Webinar Discussion on
REGIONAL CLEAN ENERGY TECHNOLOGY INNOVATION
September 29, 2016
Mission Innovation

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Mission Innovation

Within the larger international context for climate change:

- Commitment of US and 19 other world leaders to commit to a doubling ($6.4 billion in FY 2016 to $12.8 billion in FY 2021) of public investment in clean energy R&D over next 5 years (FY 2017 President’s budget request is $7.7 b for 12 agencies; of this, $5.865b for DOE)

- The 20 countries represent 75% of the world’s CO2 emissions from electricity, and more than 80 percent of the world’s clean energy R&D investment

- Within DOE, new funding in FY 2017 for MI will be focused on early stage research and development
How do we advance clean energy R&D?

- A fully stocked portfolio of energy R&D based on a solid foundation of fundamental science and computing
- Innovative research collaborations
- What interdisciplinary research modes are appropriate for MI research?
Energy Frontier Research Centers

http://science.energy.gov/bes/efrc/centers/
# Energy Innovation Hubs

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<th>Energy Innovation Hubs</th>
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<tr>
<td><strong>EERE: Critical Materials Institute (AMES)</strong></td>
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<td>Explores ways to address challenges in critical materials, including mineral processing, manufacture, substitution, efficient use, and end-of-life recycling.</td>
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<td><strong>EERE: Energy-Water Nexus Desalination Hub (TBD)</strong></td>
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<td>Will serve as a center of research focused on developing integrated technological system solutions and enabling technologies for de-energizing, de-carbonizing, and reducing the cost of desalination to provide clean and safe water.</td>
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<td><strong>NE: Modeling and Simulation of Nuclear Reactors (ORNL)</strong></td>
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<td>Creates a &quot;virtual&quot; version of an existing operating Pressurized Water Reactor, a modeling and simulation tool known as the Virtual Environment for Reactors Analysis (VERA) that is being used to create a better understanding of performance and safety issues with these reactors.</td>
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<td><strong>SC: Batteries and Energy Storage Hub (ANL)</strong></td>
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<td>Focuses on discovery of new energy storage chemistries through the development of an atomic-level understanding of reaction pathways and development of universal design rules for electrolyte function.</td>
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<td><strong>SC: Fuels from Sunlight Hub (LBNL)</strong></td>
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<td>Creates transformative advances in the development of artificial photosynthetic systems for converting sunlight, water, and carbon dioxide into a range of commercially useful fuels.</td>
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Advanced Manufacturing Initiative

GOAL

Reduce by 50% in 10 years the life-cycle energy consumption of manufactured goods by targeting the production and use of advanced manufacturing technologies

Develop and Demonstrate:

• Energy-efficient processing and materials technologies for manufacturers and spur investment.
• Manufacturing processes that reduce energy intensity and improve production.
• Materials technologies improving products to use less energy throughout their lifecycles.
• Technical assistance activities promoting advanced technologies and better energy management.

➤ Oak Ridge Manufacturing Demonstration Facility
➤ Critical Materials Hub
➤ America Makes
➤ Power America
➤ Institute for Advanced Composites
Advanced Research Projects Agency – Energy (ARPA-E)
Unique Role to Complement DOE Applied Energy R&D

• Focus on early stage technologies

• Potential for meaningful advancement from concept to laboratory-scale prototype with a modest investment over a defined time period

• Project leads include companies, universities, national labs

• 475 projects from 29 focused and open solicitations, 35 new companies, 45 private sector follow on investments, 60 projects with follow on government funding for further development
### MI Portfolio: New Cross-cutting Initiatives Proposed in FY 17 Budget

#### Regional Clean Energy Innovation Partnerships
- Establish regionally-based innovation partnerships focused on regional innovation capabilities, resources, markets, needs and opportunities ($110M)
- Two principal issues: design of a partnership and establishment of regional boundaries

#### National Laboratory Small Business Partnerships
- Expansion of EERE small business voucher pilot program

#### National Laboratory Energy Technology Innovation Accelerators
- Provide clean energy entrepreneurs with seed funding, technical support, and access to lab researchers and capabilities; modeled after LBNL Cyclotron Road Partnership
Mapping of U.S. Renewable Resources

1 Does not include Alaska or Hawaii
2 Does not include Hawaii

Source: NREL 2006, 2012
Regional CO₂ Sources with Access to Sequestration Options or Associated Infrastructure
Kevin Knobloch
Chief of Staff, Office of the Secretary

Mission Innovation Website
www.energy.gov/mission-innovation
THE END