

Energy Research Grants **Cycle 6 - REQUEST FOR PROPOSAL**

Issue Date June 1, 2011
 Intent to Submit (Required) Due . . . June 22, 2011 – midnight, CST
 Proposal Due August 1, 2011 – midnight, CST

DESCRIPTION.

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 to enhance UNL 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.

PROGRAM 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 UNL faculty and with other public- and private-sector organizations and businesses.

To achieve its overall goal, the NCESR seeks to establish a well balanced portfolio that includes basic and applied research projects from a wide range of disciplines. The following types of research projects will be considered:

- Mature research projects with the potential to develop new technologies and processes within a reasonably short time frame;
- “Exploratory” projects in promising new areas of energy research;
- Projects that build effective collaborations with industry and other research institutions, and increase capabilities and infrastructure to support energy research among UNL faculty; and
- Projects that leverage the Energy Center’s seed grant funding to attract additional funding from federal agencies, foundations, the private sector and other entities.

More information about the Energy Center and previously funded energy research grants can be found at <http://ncesr.unl.edu>.

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A. 2011 FOCUS AREAS.

NCESR seeks innovative process, technology, method or other “game-changing” energy research proposals that address science (basic research) or technologies (applied research) that focus on the:

1. Ideal water chemistry and the interaction between pressurized water and boiler materials in all types of large thermal electric power generating plants.
2. Comparative analysis of the environmental impacts of all types of different cooling technologies on cooling systems in all types of large thermal electric power generating plants.
3. Framework for and/or analysis of policies (State, Federal, International) relating to renewable energy and in a way that informs at least one of the interested parties (policymakers, regulators, generators, equipment and services suppliers, users).
4. Analysis and projection of the potential adoption rate of zero-net energy technologies for individual residences throughout Nebraska.
5. Potential and value of the anaerobic digestion of thin stillage¹ to produce a synthetic gas that could replace fossil fuels (natural gas) at ethanol plants.
6. New approaches to capture carbon dioxide (CO₂), such as:
 - a. Metal organic frameworks (MOF) that can be built or fine tuned to filter specific materials, such as sulfur oxides (SO_x), nitrogen oxides (NO_x), CO₂ or water in any fossil generating station;
 - b. Zeolitic imidazolate frameworks (ZIF)² to be used for CO₂ capture; or
 - c. Other novel CO₂ capture technologies.
7. Energy storage, especially considering Nebraska’s natural advantages and the critical role of energy storage in the full integration of renewable energy resources in utility portfolios.
8. Synergies with Nebraska’s agricultural industry, such as but not limited to innovative projects utilizing distillers grains for swine and poultry feed or taking waste streams and economically converting to an efficient, useable source of energy.
9. Energy conversion, including but not limited to, hydrogen, methanol or other intermediate fuel sources.
10. Development of any other highly creative and innovative energy research, in an area not specifically described above.

¹ Thin stillage is a major byproduct of the dry-mill corn ethanol process.

² Zeolitic imidazolate frameworks (ZIF) – a special type of metal organic frameworks (MOF) – are a class of crystalline nanoporous materials made of zeolite minerals and imidazoles at the organic linkages.

B. ELIGIBILITY.

1. Principal Investigator.
 - a. The Principal Investigator (PI) must be a current UNL faculty member to be eligible to apply.
 - b. A UNL faculty member may serve as the PI for only one (1) proposal, however, a UNL faculty member may serve as a Co-Principal Investigator (Co-PI) on one or more proposals.
2. Research Team.
 - a. Interdisciplinary teams are encouraged.
 - b. Project teams may include researchers from other universities and/or partners from the private-sector.

C. FUNDING.

1. Funding is provided by the Nebraska Public Power District (www.nppd.com) to UNL and administered by the Nebraska Center for Energy Sciences Research.
2. Approximately \$380,000 is available through this competition to fund Year 1 budgets for selected projects.

D. AWARDS.

1. For a one-year (12 month) research project, the maximum award is \$75,000.
2. For a two-year (24 month) research project:
 - a. the maximum award for Year 1 is \$75,000;
 - b. the maximum award for Year 2 is \$75,000, however, Year 2 funding is provisional and contingent on the PI's demonstration of adequate project and financial performance as documented in the required progress reports; and
 - c. the maximum project total is \$150,000.
3. For a one-year (12 month) exploratory project, the award may range from \$5,000 - \$25,000.

E. TIME OF PERFORMANCE.

1. The intent is for funding award notifications to be issued in late December 2011 with the effective start date to be January 1, 2012.
2. The project period for Year 1 is intended to be January 1, 2012 – December 31, 2012.
3. The end date for those awards that are authorized Year 2 funding is intended to be December 31, 2013; which makes the project period January 1, 2012 – December 31, 2013.

F. EXTERNAL FUNDING.

1. Previous NCESR Seed Funding. Investigators who received NCESR funding as PIs or Co-PIs on previous grants will be asked to provide a brief description as to how the previous funding contributed to leveraging other resources and external grants to support their research and education efforts.
2. Seek Additional External Funding. NCESR research grants are considered seed funding to help UNL faculty develop energy-related research capacity and improve competitiveness for external funding. Therefore, the External Advisory Committee (EAC), which is comprised of the UNL Chancellor, UNL Vice Chancellor for Research and Economic Development and three representatives from NPPD, expects each PI awarded an NCESR research grant to submit at least one (1) significant grant application to an external funding agency, private sector partner or foundation during the first year of the research project. Recipients awarded funds for Year 2 are expected to continue to seek additional external funding during the second year of the research project. Documentation of grant submission and status will be required in all reports.

G. PROPOSAL SUBMISSION.

1. Intent to Submit (Required).
 - a. To be eligible to compete, the Principal Investigator (PI) must register his/her intent to submit a proposal at <http://ncesr.unl.edu/rfps/cycle6.php> no later than the deadline stated on page 1 of this RFP.
 - b. Requests for extensions or exceptions will not be accepted.
 - c. Only those PIs who register will be eligible to submit a proposal.
 - d. After registering his/her intent to submit a proposal, the PI will receive an email acknowledging the registration of the intent to submit a proposal. The email will also include proposal development and submission instructions, a pre-formatted proposal document and a customized URL to use to submit the proposal.
2. Submit the Proposal.
 - a. Proposals must be electronically submitted only using the URL provided to PIs who registered their intent to submit a proposal.
 - b. All applicants must use the form provided and follow the instructions.
 - c. The proposal must be submitted, following the instructions provided, no later than the deadline stated on page 1 of this RFP.
 - d. Requests for extensions or exceptions will not be accepted.
 - e. The PI and Co-PIs will receive an email acknowledging receipt of the proposal.
3. NUgrant Routing Is Not Applicable.

This is an internal funding competition to UNL. Therefore, PIs do not enter this proposal in NUgrant, which is currently used only for proposals submitted for external funding.
4. Proposal.
 - a. The proposal form is a pre-formatted Word 2010 document, which will be emailed to the PI after registering his/her intent to submit a proposal.
 - b. The PI must use the proposal document provided.
 - c. The PI should not modify the proposal document or the requirements in any manner.
 - d. The proposal document has 1 inch margins.
 - e. A minimum of 11 point font will be accepted.
 - f. The maximum proposal length is twenty (20) pages. A typical proposal ranges from 12-14 pages. With the addition of up to six pages of biographic sketches, then the proposal is no longer than the maximum of 20 pages.
5. Focus Area.
 - a. Each proposal must address only one focus area.
 - b. The PI must decide which focus area the proposal best addresses.

6. Budget.

- a. Proposed budgets must be complete, mathematically correct and not exceed the maximum amount that may be awarded per year.
- b. If a two-year project is proposed, the total budget for Year 1 must not exceed \$75,000. The total budget for Year 2 must not exceed \$75,000. A total budget proposed for a two-year project must not exceed \$150,000.
- c. All proposed budget categories and amounts must be directly related to this research project.
- e. All standard UNL financial rules and regulations will apply.
- f. NCSR funds may be used for supplies and technical support, graduate students, hourly help and post doctoral positions (post docs).
- g. NCSR funds may be used for travel directly related to accomplish the scope of work of the project. Travel is limited to domestic travel only. All proposed travel must be thoroughly described in the budget justification.
- f. Energy research funds may not be used for any of the following purposes:
 - To replace current funding;
 - Tenured/tenure-track faculty salaries;
 - Existing or new staff positions;
 - Remodeling, renovation or construction;
 - Recruitment or start-up packages for new hires;
 - Supplies for general purposes, which include but are not limited to desktop computers, laptop computers, other electronic devices, printers, software, and related accessories; and general office supplies not exclusive to the project; and
 - Foreign travel.

7. F&A Not Allowed.

No facilities and administrative (F&A) costs will be charged to these grants because F&A has already been charged on funding provided by the Nebraska Public Power District to UNL.

H. REVIEW.

1. Proposals that do not adhere to the instructions will not be reviewed.
2. External reviews will be performed by scientists with expertise in the subject area in question, and/or industry professionals with knowledge of research needs and opportunities in the energy industry.
3. Scientific merit, project impact and probability of success to achieve the proposal goal and objectives will be the main selection criteria. Proposals will be evaluated on the potential to:
 - Develop new technologies/processes/system improvements that contribute to renewable energy supply, energy efficiency improvements and/or energy efficiency and conservation.
 - Elevate the quality and visibility of energy-related research at UNL.
 - Increase competitiveness for additional external funding.
 - Establish effective collaborations with the private sector, other universities and research organizations and/or public sector agencies.
 - Contribute to economic development and income generation in Nebraska. (Applied research projects should indicate potential for commercialization and/or adoption of research projects and any plans to do so.)

I. SELECTION.

1. Final selection of projects and the funding amount will be performed by the External Advisory Committee (EAC).
2. The EAC gives priority consideration to projects that will produce scientific and/or technological advances that improve competitiveness for external funding; have significant potential for economic impact; address existing or anticipated constraints to energy supply and efficiency; and present a clear plan for commercialization or extension of findings and research products.
2. The decisions of the EAC are final.

J. NOTIFICATION.

It is the intent that Principal Investigators (PIs) will be notified of the EAC's decision no later than the close of business on December 23, 2011.

K. NCESR CONTACT.

For questions or more information, contact:

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