

2022/2023 Energy Research Grants – Cycle 16 NCESR.

The Nebraska Center for Energy Sciences Research (NCESR), a collaboration between the Nebraska Public Power District (NPPD) and the University of Nebraska-Lincoln (UNL), was established in April 2006 to conduct research on renewable energy sources, energy efficiency and energy conservation; and to expand economic opportunities and improve quality of life for Nebraska and the nation.

Goal. The overall goal of the NCESR is to foster research and education in energy sciences by providing funding to support innovative research and collaboration among University of Nebraska-Lincoln faculty and other public- and private-sector organizations and businesses working in energy sciences.

Request for Proposals. The NCESR released the Request for Proposals (RFP) for its sixteenth competitive round of Energy Research Grants on April 1, 2021. The External Advisory Committee (EAC) met on December 10, 2021 and selected the following eight energy research projects:

- Robust Topologically Protected Energy-Efficient On-Chip Microlaser for Secure Data Center Communication Systems - Wei Bao, Assistant Professor, Electrical & Computer Engineering
- Diamond-Coated Metallic Structures for Molten-Salt Thermal-Energy Storage Systems – Bai Cui, Associate Professor, Mechanical & Materials Engineering
- Ultra-Efficient Power Module for MVDC Solid-State Circuit Breakers – Jun Wang, Assistant Professor, Electrical & Computer Engineering
- Harnessing Domain Formation in Ferroelectric Oxides for Weather- and Environment-Resilient Energy Applications – Xia Hong, Associate Professor, Physics & Astronomy
- Protein Fibers from Sorghum Distillers Grains for Value-Additions to Sorghum-Based Biofuel Industry – Yiqi Yang, Professor, Textiles, Merchandising & Fashion Design
- A Novel Framework for Cybersecurity Vulnerability Analysis of Energy Sector OT Communications Technologies – Hamid Sharif, Professor, Electrical & Computer Engineering
- Flexible Secondary-Life Battery for Grid Energy Storage – Wei Qiao, Professor, Electrical & Computer Engineering
- Next-Generation Laser-Driven Lightsources and Imaging Modalities for Nondestructive Evaluation (NDE) of the Energy Infrastructure – Matthias Fuchs, Associate Professor, Physics & Astronomy