



Nebraska Center for Energy Sciences Research

230 Whittier Research Center
2200 Vine Street
Lincoln, Nebraska



UNIVERSITY OF NEBRASKA-LINCOLN

Nebraska Center for Energy Sciences Research (NCESR)

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**Presentation at the Forum on Climate Change
Research and Considerations in NPPD's Carbon-
Emission Reductions**

July 13, 2016



NCESR is a collaboration between NPPD and UNL

Mission

To conduct energy research that produces new technologies, processes and systems that provide new or significantly enhanced clean energy sources and improves the quality of life and economic opportunity for Nebraskans.



To accomplish the mission

- Fund research
 - Seed projects in promising new areas
 - Facilitate interdisciplinary collaborations
- Leverage funding
 - Attract external funding from federal agencies, foundations and other public or private entities
 - To date, seed grants have resulted in more than \$ 39 million in competitive external funding to further advance the field



Cycle 11 Projects (in progress)

- UNL faculty are competing in the eleventh annual cycle for energy research grants.
- Examples of faculty proposals to enhance UNL energy research and to expand economic opportunities and improve quality life for Nebraska are:
 - Fundamental Studies on Functionalization of Electric Utility Power Lines for Anti-Icing Properties
 - Storing Renewable Energy for Nebraska and Beyond using Vanadium Flow Batteries
 - Accelerating the Improvement of Bioenergy Crops via High-throughput Phenotyping
 - An Integrated Approach to Improved Wind Forecasting in Nebraska

Energy Center Presentations

Interface-Engineered Materials For High-Efficiency All-Organics Solar Cells, Axel Enders, Associate Professor,
Department of Physics and Astronomy

Novel Irradiation and Stress Corrosion Cracking Resistant Oxide-Dispersion-Strengthened Alloys, Bai Cui, Assistant
Professor, Department of Mechanical and Materials Engineering

Femtosecond Laser Surface Processing For Enhanced Heat Transfer, Anti-Icing, Condensation, and Other Energy Applications, Dennis Alexander, Professor, Department of Electrical
and Computer Engineering

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The mission is to conduct energy research that produces new technologies, processes and systems that provide new or significantly enhanced renewable energy sources; increases energy efficiency and conservation; and improves the quality of life and economic opportunity for Nebraskans.



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