

# National Center for Reliable Electric Power Transmission

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UNIVERSITY OF  
**SOUTH CAROLINA**



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**ARKANSAS**



# GRid-connected Advanced Power Electronic Systems (GRAPES) – An NSF I/UCRC

## Power Electronics: The Muscle of the Smart Grid

NSF Showcase

May 16, 2012





# VICTER

Vertically-Integrated Center for Transformative Energy Research

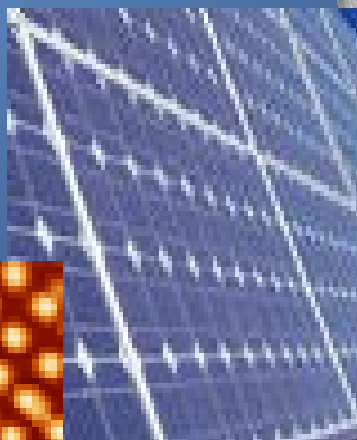
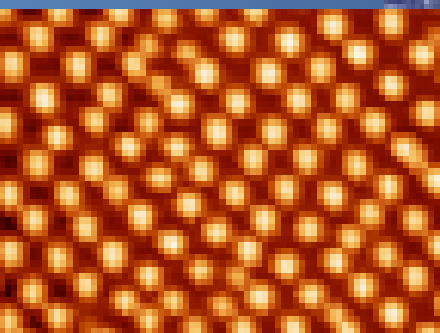


Test Facility

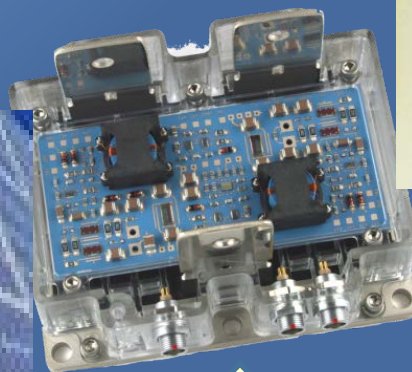


## MATERIALS 2 GRID

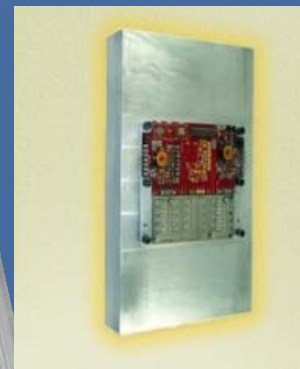
Novel Nano-  
materials for PV,  
Thermoelectrics,  
etc.



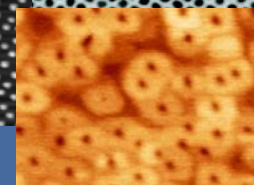
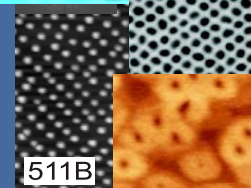
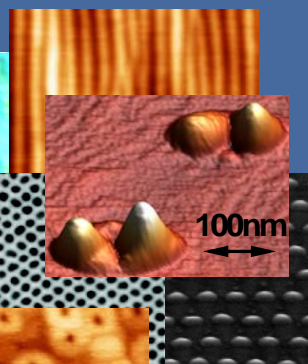
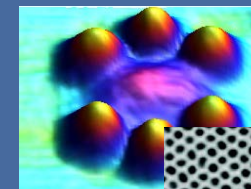
Packaged  
Solar Cells &  
Panels



Power  
Electronic  
Modules

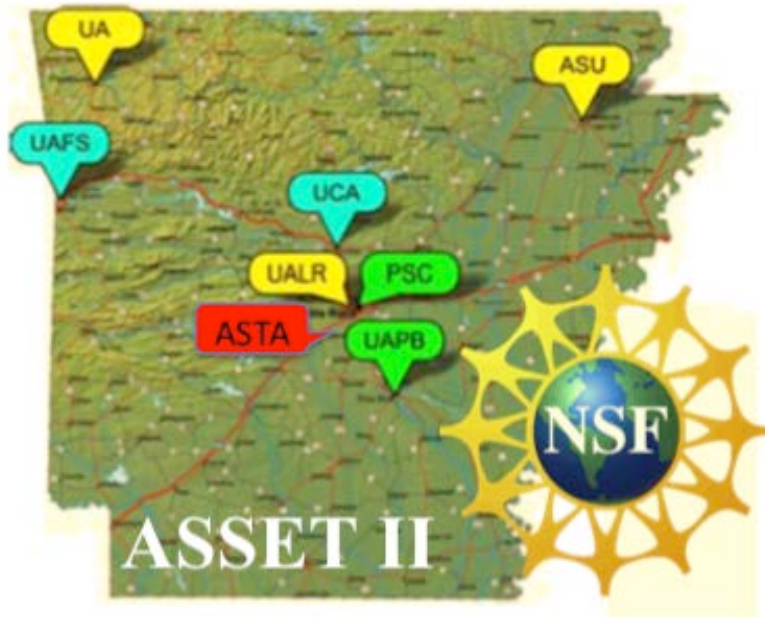


Packaged  
Power  
Electronic  
Interfaces



Materials form the foundation of VICTER

*Arkansas Center  
for  
Green Renewable Energy Efficiency with Nanoplasmonic  
Solar Cells*





# HEEET

## Harsh Environment Electronics for Electrified Transportation

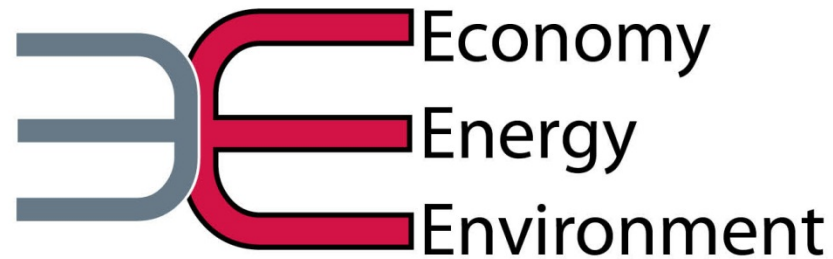


# Participants



# Obama Administration's Wide Bandgap Manufacturing Initiative

- 1 center nationwide awarded by DoE
- \$70 million over 5 years
- > \$1.5 million for the UA
- Funding for APEI to a similar amount
- Pending



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# Achieving Sustainable and Resilient Prosperity

An Institute concept for impacting the university, state, nation and the world through large-scale collaboration and teamwork.

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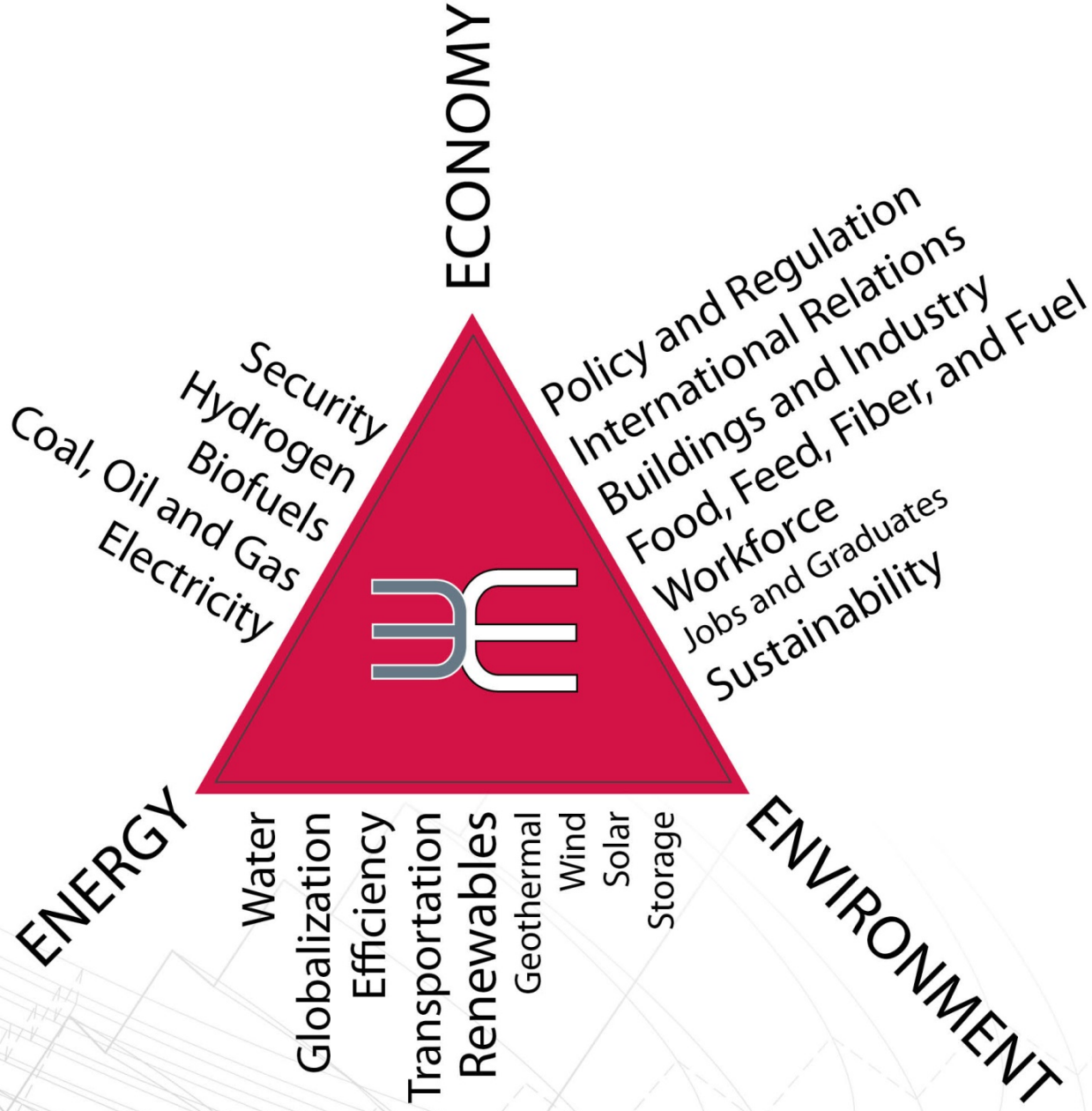


UNIVERSITY OF  
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# Hallmarks of Institute

- Establish intra-university research among our strongest areas to **accelerate** the U of A's growth to top 50
- Create **positive messages** through substantial and novel public-private collaboration
- **Seed** new and cultivate existing Centers of Excellence that support the overarching mission of achieving sustainable and resilient prosperity
- **Compete** for federal and industry funds to establish Centers of Excellence at the forefront nationally (vision – goals – metrics – performance – achievement)



# Who is ?

## Supporters

AEP  
CenterPoint  
Entergy  
JB Hunt  
Murphy  
OG&E  
SourceGas  
SPP  
Stephens  
Tyson  
Walmart  
?

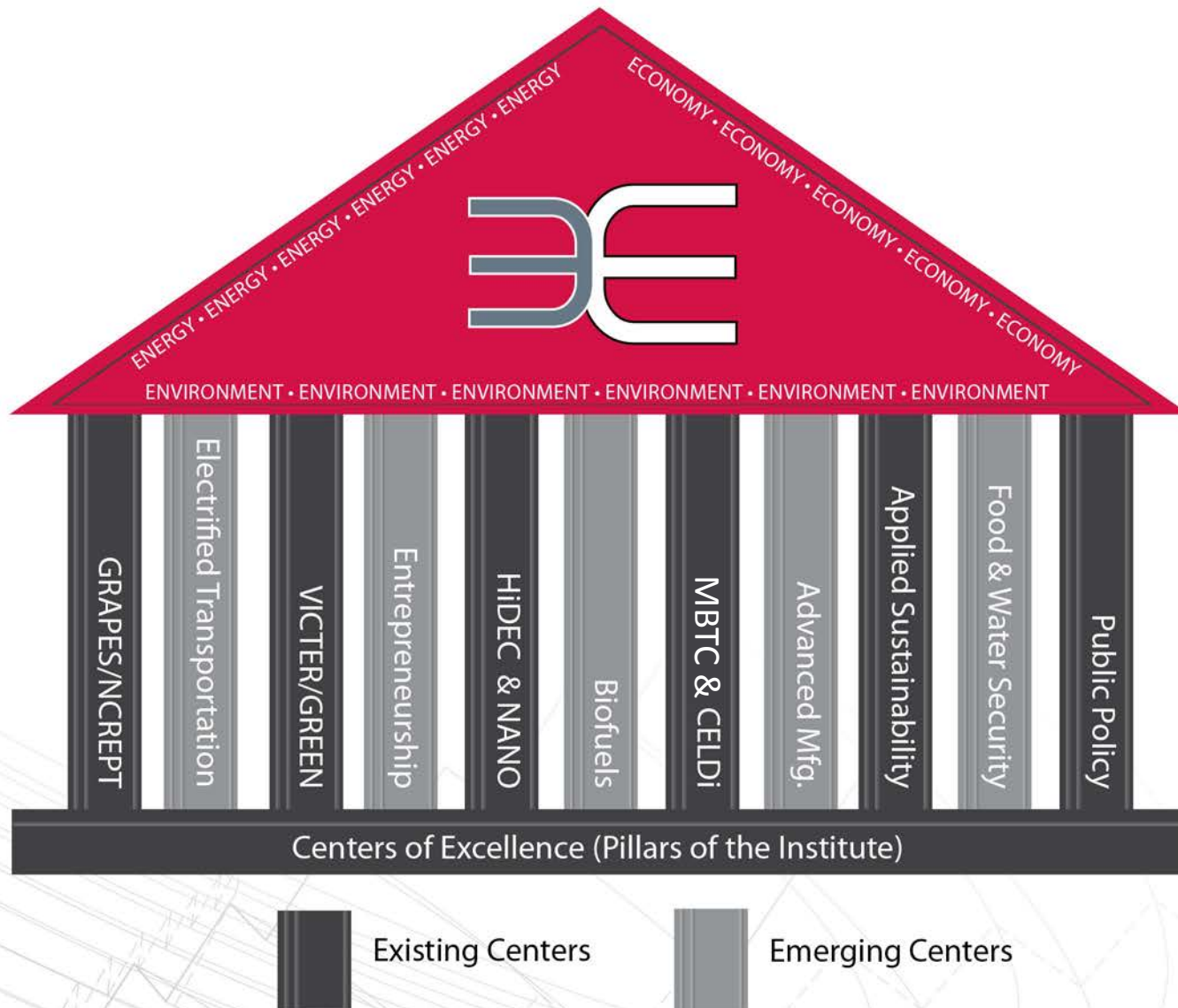
## Stakeholders

UA  
State  
Nation (Region)  
World (CGI)

## UA Contributors

Agriculture  
Architecture  
Business  
Education  
Engineering  
Law  
Sciences  
Social Science

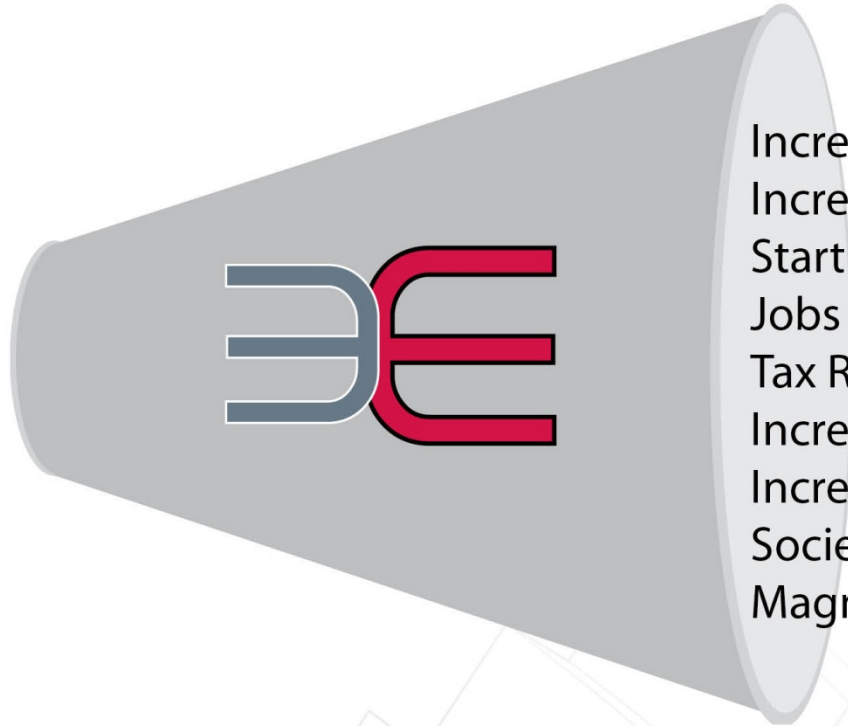
The Institute seeds the creation of collaborative efforts and leaves behind the legacy of strong centers (Reynolds Foundation Model).





# Impact of

Support from:  
U of A  
State of Arkansas  
Industry  
Private Donors



Increased Industry Dollars  
Increased Federal Dollars  
Startup Companies  
Jobs  
Tax Revenue  
Increased Scholarship  
Increased Graduate Production  
Societal Impact for Arkansas/World  
Magnet for Faculty/NAE