



REQUEST FOR PREPROPOSALS

Mississippi Research Consortium Submission to the National Science Foundation Established Program to Stimulate Competitive Research (EPSCoR) Research Infrastructure Improvement (RII Track-1) Program

Overview:

The Mississippi Research Consortium (MRC) invites preproposals in anticipation of next year's NSF EPSCoR RII Track-1 Request for Proposals.

The mission of EPSCoR is to advance excellence in science and engineering research and education to achieve sustainable increases in research, education, and training capacity and competitiveness within the eligible jurisdictions. EPSCoR goals are to a) catalyze research capability across and among jurisdictions, b) establish STEM professional development pathways, c) broaden participation of diverse groups/institutions in STEM, d) effect engagement in STEM at national and global levels, and e) impact jurisdictional economic development.

Comprised of the Chief Research Officers (CRO) at Jackson State University, Mississippi State University, the University of Mississippi, and the University of Southern Mississippi, MRC serves as the EPSCoR State Advisory Committee for Mississippi.

EPSCoR RII Track-1 Program Description:

Consistent with NSF EPSCoR's programmatic goals, the purpose of RII Track-1 is to provide support for sustainable improvements in the state's academic research infrastructure that will lead to increased research capacity and competitiveness. These awards are unique in their statewide scope and complexity; in their integration of individual researchers, institutions, and organizations; and in their role in developing the diverse, well-prepared, STEM-enabled workforce necessary to sustain research competitiveness and catalyze economic growth and development in Mississippi. It is inherent to the nature of RII Track-1 projects that they simultaneously focus both on conducting high-quality research and on developing the infrastructure necessary for sustained improvements to Mississippi's R&D capacity.

The preproposals should be hypothesis- and/or problem-driven and add specific value to Mississippi's academic research infrastructure not generally available through other NSF funding mechanisms. Appropriate research topics are those that benefit from a comprehensive and integrative approach, typically relating to a scientific area of significant regional or jurisdictional importance. Previously funded themes are allowed but are at neither advantage nor disadvantage for the upcoming EPSCoR program. Preproposals should be strongly aligned with Mississippi's Science and Technology Plan (<https://mississippiresearchconsortium.org/static/ST-Plan.pdf>).

Researchers are strongly encouraged to have formed partnerships among the four research institutions when preparing the preproposal.

Eligibility of Science Director:

Any faculty member at Jackson State University, Mississippi State University, the University of Mississippi (including the Medical Center campus), or the University of Southern Mississippi, is eligible to submit a preproposal as Science Director and co-PI of the proposed Track-1 project. The Office of Research and Economic Development at Mississippi State University shall serve as the fiscal agent and fill the roles of PI/Program Director and Program Administrator. There is no limit to the number of preproposals on which an individual can participate.

Preproposals may identify up to three other individuals (for example, one from each of the other three research universities) as prospective co-PIs. Note that NSF limits the number of co-PIs on a Track-1 proposal; the current limit is four. The final determination of the number of co-PIs of the selected Track-1 preproposal is subject to change as the full proposal is developed. Preproposals are strongly encouraged to include senior personnel individuals from other Mississippi colleges and universities, including regional universities and community colleges.

Selection Process Timeline and Budget Information

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| • Release Call for Preproposals | Wednesday, August 18, 2021 |
| • MS EPSCoR Track-1 Webinar | Wednesday, September 1, 2021 |
| • Preproposals Due | Friday, October 15, 2021 |
| • External Review Complete | Monday, November 8, 2021 |
| • Presentation to MRC by Top Ranked | Wednesday, November 17, 2021 |
| • Announcement of Selected Preproposal | Tuesday, November 30, 2021 |

Preproposals should be submitted online at <https://www.tfaforms.com/4921734>. Additional information about the webinar and any programmatic updates can be found at www.msepscor.org.

Although due dates and financial details will not be available until the new RFP is issued by NSF in Spring 2022, based on previous RFPs, it is expected that Letter of Intent will be due to NSF during the first week of July 2022 and full proposals due in early August 2022. Funding for the 5-year project is expected to total \$20M. There is no restriction on the amount requested annually, but the total request is limited to \$20M.

Preproposals Due: Friday, October 15, 2021

Submit preproposals at <https://www.tfaforms.com/4921734>

The preproposals must contain the following elements, in the order presented here. Proposers are strongly encouraged to refer to the current NSF EPSCoR program solicitation NSF 21-586. Final proposals will be prepared in accordance with the NSF solicitation in effect at the time.

- 1. Cover Sheet (1 page)** to include:
 - Title of Proposed Project
 - Name of Institution(s) Involved
 - Name of Faculty/Researchers w/E-Mail/Office Phone and Cell Phone/Mail Address (**Science Director and Co-Investigators must provide a signature for the preproposal to be reviewed. Electronic signatures will suffice.**)
 - Addresses of Institutions
 - List Participating Departments
 - List Project Discipline(s)
- 2. Project Summary (1 page max).** Each preproposal must contain an NSF-compliant summary of the proposed project. Provide a clear description of the proposed project and its potential impact. Briefly describe the proposed scope and the RII Track-1 project organization, activities in research and education and their integration. The summary must also include a statement on the intellectual merit and a statement on the broader impacts of the proposed project.
- 3. Abbreviated Project Description (9 page max):** The project description is the centerpiece of the RII Track-1 preproposal. This section of the preproposal should include clear and succinct goals, objectives, and activities for the proposed research, education, workforce development, and sustainability beyond the project period. Activities to be facilitated by the project should be presented in a clear, compelling way and describe how the requested NSF support will lead to increased and sustainable competitiveness. Research should be aligned with the [MRC's State's Science and Technology \(S&T\) Plan](#). Describe any barriers that currently impede your progress.

The project description must contain the following sections:

- A. Status and Overview (1 page max):** Describe the status of the jurisdiction's academic R&D enterprise, including the strengths, barriers, and opportunities for development of the academic institutions in support of overall R&D objectives. The proposal narrative should provide a convincing rationale for the project's scientific vision and indicate how the overall strategy, proposed implementation mechanisms, and infrastructure support will mitigate the identified barriers and improve academic research competitiveness. The discussion in this section must explicitly describe the alignment of the proposed research with the STEM research priorities of the state's S&T Plan.
- B. Research Program (5 pages max):** The research program is the project's central focus, the nucleus that links all other project elements. It is the primary element that will be judged during the merit review process, both for its intellectual merit and its broader scientific impacts. For each theme proposed, provide a concise description of the research goals and intellectual focus, and describe the planned activities in sufficient detail to enable their intellectual merit and broader impacts to be assessed. The proposed research in each theme should be presented in the context of

other efforts in the field (with appropriate references), stating the major challenges and current gaps in knowledge, and discussing the novelty and/or originality of the proposed approach. The narrative must contain sufficient details regarding the scientific hypotheses, goals, and research and training methods (laboratory, field, theoretical, computational, or other) such that experts in the field of the proposed research, or closely related fields, can accurately judge the plan's intellectual merit and broader impacts.

In addition to providing clear and concise evidence for intellectual merit and broader impacts of the research and capacity-building activities, this section should:

- Identify by name all faculty-level participants and estimate the numbers of faculty and postdoctoral, graduate, and undergraduate research participants.
- Clearly establish the means of developing a coordinated, collaborative approach involving multiple investigators and organizations.
- Describe interactions with other groups and organizations within Mississippi and at the national and international levels. Clearly demonstrate how each research topical area and approach contributes to Mississippi's strategy for the advancement of future research, education, and innovation. In particular, the narrative should demonstrate how the research activities are aligned with the STEM research priorities of the state's S&T Plan, and how they will advance the frontiers of knowledge and future competitiveness in the proposed research areas.

- C. **Education and Workforce Development (2 page max):** The scope of RII Track-1 efforts must include specific STEM education and workforce development activities that are tightly integrated with the Research Program and contribute to the preparation of a new cadre of competitive researchers, innovators, and educators. The proposed program should present an implementation plan that includes an assessment of the current circumstances as well as clearly articulated goals, milestones, and timelines. Plans should include opportunities for faculty development (particularly for early-career faculty) and for student training (which may occur at any level of the STEM education continuum). Efforts that focus on pre-college education should describe the basis for their inclusion and their relevance to the Research Program. The narrative should indicate synergies between proposed workforce development activities and other NSF investments in Mississippi that focus on strengthening STEM workforce development, especially in the research focus areas of the RII Track-1 project.

RII Track-1 projects may support the hiring, retention, and mentoring of new faculty; in such cases the role(s) of such faculty in the proposed Research Program must be clearly described. Awarded RII Track-1 projects are expected to follow through on all proposed new faculty hires as described in the proposal.

- D. **Partnerships and Collaborations (1 page max):** Partnerships allow leveraging of resources and promote sustainability. Partnerships may seed science, engineering, and education collaborations that promote innovation and STEM workforce development and can range in scope from intra-jurisdictional to inter-jurisdictional, regional, national, or international. Proposed activities should demonstrate how the anticipated partnerships and collaborations directly contribute to the attainment of project goals (including integration with the Research Program), increase research competitiveness, broaden, and strengthen the STEM workforce, and provide opportunities for innovation, technology transfer, and commercialization of research and education products. Proposed partnerships and collaborations may involve unfunded partners or stakeholders in the project. All activities should be detailed with clearly articulated goals, milestones, and timelines.

The Partnerships and Collaborations section should specifically articulate partnerships with large NSF or other federally funded projects, including cyberinfrastructure resources, if applicable. Letters of support are not required for the preproposal.

- 4. References Cited (no page limit):** All references cited in the preproposal should be listed here.
- 5. Facilities (no page limit):** List current, relevant facilities available for developing this theme.
- 6. Current and Pending Support (no page limit):** List current and pending support for each faculty-level and equivalent investigator (standard NSF format).

NOTE: The final proposals will need to address all the components listed in the solicitation (i.e. diversity, sustainability, communication, evaluation, etc.) during your presentation to the MRC (see Assessment of Preproposals section, below). The most recent EPSCoR RII Track-1 RFP (21-586) is available here: https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503429.

Assessment of Preproposals: All preproposals will be reviewed first by the Chief Research Officer (CRO) at the Science Director's home institution. If approved, the preproposal will be submitted by the CRO for consideration by the MRC officers following an external review. Researchers with top ranked preproposals may be asked to make a presentation to the MRC. The MRC expects to make a decision in November 2021 about which idea will be developed into a full proposal for submission to NSF in summer of 2022.

Preproposal Submission: The preproposal, formatted as a single pdf document, should be submitted at <https://www.tfaforms.com/4921734> **no later than the close of business (5:00 p.m.) on Friday, October 15, 2021.** An e-mail acknowledging receipt of the preproposal will be sent to the researcher. Failure to receive an acknowledgement by noon on Monday, October 18, 2021, indicates that the preproposal has not been received and will not be considered for review.

Please direct any questions to the chief research officer of your home institution:

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Preproposal Review Process

The external review will utilize the Merit Review Criteria of NSF, with additional EPSCoR-specific criteria as explained below.

Merit Review Criteria. All preproposals will be evaluated through use of the two National Science Board-approved merit review criteria. The two merit review criteria are listed below. Both criteria will be given full consideration during the review and decision-making processes; each criterion is necessary but neither, by itself, is sufficient. Therefore, proposers must fully address both criteria.

When evaluating the preproposals, reviewers will be asked to consider what the proposers want to do, why they want to do it, how they plan to do it, how they will know if they succeed, and what benefits could accrue if the project is successful. These issues apply both to the technical aspects of the preproposal and the way in which the project may make broader contributions. To that end, reviewers will be asked to evaluate all preproposals against the two NSF criteria:

Intellectual Merit: The Intellectual Merit criterion encompasses the potential to advance knowledge; and

Broader Impacts: The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.

The following elements should be considered in the review for both criteria:

1. What is the potential for the proposed activity to:
 - a. Advance knowledge and understanding within its own field or across different fields (Intellectual Merit); and
 - b. Benefit society or advance desired societal outcomes (Broader Impacts)?
2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
3. Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
4. How well-qualified is the individual, team, or organization to conduct the proposed activities?
5. Are there adequate resources available (either at the home organization or through collaborations) to carry out the proposed activities?

Additional Solicitation-Specific Review Criteria

Reviewers for the RII Track-1 preproposals will also consider the following specific aspects of intellectual merit and broader impacts, as applicable:

Research Capacity – What is the potential of the project to advance the relevant fields of science and engineering while simultaneously enhancing research competitiveness and developing research capacity and infrastructure (including physical, cyber, and human resources) in Mississippi? How will the proposed activities contribute to the national and international recognition of the project participants and participating organizations? What is the potential of the project to increase the capacity of the participating organizations and capability of project participants to propose and implement research activities in the future? How will the diversity of institutional types within Mississippi benefit from the proposed enhancement of research capacity?

Jurisdictional Impacts – How well-aligned are the project's research activities with the STEM research priorities described in Mississippi's S&T Plan? What is the potential to achieve meaningful and sustained impacts within and throughout Mississippi with respect to education capacity (including workforce preparation), economic development (including innovation, technology transfer, and potential commercialization), and quality of life? How do the proposed activities promote organizational connections and linkages within Mississippi, as well as between private and public sectors? How well do the proposed partnerships and collaborations advance the project goals? How well does the project leverage past accomplishments and existing resources, especially those from prior RII funding and NSF, state, and regional investments?

Workforce Development – What is the potential to enhance research and education capacity through the recruitment, mentoring, and professional development of students, junior researchers, and faculty (including early career)? How effectively will the range of project participants (including diverse populations and organizations) be engaged in the research and education activities? What is the potential to prepare a new cadre of competitive researchers, innovators, and educators, especially in the proposed area(s) of research? What novel and effective ways are proposed to broaden the participation of women and minorities underrepresented in STEM (also: persons with disabilities, students who are in the first generation of the family to attend college, or those from economically disadvantaged or rural populations), especially in the proposed area(s) of research? How well will the project enhance participation and research capacity at non-research intensive PUIs, HBCUs, and 2-year institutions?

Integration of Project Elements – How well are the project elements (especially education, workforce development, and diversity) aligned and integrated with the research activities? What added value and benefits can be realized through the integration of the project elements with research as part of an RII project? What is the potential of the project to reach its education and workforce development goals and objectives as a result of the proposed research, and vice versa? What is the level of integration among shared facilities and research partners? In addition, reviewers will be instructed to consider the feasibility of the proposed activities, and whether sufficient and accurate baseline data have been provided regarding the proposed project goals.