

# UCEAO

## Energy Initiatives for Ohio

Jane Harf  
Director, UCEAO

NASA-Glenn Green Forum  
July 28, 2009





# University Clean Energy Alliance of Ohio

On April 23, 2007, the presidents of fifteen research institutions from throughout the state of Ohio came together to sign a Memorandum of Understanding establishing the University Clean Energy Alliance of Ohio [UCEAO].



Cleveland State University



THE UNIVERSITY OF  
TOLEDO  
1872



Youngstown  
STATE UNIVERSITY



## **Founding Members: 13 Public and Two Private Universities form the UCEAO Board of Governors**

University of Akron  
Bowling Green State University  
Case Western Reserve University  
Central State University  
University of Cincinnati  
Cleveland State University  
University of Dayton  
Kent State University  
Miami University  
Ohio State University  
Ohio University  
Shawnee State University  
University of Toledo  
Wright State University  
Youngstown State University



**UCEAO is fortunate to have the support of government labs and research partners.**

NASA – Glenn Research Center

US Air Force Research Laboratory

USEPA, National Risk Management Research Lab

Edison Welding Institute [EWI]

Ohio Aerospace Institute [OAI]



## UCEAO Statement of Principles

- ✓ The University Clean Energy Alliance of Ohio is dedicated to **sharing expertise** in the areas of clean energy generation within UCEAO as well as with our government, academic, non-profit and industrial partners.
- ✓ Our mission is to **promote energy education and research** and to **inform energy policy decision makers** using the best information available.
- ✓ The strength and effectiveness of individual areas of excellence at Ohio colleges and universities can be greatly enhanced through **cooperation and collaboration among institutions**.
- ✓ **A single collective voice** from an alliance of universities, concerning the critical importance of clean and secure energy to the state and the nation, will be an important and powerful message.



## Strategies to advance UCEAO Principles

### ✓ **Collaboration**

Bringing together individuals, academic institutions, government, and business to reduce duplication of effort and leverage resources

### ✓ **Communication**

Outreach to opinion leaders, appointed and elected officials, environmental organizations, and the public to raise awareness and understanding

### ✓ **Creativity**

“Thinking outside the box” to solve problems

### ✓ **Commitment**

On the part of all stakeholders to the goal of developing advanced energy solutions

### ✓ **Customization**

No “one size fits all” answers. Need for flexibility to address differing needs and capabilities.



**UCEAO has productive relationships with state and federal government entities in the energy arena.**

Ohio Congressional Delegation

Ohio General Assembly

Ohio Air Quality Development Authority

Ohio Department of Agriculture

Ohio Department of Development

Ohio EPA

Ohio Department of Natural Resources

Public Utilities Commission of Ohio

Ohio Power Siting Board

Ohio Board of Regents

Inter-University Council



## Grants and Government Partnerships

✓ Awarded a grant from OAQDA to sponsor workshops investigating how universities can better assist businesses. Recommendations contained in the project report will help to make the university-industry connection stronger.

✓ Participated in a panel on small business opportunities in the energy arena at this year's ODOD Entrepreneurship Expo.

✓ Partnered with ODOD to coordinate the statewide submission process for US DOE Energy Frontier Research Center proposals.

✓ Partnered with the ODOD in developing and staffing the State of Ohio display at the American Wind Energy Association annual meeting in Chicago, with over 23,000 attendees, including state officials led by Governor Ted Strickland.



## Grants and Government Partnerships (cont.)

- ✓ In collaboration with the Ohio Board of Regents, develop a database of research expertise and technical capabilities at each of our member universities that enable the academic community, government agencies and businesses to quickly locate Ohio's talent and expertise in advanced energy areas.
- ✓ Awarded a \$600,000 3-year grant from the National Science Foundation, Partnerships for Innovation Program in collaboration with the Ohio Skills Bank, entitled *An Innovative Model for a New Advanced Energy Workforce* with a focus on wind, solar and advanced nuclear.
- ✓ Partnering with the Ohio Board of Regents on sustainability program development and the Green Pathways Project.



## Programs in Process

- ✓ Participate in a stakeholders group of energy and environmental advocates to identify and support legislative and regulatory initiatives necessary to create green energy jobs and investment in Ohio.
- ✓ Participate in a public-private partnership to support the expanded use of biomass for energy generation in Ohio.
- ✓ Create affiliate programs for community and technical colleges, four-year liberal arts institutions, incubation centers, and energy trade associations.
- ✓ Host a statewide annual conference. This year's conference – *Putting the Pieces Together: The New Energy Paradigm in Research, Education, Business and Public Policy* – attracted over 275 participants, and included six panel discussions, a poster session, exhibit hall and keynote speech by Lt. Governor Lee Fisher.



## UCEAO Connections to Industry

- ✓ Establish productive, ongoing relationships between Ohio business and industry and universities throughout the state.
- ✓ Take emerging technologies from prototype to production by blending the university research dynamic with industry's ability to produce and market products.
- ✓ Expand the linkage between environmental protection and economic development.
- ✓ Position Ohio as a leader in advanced energy generation, manufacturing, and use.



## Plans for the Future

- ✓ Develop advanced energy/sustainability curricula and degree programs at graduate and undergraduate levels.
- ✓ Facilitate co-op and internship opportunities in energy fields.
- ✓ Disseminate best practices information on energy efficiency programs among facilities management teams.
- ✓ Coordinate and support sustainability programs.
- ✓ Sponsor regional forums on relevant issues and event.
- ✓ Present opportunities to link students with prospective employers and graduate schools.
- ✓ Partner with business and industry to expand the clean energy footprint in Ohio.



## Ohio's Energy Challenges

- ✓ Diversify the fuel mix. Currently, 89% of Ohio's electricity is generated by coal.
- ✓ Develop cost effective clean coal technologies to reduce Ohio's carbon footprint.
- ✓ Provide reliable power through modernization of the energy infrastructure.
- ✓ Ensure affordable and stable energy prices to protect Ohio consumers, commercial and industrial ventures, and jobs.
- ✓ Attract new jobs to Ohio based upon Ohio's green energy portfolio.



## State of Ohio Initiatives

- ✓ Passage of SB 221 in 2008
  - Advanced Energy Portfolio Standard
  - 25% Advanced Energy by 2025
  - Energy Efficiency Program
  - 22% Demand Reduction by 2025
- ✓ Third Frontier Advanced Energy Program
  - Research dollars & Internship Program
  - Program renewal/Bond Issue
- ✓ Governor's Job Stimulus Program, 2008
  - Advanced Energy Focus
  - Board of Regents Co-Op and Internship Program
- ✓ ARRA: Federal Economic Stimulus Package



## What's Needed

- ✓ Massive public investment in energy R&D at the state and federal level, as well as a commensurate infusion of private capital.
- ✓ Focus on the “Big Picture,” including transportation systems, agricultural practices, environmental protection, national security and economic development.
- ✓ The ability to plan ahead for the long term, rather than react to short-term crises.
- ✓ Elected and appointed officials with an understanding of energy issues and a commitment to finding solutions.
- ✓ Citizens with a willingness to do what is necessary to produce results.
- ✓ National and international accords that present a clear vision for the future of energy.



## Paradigm Shift

- ✓ **The Program:** Analogies to the Apollo Program or the Manhattan Project are natural, but limited. In energy, we need 10 Apollo-type programs underway simultaneously with long-term investments in R&D and technology commercialization.
- ✓ **Climate Change:** Marked by controversy, requiring fundamental lifestyle changes, open dialogue, a balancing of values, and an international perspective.
- ✓ **Power Generation:** Less reliance on large baseload plants, more diversification and distributed generation.
- ✓ **Energy Efficiency:** Substantial gains through measures that can be accomplished more quickly and with relatively less investment.
- ✓ **Fuel vs. Food:** An understanding of the true impacts of new technologies.



## Ohio's Top 10 Research Challenges

- ✓ Energy Efficiency
- ✓ Transportation systems
- ✓ Innovative Fuels
- ✓ Supply Chain and Logistics
- ✓ Efficient Building Design, Construction and Renovation
- ✓ Carbon Emissions: Trading and Offsets with Verification
- ✓ Clean Coal Technology
- ✓ Advanced Nuclear
- ✓ Renewable Energy
- ✓ Energy Literacy



## Ohio's Colleges & Universities in the New Energy Paradigm

- ✓ Centers of Excellence:  
Geographic Decentralization = Regional Specialization
- ✓ Green Pathways:  
Designing programs that lead to careers in the  
“green economy”
- ✓ Sustainability: Campus Coordinators and Councils
- ✓ Incubators, Entrepreneurship and Innovation Centers
- ✓ Energy and Environment Institutes
- ✓ Tech Transfer and Commercialization
- ✓ Multi-disciplinary curricula and degree programs



## Ohio's Potential

- ✓ Promote the Clean Energy Supply Chain
- ✓ Take advantage of the logistics and distribution system
- ✓ Re-tool displaced workers from manufacturing sector
- ✓ Use clean energy as an economic development tool
- ✓ Encourage Green Tech/Clean Tech venture capital investments
- ✓ Address the challenges of energy supply, carbon constraints, and the “triple bottom line” of economic, environmental and social value



## **An Invitation to Join Us**

This is a critical time in Ohio – recently passed state legislation provides the foundation for significant accomplishments in the area of advanced and renewable energy, and there is more to come at federal level.

UCEAO is uniquely positioned to build on that foundation, to address the challenges through technical research, graduate and undergraduate education, workforce training and sustainability planning.