University of Kentucky Center for Applied Energy Research

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Director

UK UNIVERSITY OF KENTUCKY
Center for Applied Energy Research

History

- Created by Act of the KY Legislature in 1974
- Center opened in 1977
- Lab was intended to support growing synthetic fuels industry (coal and oil shale)
- Evolved to Kentucky’s leading energy research and development institute, focusing on optimally using Kentucky's - and the nation's - energy resources

Issues We are Addressing

- Reducing environmental impacts of energy production and use
- Sustainable re-use of coal ash
- Renewable portfolio standard
- Cost and reliability of power
- Energy efficiency
- Fuel security and domestic resource utilization
- Economic development for Kentucky

Staff

	2015
Total Personnel as of July 2015	142
Faculty	12
Scientists and Engineers	62
Tech Support	8
Postdocs	9
Admin and Facilities	15
Technicians	2
Students – Grad and Undergrad	34

Engineers

- Chemical
- Materials
- Mechanical
- Civil
- Biosystems
- Mining

- Scientists
  - Chemistry
  - Physics
  - Geology
  - Materials
  - Biology

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Center for APPLIED Energy Research

- Our mission as part of the university is:
  - Research
  - Service
  - Instruction
- Our metrics for success are:
  - Technology transfer
  - Economic development
  - New knowledge creation

CAER Research Focus

- Taking technology from bench to practice
  - Field work
  - Pilot plants
- Partnering with industry
- Build, maintain and add value to the energy economy of Kentucky

Research Divisions

- Biofuels and Environmental Catalysis
- Carbon Materials
- Clean Fuels and Chemicals
- Electrochemical Power Sources
- Environmental and Coal Technologies
- Environmental Remediation
- Power Generation and Utility Fuels
- Organic Electronics (OLED / OPV)

Energy in Kentucky Today

- 93% of Ky electricity from coal - 2015
- Ky is 1.4% of US population
- Ky produces:
  - 2.2% of US electricity
  - 4% carbon dioxide
- Ky electricity use:
  - 3.2% Industrial
    - 35% of Stainless
    - 40% of Aluminum
  - 1.9% Residential

EIA, 2015

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Energy in Kentucky Tomorrow

- Clean Power Plan
  - Significant increases to energy costs for both residential and industrial consumers
- Working to develop new sustainable energy solutions
- Partnering with many to change habits
  - Social science
  - Paradigm shift

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Why That Should Matter to You?

- Energy world you will enter is uncertain
  - Won't look like it has for 100 years
  - New energy sources; more efficient energy use; changes to the way we live and conduct business
- Most important: Jobs
  - STEM Careers – ample opportunity in a changing marketplace

Questions?

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