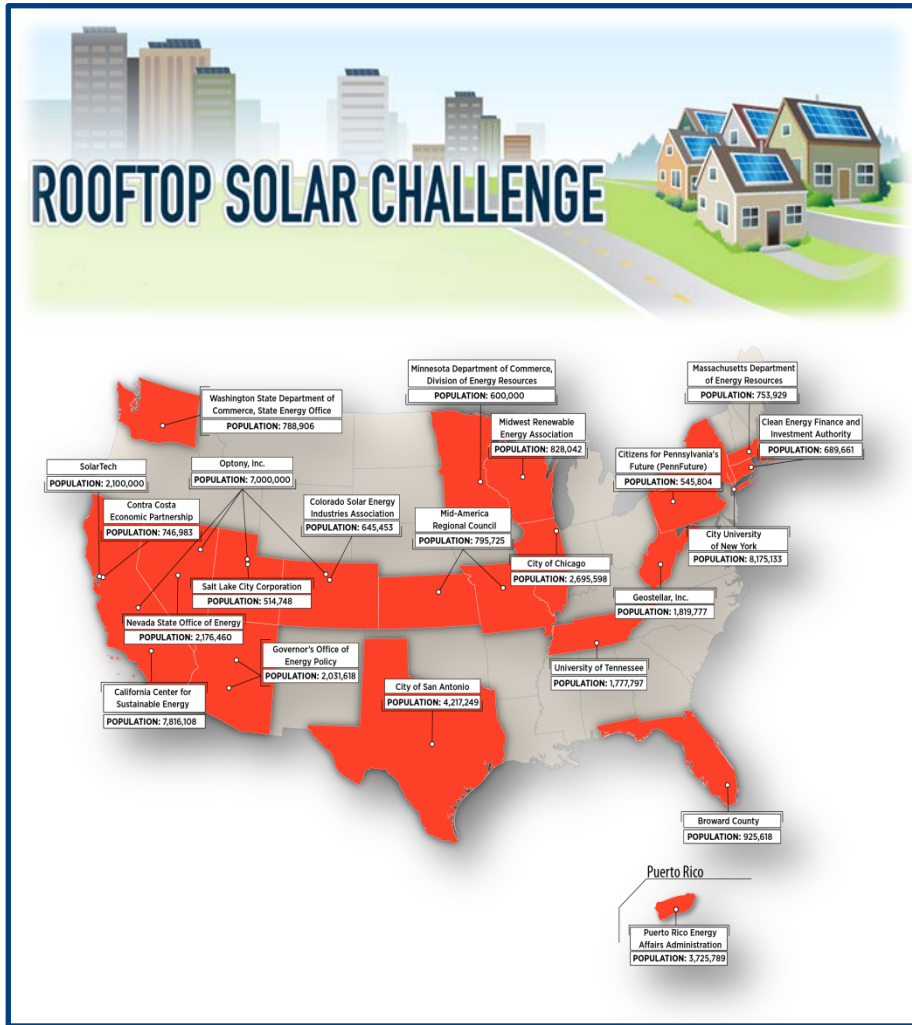
Soft Costs Dominating Overall Costs



Balance of system costs account for up to ~~50%~~
64% of the cost of a solar installation

→ Not decreasing as quickly as equipment costs

Rooftop Solar Challenge (2011-2013)



- 22 teams, 50 million people
- Best practices developed, shared, and harmonized
- Easier, cheaper, and **one week** faster to go solar on average

One week per installation adds up ...

PV Installed in RSC locales:

Residential: 225 MW

Commercial: 357 MW

37,960 Residential Systems

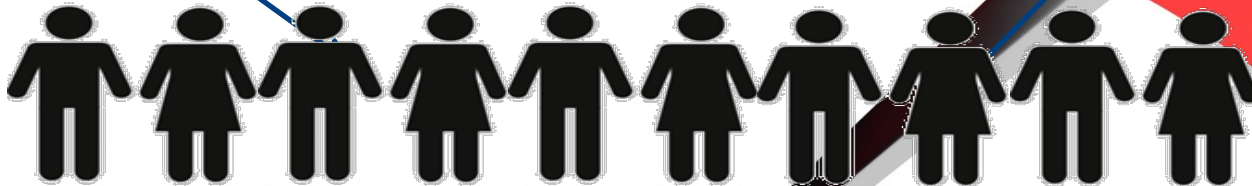
3,148 Commercial Systems

=

Which means the RSC saved Americans from...

Average Business Days Saved Per Install = 5.1

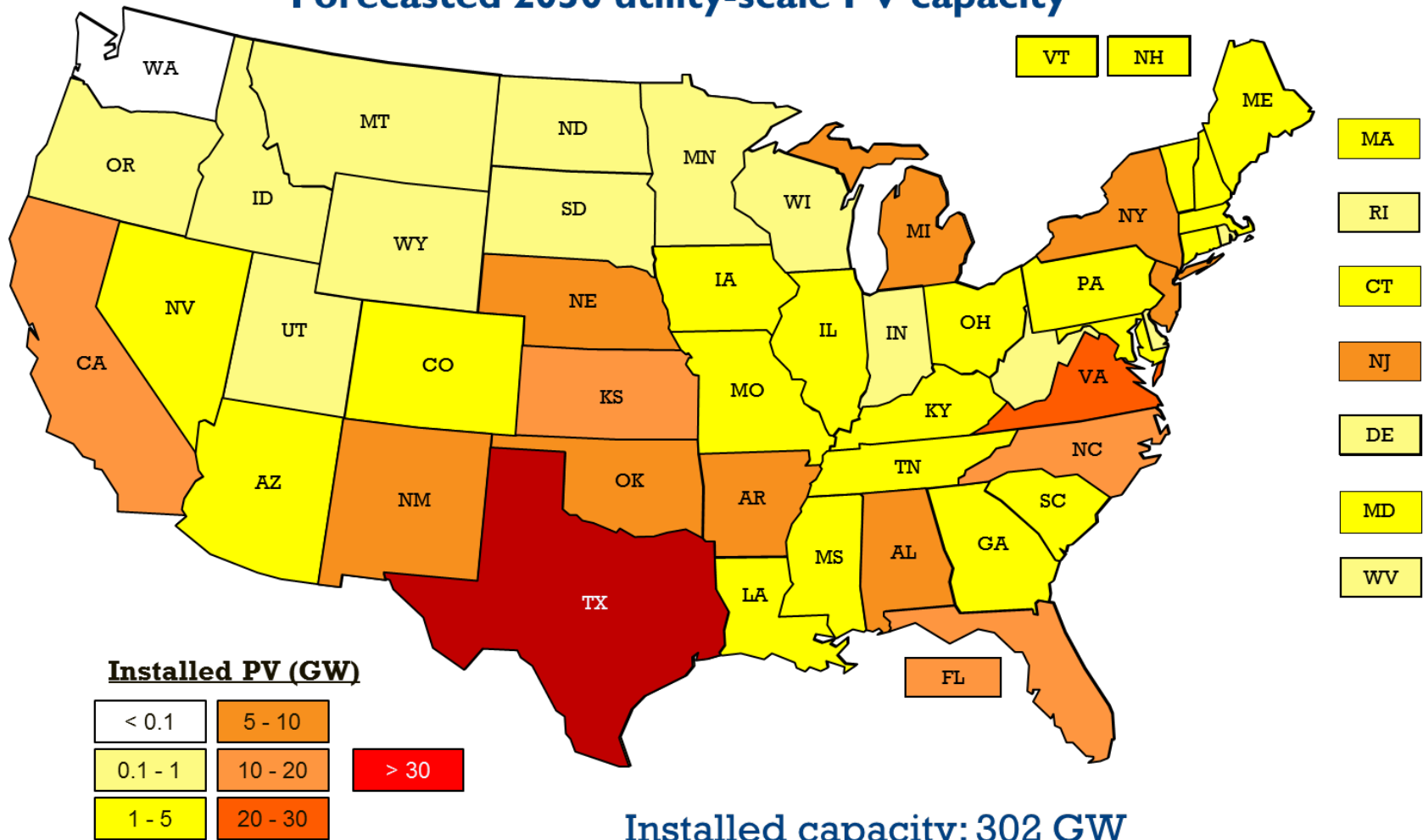
Average Business Days Saved Per Install = 4.1



OVER 10 LIFETIMES SAVED

SunShot 2030 Vision: Rapid Solar Deployment

Forecasted 2030 utility-scale PV capacity



Installed capacity: 302 GW
14% of electrical demand