



# EERE NATIONAL LAB IMPACT SUMMIT



**MAY 4, 2016**  
**GOLDEN, COLORADO**

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Senior Advisor  
Office of the DAS for Renewable Power

# Renewable

## ELECTRICITY GENERATION



- Photovoltaics
- Concentrating Solar Power
- System Integration
- BOS Soft Costs Reduction
- Innovations in Manufacturing



- Land Based
- Offshore
- Distributed
- Market Acceleration & Deployment



- Marine and Hydrokinetics
- Hydropower
- Market Acceleration & Deployment



- Enhanced Geothermal Systems
- Hydrothermal
- Low Temp and Coproduced

# Renewable

## ELECTRICITY GENERATION



**Roland Risser**  
Deputy Assistant  
Secretary for  
Renewable Power



**Lidija Sekaric**  
Solar Acting Director



**Jose Zayas**  
Wind and Water  
Power Director



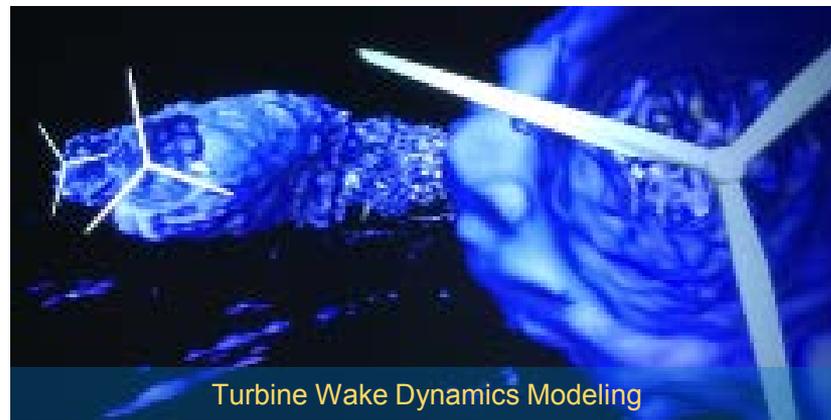
**Susan Hamm**  
Geothermal  
Acting Director



**Kevin Lynn**  
Grid Modernization  
Director



# Enabling the Wind Plant of Tomorrow

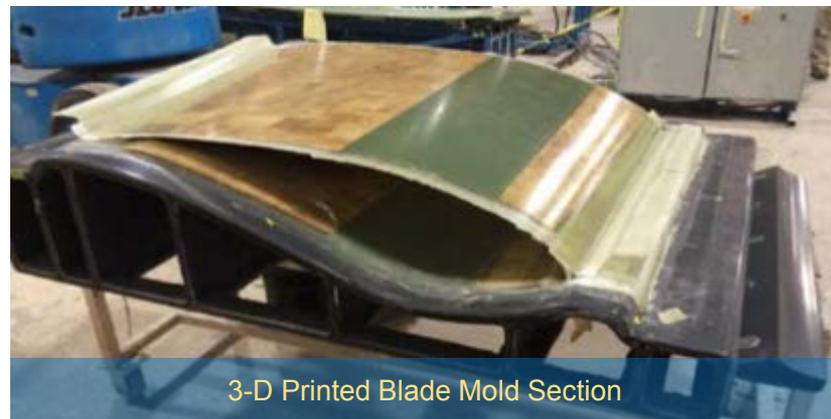


**Atmosphere to Electrons (A2e):** A2e is a multi-year research initiative targeting significant reductions in the cost of wind energy through an improved understanding of the complex physics governing electricity generation by wind plants.

**Lab partners:** ANL, LANL, LBNL, LLNL, NREL, PNNL, SNL



# Transforming Wind Turbine Manufacturing

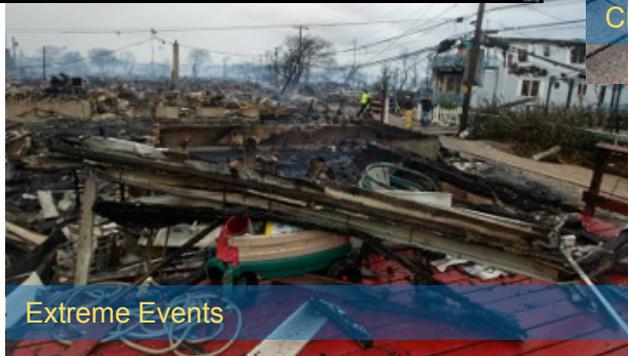


**Additive Manufacturing:** Simplify the manufacture of molds for turbine blades by applying 3D printing directly to the mold process. At 500-1,000x faster, also reduces the amount of time; reduces the cost—and is capable of printing polymer components 10x larger than today's industrial additive machines

**Lab partners:** NREL, ORNL, and SNL

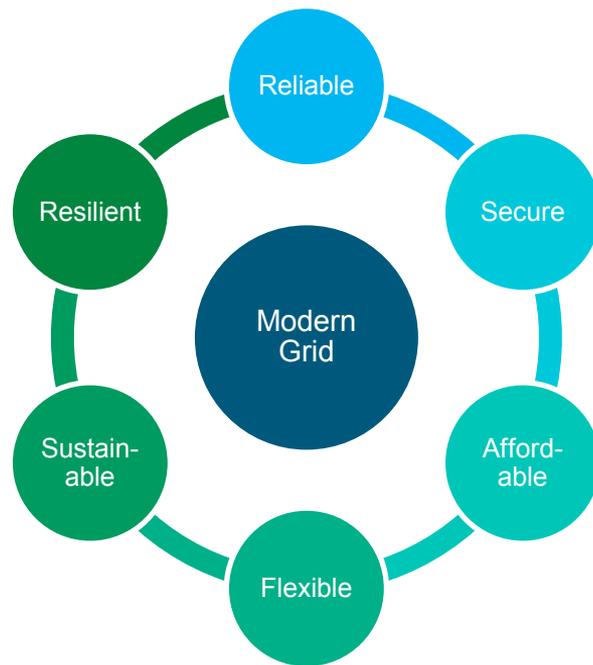
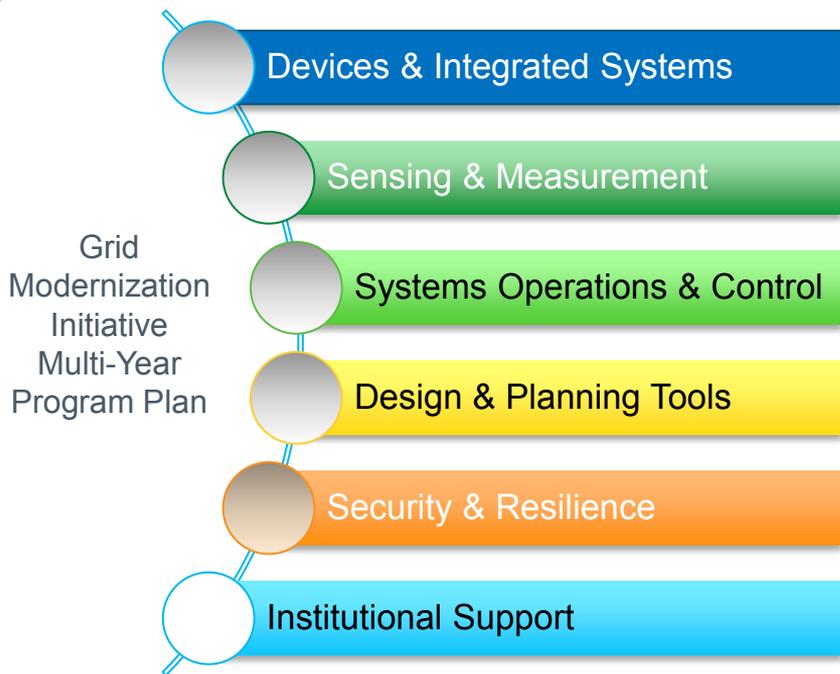
# Modernizing our Grid

*The existing U.S. power system has served us well...*



*...but our 21st Century economy needs a 21st Century grid.*

# Our Path to a Modernized Grid



**Lab partners:** ANL, BNL, INL, LANL, LBNL, LLNL, NETL, NREL, ORNL, PNNL, SLAC, SNL, SRNL



# Crosscutting the Subsurface

## Wellbore Integrity



3D Acoustic Borehole Integrity Monitoring System (LANL)

Spectroscopy Stress Sensor for In-Situ Stress (ORNL)

Ultrasonic Arrays and Tomography for Well Inspection (ORNL)

## Subsurface Stress & Induced Seismicity



Hydraulic Fracture Field Laboratory in a Deep Mine (LBNL)

Imaging Fractures w Crosshole Seismic & Advanced Change Detection Algorithms (SNL)

Measuring Stress Away from Borehole (LANL)

MicroBayesloc Location Method (LLNL)

Big Data Analytics for

## Permeability Manipulation



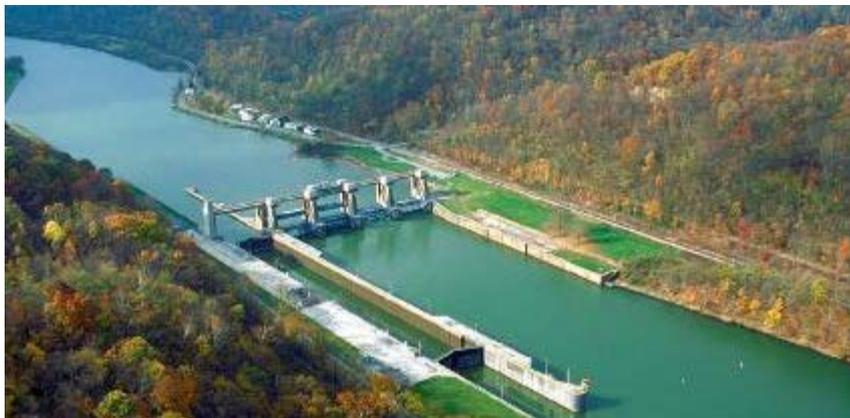
## Subsurface Signals



Borehole Muon Detector for Tomography of Subsurface Reservoirs (PNNL)

Induced Seismicity (NETL)

# Charting a Data-Driven Renewable Future



## Hydropower Vision Study

**Lab partners:** ANL, NREL, ORNL, PNNL

Both Vision studies will lay out a credible analysis of potential growth scenarios across their market sectors, and closely engage industry and other key stakeholders

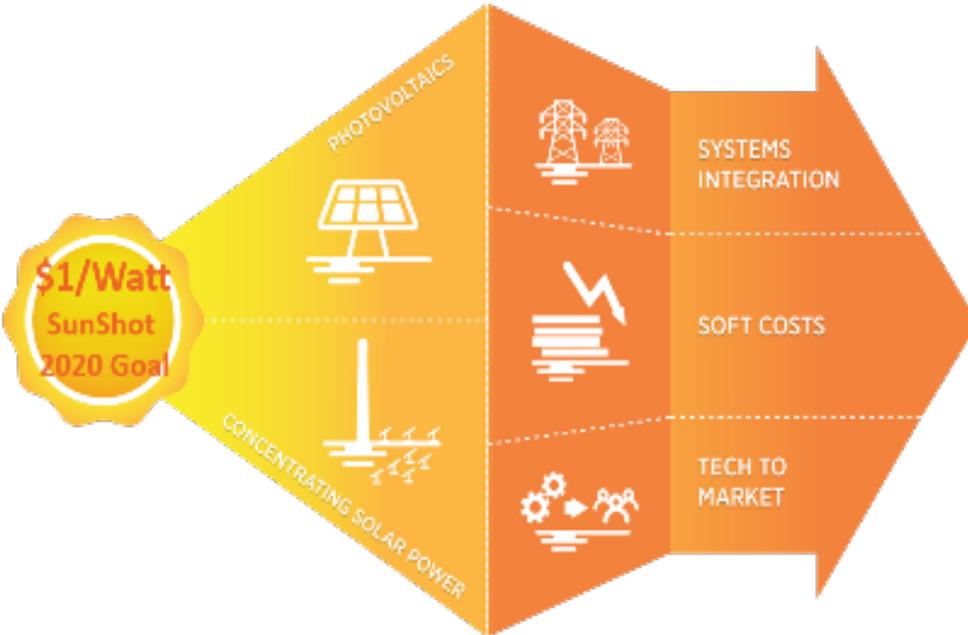


## Geothermal Vision Study

**Lab partners:** ANL, INL, LBNL, LLNL, NREL, ORNL, PNNL, SNL



# Achieving our SunShot Goal



Solar Regional Test Center in Williston, VT

## Solar Regional Test Centers

- **Five RTCs** located around the country: CO, FL, NV, NM, VT
- **Lab Partners:** NREL, SNL

# Engaging with World-Class Facilities



**Energy Systems  
Integration Facility (ESIF),  
NREL**



**Drivetrain Testing Facility,  
Clemson University**



**Scaled Wind Farm  
Technology Facility (SWiFT),  
Texas Tech University and  
SNL**

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