



**NASA Kentucky EPSCoR  
Rapid Response Research (R3) FY2023  
Request for White Papers**

**Announcement: RFP-22-006**

Release Date: July 25, 2022

**Responses Due: Wednesday, October 12, 2022**

Submit via email to [nasa@uky.edu](mailto:nasa@uky.edu)

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FAQ and additional information available:  
[nasa.engr.uky.edu/epscor](https://nasa.engr.uky.edu/epscor) and [nasa.engr.uky.edu/requests-for-proposals](https://nasa.engr.uky.edu/requests-for-proposals)



## **NASA KY EPSCoR R3 FY23 Request for White Papers**

### **NASA EPSCoR Rapid Response Research (R3) Opportunity**

The National Aeronautics and Space Administration (NASA) Office of STEM Engagement (OSTEM), in cooperation with NASA's five Mission Directorates (MD) and ten Centers, will solicit FY23 proposals for the NASA Established Program to Stimulate Competitive Research (EPSCoR) Rapid Response Research (R3) program.

The NASA EPSCoR R3 program supports researchers to work with NASA within a 1-year period to address tasks listed in the solicitation. The purpose is to provide a streamlined method to address research topics important to NASA and to enable EPSCoR researchers to help solve research needs impacting the Agency's programs and missions. The proposals will be short (2-5 pages) and are submitted at the discretion of Kentucky's NASA EPSCoR Director. No cost-share is required.

The FY2023 NASA EPSCoR R3 Notice of Funding Opportunity (NOFO) is expected to be available at [nspires.nasaprs.com](https://nspires.nasaprs.com) in mid-September 2022. Prior to its release, proposers may refer to the previous R3 NOFO ([NNH22ZHA004C](#) FY22) for descriptions of national program objectives and proposal guidelines. The FY23 R3 topic descriptions are available ahead of the NOFO release and are posted on the NASA KY website. Each of the 28 EPSCoR states is permitted to submit six proposals to the NASA solicitation, where 30 total awards are expected. This RFP process will select Kentucky's six proposals for the national competition.

### **Request for Pre-proposals**

*NASA KENTUCKY invites white paper submissions for in-state selection of six proposals to submit to NASA addressing the NASA EPSCoR FY23 R3 Research Topics.*

**Please submit a white paper of no more than 3 pages by October 12, 2022** using guidelines below if your research group has strong alignment with a listed research topic. The NASA Kentucky EPSCoR program will review the responses and may contact research teams to discuss developing a proposal to this opportunity. Research groups will work with the NASA KY EPSCoR Director to prepare the full proposal for submission to NASA via NSPIRES. University of Kentucky will be the submitting institution. The funding level will be approximately \$85,000. Proposals will be due to NASA by December 15, 2022.

Carefully review the [NASA EPSCoR FY23 R3 Topic Descriptions](#) posted on the NASA KY website. Points of contact for each NASA Office are available with the topic descriptions. Researchers wishing to propose to multiple R3 topics must submit individual white papers per topic.

The most competitive papers will:

- 1) Have clear goals and objectives and address the expectations described in the announcement
- 2) Describe the relevance of the research to NASA's current progress on the topic
- 3) Describe the use of NASA content, people, or facilities in the execution of the research activities
- 4) Describe the proposed project management structure in detail

Eligibility:

- 1) All institutions of higher education within Kentucky
- 2) No citizenship restriction

**Please provide responses via email using the following guidelines to:**

**[nasa@uky.edu](mailto:nasa@uky.edu) no later than **Wednesday, October 12, 2022****

Contact NASA KY at [nasa@uky.edu](mailto:nasa@uky.edu) or 859-323-4542 with questions about this opportunity

### **Response Guidelines**

Each response should address only one appendix topic in no more than 3 pages (12-point font, 1-inch margins, single spaced) with the following:

- 1) Abstract/Project summary
- 2) Goal and specific objectives of the envisioned experiment, specifically addressing unique and innovative methods, approaches, concepts, or advanced technologies related to the proposed task
- 3) Description of NASA's current approach to the topic
- 4) Description of existing or proposed NASA collaborations
- 5) Description of project management, personnel and potential partners
- 6) Brief budget discussion that demonstrates effective use of \$85,000 in funds, including full research rate indirect (F&A) costs

### **General Guidelines**

The following guidelines apply. Proposers may also wish to also review the [NASA Guidebook for Proposers](#) for NASA-specific proposal guidelines.

- *Special Purpose Equipment* may be purchased.
- *General Purpose Equipment* may not be purchased.
- *Travel* funds may be used for domestic travel as specified in the NASA NOFO.
- *US citizenship not required*; however, foreign national personnel receiving support must be employed by a US institution and project activities may be subject to export control restrictions.

### **Research Alignment and Collaboration**

Proposals to this program must address objectives described in [NASA EPSCoR FY23 R3 Topics List](#). Proposals should align with NASA's missions and research as well as national [NASA EPSCoR](#) objectives and program elements described in the most recent R3 solicitation ([NNH22ZHA004C](#) FY22). Proposers should review proposal resources available on the [NASA KY EPSCoR](#) web page, including the NASA Center Core Competencies, the 2020 NASA Technology Taxonomy, and the FY2023 NASA EPSCoR Research Areas of Interest.

### **National NASA EPSCoR Program Objectives**

- Contribute to and promote the development of research infrastructure in NASA EPSCoR jurisdictions in areas of strategic importance to the NASA mission.
- Improve the capabilities of the jurisdictions to gain support from sources outside the NASA EPSCoR program.
- Develop partnerships among NASA research assets, academic institutions, commercial space programs, and industry.
- Contribute to the overall research infrastructure, science and technology capabilities of higher education, and/or economic development of the jurisdiction.

### **Kentucky NASA EPSCoR Program Objectives**

The statewide Kentucky EPSCoR Program mission is to enhance research and intellectual capacity of the state's universities and colleges by building and coordinating strategic investments in human capital necessary for Kentucky to excel in Federal R&D funding competitiveness. Derived from this statewide mission, NASA Kentucky EPSCoR has goals to enhance capacity through strategic investments focused on NASA-priority research areas and competitiveness for non-EPSCoR funding.

A key factor in achieving these goals is initiation of relationships between Kentucky's and NASA's researchers that develop into partnerships. Every aspect of the program emphasizes the process of relationship building, including the contribution of early-career faculty in helping to solve NASA technical problems.

NASA KY EPSCoR investment is focused on NASA priorities including Aeronautics, Science, Human Spaceflight and Space Technology missions, ISS National Laboratory, lunar and planetary exploration, to develop researchers in Kentucky who are nationally and internationally recognized for contributions to their fields.

Equally important to building research capacity are the resulting contributions to economic development evidenced by securing non-EPSCoR follow-on research funding and supporting aerospace-related industrial development and associated job creation. Growth in economic development opportunities as a result of the NASA EPSCoR investment is therefore also a jurisdictional emphasis underlying all aspects of the program. The NASA Kentucky EPSCoR Program receives state support through the Cabinet for Economic Development and the statewide Kentucky EPSCoR Committee, the University of Kentucky, and cost-share commitment from participating institutions statewide.

### **Kentucky Science and Innovation Strategy**

Kentucky has undergone an extensive effort to evaluate and produce a science and technology strategic plan, the 2012 *Kentucky Science and Innovation Strategy*, with a fifth-year anniversary update in 2018, reviewed by the Kentucky Council on Postsecondary Education (CPE). Five high-value areas are identified with strong potential to build innovation capacity in the Commonwealth: 1. Agriculture and Bioscience, 2. Energy and Environmental Technologies, 3. Human Health and Personalized Medicine, 4. Information Technology and New Media, and 5. Material Science and Advanced Manufacturing. The strategy acknowledges the importance of the aerospace sector to Kentucky's economy and that relevant high-value R&D often spans multiple areas, as is the case for aerospace-related research. The strategy further defines actions to catalyze investment in high-value areas and to build industry/academic partnerships for STEM workforce development, goals which intersect with priorities of both the NASA Kentucky EPSCoR and Space Grant Consortium programs.

### **NASA Research and Technology Development Priorities**

The NASA EPSCoR Program and the NASA Office of STEM Engagement (OSTEM) identify research and technology priorities based on alignment with NASA's five Mission Directorates: Aeronautics Research Mission Directorate (ARMD), Exploration Systems Development Mission Directorate (ESDMD), Science Mission Directorate (SMD), Space Operations Mission Directorate (SOMD), and Space Technology Mission Directorate (STMD). For information on NASA's missions, please visit [www.nasa.gov/missions/index.html](http://www.nasa.gov/missions/index.html) and the following URLs:

- Aeronautics Research (<http://www.aeronautics.nasa.gov/>)
- Exploration Systems Development (<https://www.nasa.gov/directorates/exploration-systems-development>)
- Science (<http://science.nasa.gov/>)
- Space Operations (<https://www.nasa.gov/directorates/space-operations-mission-directorate>)
- Space Technology (<http://www.nasa.gov/directorates/spacetech/home/index.html>)
- NASA Office of STEM Engagement (OSTEM) (<https://www.nasa.gov/stem>)
- NASA OSTEM Higher Education (<https://www.nasa.gov/stem/highereducation/index.html>)
- NASA EPSCoR (<https://www.nasa.gov/stem/epscor/home/index.html>)

### NASA Mission Directorate (MD) Descriptions

**Aeronautics Research Mission Directorate (ARMD):** NASA aeronautics has made decades of contributions to aviation. Every U.S. commercial aircraft and U.S. air traffic control tower has NASA-developed technology on board that helps improve efficiency and maintain safety. Research conducted by ARMD directly benefits today's air transportation system, the aviation industry, and the passengers and businesses who rely on aviation every day. ARMD scientists, engineers, programmers, test pilots, facilities managers and strategic planners are focused on aviation's future. They design, develop and test advanced technologies that will make aviation much more environmentally friendly, maintain safety in more crowded skies, and ultimately transform the way we fly. NASA's aeronautics research is primarily conducted at four NASA centers: Ames Research Center and Armstrong Flight Research Center in California, Glenn Research Center in Ohio, and Langley Research Center in Virginia.

**Exploration Systems Development Mission Directorate (ESDMD):** The Exploration Systems Development Mission Directorate defines and manages systems development for programs critical to the NASA's Artemis program and planning for NASA's Moon to Mars exploration approach in an integrated manner. ESDMD manages the human exploration system development for lunar orbital, lunar surface, and Mars exploration. ESDMD leads the human aspects of the Artemis activities as well as the integration of science into the human system elements. ESDMD is responsible for development of the lunar and Mars architectures. Programs in the mission directorate include Orion, Space Launch System, Exploration Ground Systems, Gateway, Human Landing System, and Extravehicular Activity (xEVA) and Human Surface Mobility. ESDMD duties were previously managed under the Human Exploration and Operations Mission Directorate (HEOMD).

**Science Mission Directorate (SMD):** NASA's Science Mission Directorate (SMD) is responsible for directing and overseeing the nation's space research program in Earth and space science. The Directorate engages the external and internal science community to define and prioritize science questions and seeks to expand the frontiers of four broad scientific pursuits: Earth Science, Planetary Science, Heliophysics, and Astrophysics. Through a variety of robotic observatory and explorer craft, and through sponsored research, the Directorate provides virtual human access to the farthest reaches of space and time, as well as practical information about changes on our home planet.

**Space Operations Mission Directorate (SOMD):** NASA's Space Operations Mission Directorate (SOMD) is responsible for enabling sustained human exploration missions and operations in our solar system. SOMD manages NASA's current and future space operations in and beyond low-Earth orbit (LEO), including commercial launch services to the International Space Station. SOMD operates and maintains exploration systems, develops and operates space transportation systems, and performs broad scientific research on orbit. In addition, SOMD is responsible for managing the space transportation services for NASA and NASA-sponsored payloads that require orbital launch, and the agency's space communications and navigation services supporting all NASA's space systems currently in orbit. SOMD duties were previously managed under the Human Exploration and Operations Mission Directorate (HEOMD).

**Space Technology Mission Directorate (STMD):** Technology drives exploration to the Moon, Mars and beyond. NASA's Space Technology Mission Directorate (STMD) develops transformative space technologies to enable future missions. As NASA embarks on its next era of exploration, STMD is focused on advancing technologies and testing new capabilities at the Moon that will be critical for crewed missions to Mars. In many ways, the Moon will serve as a technology testbed and proving ground for Mars. STMD engages and inspires thousands of entrepreneurs, researchers and innovators, creating a community of America's best and brightest working on the nation's toughest challenges. Space technology research and development take place at NASA centers, universities and national labs. STMD leverages partnerships with other government agencies as well as commercial and international partners. Our current technology portfolio spans a range of discipline areas and technology readiness levels. Investments in revolutionary, American-made space technologies provide solutions on Earth and in space. NASA technology turns up in nearly every corner of modern life. We make our space tech available to commercial companies to generate real world benefits – everything from creating jobs to saving lives.