



NASA EPSCoR Research Award (RA) 2022 Request for Pre-Proposals

Announcement: RFP-22-004

Release Date: July 11, 2022

Letter of Intent (Required): Monday, August 1, 2022, 5:00 PM ET

Pre-proposals: Wednesday, August 24, 2022, 5:00 PM ET

Teleconference for Proposers: Monday, July 18, 2022, 2:00 PM ET

Register: forms.gle/1SDos4L9n2Zvx6kb8

Dr. Alexandre Martin, Director

NASA Kentucky

151 RGAN (R.G. Anderson Bldg)

Lexington, KY 40506-0503

(859) 218-NASA (6272)

nasa@uky.edu

For more information contact:

Jacob Owen, Associate Director

(859) 323-4542

jacob.owen@uky.edu

Proposal forms, FAQ, and additional information available:
nasa.engr.uky.edu/epscor and nasa.engr.uky.edu/requests-for-proposals



NASA KY EPSCoR RA 2022 Request for Pre-Proposals

NASA EPSCoR Research Award Overview

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) Research Award program.

Each funded NASA EPSCoR proposal is expected to establish research activities that will make significant contributions to strategic research and technology development priorities of one or more NASA MD or Centers and contribute to overall research infrastructure, science and technology capabilities, higher education, and/or economic development of the EPSCoR jurisdiction (Kentucky).

The FY2023 NASA EPSCoR Research Notice of Funding Opportunity (NOFO) is expected to be available at nspires.nasaprs.com in mid-August 2022. Prior to its release, proposers may refer to the previous RA NOFO ([NNH22ZHA005C](#) FY22) for descriptions of national program objectives and proposal guidelines. Each of the 28 EPSCoR states is permitted to submit one proposal to the NASA solicitation, where 10 to 15 awards are expected. This RFP process will select Kentucky's sole proposal for the national competition.

Request for Pre-proposals

NASA KENTUCKY invites pre-proposal submissions for in-state selection of one proposal to submit to NASA addressing the mission needs of NASA and Kentucky aerospace-related research interests.

Period of Performance: NASA EPSCoR will support awards up to 3 years with estimated start date May 2023.

Anticipated Size of Awards: The Research team may submit a pre-proposal budget for up to \$900,000 over three years: \$675,000 in Federal funds with full indirect costs (F&A) and \$225,000 in state funds without F&A.

Cost-Share: Federal funds must be cost-shared at a level of at least 50% with in-kind and/or non-Federal funds. Typically, the KY Cabinet for Economic Development and the KY Statewide EPSCoR Committee provide \$225,000 in State matching funds to the Research team. Expenditure of these funds is reported as cost-share for the project. Additional budget guidelines are available on pg. 8 in the [NASA KY FAQ](#).

State matching funds do not allow for indirect costs, resulting in associated unrecovered indirect costs that can be used as cost-share. The unrecovered indirect amount is based on the Research team's institutional indirect rate. State match funds plus associated unrecovered indirect amounts are usually adequate to meet the 50% cost-share requirement. However, proposers should consider that institutional support and additional cost-share sources are: 1) viewed favorably in the national competition and 2) serve as alternate cost-share sources should state funds not be available in a future budget year.

Number of Pre-Proposals Selected: One pre-proposal will be selected for development into a full proposal and submitted by NASA Kentucky & the University of Kentucky as the state's single allowed entry in the national competition. The pre-proposal submission and selection process will be conducted according to the guidelines and timeline described below.

Eligibility: NASA EPSCoR funds shall be expended on institutions in eligible NASA EPSCoR jurisdictions. Pre-proposals will be accepted from institutions of higher education in Kentucky. Eligibility is not limited to NASA Kentucky Space Grant Consortium Affiliate Institutions. US Citizenship not required.

Additional information and FAQ: nasa.engr.uky.edu/epscor

Pre-proposal Submission Instructions

Timeline:

▪ Teleconference for Proposers	Monday, July 18, 2022, 2:00 PM ET
▪ Letter of Intent (Required)	Monday, August 1, 2022, 5:00 PM ET
▪ Pre-Proposal Submission Deadline	Wednesday, August 24, 2022, 5:00 PM ET
▪ Pre-Proposal Selection Announcement	Anticipated before October 1, 2022
▪ Full Proposal Submission to NASA via NSPIRES	Anticipated November 16, 2022

1) Letter of Intent (Required): Send to nasa@uky.edu by **5:00 pm ET, Monday, August 1, 2022.**

The Letter of Intent should summarize in one page: the research topic & 3-year scope of work, brief description of alignment with NASA including Mission Directorate or Center, existing NASA partnerships, and potential for additional research collaboration with NASA, industry and other research institutions.

Include on a separate page complete contact information (name, title, address, phone, email) for each of the following: PI and their Authorized Organizational Representative (AOR) for Sponsored Projects. Please also include a list of potential NASA collaborators with description of their prospective role.

The LOI should show evidence of well-developed research goals, strong potential for NASA partnership and alignment with NASA KY program objectives. NASA Kentucky will review LOI submissions and may provide research teams feedback to suggest areas of improvement necessary for success in the NASA EPSCoR RA program.

2) Pre-Proposal: Submit online at nasa.engr.uky.edu by **5:00 pm ET, Wednesday, August 24, 2022.**

All pre-proposals must be submitted as PDF files via the NASA KY website. Documents can be submitted as a combined PDF. The project cover page requires AOR signature. Please title documents beginning with the PI's last name. Letters of support are strongly encouraged with this submission.

- SIGNED COVER PAGE:** Complete in Adobe Acrobat/Reader, save as PDF
 - Digital signatures are acceptable or scan signed original and save as PDF
- PRE-PROPOSAL PROJECT DESCRIPTION:**
 - 12-point font, 1-inch margins, single spaced
 - 10-page limit - See guidelines (pg. 7) for required content
 - Additional pages - See guidelines (pg. 7) for list of documents
- BUDGET FORMS & JUSTIFICATION:** See budget guidelines (pg. 8)
 - Budget form for Federal funds (\$675,000) with F&A
 - Budget form for State funds (\$225,000) without F&A
 - Include budget narrative detailing requested support and cost-share

Proposal forms available online at nasa.engr.uky.edu/requests-for-proposals/forms

Teleconference for Proposers (Optional)

Interested researchers may participate in a conference call at 2:00 pm ET, Monday, July 18, 2022 to discuss the submission and selection process, features of past successful proposals, and budget structure. Please register to receive meeting information and updates about the telecon: forms.gle/1SDos4L9n2Zvx6kb8. Participation information will be kept confidential from other proposers.

General Guidelines

Proposers may wish to review the [NASA Guidebook for Proposers](#) for NASA-specific proposal guidelines. Pre-proposals that omit required materials or exceed page limits are considered non-compliant and may be rejected without review. Failure to complete proposed work on prior NASA Kentucky projects will be taken into consideration in selecting a pre-proposal. By submitting to this RFP, the proposer acknowledges that NASA Kentucky reserves the right to request supporting financial information at any time during the course of an awarded project. See pg. 7-8 for specific content guidelines.

- *Special Purpose Equipment* may be purchased or used as cost-share (during the performance period).
- *General Purpose Equipment* may not be purchased or used as cost-share.
- *Travel* funds may be used for foreign and domestic travel as specified in the NASA NOFO.
- *Cost-share* must be 50% and come from non-Federal sources.
- *US citizenship not required*; however, foreign national personnel receiving support must be employed by a US institution.

Pre-Proposal Review Process

The NASA KY EPSCoR program and advisors from inside and outside the jurisdiction will review pre-proposals and rate them based on the following criteria:

- INTRINSIC MERIT (40%)
 - Proposed research
 - Prior research
- NASA ALIGNMENT AND PARTNERSHIPS (40%)
 - Relevance of proposed research to NASA and Kentucky priorities
 - Strength of NASA and industry collaborations
 - Sustainability - specific plans for building partnerships, institutional support, continued funding
 - Diversity (institutional & personnel) - Multi-institutional participation; personnel inclusion (DEI)
- MANAGEMENT (10%): Project management and evaluation, including task schedule; successful and timely completion of prior NASA Kentucky projects and reporting
- BUDGET (10%): Effective use of funds, reasonableness and detail of budget narrative

The review process will consider funding history and prior reporting of the research team to assess their readiness to propose to the national competition. During review, the Director may contact NASA collaborators identified in the pre-proposal to evaluate strength of partnership and involvement in pre-proposal development. Note: In the national competition, strength of partnership is a major factor.

As a panel, reviewers will recommend to the NASA KY EPSCoR Director one pre-proposal for development into a full proposal. The selected research group 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.

Research Alignment and Collaboration

Programmatic alignment is a determining factor in this funding program. Proposals to this program must address objectives described in the following sections. Proposals should align with NASA's missions and research as well as national [NASA EPSCoR](#) objectives and program elements described in the most recent solicitation ([NNH22ZHA005C](#) FY22). Proposals should address Kentucky program objectives and contribute to significant research capabilities in the state. Also see the NASA Center Core Competencies and contacts appended to this announcement, *and especially* the [2020 NASA Technology Taxonomy](#) and the [FY2023 NASA Research Areas of Interest](#), available under Proposal Resources on the [NASA KY EPSCoR](#) web page.

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 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.

Pre-Proposal Content Guidelines

Submit pre-proposals online at nasa.engr.uky.edu by 5:00 pm ET, Wednesday, August 24, 2022

A pre-proposal consists of a signed cover page and 10-page Project Description plus specified Additional Pages. Successful proposals clearly describe how the proposed research supports NASA priorities aligned with one or more NASA Mission Directorates or Centers, how the proposed effort enhances research capabilities within Kentucky of strategic importance to NASA, and how Kentucky researchers will continue to interact with NASA researchers.

Based on reviewer comments from the national selection process, top-ranked proposals include sound science plans aligned with NASA priorities. Discriminating considerations are strength of partnerships, contributions to state research capabilities and infrastructure, including involvement of early-career faculty, and diversity of the research team. Diversity refers to institutions as well as personnel.

Documents can be submitted as a combined PDF and should be titled with the PI's last name.

Project Description (10-page limit):

The project description includes a detailed description of the proposed research plan and addresses each of the sections described below. Page limit includes all illustrations, tables, and figures.

- Abstract** (200-300 words)
- Proposed Research:** Goals, objectives, tasks and project schedule
- Partnerships and Interactions:** Describe any partnerships or cooperative arrangements among academia, government agencies, business and industry, private research foundations, state and local agencies, as well as inclusion of faculty and students from underrepresented groups and rural or urban underserved areas.
- Sustainability:** Describe how the research capability will be sustained beyond the funding period. There should be a clear plan for sustaining the research beyond NASA EPSCoR funding and for seeking institutional support and non-EPSCoR funding. Identify potential solicitations and opportunities specifically as examples.
- Evaluation:** Describe the evaluation plan for measuring project success. The evaluation plan should be appropriate for the scope of the proposed activity and include a discussion of data collection and analysis procedures.
- Prior NASA EPSCoR and NASA Kentucky Research Support:** Demonstrate the effectiveness of prior research support. If the PI or any Co-PI identified on the project has received NASA EPSCoR or NASA Kentucky research funding in the past five years, information on the award(s) and results is required.

Additional Pages: the following should be included after the 10-page Project Description:

- References:** No page limit
- Budget Justification:** See guidelines on next page.
- Team Management Summary:** No more than 2 pages summarizing qualifications, roles, responsibilities and effort committed by team members.
- Curriculum vitae:** 2-page CV for lead PI, 1-page CV for Co-Is
- Statements of Commitment:** Letters of support from all collaborators should be included. A letter of support or email from at least one NASA researcher is strongly encouraged. Letters should indicate a strong commitment to the proposed research project, relevance to funding priorities, and willingness to participate in the proposal. Please note, it could take several weeks for a NASA collaborator to obtain authorization to send a letter of support. See [NASA Guidebook for Proposers](#) Section 2.17 for guidelines about letters of support. Page limit as needed.

Pre-Proposal Budget Guidelines

A complete proposal budget should be submitted along with the pre-proposal and a cover page signed by the PI's Authorized Organizational Representative (AOR) for Sponsored Projects. The budget should address proposed expenditures for the three-year project, with a start date of May 2023 or soon after. The research team may request up to \$900,000 over three years: \$675,000 in Federal funds with full indirect costs (F&A) and \$225,000 in state funds (to be expended as cost-share) without F&A. For additional information about cost-share, see pg. 1.

The submitted budget should include two NASA KY budget forms: one summarizing proposed costs for \$675,000 in Federal funds (with F&A) and one summarizing proposed costs for \$225,000 in state funds (without F&A).

The budget narrative should describe how the award and cost-share funds will be used to support faculty, students, travel, materials and supplies, research equipment, and other costs. The budget should include proposed costs for the state match amount and describe institutional support or additional sources to address the required 50% cost-share, including any in-kind contributions. Describe indirect cost rate (F&A) and cost basis.

Proposers should contact NASA KY with questions about allowable costs. Submitted proposals must be consistent with the research team's institutional policies and practices, e.g. definition of equipment, stipend, etc. Any third-party support committed to the project from collaborators should include a letter of support detailing the commitment.

The following should be submitted with the pre-proposal package:

Signed Cover Page:

Submit a signed version of the project cover page. The project cover page must be signed by the PI's Authorized Organizational Representative (AOR) for Sponsored Projects. Digital signatures are acceptable. For physical signatures, scan the signed original and save as PDF.

Final Budget (no page limit):

The final budget should include one NASA KY budget form for the Federal amount and one for the State match amount, along with a budget narrative describing the use of funds. Proposers may provide additional budget detail (e.g. annual budgets) using their own budget tables. The budget justification should address all requested support and cost-share.

- NASA KY Budget Forms:** 1 for Federal funds, 1 for State funds (both cumulative)
- Budget Narrative:** Describe how the award and cost-share funds will be used to support faculty, students, travel, materials and supplies, research equipment, and other costs. Describe in-kind contributions and plans to address the required 50% cost-share. Describe indirect cost rate and basis. Page limit as needed.
- Budget Detail:** Proposers may include their own budget tables showing additional budget detail, including annual costs.