History of CAER

• 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).
• Transferred to the University of Kentucky in 1988.

OUR MISSION

To execute a research program designed to develop new and more effective and environmentally acceptable use for coal and to improve existing uses for Kentucky's fossil fuels and other natural resources.

- KY Acts 90 Ch 325

carer.uky.edu
Focused on Kentucky Issues

Environment
Reducing environmental impacts of energy production and use.

Coal Ash & Waste
Exploring beneficial uses for coal ash and industrial waste.

Renewables
Developing a renewable portfolio standard.

Cost & Reliability
Insuring the affordable cost and reliability of power in the state.

Efficiency
Discovering new ways to improve energy efficiency.

Security
Improving fuel security and domestic resource utilization.

Economy
Promoting economic development in Kentucky.
153
UK CAER employs 153 total personnel, as of August 2016.

Who We Are

13 Faculty
5 Tech Support
2 Technicians
41 Students
63 Scientists & Engineers
10 Postdoctoral Scholars
19 Admin & Facilities

SCIENTISTS
- Chemistry
- Materials
- Physics
- Biology
- Geology

ENGINEERS
- Chemical
- Materials
- Mechanical
- Civil
- Biosystems
- Mining
UK CAER Funding
2015-2016

<table>
<thead>
<tr>
<th>General Fund</th>
<th>$5.3M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utilities &amp; Supplies</td>
<td>$1.4M</td>
</tr>
<tr>
<td>Cost Share</td>
<td>$542,000</td>
</tr>
<tr>
<td>Salaries</td>
<td>$3.4M</td>
</tr>
<tr>
<td>Operations &amp; Maintenance covered by the General Fund.</td>
<td></td>
</tr>
</tbody>
</table>

| Grants, Contracts & Income | $25.5M |

UK CAER Research Funding

<table>
<thead>
<tr>
<th>Sponsored Project Awards</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
</tr>
<tr>
<td>2015</td>
</tr>
<tr>
<td>2014</td>
</tr>
<tr>
<td>2013</td>
</tr>
<tr>
<td>2012</td>
</tr>
</tbody>
</table>
Our Facilities

Laboratory 1
55,000 sq. ft.

Laboratory 2
43,000 sq. ft.

Mineral Processing
6,500 sq. ft.

Fiber Development
4,800 sq. ft.

CAER Greenhouse
2,500 sq. ft.

Synthesis & Pitch Lab
1,400 sq. ft.
UK CAER Statewide Offices and Outreach Locations

FRANKFORT
DEPT. OF LOCAL GOVERNMENT
DEPT. OF ENERGY DEVELOPMENT AND INDEPENDENCE

BOONE CO.
DUKE ENERGY EAST BEND POWER STATION

TRIMBLE CO.
TRIMBLE COUNTY GENERATING STATION (Proposed)

PADUCAH
PADUCAH GASIFICATION DIFFUSION PLANT

MERCER CO.
KU E.W. BROWN POWER STATION

PIKE CO.
PIKE COUNTY TEST PLOTS

Energy
caer.uky.edu
What We Do

- Developing technologies to address Kentucky’s energy needs.
- Protecting Kentucky’s environment.
- Partnering with Kentucky industry to add value to their operations.
- Taking technology from bench to practice.
- Providing hands-on scientific experiences to Kentucky students.
  - P-12 Education
  - Undergraduate Research
  - Graduate Students
How We Do This

Collaborative Research Groups

- Biofuels and Environmental Catalysis
- Power Generation and Carbon Management
- Material Technologies
  - Carbon materials & materials from ash and other byproducts
- Clean Fuels and Chemicals
- Remediation and Environmental Monitoring
- Organic Electronics
Questions?

David Melanson
UK CENTER FOR APPLIED ENERGY RESEARCH
2624 Research Park Drive
Spindletop Administration Building
Lexington, KY 40511

david.melanson@uky.edu
Ph. 859.257.0330
caur.uky.edu

Shiela Medina
UK CENTER FOR APPLIED ENERGY RESEARCH
2624 Research Park Drive
Spindletop Administration Building
Lexington, KY 40511

shiela.medina@uky.edu
Ph. 859.257.0202
caur.uky.edu