



**NASA Kentucky EPSCoR
Competitive Research Award (CRA)
2021-2022 Request for Pre-Proposals**

Announcement: RFP-21-002

Release Date: October 15, 2021

Telecon for Proposers: 2:00 pm ET, Thursday, November 4, 2021
Letter of Intent (Required): 5:00 pm ET, Wednesday, November 10, 2021
Pre-proposals: 5:00 pm ET, Wednesday, December 1, 2021
Final Budget: 5:00 pm ET, Wednesday, December 8, 2021

Dr. Alexandre Martin, Director

NASA Kentucky
112 RMB (Robotics)
Lexington, KY 40506-0108
(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 CRA 2021-2022 Request for Pre-Proposals

NASA EPSCoR Research Area Award Overview

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

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 2022 NASA EPSCoR Research Notice of Funding Opportunity (NOFO) is expected to be available at nspires.nasaprs.com in mid-November 2021. Prior to its release, proposers may refer to the previous CRA NOFO ([NNH21ZHA004C](#) 2021) for descriptions of national program objectives and proposal guidelines. Each EPSCoR state is permitted to submit one proposal to the NASA NOFO. This RFP process will select Kentucky's 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 August 2022.

Anticipated Size of Awards: Researchers (designated as Science-PI) may request up to \$900,000 over three years: \$675,000 in Federal funds with full indirect costs (F&A) plus \$225,000 in state funds (provided as cost-share) 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, \$225,000 in State match funds are available to the Research team, provided to Kentucky's NASA EPSCoR program by the KY Cabinet for Economic Development and the KY Statewide EPSCoR Committee. A sample budget calculation is available on pg. 8 in the [NASA KY FAQ](#).

Indirect costs are not allowed on state match funds, 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 additional cost-share sources are: 1) viewed favorably in the national competition and 2) serve as alternative 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 as Kentucky's single allowed entry in the national competition. The pre-proposal submission and selection process will be conducted according to guidelines and timeline described below.

Eligibility: 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

Submission Instructions

Timeline:

▪ Teleconference for Interested Proposers (Optional)	2:00 pm ET, Thursday, November 4, 2021
▪ Letter of Intent (Required)	5:00 pm ET, Wednesday, November 10, 2021
▪ Pre-Proposal Submission Deadline	5:00 pm ET, Wednesday, December 1, 2021
▪ Final Budget Deadline	5:00 pm ET, Wednesday, December 8, 2021
▪ Pre-Proposal Selection Announcement	Anticipated early January 2021
▪ Full Proposal Submission to NASA via NSPIRES	Anticipated mid-February 2021

Teleconference for Interested Proposers (Optional): Interested researchers may participate in a conference call at 2:00 pm ET, Thursday, November 4, 2021 to learn more about the submission and selection process, features of past successful proposals, and budget structure. Please register to receive meeting information and updates about the telecon via the [NASA KY Proposers Telecon](#) form.

1) Letter of Intent (Required): Send to nasa@uky.edu by **5:00 pm ET, Wednesday, November 10, 2021.**

The Letter of Intent should describe 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: Science PI and Science-PI's Authorized Organizational Representative (AOR) for Sponsored Projects. Please also include a list of potential NASA collaborators with description of their 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 provide research teams feedback to encourage submission of a pre-proposal and/or suggest areas of improvement necessary for success in the NASA EPSCoR CRA program.

2) Pre-Proposal: Submit online at nasa.engr.uky.edu by **5:00 pm ET, Wednesday, December 1, 2021.**

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 does not require AOR signature at this stage. Please title documents beginning with the Science-PI's last name. Letters of support are strongly encouraged with this submission.

- COVER PAGE:* Complete in Adobe Acrobat/Reader, save as PDF
- PRE-PROPOSAL PROJECT DESCRIPTION:*
 - 12 point font, 1 inch margins, single spaced
 - 10 page limit - See guidelines (pg. 6) for required content
 - Additional pages - See guidelines (pg. 6) for list of documents

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

3) Final Budget: Submit online at nasa.engr.uky.edu by **5:00 pm ET, Wednesday, December 8, 2021.** Include a cover page signed by institutional AOR and any collaborator support letters not previously submitted.

All materials must be submitted as PDF files via the NASA KY website. Documents can be submitted as a combined PDF. The project cover page must be signed by the Science-PI's Authorized Organizational Representative (AOR) for Sponsored Projects. Please title documents beginning with the Science-PI's last name

- SIGNED COVER PAGE:* Digital signatures are acceptable or scan signed original and save as PDF
- BUDGET FORM AND JUSTIFICATION:* Include justification detailing requested support and cost-share

General 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 backup financial information at any time during the course of an awarded project. See pg. 6-7 for specific content guidelines.

- *Special Purpose Equipment* may be purchased or used as cost-share (during the budget 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 NASA NOFO.
- *Cost-share* must be 50% and come from non-Federal sources.

Pre-Proposal Review Process

The NASA KY EPSCoR Subcommittee and content specialists from 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 and continued funding
 - Diversity (institutional and personnel)
- MANAGEMENT: Management and evaluation; successful and timely completion of prior proposed NASA Kentucky projects and reporting (10%)
- BUDGET: Reasonableness of budget narrative (10%)

The review process will consider funding history and prior reporting compliance of the research team to assess their readiness to propose to the national competition. During review, the Director will 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 via NSPIRES.

Research Alignment and Collaboration

Proposals should align with national [NASA EPSCoR Program](#) objectives and the Agency's missions and research as well as contribute to research capabilities in the state of Kentucky. See the following information on NASA and programmatic alignment. Also see "FY2022 NASA Research Areas of Interest" available under Proposal Resources on the [NASA KY EPSCoR](#) web page.



Kentucky Statewide 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 industrial development and associated job creation. Growth in economic development as a result of the NASA EPSCoR investment is therefore also a jurisdictional emphasis underlying all aspects of the program.

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.

NASA Research and Technology Development Priorities

The NASA Office of STEM Engagement identifies research and technology priorities based on alignment with NASA's Mission Directorates: the Aeronautics Research Mission Directorate (ARMD), Human Exploration and Operations Mission Directorate (HEOMD), Science Mission Directorate (SMD) and the Space Technology Mission Directorate (STMD). For information on all of NASA's missions, please visit:

<http://www.nasa.gov/missions/index.html>.

NASA Mission Directorate (MD) Descriptions

Human Exploration and Operations Mission Directorate (HEOMD) provides the Agency with leadership and management of NASA space operations related to human exploration in and beyond low-Earth orbit. HEO also oversees low-level requirements development, policy, and programmatic oversight. The International Space Station represents NASA exploration activities in low-Earth orbit. Exploration activities beyond low-Earth orbit include the management of Commercial Space Transportation, Exploration Systems Development, Human Space Flight Capabilities, Advanced Exploration Systems, and Space Life Sciences Research & Applications. The directorate is similarly responsible for Agency leadership and management of NASA space operations related to Launch Services, Space Transportation, and Space Communications in support of both human and robotic exploration programs. (www.nasa.gov/directorates/heo/home/index.html)

** Note: HEOMD is undergoing reorganization into two new areas: Exploration Systems and Space Operations

Aeronautics Research Mission Directorate (ARMD) 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. (www.aeronautics.nasa.gov)

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. (nasascience.nasa.gov)

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. (www.nasa.gov/directorates/spacetech/home/index.html)

Pre-Proposal Content Guidelines

Submit pre-proposals online at nasa.engr.uky.edu by 5:00 pm ET, Wednesday, December 1, 2021

A pre-proposal consists of a cover page and 10-page Project Description plus the specified Additional Pages. Successful proposals clearly describe how the 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 Science-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**
- Partnerships and Interactions:** Describe any partnerships or cooperative arrangements among academia, government agencies, business and industry, private research foundations, jurisdiction agencies, and local agencies as well as partnerships with minority-serving institutions and the inclusion of faculty and students from underrepresented / underserved groups.
- 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 non-EPSCoR funding. Identify potential NOFOs, NRAs, RFPs, etc., 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 Science 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 Narrative:** No more than 1 page describing how the award and cost-share funds will be used to support students, faculty, travel, materials and supplies, and research equipment. Describe in-kind contributions and plans to address the required 50% cost-share. Detailed numerical budgets *are not* required with the pre-proposal submission at this stage.
- Team Management Summary:** No more than 2 pages summarizing qualifications, roles, responsibilities and effort committed by team members.
- Curriculum vitae:** 2 page CV for Science PI, 1 page CV for Co-PIs
- Statements of Commitment:** A support letter or email from at least one NASA researcher indicating a strong commitment to the proposed research project, relevance to NASA priorities and willingness to participate in proposal development. (See [NASA KY FAQ](#) pg. 7 for information about NASA letters of support). Page limit as needed.

Final Budget Submission Guidelines

Submit final budget online at nasa.engr.uky.edu by 5:00 pm ET, Wednesday, December 8, 2021

A complete, final version of the proposal budget should be submitted along with a cover page signed by the Science-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 August 2022 or soon after. Researchers (designated as Science-PI) may request up to \$900,000 over three years: \$675,000 in Federal funds with full indirect costs (F&A) plus \$225,000 in state funds (as cost-share) without F&A. For additional information about cost-share, see pg. 1

The final version of the 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 award and cost-share funds will be used to support students, faculty, travel, materials and supplies, and research equipment. The budget should include proposed costs for the state match amount and describe additional plans to address the required 50% cost-share, including any additional cost-share sources and in-kind contributions. Describe indirect cost rate and cost basis.

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

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

Signed Cover Page:

Submit a signed version of the project cover page. The project cover page *must be signed* by the Science-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 justification. Proposers may provide additional budget detail (e.g. annual budgets) using their own budget tables. The budget and justification should address all requested support and cost-share.

- NASA KY Budget Forms:** 1 for Federal funds, 1 for State
- Budget Narrative:** Describe how the award and cost-share funds will be used to support students, faculty, travel, materials and supplies, and research equipment. 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.

Additional Pages: the following should be included after the Budget Description:

- Statements of Commitment:** Include any additional support letters or email from collaborators (NASA, industry, etc) that were not included with the pre-proposal submission.