

Oklahoma NSF EPSCoR – Call for Pre-Proposals Research Infrastructure Improvement Track-1 Program 2017 Lead Team Selection

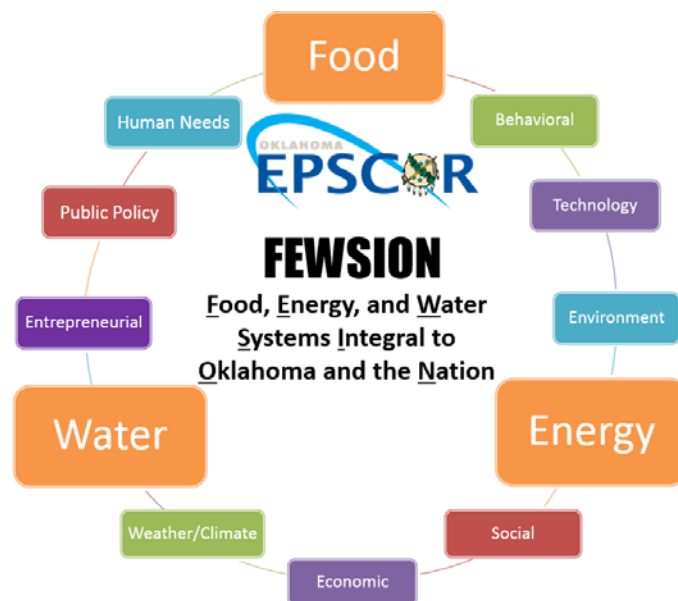
Background. Oklahoma plans to submit a new application in Fall 2017 for continued support through the National Science Foundation (NSF) Research Infrastructure Improvement (RII) Track-1 Program. The current Oklahoma RII Award, which began in June 2013, supports research infrastructure development in the area of social-ecological aspects of climate variability. In its new Strategic Plan, the Oklahoma EPSCoR Advisory Committee determined that, to most effectively build sustainable research capacity within the State – which is the foundational notion of EPSCoR – Oklahoma should work to ensure some degree of theme continuity across RII submissions rather than completely change direction every five years. Consequently, for the 2017 application, the Oklahoma EPSCoR Advisory Committee has determined that the scientific theme will be:

Food, Energy, and Water Systems Integral to Oklahoma and the Nation

FEWSION

Overview of the FEWSION Theme. Society is reliant upon the physical resources and natural systems of the Earth for the provision of food, energy, and water. It is imperative that we understand the integration across the natural and built environments to meet the growing demand for food, water and energy while maintaining the health and sustainability of the ecosystem. Factors contributing to stresses in the food, energy, and water (FEW) systems – systems for which complex linkages are not well understood – include land use change, soil deterioration, climate variability, and heterogeneous resource distribution as well as the increasing regional and social pressures and governance issues that result. These interconnections and interdependencies associated with the food, energy, and water nexus create enormous challenges in understanding how the complex, coupled processes of society and the environment function now, and in the future. Investigations of these complex systems may produce discoveries that cannot emerge from research on food or energy or water systems alone. The synergy among these components in the context of sustainability can open innovative science and engineering pathways to produce new knowledge and technologies to solve problems of scarcity and variability.

Oklahoma is an agricultural and energy-producing state subject to



dramatic weather and climate patterns that impact the availability of food, energy, and water. Oklahoma also has extensive existing facilities and intellectual capability in the scientific and engineering aspects of agriculture, food, energy, water, and weather. Moreover, Oklahoma also has considerable research expertise in the social, behavioral, and economic sciences that are of great importance in how the FEW systems interact (sometimes called the *nexus* points). Combined, these assets make Oklahoma uniquely suited to help the nation understand and address the needs within these integral systems.

With that preface, the over-arching goals of an Oklahoma EPSCoR Track 1 RII program within the FEWSION theme will be:

1. Significantly advance our understanding of the integral systems of food, energy, and water by identifying key intellectual challenges relevant to Oklahoma and similar regions of the world, and developing scalable, sustainable capacity for conducting sound research that adopts the systemic framework described above.
2. Enable innovative system-level and technological solutions to critical FEW problems, including availability, affordability, and sustainability, that can be implemented via public-private partnerships and engagement of the private sector.
3. Leverage the research capacity, new knowledge, and collaborative relationships being developed within the current (2013-2017) Track-1 RII award.
4. Grow the quantity and diversity of the scientific and technical workforce in Oklahoma capable of studying and managing the FEW system, through the following avenues:
 - a. Researcher recruitment (i.e., hiring additional research faculty in the topic area to universities and other research institutions in the state)
 - b. Inter-campus collaboration on the topic both on the research and related academic and outreach programs
 - c. Professional development programs to increase the relevant expertise of existing researchers within the state
 - d. Educational outreach programs that increase the pipeline of numerous and diverse students choosing careers in fields relevant to the topic

Requirements for all RII applications are that they: (i) conduct research in disciplines supported by NSF (<http://www.nsf.gov/news/overviews/>); (ii) show a meaningful approach to building sustainable research capacity, in concert with the foundational tenets of EPSCoR; and (iii) are consistent with each state's Science and Technology (S&T) Plan. Consonant with this latter requirement, Oklahoma's 2017 RII application will be closely aligned with the existing S&T plan. The current Oklahoma plan can be accessed at the following link:

<http://www.oklaosf.state.ok.us/ocast/documents/2016OneOklahoma.pdf>

The NSF solicitation for the 2017 RII competition has not been released. However, in light of the complexity of putting together this statewide application, we are proceeding with the selection of a team to lead Oklahoma's proposal within the FEWSION theme at

this time. The most current solicitation for the RII competition will be used for advanced planning and can be accessed via the following link:

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503429

A link to the 2017 solicitation will be posted on the Oklahoma EPSCoR website (<http://okepscor.org/>) when it becomes available.

Selection Considerations. The competition for the team to lead the 2017 RII proposal will likely be very competitive. The Oklahoma EPSCoR Advisory Committee will select the team, maintain active involvement with the team as the proposal develops, and approve the proposal to be submitted for the 2017 RII program.

Applicants should clearly specify how their proposed program will address the four overarching goals outlined above. Pre-proposals that integrate compelling research with strong capacity-building and impactful outreach components will be favored.

A multi-disciplinary, multi-campus team is critical to success. All pre-proposals must involve researchers from at least two, and preferably all three, of the state's comprehensive research universities (OSU, OU, and TU) ***PLUS one investigator from a regional institution.***

The hiring, professional development, and outreach components should include a diversity plan. The outreach components should be connected with the FEWSION research theme and, whenever possible, integrated with the specific research being proposed.

Our expectation is that the total amount available from NSF will be \$4 million per year with five years of support. As a general rule of thumb, proposers should anticipate expending approximately 50% of the funds on goals 1 and 2 (the specific research projects and solution development), and 50% on goal 3 (expanding the state's research and technical capacity in the FEW domain).

Pre-Proposal Requirements. Formal pre-proposals to lead Oklahoma's 2017 RII application are required. The **deadline** for submission of the pre-proposal to the Oklahoma EPSCoR Advisory Committee is **June 29, 2016 at 5:00 p.m.** The pre-proposal, structured as per the instructions below, are to be **submitted electronically to dhammon@osrhe.edu.**

Pre-Proposal Format

Overall: All components of the pre-proposal should have 1-inch margins and use 12-point type.

Cover Page (limit 1 page): Provide the title of the project, the names and email addresses for all lead scientists, and the participating institutions.

Research Narrative (limit 3 pages): Describe the research to be undertaken in language that is generally understandable to the diverse group of scientists represented on the Oklahoma EPSCoR Advisory Committee. The narrative should include a description of the following:

- research objectives
- the methods by which the objectives will be accomplished
- how the project fits within the FEWSION theme
- the facilities and resources that are available to the team, as well as those that will be needed to attain project objectives

Infrastructure Improvement Narrative (limit 3 pages): This section should address how the project will achieve goal 4 listed above. Importantly, this section should provide a clear pathway through which EPSCoR RII funding will be used to build infrastructure within Oklahoma that adds capacity and value at the institutional, state, and regional levels in research, education, and innovation. In view of the NSF EPSCoR requirement for *sustained* infrastructure improvement and building of research capacity, participating institutions must provide commitments for hiring new tenure-track faculty or an alternative but equally compelling form of institutional commitment to support project activities. These commitments need not be finalized at the time of submitting the pre-proposal, but a reasonable plan of obtaining them should be presented.

References (limit 2 pages): References cited in the narrative sections should be provided in a standard citation format.

Investigator Bio Sketches (limit 2 pages each): The pre-proposal must include NSF-style bio sketches for the lead investigators.

Budget Notes (optional, limit 1 page): A complete budget is not required at the pre-proposal stage. But of course, proposers should be careful to propose projects that are achievable within the anticipated allocation described above. In this *optional* section, investigators may describe any special budgetary issues of importance.

Agreements and Signatures (limit 1 page): Researchers submitting pre-proposals must acknowledge and agree to a set of statements that signify the special nature of an RII submission, and the continued and significant coordinating role that the Oklahoma EPSCoR Advisory Committee will have as the final NSF proposal is developed. Applicants should include and sign an explicit statement that they acknowledge and agree to the following:

- The Oklahoma EPSCoR Advisory Committee has the right to combine proposals and/or proposal components from multiple applicants, and invite specific researchers to participate on a leadership team composed differently than the one in this pre-proposal.
- The final project team (and thus the final range of sub-projects) will evolve throughout the proposal development process, under the supervision and final approval of the Oklahoma EPSCoR Advisory Committee.

- The final proposal will require the development and integration of significant “broader impacts” (in particular, diversity impacts) that far exceed those likely to be fully specified in a pre-proposal.

Selection Process. The pre-proposals will be distributed to the Oklahoma EPSCoR Advisory Committee for their consideration. It is likely (but not yet finalized) that some applicants will be invited to meet with and/or make an oral presentation to the Committee or a subcommittee thereof. Depending upon the nature and quality of the pre-proposals, the Committee may take any one of a number of actions, including (but not limited to):

- a. Direct two or more pre-proposers to work collaboratively and submit a single, revised pre-proposal
- b. Down-select to a subset of the pre-proposals and invite more detailed pre-proposals
- c. Select a single pre-proposal that will form the basis of the Oklahoma Track 1 submission for 2017

If there are any questions concerning this process, please contact Dr. Ray Huhnke, NSF EPSCoR RII Project Director at raymond.huhnke@okstate.edu (overall project information), Ms. Valerie Phillips, Project Administrator and Assistant Project Director, at vphillips@okepscor.org (general information and budgets), Ms. Gina Miller, Outreach Coordinator at [gmiller@okepscor.org](mailto:gmillers@okepscor.org) (outreach planning), or Ms. Dawn Hammon at dhammon@osrhe.edu (pre-proposal submission).

Continued Potential Involvement of Non-Selected Researchers. Once the process described above is complete and a lead team is chosen, it is anticipated that additional projects (research as well as educational and outreach projects) will still be solicited and added to the final proposal to NSF. So researchers interested in the FEWSION theme should continue to monitor the development of the 2017 Track 1 proposal, even if they are not chosen to lead the proposal.