



The News Journal



CREATING  
*the* CLEAN  
 ENERGY  
 ECONOMY  
 IN DELAWARE, THE REGION  
 AND THE NATION

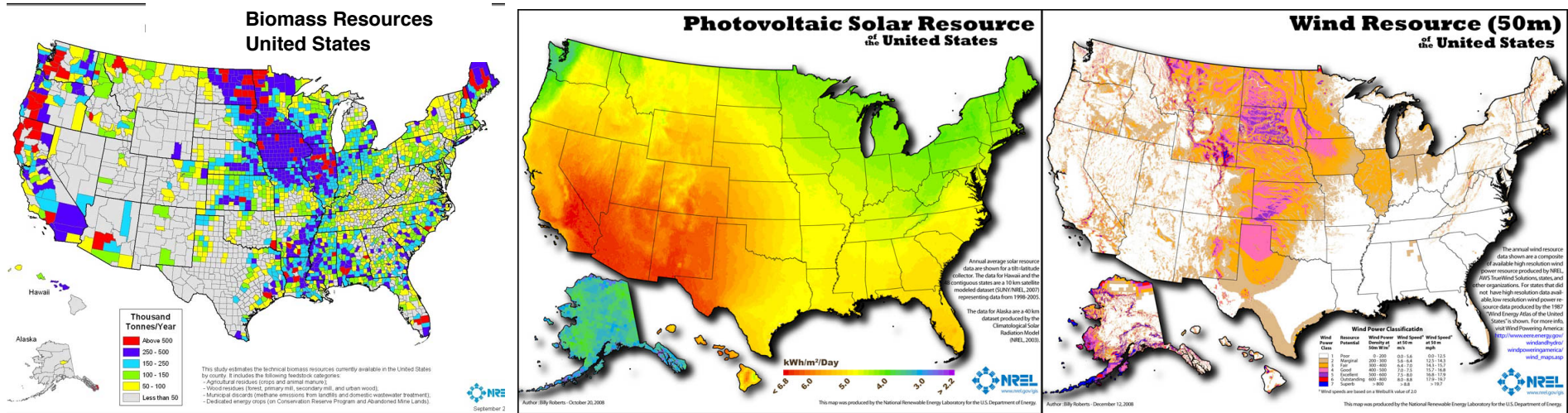
Robert Birkmire  
 Director, Institute for  
 Energy Conversion  
 University of Delaware

UNIVERSITY OF  
 DELAWARE  
 CREATING  
 KNOWLEDGE-BASED  
 PARTNERSHIPS

# Panel B

## Creating a Clean Energy Economy in the U.S.

### Federal Role



**Robert Birkmire**  
**University of Delaware**  
**Director**  
**Institute of Energy Conversion**



*Institute of Energy Conversion      Creating a Clean Energy Economy      December 13, 2010*  
*University Center of Excellence for Photovoltaic Research and Education*





**Steve Chu**  
**Secretary of Energy**  
**National Press Club**  
**29 November, 2010**

# **Is the Energy Race our new “Sputnik” Moment?**

- 1) Innovation adds to the wealth of society**
- 2) Science and technology R&D lie at the heart of innovation**
- 3) Leadership in innovation cannot be taken for granted.**

***For over a century, America has led the world in innovation***

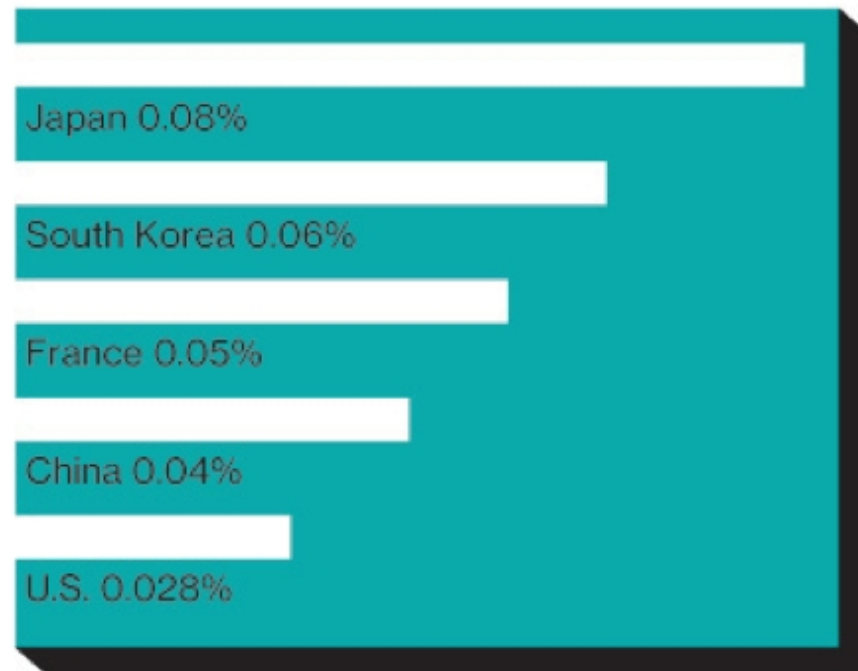
***Today, that leadership is at risk***



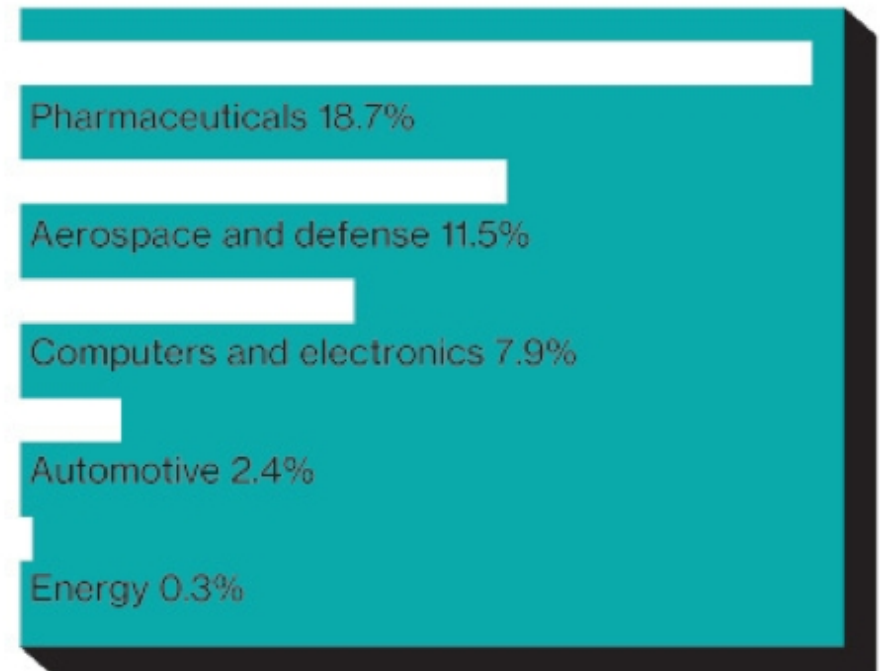
# US is losing it's leadership position in energy technologies

## The U.S. Government Lags in Energy Research—and So Do Energy Companies

Public energy research, development, and deployment spending as a share of GDP in 2007



R&D spending as a share of sales at U.S. companies in 2009



DATA: AMERICAN ENERGY INNOVATION COUNCIL

**Bloomberg Businessweek: Politics & Policy June 17, 2010**

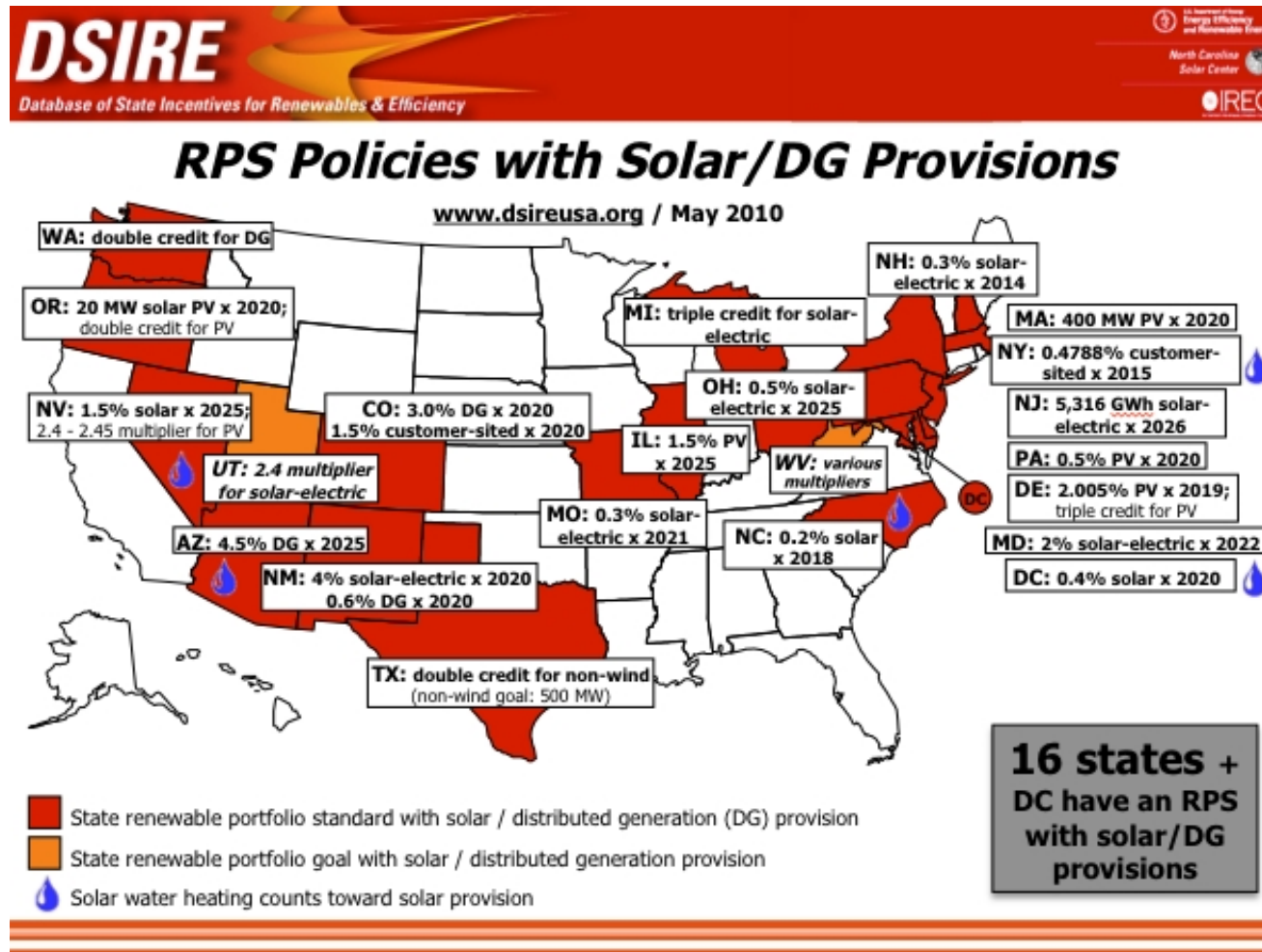


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# States Driving Renewables

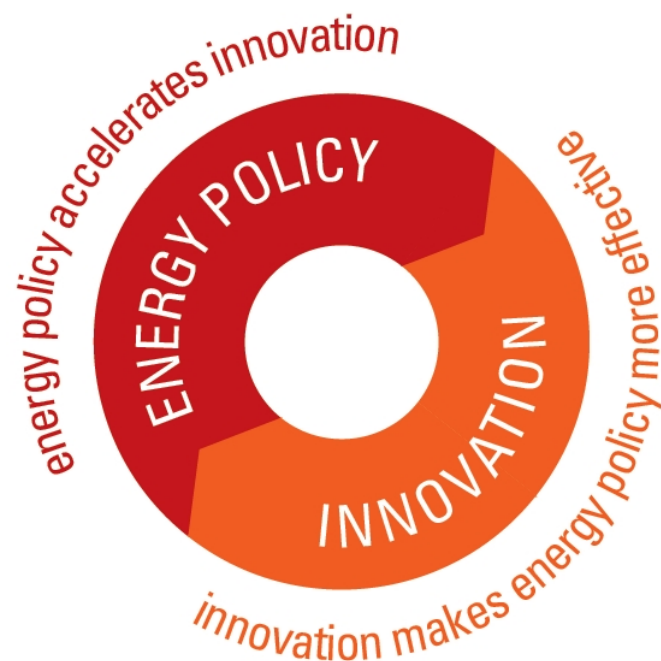
## R&D Centers and Policy



# We need a National Energy Strategy

Policy ↔ R&D ↔ Workforce

Science ↔ Engineering ↔ Commercialization



American Energy Innovation Council // A BUSINESS PLAN FOR AMERICA'S ENERGY FUTURE



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# Opportunity for Delaware

## Energy Innovation & Technology Development Center

### Longstanding UD Organizations

Institute of Energy Conversion: PV  
(1972)

Center for Catalytic Science and Technology: Bio & Solar Fuel  
(1978)

Center for Energy and Environmental Policy  
(1980)

### More Recent Programs at UD

Fuel Cells    Magnetics    Wind



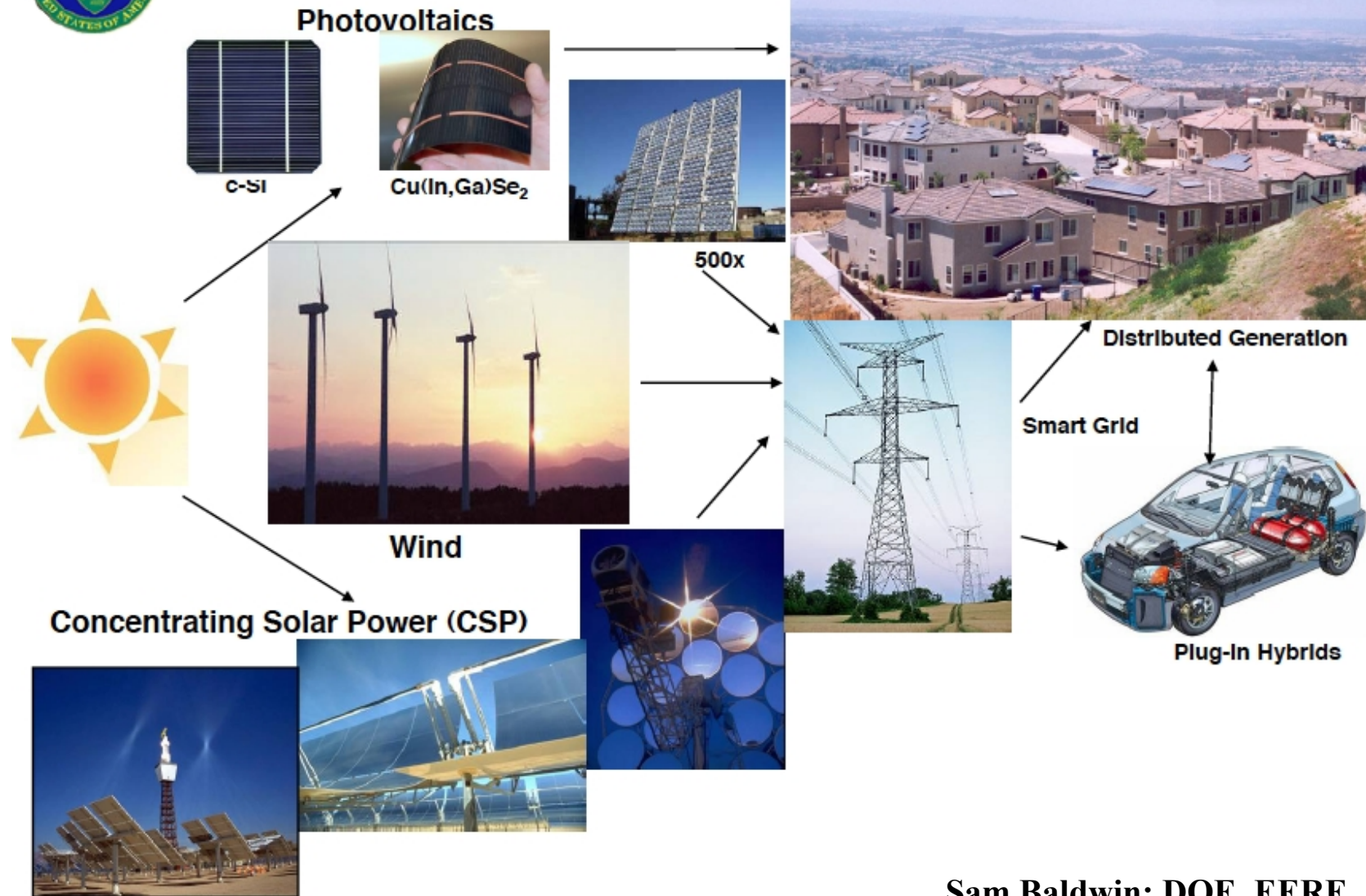
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# Renewable Electricity Systems



Sam Baldwin: DOE, EERE





# Institute of Energy Conversion

'World's oldest continuously operating solar research facility'

Continuous funding since 1972  
Designated DOE Center of Excellence 1992

Providing

RESEARCH INNOVATION EDUCATION SUPPORT  
for  
US PV Programs & Industry



*Supplying the Workforce for PV Industry*



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# DOE University Support for PV

**Requires sustained investment in people and equipment**

- ❑ **Core competency and skills must be nurtured and supported**
- ❑ **Infrastructure needed to develop leading-edge concepts**
- ❑ **Basic research: Disruptive technology >20 yrs; adequate support through Frontier Centers**
- ❑ **Applied research: improve current technologies critical for competitiveness of PV industry; sporadic support with gaps in funding**

**Innovation provided to industry**

- ❑ **Shared research, internships**
- ❑ **People workforce**
- ❑ **IP licensing, technology transfer**



Secretary of Energy Steve Chu:

***America still has the opportunity to lead the world in a new industrial revolution and secure our future prosperity, but time is running out.***

***Federal support of scientific R&D is critical to our economic competitiveness.***



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