

# USEA Advanced Energy Technology Forum

## What's New at Penn State?

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# Energy: A Penn State Tradition

- Penn State has taught our students energy topics for over a century.
- We currently have more energy degree programs than any other U.S. university.
- We have world-class research programs in coal and natural gas, biomass, solar, wind, nuclear, batteries, smart grid technology, policy and economics, transportation and building energy efficiency.



# Elements of a Vision

**Penn State will advance clean, safe, abundant and affordable energy, optimizing use of**

- **Photons** – harnessing power from the sun through biology, chemistry, and materials,
- **Atoms** – next generation nuclear energy,
- **Electrons** – efficient transport and storage,
- **Carbon** – advanced capture, use and storage,
- **Hydrogen** – distributed clean energy use, and,
- **the Human Element** – our future depends on it!



# Energy University - Structure

## **Consortium for Integrated Energy Systems –**

investing in the technology innovation and systems integration required for future energy transitions.

## **Center for Energy Law and Policy –**

advancing the policy dimensions of energy system transformation and impact.

## **Center for Energy and the Public –**

energy literacy for students, K-12, alumni, businesses, citizens. Research on communication, cognitive understanding and attitude formation.



# Energy University - Function

- **Virtual Assets** – data sharing for research and education.
- **Operating Station** – demonstration of new technologies, learn-by-doing at Penn State campuses and communities.
- **Transforming Energy Education** – on-line resources, project-based learning, internships, leveraging Virtual Assets and Operating Station.
- **Energy Extension** – Developing solutions for citizen and consumers, businesses and communities in Pennsylvania & beyond.



# Energy University - Engaged

- **Global Building Network** – leading a UN partnership to enhance building performance for energy efficiency, health and human performance.
- **Drawdown** – from global analysis to local implementation, advancing the most comprehensive plan to reverse global warming. **Sept. 16-18, 2019**



# Energy University – Next Steps

- **Education** – curriculum renovation, campus-wide energy literacy. Town Halls and pilot projects.
- **Research** – Clusters of excellence, enhanced stakeholder engagement.
- **Outreach** – on-line resources, project-based learning, internships, curriculum renovation. Launch Energy Extension to implement our Land Grant mission to serve society.



# Roles for Partners

- **Virtual Assets –**  
data sharing for research and education.
- **Operating Station –**  
demonstration of new technologies, learn-by-doing at Penn State campuses and communities.
- **Transforming Energy Education & Outreach –**  
employee training, internships, sponsor project-based learning, developing solutions for Pennsylvania and across the globe.
- **Energy University Design Partnership –**  
working with key stakeholders to design and implement the energy university for the 21<sup>st</sup> century.



