

Office of Strategic Programs



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Strategic Programs**

OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY



ENERGY EFFICIENCY

- Advanced Manufacturing
- Building Technologies
- Federal Energy Management
- Weatherization & Intergovernmental



RENEWABLE ENERGY

- Geothermal Technologies
- Solar Energy Technologies
- Wind & Water Technologies



TRANSPORTATION

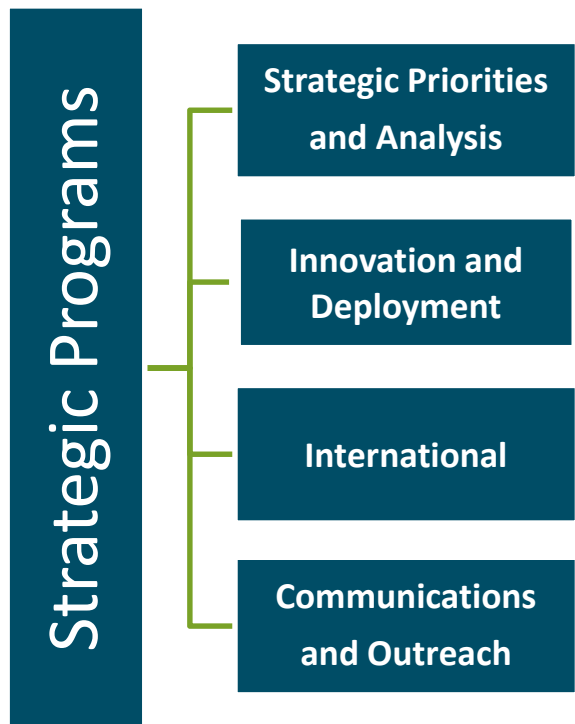
- Biomass & Biorefinery Systems
- Hydrogen & Fuel Cell Technologies
- Vehicle Technologies

- Advanced Manufacturing
- Sustainability Performance
- Strategic Programs

Strategic Programs' Role in EERE

The Office of Strategic Programs accelerates development, commercialization and deployment of EE/RE technologies by communicating and leveraging crosscutting opportunities within the EERE portfolio and providing a strong foundation and best practices for strategic planning, implementation and decision making.

Strategic Programs Objectives:



- Provide a consistent, objective and credible analysis underpinning for EERE.
- Promote innovation and accelerate adoption of energy efficiency and renewable energy technologies.
- Advance the progress of EERE's domestic R&D programs and accelerate global deployment of U.S.-made clean energy technologies through international collaboration.
- Provide accessible, sound, reliable information on energy technologies and systems and their evolution, and further promote energy awareness.

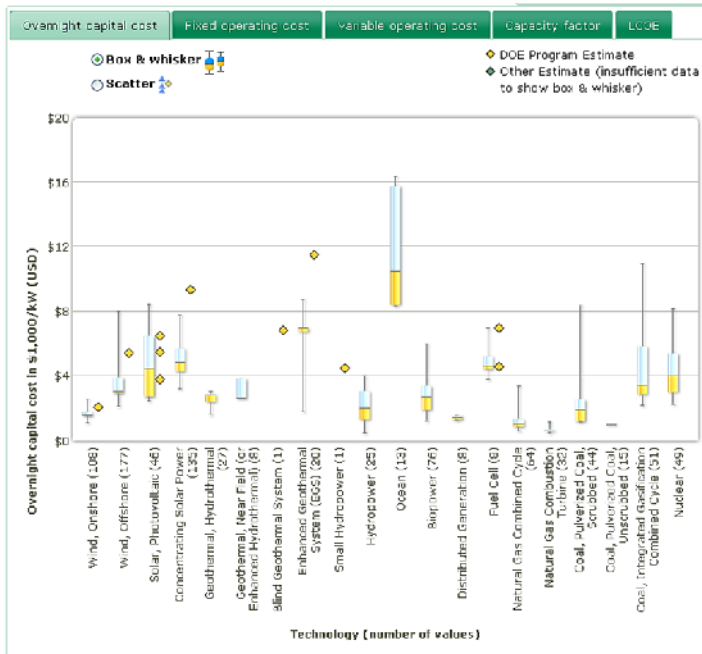
Strategic Priorities and Impact Analysis

Strategic Priorities and Impact Analysis

Provide a consistent, objective and credible analysis underpinning for EERE

Objectives:

- Inform EERE corporate decisions and program implementation through a portfolio perspective
- Explain EERE impact on US energy system, economy, jobs, and environment
- Increase the transparency, rigor, and utility of EERE data and analysis tools, using state-of-the-art methods
- Guide program evaluations



The **Transparent Cost Database** collects program cost and performance estimates for EERE technologies in a public forum where they can be viewed and compared to other published estimates.



<https://bites.nrel.gov/index.php>

The **BITES Tool** is a scenario-based analysis tool to explore how changes in energy demand and supply by economic sector potentially impact CO₂ emissions.

<http://en.openei.org/apps/TCDB/>

Innovation & Deployment

Innovation and Deployment

Promote innovation and accelerate adoption of energy efficiency and renewable energy technologies.

Challenges

- Small businesses face challenges in financing the development and deployment of clean energy technologies.
- New ventures often lack the business savvy and access to investors necessary to succeed.
- Communities lack knowledge and tools to select effective energy portfolios or prioritize investments across varied technologies.
- The currently available skilled clean energy workforce is inadequate.
- Reach of EERE information is hindered by limited use of state-of-the-art tools and software.

Objectives:

- Support small business innovative research and technology commercialization
- Help create ecosystems that can move innovative technologies into the market faster
- Transform the energy market through a community-based planning and deployment approach
- Develop and implement advanced workforce education/training tools and methods
- Develop and distribute interactive applications, tools and content across EERE, DOE and the Nation

Small Business Innovation Research (SBIR) and Small Businesses Technology Transfer Research (STTR)

SBIR

Structure:

- Phase I: \$150-225K, 1 yr
- Phase II: \$1.0-1.5M, 2 yrs

Fiscal Year 2013 Schedule

	Phase I		
	Release 1	Release 2	Release 3
Pre-Release	07/16/12	10/29/12	TBD
FOA Release	08/13/12	11/26/12	TBD
Pre-Apps Due	09/04/12	12/17/12	TBD
Applications Due	10/16/12	02/05/13	TBD
Award Notification	~01/13*	~05/13*	TBD
Grant Start Date	~02/13*	~05/13*	TBD
	Phase II		
	Release 1	Release 2	Release 3
FOA Issued	10/22/12	02/27/13	07/15/13
Applications Due	12/11/12	04/17/13	05/5/13
Award Notification	~02/13*	~06/13*	~11/13*
Grant Start Date	~03/13*	~07/13*	~12/13*

Success Stories

- **A123 Systems**, 2003 SBIR Phase I grantee, developed *Advanced Li-Ion Batteries*. By the time of the 2006 DOE survey, it already had sales 35 times greater than the DOE investment. Early sales were for cordless power tool batteries; now the batteries are in hybrid vehicles.

"Beyond SBIR"



- EERE supports the **Clean Energy Alliance** to link small businesses with incubators and facilitate commercialization. **LoadIQ**, 2012 SBIR Phase I grantee, developed *Utility Accountant* technology, which enables consumers to see their energy use itemized in real time and reduce their energy costs. Recently raised \$1.1M from public and private sector sources and landed pre-purchase commercial trials for a food service company.

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy

Innovation Ecosystem Initiative

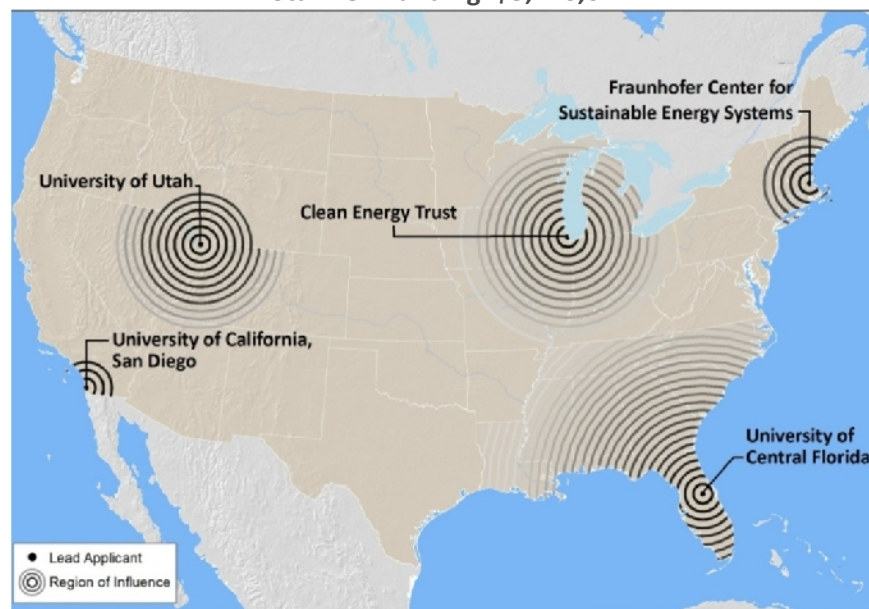
Enabling business mentoring, entrepreneurial fellowships, and business plan competitions to accelerate the movement of innovative efficiency and renewable technologies to the marketplace

Highlights:

- Competitively selected 5 ecosystems that include 80+ partners and client companies
- ~\$30,000,000 in private-sector funding, >\$3,000,000 in additional federal funding, >25 start-up companies; examples:
 - **FirstFuel Software** raised >\$12M in venture capital to develop remote building energy audit business
 - **Clean Urban Energy** raised >\$7M to incorporate building energy use into its smart grid software

Five 3-Year Regional Projects Awarded in 2010

Total DOE Funding: \$5,240,641



National Clean Energy Business Plan Competition

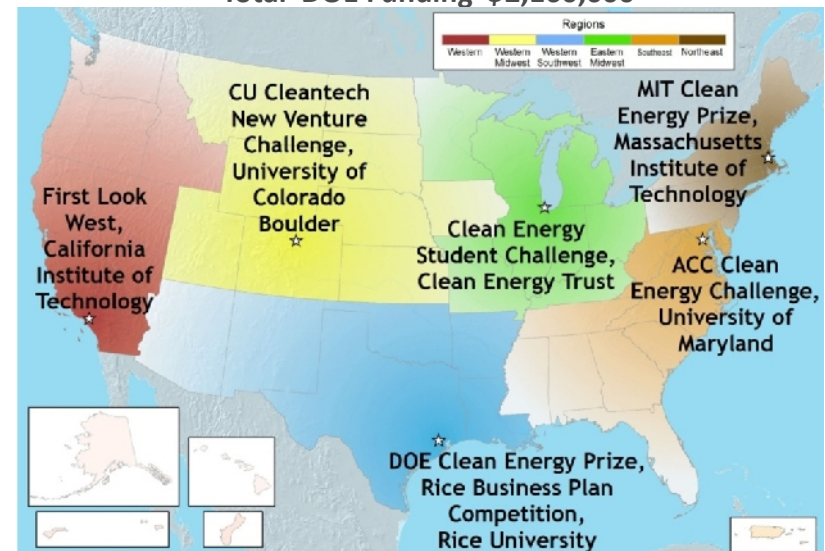
Part of the White House Startup America initiative to celebrate, inspire, and accelerate entrepreneurship throughout the nation

Approach: convene venture capitalists, thought leaders from the energy industry and government, and the nation's most promising young business minds to connect student-led teams with the resources and expertise their startups need to succeed

Progress & Plans:

- More than 275 student teams competed in the 6 regional competitions.
- The winner from each of those competitions received \$100,000 in DOE prize money.
- Participating teams have raised more than \$800,000 of follow-on funding since March 2012.
- 30+ startups have been incorporated and 120+ startups have received entrepreneurial services because of the initiative
- 10+ sponsors supported the National Competition

Six 3-Year Regional Student Competitions
Total DOE Funding \$2,160,000



National Business Plan Competition - Winners

Western Southwest Region

SolidEnergy (MIT)- battery innovation that improves safety and energy density of rechargeable lithium batteries – intended to extend deployment of electric vehicles.

Northeast Region

Radiator Labs (Columbia University) - a low-cost radiator retrofit that converts steam radiator heating systems into a controlled zoned system, increasing efficiency of heating and occupant comfort.

Western Region

Stanford Nitrogen Group (Stanford University) - new wastewater treatment process that removes and recovers energy from waste.

Southeast Region

Mesdi Systems (University of Central Florida) – precision electro spray tools that increase production capacities and reduce costs for clean energy manufacturing.

Western Midwest Region

Navillum Nanotechnologies (University of Utah) - low cost commercial scale production of semiconducting nanocrystals for energy efficient products (TVs, tablet displays, and LED lighting) and to improve energy-harnessing capabilities of solar panels.

NATIONAL WINNER of >\$180,000 worth of prizes:

- \$100,000 in seed funding
- Technical and commercialization assistance
- 30 hours of legal assistance (Mintz Levin)
- 40 hours of advisory services (Battelle Ventures)



Eastern Midwest Region

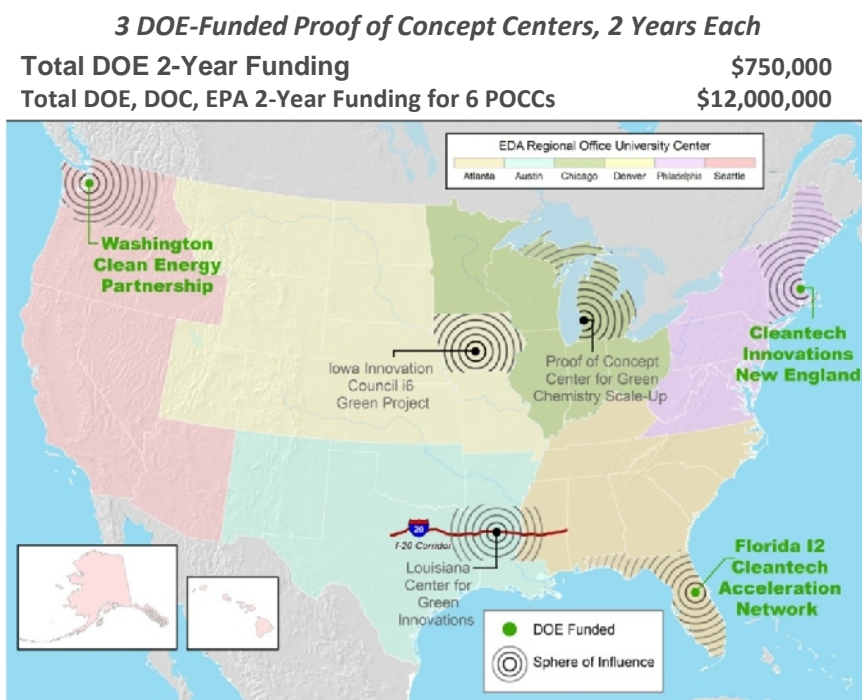
NuMat Technologies (Northwestern University) -nanomaterial (metal-organic framework) that stores gases at lower pressure, reducing infrastructure costs and increasing design flexibility (e.g., natural gas tank and storage).

i6 Green Challenge

A partnership with DOC Economic Development Administration to support three regional proof of concept centers in green innovation to improve competitiveness and create jobs

Progress & Plans:

- Region-specific centers that provide services to clean energy ventures:
 - Washington focuses on energy efficiency in buildings
 - Florida targets technologies from partner universities, linkages with Kennedy Space Center
 - New England collaborates with Fraunhofer ecosystem, focuses on economic expansion throughout New England
- Florida I2 CAN creating a “gap fund” to invest in clean energy startups
- Washington Clean Energy Partnership is working with Microsoft to create campus energy management test bed facility with Seattle City Light
- Cleantech Innovations New England provides entrepreneurial services to business plan competition winners, thereby accelerating commercial success.

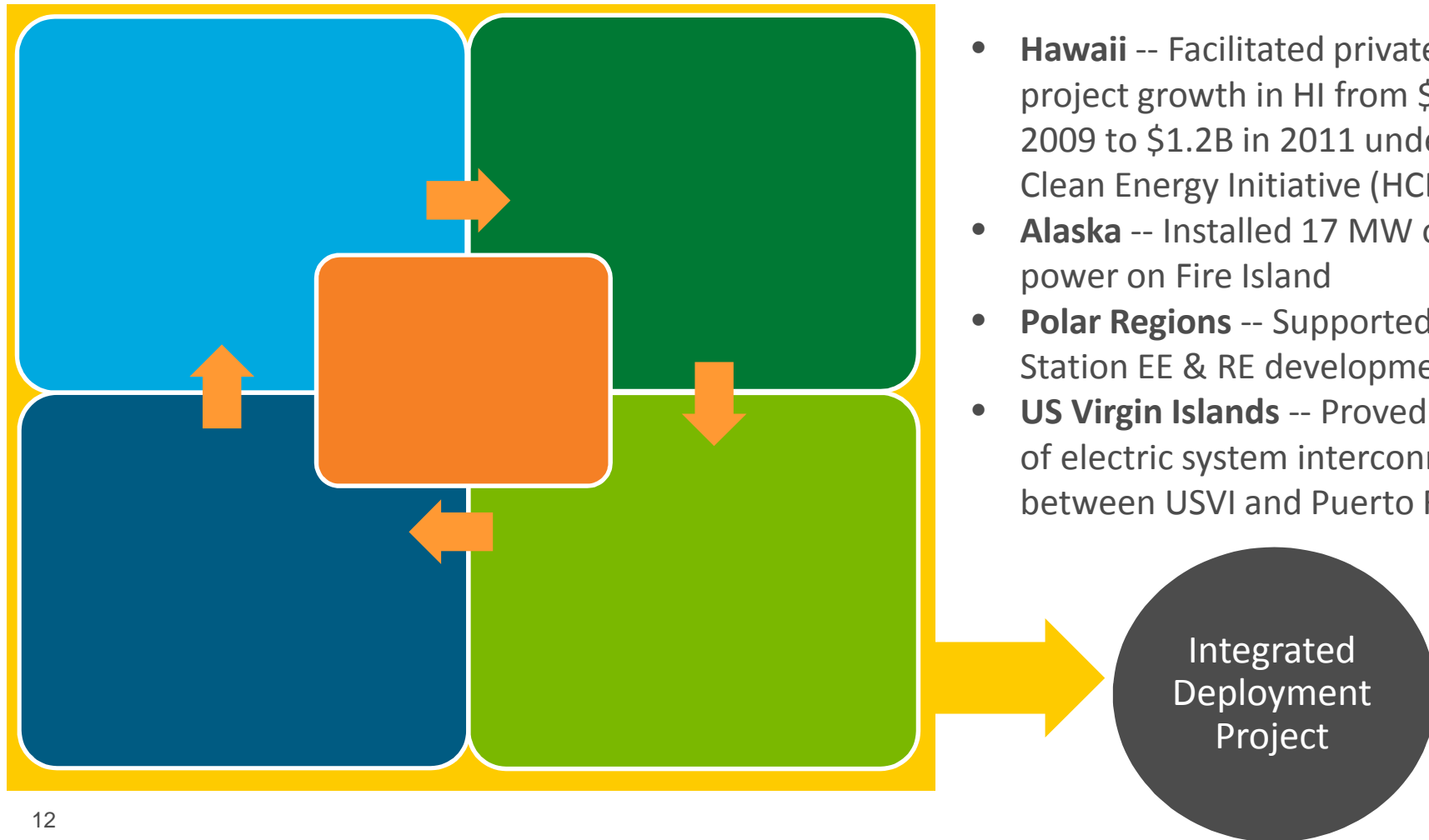


Integrated Deployment

EERE's community-based approach to assist in the deployment of energy efficiency and renewable energy technologies in high energy cost regions.

Accomplishments

- **Hawaii** -- Facilitated private capital project growth in HI from \$300M in 2009 to \$1.2B in 2011 under Hawaii Clean Energy Initiative (HCEI)
- **Alaska** -- Installed 17 MW of wind power on Fire Island
- **Polar Regions** -- Supported Summit Station EE & RE development
- **US Virgin Islands** -- Proved viability of electric system interconnection between USVI and Puerto Rico



International

International

Advance the progress of EERE's domestic R&D programs and accelerate global deployment of U.S.-made clean energy technologies through international collaboration.

Bilateral Partnerships

- China
- India
- Brazil
- Israel
- EU
- United Arab Emirates
- Canada
- Japan
- Mexico
- Korea
- Russia
- Kazakhstan

Multilateral Partnerships

- APEC – Asia-Pacific Economic Cooperation
- CEM– Clean Energy Ministerial
- ECPA – Energy and Climate Partnership for the Americas
- EDIN – Energy Development in Island Nations
- IEA Working Groups and Implementing Agreements
- IPEEC – International Partnership for Energy Efficiency Cooperation
- IPGT – International Partnership for Geothermal Technology
- IPHE – International Partnership for Hydrogen and Fuel Cells in the Economy
- IRENA – International Renewable Energy Agency

International Program: Linking Goals to High-Impact Activities

Support High-level Goals

- *“U.S. leadership through the Department can help promote clean energy technologies around the world...International partnerships could offer more diverse projects **to increase learning rates, promote the global adoption of clean energy technologies, and perhaps ease foreign market entry for U.S. firms...**” -- DOE Strategic Plan, May 2011*

Strategies and Means

- Use technical and policy assistance as “market priming” activities to facilitate international business and investment opportunities for U.S. clean tech companies
- Collaborate with Commerce, USTDA, ExIm, and OPIC through formal and informal interagency processes to support President’s National Export Initiative
- Promote the development and implementation of codes and standards (specifically, those prevailing in the U.S.) to provide competitive advantage of U.S. clean energy technologies

High-Impact Activities

- **U.S.-China Renewable Energy Partnership.** According to MA-based Second Wind, DOE technical workshops have been “vital” to the sale of U.S.-manufactured wind measurement devices to China.
- **U.S China Mayors Training visits.** AZ-based Solatube, maker of innovative daylighting technology, recorded \$4M sale as result of visits.
- **Brazil Strategic Energy Dialogue—**
 - Building envelope technologies. Introducing U.S.-supported labeling program to promote sale of US goods in rapidly expanding market; industry cost share of 50% to support workshops indicates market relevance and export potential.
 - Small wind systems. DOE-supported manufacturers participating in workshop to discuss standards development, testing, certification, wind resource and site assessment, grid infrastructure, incentive programs, and project development opportunities.