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

Clean Energy Manufacturing Initiative

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April 12, 2013

President Obama's Manufacturing Focus

"The path towards sustainable energy sources will be long and sometimes difficult. But America cannot resist this transition; we must lead it. We cannot cede to other nations the technology that will power new jobs and new industries – we must claim its promise."

President Obama, Inaugural Address 2013

"If we want a robust growing economy, we need a robust manufacturing sector. … We cannot remain the world's engine of innovation without manufacturing activity."

President Obama

Presidential Manufacturing Strategy

Advanced Manufacturing Partnership

National Science & Technology Council

Advanced Manufacturing National Program Office

President Obama's Export Initiative & Trade Promotion

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Sustainable
TRANSPORTATION

Renewable
ELECTRICITY GENERATION

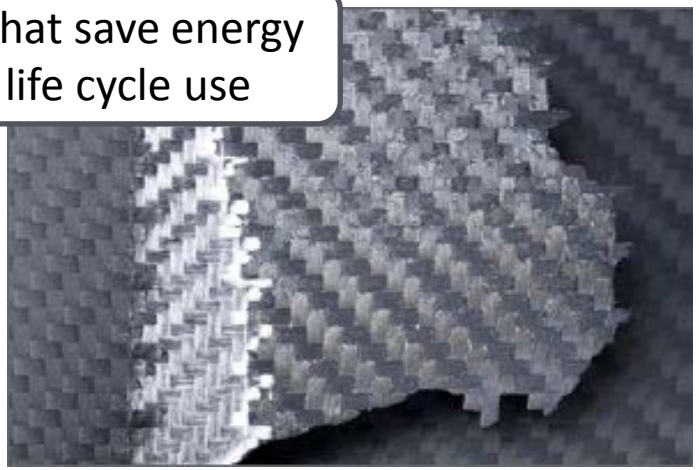
Energy Saving
HOMES, BUILDINGS, & MANUFACTURING

What is Clean Energy Manufacturing?

1. **The production of clean energy products**

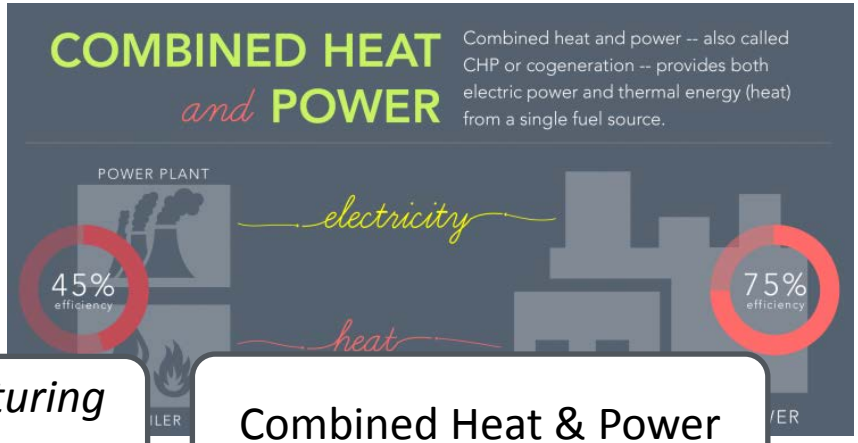
Products that generate clean energy

Products that save energy in their life cycle use

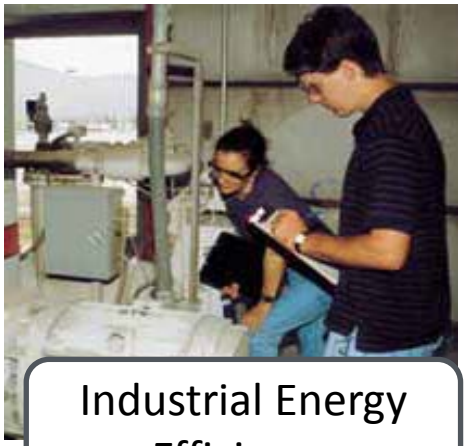


2. **Increased energy productivity in the manufacturing sector**

Advanced Manufacturing Technologies



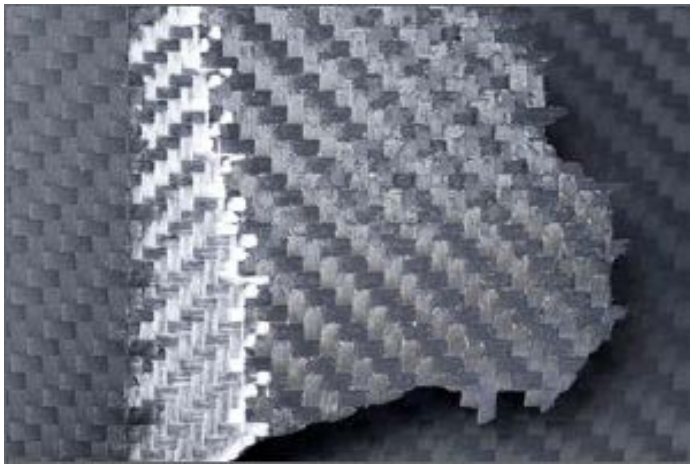
Combined Heat & Power



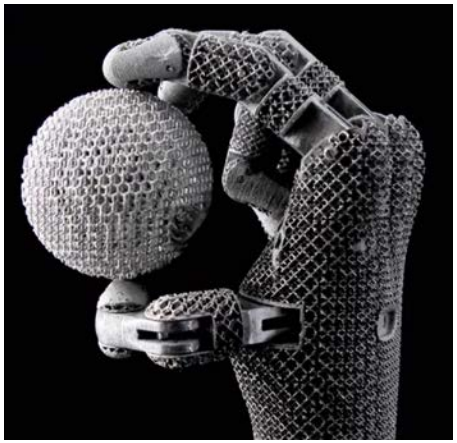
Industrial Energy Efficiency

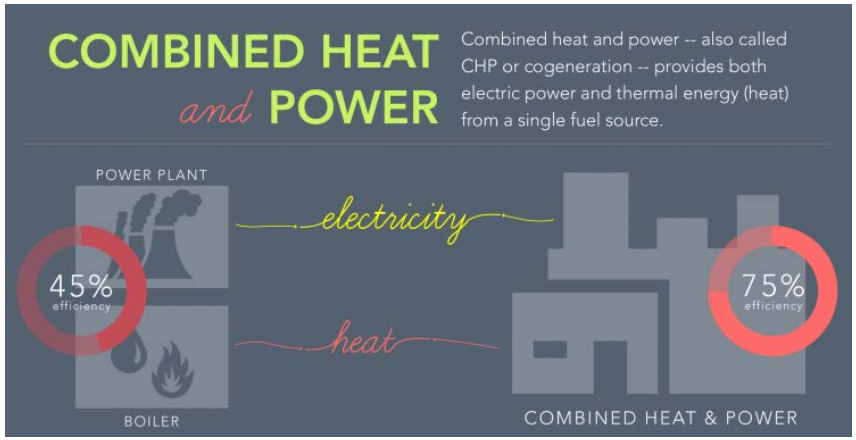
Clean Energy Manufacturing *Initiative*

1. **Increase U.S. competiveness in the production of clean energy products**



2. **Increase U.S. manufacturing competitiveness across the board by increasing energy productivity**





Clean Energy Manufacturing Initiative

Announced March 26

Carbon Fiber Technology Facility, ORNL

Clean Energy Manufacturing Initiative

An increased commitment to manufacturing across EERE:

- Manufacturing R&D
- Facilities for manufacturing innovation & demonstration
- Energy productivity resources
- Competitiveness analysis
- Partnerships & engagement

Manufacturing R&D

- SolarMaT: $15M Solar Manufacturing R&D
  - 4/26: Proposals due

- Cross-cuttnig Innovative Manufacturing R&D
  - 3/26: $23.5M awarded

University of Texas at Austin and partners: Smart Manufacturing Leadership Coalition – big data in manufacturing

The Colorado School of Mines and partners: a room temperature forming process for automotive steel

Novomer and partners: conversion of waste CO2 and shale gas to high-value chemicals

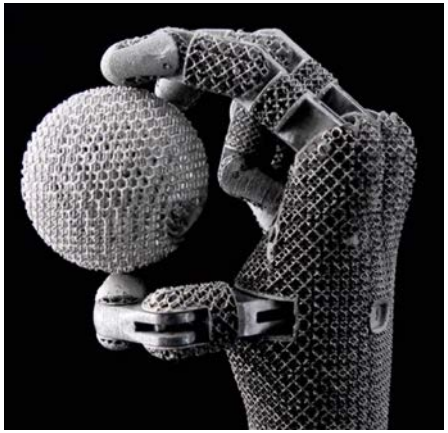
TIAX and partners: New scroll expander to turn waste heat into electricity

Ford Motor Company and partners: Rapid, freeform sheet metal forming technology

Facilities

- ORNL Manufacturing Demonstration Facility:





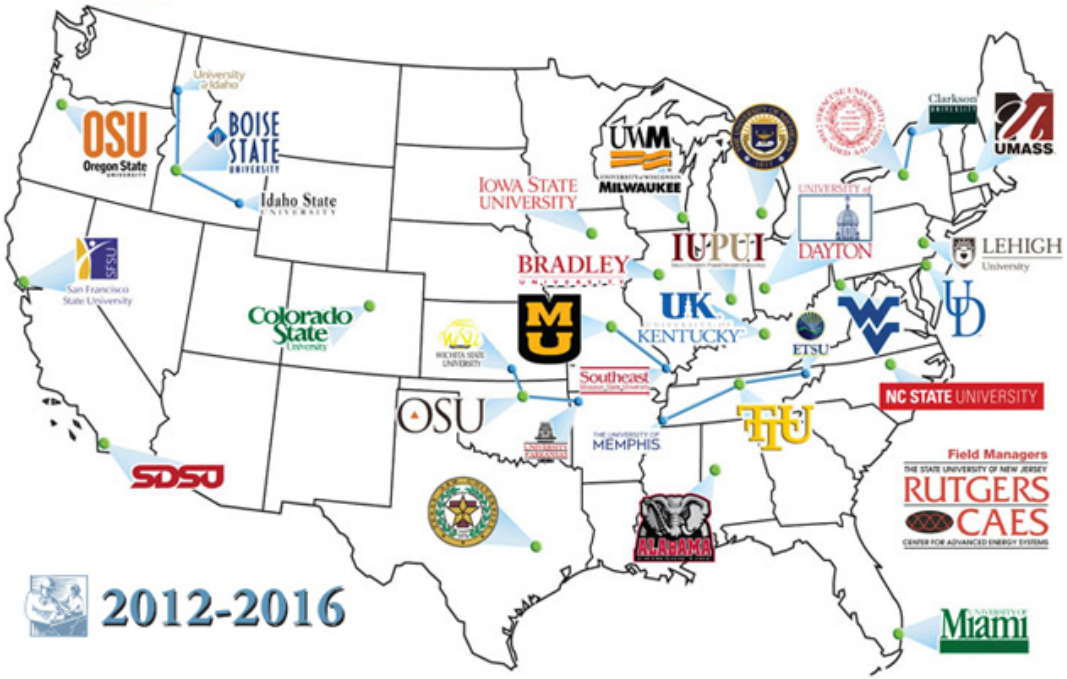
- National Network for Manufacturing Innovation
  - National Additive Manufacturing Innovation Institute
  - Coming soon: New Institute

CEMI: Energy Productivity in the Manufacturing Sector

- New programs to beak down market barriers

Better Plants CHALLENGE
U.S. DEPARTMENT OF ENERGY

- Combined Heat & Power Technical Assistance Partnerships
- Industrial Assessment Centers



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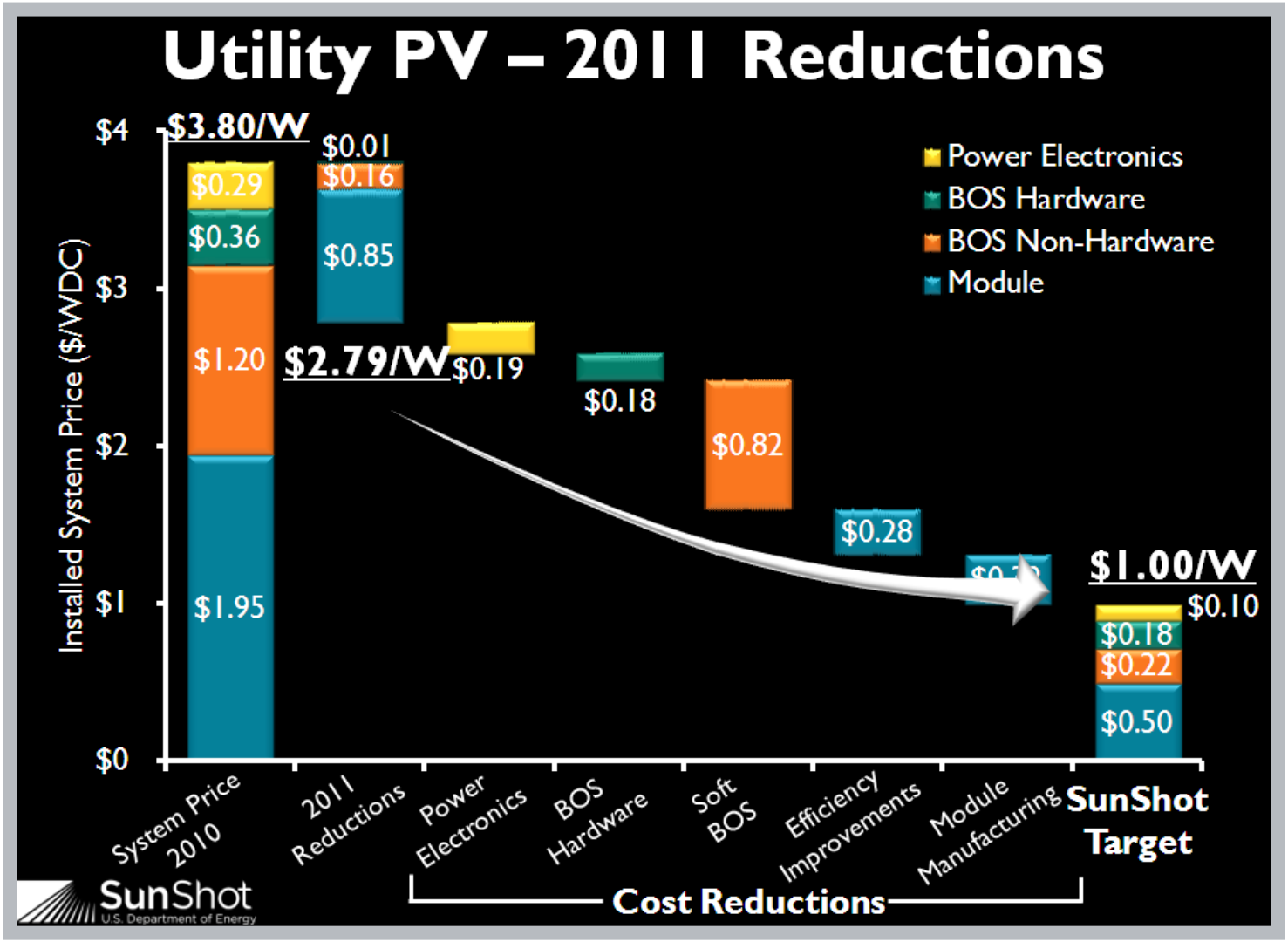
Competitiveness Analysis

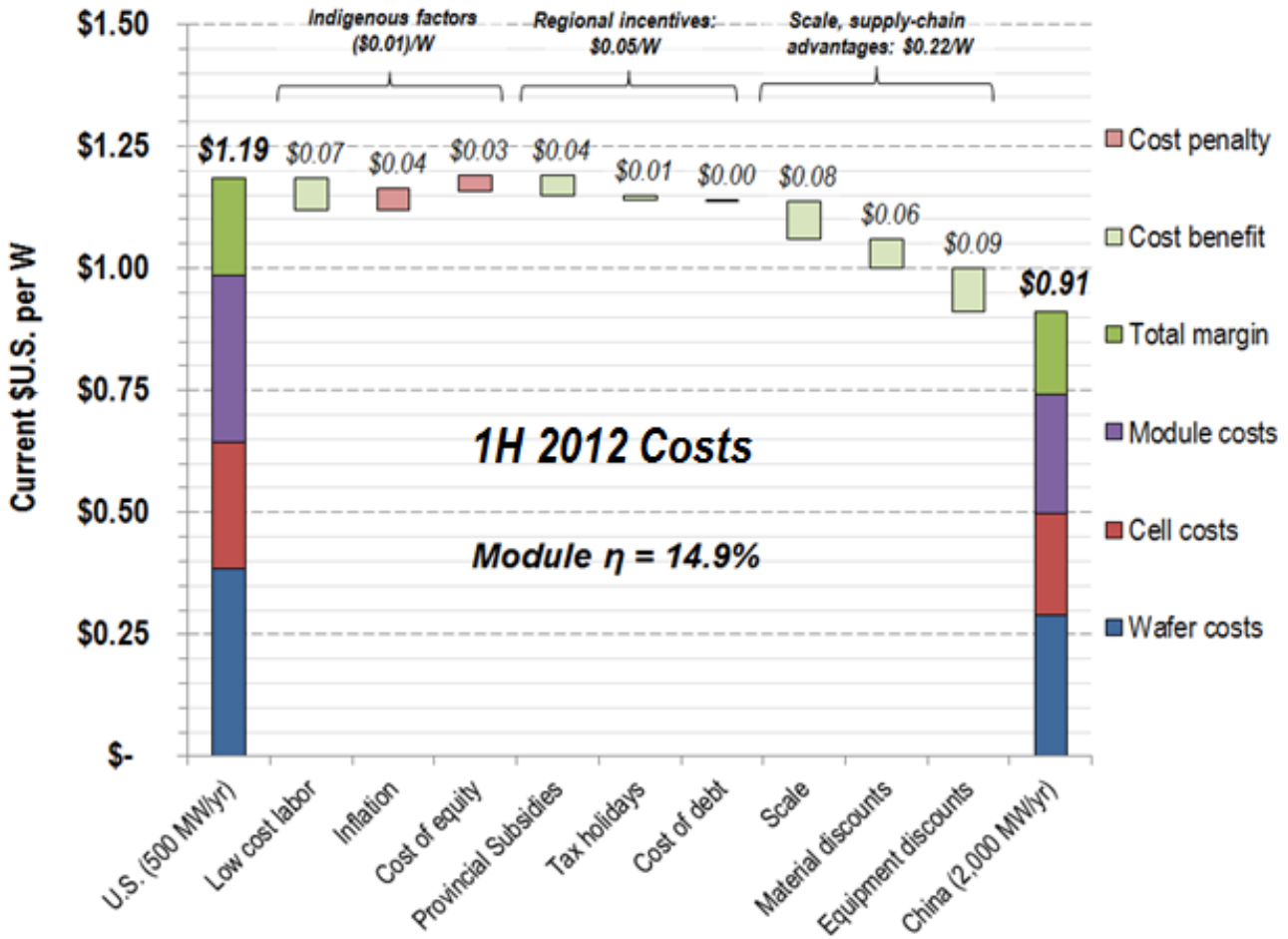
Current Technical Analysis



Source: SunShot Vision

Competitiveness Analysis

Silicon PV: Comparative Cost Assessment

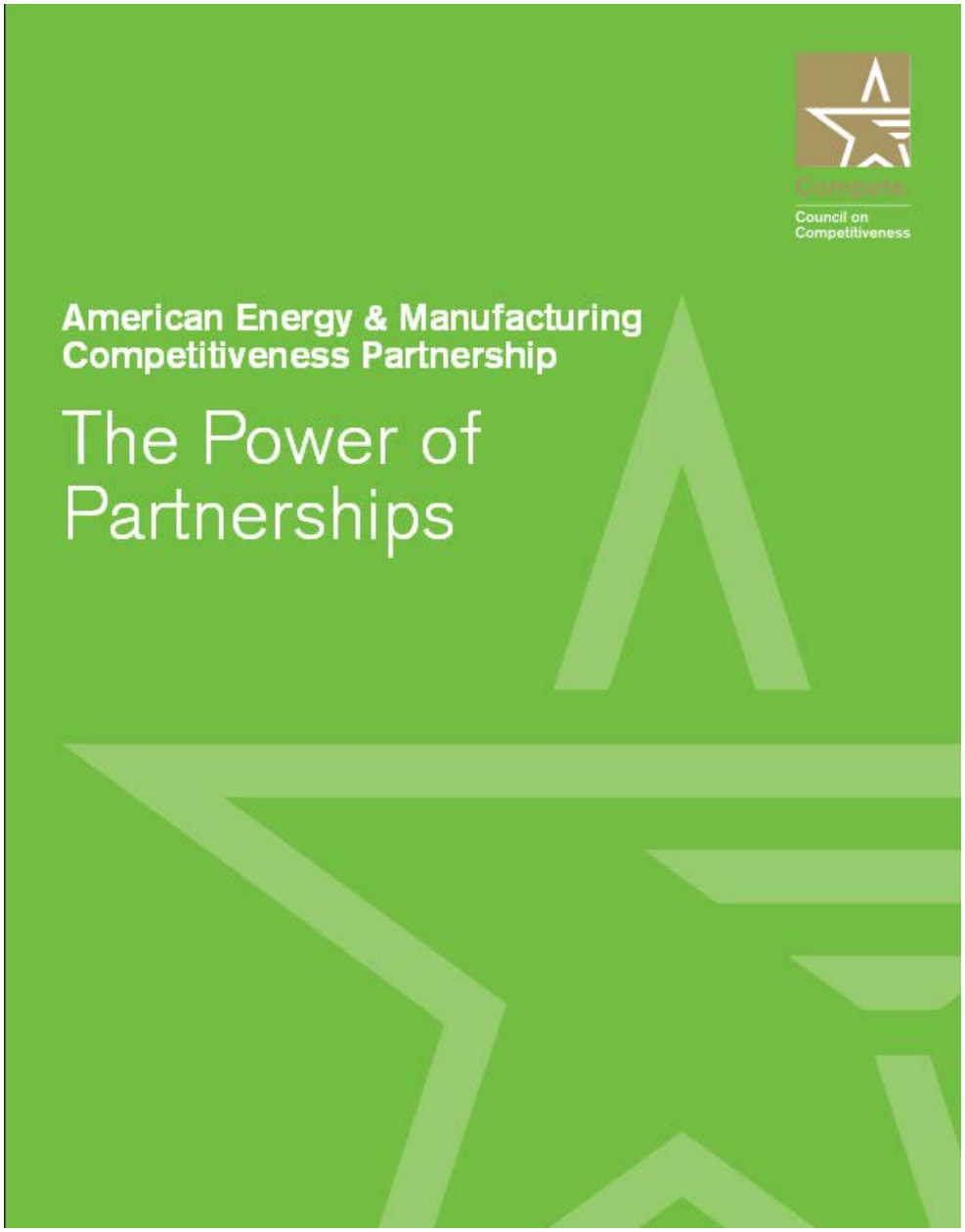


Source: Original Clean Energy Manufacturing Initiative – SunShot research

Goodrich, A.; Buonassisi, T.; Powell, D.; James, T. "Assessing the Drivers of Regional Trends in Solar Photovoltaic Manufacturing", E&ES (submitted), October 2012.

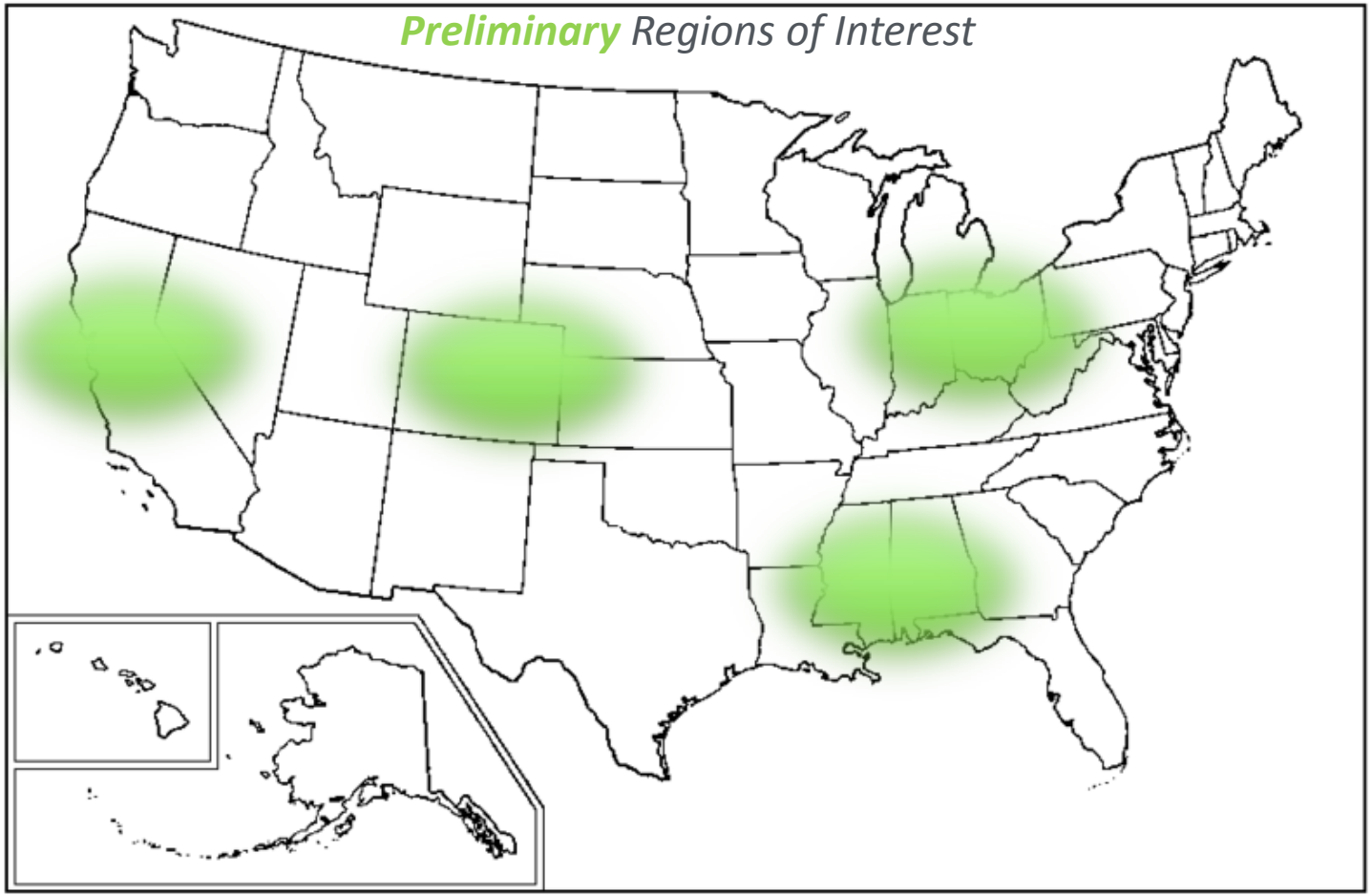
NREL chart using data from Mints, P.; Donnelly, J. (2011). "Photovoltaic Manufacturer Shipments, Capacity and Competitive Analysis 2010/2011." Report NPS-Supply 6, Navigant Solar Services Program. Palo Alto, CA.

Partnerships



CEMI: Regional Engagement: Input & Regional Models

Regional Summits



State & Metro Policy Analysis

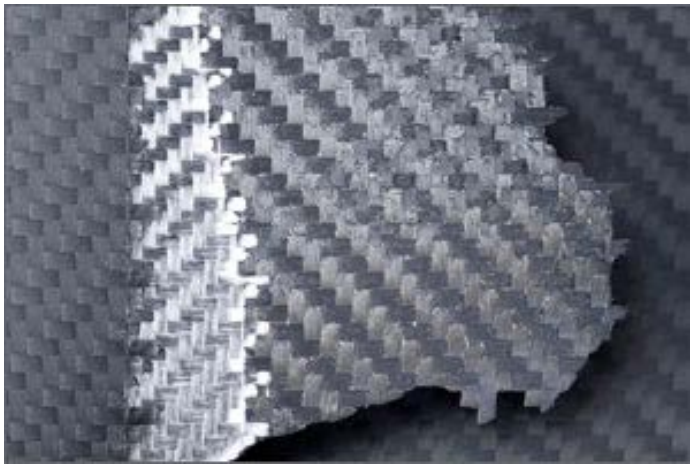
Gather Input

Cluster Assessment

Clean Energy Manufacturing *Initiative*

1. **Increase U.S. competiveness in the production of clean energy products**





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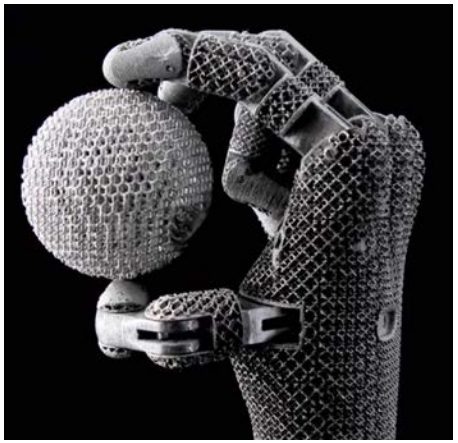
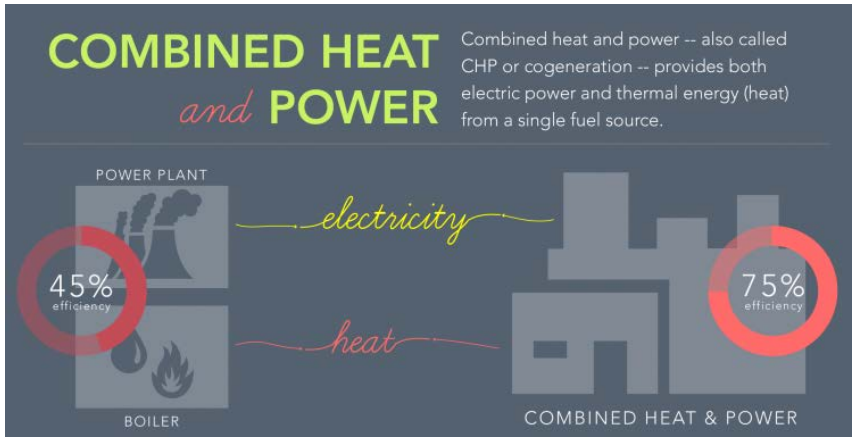

Discussion

- Competitive Analysis
  - Identify the quantitative factors that drive factory location decisions
  - Identify the qualitative factors that drive factory location decisions
  - Extract strategies to increase U.S. clean energy manufacturing competitiveness
- Competitiveness Drivers in Fuel Cells & Hydrogen Industry
- Critical R&D for US Competitiveness in the Hydrogen Industry
- Other critical support for US Competitiveness