EPSCoR Research Incubators for STEM Excellence Research Infrastructure Improvement Program (E-RISE RII)

PROGRAM SOLICITATION
NSF 23-588

Full Proposal Deadline(s) (due by 5 p.m. submitter's local time):

- January 16, 2024
- August 13, 2024
- August 12, 2025
- Second Tuesday in August, Annually Thereafter

IMPORTANT INFORMATION AND REVISION NOTES

The EPSCoR Research Incubators for STEM Excellence Research Infrastructure Improvement (E-RISE RII) Program is a new program that responds directly to input from recent national studies and legislation, including the 2022 2M Study EPSCoR, Envisioning the Future of NSF EPSCoR report, and the CHIPS and Science Act of 2022 (Public Law 117-167). E-RISE RII, which focuses on the development and sustainability of EPSCoR-eligible jurisdictions’ research capacity and competitiveness in a scientific topical area, is intended to supplant the NSF EPSCoR RII Track-1 Program, which will be archived in fiscal year 2024.

NSF EPSCoR eligibility is based on a jurisdiction’s most recent five-year history of total funds awarded by NSF relative to the Foundation’s total research budget for that same period. The CHIPS and Science Act of 2022 (P.L. 117-167) suspends inclusion of new or graduation of existing EPSCoR jurisdictions through fiscal year 2027. Additional details on the EPSCoR eligibility criteria are available on the NSF EPSCoR website (see RII eligibility).

Any proposal submitted in response to this solicitation should be submitted in accordance with the NSF Proposal & Award Policies & Procedures Guide (PAPPG) that is in effect for the relevant due date to which the proposal is being submitted. The NSF PAPPG is regularly revised and it is the responsibility of the proposer to ensure that the proposal meets the requirements specified in this solicitation and the applicable version of the PAPPG. Submitting a proposal prior to a specified deadline does not negate this requirement.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:
EPSCoR Research Incubators for STEM Excellence Research Infrastructure Improvement (E-RISE RII)

Synopsis of Program:

The Established Program to Stimulate Competitive Research (EPSCoR) fulfills the mandate of the National Science Foundation (NSF) to promote scientific progress nationwide. NSF EPSCoR facilitates the establishment of partnerships among academic institutions, government, industry, and non-profit sectors that are designed to promote sustainable improvements in the research infrastructure, Research and Development (R&D) capacity, and R&D competitiveness of EPSCoR-eligible jurisdictions (i.e., states, territories, and commonwealths).

The E-RISE RII program supports the incubation of research teams and products in a scientific topical area that links to research priorities identified in the submitting jurisdiction's approved Science and Technology (S&T) Plan. E-RISE RII invites innovative proposals that will lead to development and implementation of sustainable broad networks of individuals, institutions, and organizations that will transform the science, technology, engineering and mathematics (STEM) research capacity and competitiveness in a jurisdiction within the chosen field of research.

E-RISE RII projects must be designed to incubate (i) areas of research capacity building within a chosen research topic; (ii) development of a skilled workforce that is relevant to the project and its outcomes; (iii) promotion of diversity, equity, access, and a culture of inclusion of different types of academic institutions (see below) and non-academic sectors (e.g., industry and government); (iv) integration of the research with societal impacts in a time-bound manner; and (v) sustainability of a clear pathway towards preserving the resulting research incubator’s team and products beyond E-RISE RII funding.

Cognizant Program Officer(s):
Please note that the following information is current at the time of publishing. See program website for any updates to the points of contact.

- John-David Swanson, telephone: (703) 292-2898, email: jswanson@nsf.gov
- Pinhas Ben-Tzvi, telephone: (703) 292-8246, email: pbentzvi@nsf.gov
- Jose Colom-Ustariz, telephone: (703) 292-7088, email: jcolom@nsf.gov
- Andrea Johnson, telephone: (703) 292-5164, email: AndJOHNS@nsf.gov
- Casonya M. Johnson, telephone: (703)292-2658, email: casjohns@nsf.gov
- Eric W. Lindquist, telephone: (703) 292-7127, email: elindqui@nsf.gov
- Jeanne R. Small, telephone: (703) 292-8623, email: jsmall@nsf.gov
- Chinonye Whitley, telephone: (703)292-8458, email: cwhitley@nsf.gov

Applicable Catalog of Federal Domestic Assistance (CFDA) Number(s):

- 47.083 --- Office of Integrative Activities (OIA)

### Award Information

#### Anticipated Type of Award: Continuing Grant

#### Estimated Number of Awards: 18

Up to 18 awards annually (pending the quality of proposals and availability of funds). More than one award per jurisdiction will be considered depending on the quality of the proposals and the availability of funds.

Awards will be funded for up to seven years, with the initial award for the first four years and the second award for three years based on project performance and review of a renewal proposal. Each individual year’s continued funding will be contingent on satisfactory progress as based on the annual reporting requirements.

#### Anticipated Funding Amount: $31,500,000

Up to $31,500,000 annually, to support up to 18 newly funded awards for the first four years. Number of awards is approximate and subject to the availability of funds and quality of the proposals submitted.

Funding requests may be for a maximum total budget of $7,000,000 over the first four (4) years and a maximum of $4,500,000 over the subsequent three-year renewal period, as applicable.

The Year-1 budget will be committed upon award, and subsequent year budgets are subject to satisfactory annual review of project success. Pending performance and outcome of a renewal proposal review in the fourth year, support for years five through seven will continue at an expected total of up to $4,500,000 over the three-year renewal period.

Note that in only rare and exceptional circumstances that no-cost extensions beyond the grantee-approved no-cost extension will be granted during the initial or renewal award period.

NSF EPSCoR support of a proposed research infrastructure improvement activity should not duplicate other available federal, jurisdictional, or institutional resources and should add significant value to increasing scientific competitiveness at the national or regional level.

### Eligibility Information

#### Who May Submit Proposals:

Proposals may only be submitted by the following:

- Institutions or organizations in jurisdictions that meet the EPSCoR eligibility criteria and that are without a collaborating role in a current or potentially pending EPSCoR RII Track-1 award unless the current EPSCoR RII Track-1 award is in its final year, or have an awarded or pending EPSCoR Collaborations for Optimizing Research Ecosystems (E-CORE RII) proposal from any eligible entity within the jurisdiction.

- Institutions of higher education (PhD-granting and non-PhD-granting), acting on behalf of their faculty members, that are accredited in and have a campus in the United States, its territories, or possessions. Distinct academic campuses within multi-campus systems (e.g., campuses that award their own degrees and have independent administrative structures, admissions policies, and alumni associations) qualify as separate submission-eligible institutions. Campuses that plan to submit a proposal through the Sponsored Projects Office of other campuses or organizations should contact NSF EPSCoR to discuss eligibility as early as possible and at least six weeks before submitting such a proposal.

- Non-profit, non-degree-granting domestic U.S. organizations, acting on behalf of their employees, that include (but are not limited to) independent museums and science centers, observatories, research laboratories, professional societies, and similar organizations that are directly associated with the Nation’s research or educational activities. These organizations must have an independent, permanent administrative organization (e.g., an office of sponsored research) located in the United States, its territories, or possessions, and have 501(c)(3) tax status.

- Tribal Governments with the governing body of any Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of the Interior acknowledges to exist as an Indian tribe under the Federally Recognized Indian Tribe List Act of 1994 (25 U.S.C. 479a, et seq.) or Indigenous communities that are not recognized by the Federally Recognized Indian Tribe List Act of 1994 (25 U.S.C. 479a, et seq.).

E-RISE RII submissions should be multi-institutional or multi-organizational, with a lead institution/organization and additional collaborating...
partner(s), which may include academic and non-academic organizations. E-RISE RII collaborations must be indicative of building an inclusive jurisdiction-wide network of expertise in the chosen research topic.

It is encouraged that the lead institution/organization or at least one collaborative partner be an institution from one of the categories below:

- Emerging Research Institutions as defined in 42 § USC 18901 as institutions of higher education with an established undergraduate or graduate program that have less than $50,000,000 in Federal research expenditures;
- Minority-serving institutions, including Historically Black Colleges and Universities (HBCUs), Hispanic-serving institutions (HSIs), Tribal Colleges or Universities (TCUs), and other institutions that enroll a significant percentage of students from underrepresented populations as defined by the U.S. Department of Education (e.g., Alaska Native-serving institutions, Native Hawaiian-serving institutions, Predominantly Black Institutions, Asian American and Native American Pacific Islander-serving institutions, and Native American-serving non-tribal institutions);
- Primarily Undergraduate Institutions (PUIs), including two-year colleges, that award associates degrees, bachelor's degrees, and/or master's degrees in NSF-supported fields, but have awarded 20 or fewer Ph.D./D.Sci. degrees in all NSF-supported fields during the combined previous two academic years;
- Institutions of higher education that are dedicated to serve students with disabilities, as listed in Table 1, page 5, of NSF’s 2008 Broadening Participation report (https://nsf.gov-resources.nsf.gov/2022-03/nsf_frameworkforaction_0808.pdf);

Collaborations with other EPSCoR jurisdictions, non-EPSCoR jurisdictions, and international entities are allowed provided there is significant justification outlining a critical need that cannot be fulfilled in the home jurisdiction. However, since EPSCoR program funds may only be allocated for activities and personnel within an EPSCoR jurisdiction, participation of collaborators in non-EPSCoR jurisdictions must be as an unfunded collaborator.

Who May Serve as PI:

Principal Investigators must be affiliated with and employed by an eligible organization in an EPSCoR jurisdiction.

Each partner institution participating in a proposed project must be represented by a PI or at least one co-PI with relevant project expertise.

Limit on Number of Proposals per Organization: 1

Only one submission per institution or organization is allowed where the institution or organization serves as the lead either on a single proposal with subawards or as the lead on a set of separately submitted collaborative proposals. There is no limit on the number of submissions per jurisdiction.

Limit on Number of Proposals per PI or co-PI: 1

An individual may serve as Principal Investigator (PI) or co-PI on only one submission, including pending or active E-RISE RII projects, but may serve as senior personnel on any number of E-RISE RII proposals or awards.

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- Letters of Intent: Not required
- Preliminary Proposal Submission: Not required
- Full Proposals:

B. Budgetary Information

- Cost Sharing Requirements:
  Inclusion of voluntary committed cost sharing is prohibited.
- Indirect Cost (F&A) Limitations:
  Not Applicable
- Other Budgetary Limitations:
  Other budgetary limitations apply. Please see the full text of this solicitation for further information.

C. Due Dates

- Full Proposal Deadline(s) (due by 5 p.m. submitter's local time):
I. INTRODUCTION

A. EPSCoR Mission and Goals

The mission of EPSCoR is to enhance research competitiveness of targeted jurisdictions (states, territories, commonwealths) by strengthening STEM capacity and capability through a diverse portfolio of investments from talent development to local infrastructure. Through its programmatic goals, EPSCoR seeks to:

- Catalyze the development of research capabilities and the creation of new knowledge that expands jurisdictions’ contributions to scientific discovery, innovation, learning, and knowledge-based prosperity;
- Establish sustainable STEM education, training, and professional development pathways that advance jurisdiction-identified research areas and workforce development;
- Broaden direct participation of diverse individuals, institutions, and organizations in the project's science and engineering research and education initiatives;
- Effect sustainable engagement of project participants and partners, the jurisdiction, the national research community, and the general public through data-sharing, communication, outreach, and dissemination; and
- Impact research, education, and economic development beyond the project at academic, government, and private sector levels.

B. EPSCoR and E-RISE RII Eligibility Criteria

NSF EPSCoR eligibility is based on a jurisdiction’s most recent five-year history of total funds awarded by NSF relative to the Foundation’s total research budget for that same period (see EPSCoR eligibility). An EPSCoR-eligible jurisdiction is defined as a state, U.S. territory, or U.S. commonwealth that previously did not

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Proposal Review Information Criteria

Merit Review Criteria:

National Science Board approved criteria. Additional merit review criteria apply. Please see the full text of this solicitation for further information.

Award Administration Information

Award Conditions:

Standard NSF award conditions apply.

Reporting Requirements:

Additional reporting requirements apply. Please see the full text of this solicitation for further information.

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I. INTRODUCTION

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The E-RISE RII program seeks to provide investments in incubating sustainable research infrastructure and capacity to position teams of researchers in the jurisdiction to be leaders in a STEM topical area at a national and/or international level.

For entities to be eligible to apply for E-RISE RII funding, the EPSCoR-eligible jurisdiction must demonstrate its commitment to develop its research foundation and improve the quality of STEM research conducted at its universities and colleges by:

- Having an active Jurisdictional Steering Committee with current by-laws in place to support jurisdiction-wide STEM research;
- Having a jurisdictional Science and Technology (S&T) Plan that has been officially accepted and approved by the jurisdiction within the past five years; and
- Having a pending or awarded proposal from any eligible entity within the jurisdiction for the EPSCoR Collaborations for Optimizing Research Ecosystems (E-CORE RII) program, or an active EPSCoR RII Track-1 award either in its fifth or final year.

C. Jurisdictional EPSCoR Steering Committee and Science & Technology (S&T) Plan

The success and ultimate sustainability of an E-RISE RII incubator is rooted in the project's responsiveness to the research needs and priorities of its jurisdiction. As such, jurisdictional EPSCoR Steering Committees serve as fundamental and inherent collaborators and partners in E-RISE RII projects to help determine research priorities for the jurisdiction. The Steering Committee, working closely with diverse jurisdictional leaders in academia, government, and the private sector, is expected to work towards identifying R&D improvement strategies and research initiatives that will advance the development of nationally competitive capabilities in jurisdictional S&T. This work must expand to all areas of an E-RISE RII project's proposed research capacity building and include jurisdictional needs associated with workforce development, broadening participation in STEM, preparing a K-16 STEM pipeline, and enhancing the economic impact of the jurisdiction's R&D enterprise within the chosen topical area.

The EPSCoR Steering Committee should have an awareness of all federal and state investments in the jurisdiction to facilitate linkages and provide pathways of communication in E-RISE RII projects and to allow for jurisdiction-wide participation of diverse entities. To support successful submissions, the Steering Committee should routinely conduct an evidence-based, comprehensive analysis of the jurisdiction's R&D strengths, opportunities that exist to further develop R&D capacity, and challenges that must be overcome to take advantage of those opportunities. The Steering Committee must have also evaluated the maturity of existing R&D efforts in the jurisdiction as well as the potential of new research directions that align with jurisdictional needs and where needed, provide facilitation to ensure jurisdictional networks, other NSF and federal investments are working in concert to maximize these investments and ultimately lead to increasing research competitiveness. To allow for E-RISE RII projects to appropriately align with the priorities and needs of the jurisdiction, the jurisdiction's S&T Plan should be routinely revisited to document and record the changing research ecosystem of the jurisdiction.

II. PROGRAM DESCRIPTION

A. E-RISE RII Program Goals

NSF EPSCoR investments support and build STEM-driven, jurisdiction-wide research incubators with the potential to position the team to be nationally and internationally competitive within a chosen research field. The E-RISE RII program is designed to provide EPSCoR-eligible jurisdictions with funding to support incubation of research in a scientific field that will lead to increased research capacity and competitiveness in the topical area and sustainable improvements in the jurisdiction's academic research infrastructure and human networks related to the chosen topical area. E-RISE RII incubators are intended to span the breadth of institutions in the jurisdiction, including primarily undergraduate institutions, two-year institutions, and minority-serving institutions, and also link to any NSF active areas of support.

The E-RISE RII program aims to support EPSCoR-eligible jurisdictions to:

1. Build a jurisdiction-wide network of teams of researchers and sectors that incubate high-quality research in a defined STEM disciplinary area or topic of choice that is aligned with jurisdictional priority areas and EPSCoR's mission and goals.

2. Develop high quality hypothesis- and problem-driven research projects that will sustain project outcomes beyond the E-RISE RII funding, including the development of effective STEM education and workforce development opportunities within the research topic that engage diverse audiences across the jurisdiction and establishes meaningful partnerships at the individual and institutional levels both within the jurisdiction and beyond.

E-RISE RII incubators are intended to result in sustainable infrastructure in a jurisdiction that positions research teams to be leaders in a STEM topical area at a national and/or international level.

B. Key Elements of E-RISE RII Projects

An E-RISE RII project must clearly align with one or more S&T topical areas that are consistent with the specific research priorities of the jurisdiction's S&T Plan as well as EPSCoR's mission and goals. E-RISE RII projects should be designed using the six key elements outlined below.

1) Building of a jurisdiction-wide network of individuals, institutions, and organizations to develop high-quality research aligned with jurisdictional scientific priority areas and the EPSCoR mission and goals

The focused research topic of a submission must include a comprehensive and integrative approach that aligns a scientific area of significant regional or jurisdictional importance and an area of recognized national or global interest. Proposals must be developed with research projects that will contribute to the field and will set the network for success beyond the award period. A track record of prior collaboration with proposed collaborators is not required.

2) Incorporation of Diversity, Equity, Access, and Culture of Inclusion of different institution types and sectors (DEACI)

In addition to creating a diverse team, E-RISE RII projects must be designed to demonstrate an environment of inclusion in which all team members are valued and welcomed, creatively contribute, and gain mutual benefit from participating. Participation from members of groups traditionally underrepresented in STEM as well as diverse scientific and other perspectives are required. E-RISE RII projects should include and leverage individuals that represent the collective intellectual capacity of the jurisdiction regardless of institution type (e.g., research-intensive institutions, emerging research institutions, primarily undergraduate institutions).
institutions, minority-serving institutions, two-year colleges) or sector (e.g., non-academic, governmental, industry). Submissions must document substantive partnerships that are clear, deep, and meaningful, free of ingrained systemic hierarchies, and contribute directly to a collaboration that is well-positioned to produce outcomes that leverage the research capacity of an entire jurisdiction.

In cases where jurisdictions may have limited expertise or resources to support needs in the area, collaboration with additional EPSCoR jurisdictions is allowable, providing the proposing team can justify the need and how the collaboration benefits the home jurisdiction. Likewise, non-EPSCoR and international collaborations may be included with appropriate justification, but no EPSCoR funds may be directed to non-EPSCoR entities or organizations.

3) Development of a skilled workforce that is relevant to the project and its outcomes (WFD)

E-RISE RII projects should include development of innovative educational plans to prepare a skilled technical workforce, at multiple levels (i.e., K-12, two-year college, undergraduate, graduate, university faculty), driven by the future education, workforce development, and labor market needs relevant to the E-RISE RII proposal’s research topic. Furthermore, in response to the anticipated needs of the future workforce, projects should develop strong educational programs in the proposed research areas that can be implemented across institutions of higher learning and directly contribute to building a skilled workforce in research topics associated with the proposal.

4) Incorporation of use-inspired perspectives and societal impact (SI)

E-RISE RII projects should include components that address understanding and assessing any specific disruptive impacts of the research for the betterment of the jurisdiction in a time-bound manner. This includes the explicit connection of the research to its end use, and how this directly connects to innovation and policy, which in turn leads to societal impact. To support this connection, NSF EPSCoR envisions the convergence of multidisciplinary and diverse teams, including social scientists, that span innovation research to understand and build the science, scale it up, and ground it within the perspective of socio-economic implications.

5) Building of a pathway to sustainability

E-RISE RII projects should provide a pathway to sustainability and research capacity for the team beyond the award period. Examples of sustainability may include developing a competitive team for a wide range, or combination of, NSF funding investments (e.g., Engineering Research Centers, Science and Technology Centers, Regional Innovation Engines) and other possible federal funding opportunities; local or state government investment; or creation of new startups or industry investments.

While the project will be initially funded for a period of four years, a three-year award renewal may be awarded partially based on progress towards a clearly articulated sustainability goal, as outlined in the required Strategic Plan.

6) Development of a continual improvement cycle

E-RISE RII projects should provide a project-wide embracement of a continual process improvement cycle. To facilitate continued assessment, each project must include an independent (to the project) evaluator that is able to assess progress towards all project elements outlined above. If awarded, the project will create an NSF EPSCoR approved Strategic Plan according to NSF guidance that will be used to identify when project milestones and goals are met and identify resulting outcomes.

The Strategic Plan may be updated throughout the award pending NSF review and approval. Outputs and outcomes will be assessed yearly by the team. If needed, updates may be made in consultation with NSF EPSCoR and subsequently incorporated into the Strategic Plan, and reported to NSF EPSCoR accordingly through the EPSCoR Data Outcome Collection System (EDOCS). Even though the award will be initially made for four years, each year's increment is dependent on progress towards the goals of the project and mitigation to challenges encountered as demonstrated through the continuous improvement cycle and reported through annual reporting to NSF EPSCoR.

Renewal

For funded projects, in the third quarter of the third year of the award, the project will be allowed to apply for a single three-year renewal award. Projects that wish to do this will need to indicate interest to do so in the third year annual report. The submission of the proposal and potential award will be concurrent with an assessment of progress by NSF EPSCoR or its designee in the form of a Site Visit or other similar mechanism. Awards will be based on the quality of the submitted proposal, progress towards stated project goals, and the development of clear pathways to sustainability of a research network beyond the initial award period, as assessed through merit review and outcomes of the Site Visit. Additionally, it is expected that all E-RISE projects will require additional resources as they execute their plan toward sustainability. The demonstrable procurement of these resources will be expected at time of renewal.

III. AWARD INFORMATION

Up to $31,500,000 annually, to support up to 18 newly funded awards for the first four years. Number of awards is approximate and subject to the availability of funds and quality of the proposals submitted.

The Year-1 budget will be committed upon award, and subsequent year budgets are subject to satisfactory annual review of project success. Pending performance and outcome of a renewal proposal review in the fourth year, support for years five through seven will continue at an expected total of up to $4,500,000 over the three-year renewal period.

NSF EPSCoR support of a proposed RII activity should not duplicate other available federal, jurisdictional, or institutional resources and should add significant value to increasing scientific competitiveness at the national or regional level.

IV. ELIGIBILITY INFORMATION

Who May Submit Proposals:
Proposals may only be submitted by the following:

- Institutions or organizations in jurisdictions that meet the EPSCoR eligibility criteria and that are without a collaborating role in a current or potentially pending EPSCoR RII Track-1 award unless the current EPSCoR RII Track-1 award is in its final year, or have an awarded or pending EPSCoR Collaborations for Optimizing Research Ecosystems (E-CORE RII) proposal from any eligible entity within the jurisdiction.

- Institutions of higher education (PhD-granting and non-PhD-granting), acting on behalf of their faculty members, that are accredited in and have a campus in the United States, its territories, or possessions. Distinct academic campuses within multi-campus systems (e.g., campuses that award their own degrees and have independent administrative structures, admissions policies, and alumni associations) qualify as separate submission-eligible institutions. Campuses that plan to submit a proposal through the Sponsored Projects Office of other campuses or organizations should contact NSF EPSCoR to discuss eligibility as early as possible and at least six weeks before submitting such a proposal.

- Non-profit, non-degree-granting domestic U.S. organizations, acting on behalf of their employees, that include (but are not limited to) independent museums and science centers, observatories, research laboratories, professional societies, and similar organizations that are directly associated with the Nation's research or educational activities. These organizations must have an independent, permanent administrative organization (e.g., an office of sponsored research) located in the United States, its territories, or possessions, and have 501(c)(3) tax status.

- Tribal Governments with the governing body of any Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of the Interior acknowledges to exist as an Indian tribe under the Federally Recognized Indian Tribe List Act of 1994 (25 U.S.C. 479a, et seq.) or Indigenous communities that are not recognized by the Federally Recognized Indian Tribe List Act of 1994 (25 U.S.C. 479a, et seq.).

E-RISE RII submissions should be multi-institutional or multi-organizational, with a lead institution/organization and additional collaborating partner(s), which may include academic and non-academic organizations. E-RISE RII collaborations must be indicative of building an inclusive jurisdiction-wide network of expertise in the chosen research topic.

It is encouraged that the lead institution/organization or at least one collaborative partner be an institution from one of the categories below:

- Emerging Research Institutions as defined in 42 § USC 18901 as institutions of higher education with an established undergraduate or graduate program that have less than $50,000,000 in Federal research expenditures;

- Minority-serving institutions, including Historically Black Colleges and Universities (HBCUs), Hispanic-serving institutions (HSIs), Tribal Colleges, or Universities (TCUs), and other institutions that enroll a significant percentage of students from underrepresented populations as defined by the U.S. Department of Education (e.g., Alaska Native-serving institutions, Native Hawaiian-serving institutions, Predominantly Black Institutions, Asian American and Native American Pacific Islander-serving institutions, and Native American-serving non-tribal institutions);

- Primarily Undergraduate Institutions (PUIs), including two-year colleges, that award associate degrees, bachelor's degrees, and/or master's degrees in NSF-supported fields, but have awarded 20 or fewer Ph.D./D.Sci. degrees in all NSF-supported fields during the combined previous two academic years;

- Institutions of higher education that are dedicated to serve students with disabilities, as listed in Table 1, page 5, of NSF's 2008 Broadening Participation report (https://nsf.gov/programs/digest/d21/tables/dt21_312.30.asp);


Collaborations with other EPSCoR jurisdictions, non-EPSCoR jurisdictions, and international entities are allowed provided there is significant justification outlining a critical need that cannot be fulfilled in the home jurisdiction. However, since EPSCoR program funds may only be allocated for activities and personnel within an EPSCoR jurisdiction, participation of collaborators in non-EPSCoR jurisdictions must be as an unfunded collaborator.

Who May Serve as PI:

Principal Investigators must be affiliated with and employed by an eligible organization in an EPSCoR jurisdiction.

Each partner institution participating in a proposed project must be represented by a PI or at least one co-PI with relevant project expertise.

Limit on Number of Proposals per Organization: 1

Only one submission per institution or organization is allowed where the institution or organization serves as the lead either on a single proposal with subawards or as the lead on a set of separately submitted collaborative proposals. There is no limit on the number of submissions per jurisdiction.

Limit on Number of Proposals per PI or co-PI: 1

An individual may serve as Principal Investigator (PI) or co-PI on only one submission, including pending or active E-RISE RII projects, but may serve as senior personnel on any number of E-RISE RII proposals or awards.

Additional Eligibility Info:

For entities to be eligible to apply for E-RISE RII funding, the EPSCoR-eligible jurisdiction must demonstrate its commitment to develop its research foundation and improve the quality of STEM research conducted at its universities and colleges by:

- Having an active Jurisdictional Steering Committee with current by-laws in place to support jurisdiction-wide STEM research;
- Having a jurisdictional Science and Technology (S&T) Plan that has been officially accepted and approved by the jurisdiction within
V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Full Proposal Preparation Instructions: Proposers may opt to submit proposals in response to this Program Solicitation via Research.gov or Grants.gov.

- Full Proposals submitted via Research.gov: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF Proposal and Award Policies and Procedures Guide (PAPPG). The complete text of the PAPPG is available electronically on the NSF website at: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg. Paper copies of the PAPPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from nsfpubs@nsf.gov. The Prepare New Proposal setup will prompt you for the program solicitation number.

- Full proposals submitted via Grants.gov: Proposals submitted in response to this program solicitation via Grants.gov should be prepared and submitted in accordance with the NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov. The complete text of the NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: (https://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide). To obtain copies of the Application Guide and Application Forms Package, click on the Apply tab on the Grants.gov site, then click on the Apply Step 1: Download a Grant Application Package and Application Instructions link and enter the funding opportunity number, (the program solicitation number without the NSF prefix) and press the Download Package button. Paper copies of the Grants.gov Application Guide also may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from nsfpubs@nsf.gov.

In determining which method to utilize in the electronic preparation and submission of the proposal, please note the following:

Collaborative Proposals. All collaborative proposals submitted as separate submissions from multiple organizations must be submitted via Research.gov. PAPPG Chapter II.E.3 provides additional information on collaborative proposals.

See PAPPG Chapter II.D.2 for guidance on the required sections of a full research proposal submitted to NSF. Please note that the proposal preparation instructions provided in this program solicitation may deviate from the PAPPG instructions.

The following instructions are specific to proposals submitted to the EPSCoR Research Incubators for STEM Excellence (E-RISE RII) competition and supplement the NSF PAPPG and NSF Grants.gov Application Guide:

- E-RISE RII proposals may only be submitted by organizations in eligible EPSCoR jurisdictions listed in Section IV of this solicitation. An organization may only serve as lead on one proposal, either as the lead on a single proposal with subawards, or as the lead on a set of separately submitted collaborative proposals.

Proposal Set-Up: Select "Prepare New Full Proposal" in Research.gov. Search for and select this solicitation title in Step One of the Full Proposal wizard. In the proposal details section, select "Single proposal (with or without subawards)" or "Separately submitted collaborative proposal". The project title must begin with “E-RISE RII:” and follow with an informative title in the topic area.

1. Senior Personnel. The lead PI must be a researcher from the submitting jurisdiction and all other collaborating institutions should have at least one individual designated as PI or co-PI on the proposal.

2. Project Summary. In accordance with the guidance in the PAPPG, the Project Summary must include three separate sections labeled Overview, Intellectual Merit, and Broader Impacts.

In the Overview section, briefly describe: the collaborating institutions; the vision and goals of the collaboration; a statement of the research objectives and methods to be employed; expected jurisdiction-wide impacts of the proposed activities; and plans for sustaining collaborations and impacts beyond the award period.

At the end of the Broader Impacts section, provide five key words that describe the proposal research topic, and the NSF Directorate(s), Division(s), and Program(s) that most closely align with the proposal's research focus.

3. Project Description. (20 pages maximum). This section should present the proposed activities in a clear, compelling way and describe how the activities will lead to a sustainable research network beyond the award period. In addition to the requirements contained in the NSF PAPPG, including a separate section labeled Broader Impacts, the Project Description must contain the following subsections with supporting detail and articulate clear plans for each subsection described below.

I. Research and Capacity-Building Goals and Vision

A. Overview: 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, evidence-based rationale for the project's scientific topic and vision, and indicate how the overall strategy, proposed implementation mechanisms, and infrastructure support will mitigate the identified barriers and improve academic research competitiveness in the topic area chosen. The discussion in this section must explicitly describe alignment of the proposed research topic with the STEM research priorities of the jurisdictional S&T Plan.

B. Vision: The project's Research, Education, and Incubator Vision components are the focal point from which all other project elements derive. This section of the proposal should provide a concise description of the long-term research and education goals and intellectual focus in sufficient detail to enable their intellectual merit and broader impacts to be assessed. The proposal must present the proposed research in the context of other efforts in the field (with appropriate references), state the major challenges and how they will be addressed, and comment on the novelty and/or originality of the proposed approach.
The narrative must contain sufficient detail regarding the scientific hypotheses, goals, and research and training methods (laboratory, field, theoretical, computational, or other). Elements of capacity building should be clearly identified, including a summary of the personnel and equipment already available in the jurisdiction, what personnel and equipment would need to be acquired in order to do the proposed work, and the timing of the acquisition of personnel and equipment within the four-year timeframe of the project. In addition, this section should provide the grounding for the future of the incubator past the award period.

Proposals are required to include a use-inspired and/or social perspective as part of the research component, and their resulting potential societal implications. It is expected that projects include components that address understanding and assessing any specific disruptive impacts of the research for the betterment of the jurisdiction in a time-bound manner. This includes the explicit connection of the research to its end use and how this directly connects to innovation and policy which in turn leads to societal impact. Innovative use of cyberinfrastructure and other technologies to broadly engage institutions, organizations, and sectors across the jurisdiction is encouraged.

C. Workforce Development: Projects must include specific STEM education and workforce development activities that are integrated with the research goals of the incubator and contribute to the preparation of a competitive workforce appropriate to the chosen research topic. Where appropriate, baseline data should be provided to give context for the impacts of the planned activities. Plans can include opportunities for faculty development (particularly for early-career faculty) and/or for student training (which may occur at any level of the STEM education continuum). The proposal should describe mentoring and professional development of students, junior or postdoctoral researchers, and early-career faculty. Efforts that focus on pre-college education should describe the basis for their inclusion and their relevance to the research. The narrative should indicate synergies between proposed workforce development activities and other NSF investments in the jurisdiction that focus on strengthening STEM workforce development, especially in relation to any EPSCoR Collaborations for Optimizing Research Ecosystems (E-CORE RII) awards as appropriate.

Projects may support the hiring, retention, and mentoring of new faculty: in such cases the role(s) of such faculty in the proposed research and capacity building of the E-RISE RII project must be clearly described. Awarded E-RISE RII projects are expected to follow through on all proposed new faculty hires as described in the proposal.

D. Jurisdictional Impact and Sustainability: Provide details of how the project's collaborative efforts will positively impact the jurisdiction in terms of bolstering research capacity and positioning the project team for future success and competitiveness in the chosen research topic. This section also should describe the overall goals for sustaining key outcomes of the project beyond the award period. It should provide a rationale for the goals that are identified and indicate the desired trajectory toward reaching these goals during the first four-year period of the award and beyond, including milestones and timelines. The plans should explain how the advances in research, education, and workforce development realized during the project, and the partnerships established, will serve to advance the S&T competitiveness of the jurisdiction. As appropriate, the section should include futuristic plans for the ongoing recruitment and retention of faculty and students, their training and mentoring, and related activities to support their continued career development (such as attending or organizing conferences, workshops, and summer schools). Recognizing that sustaining all project activities may not be possible, the general plans for maintaining impacts into the future should emphasize the project's strategies for identifying priority areas, its innovative approaches to securing necessary financial support, and its creativity in leveraging other NSF, federal, and private resources.

II. Execution, Planning, and Assessment

A. Strategic Plan: The Strategic Plan must clearly define the implementation of the proposal and describe how the features of the E-RISE RII will be integrated to achieve the vision, in particular the cohesive plan for involving participants at all levels in the six key elements as defined above.

The Strategic Plan should have the flexibility and agility to evolve over time but should include the following components:

- A description of the high-level goals within each of the six key elements described above and the interrelationships among those goals, as well as the strategic role of partner institutions in achieving these goals.
- A roadmap with major milestones and a description of how the project leadership will know when it has been successful in meeting its goals.
- Articulation of the logical reasoning that connects the proposed activities to the identified goals and how they will be connected across the jurisdictional partners.

B. Evaluation Plan: The Evaluation Plan should be an integral part of the project design and be connected to the project's Strategic Plan. It should also aid in the identification of outcomes and impacts of the project's goals and objectives as well as serve as a tool for providing effective feedback to the management team through the independent evaluator. The project's Evaluation Plan should include strategies for formative and summative assessments, including goals, metrics, and milestones. The plan must include metrics for assessing the strength of the collaboration and workforce development, including submission of collaborative proposals and associated awards, submission of collaborative publications, progression of early-career faculty, innovations, research results, and the longitudinal tracking of undergraduates, graduate students, and postdocs, and it should document how the collaborative efforts evolve over time.

The Evaluation Plan should identify an independent evaluator who will provide annual evaluation and assessment of the project. In addition to the collection of project-specific evaluation data, funded projects will also be required to input evaluative data in the NSF EPSCoR Data Outcomes Collection System (E-DOCS), which is intended to facilitate standardized, accurate metrics for tracking across projects and which will complement projects' individual evaluation and assessment efforts.

III. Organization and Management

A. Management Plan: Proposals must include a management plan that describes the leadership team and its function (including the expertise of the leadership team), the administration of the project, key personnel, and the role of any advisory committee(s) or executive committee(s).

To properly address the key elements of E-RISE RII, the Leadership Team must include identified individuals with: (a) deep expertise in the fundamental science/engineering areas envisioned by the project; (b) strategic leadership in innovation including intellectual property; (c) expertise in workforce development relevant to the chosen topic; and (d) experience in diversity and inclusion activities.

Proposals should include a clear plan on the separation of duties and responsibilities related to the project's overall management and reporting structure, including identification of personnel or groups responsible for each part of the project. Since the quality of team-member interaction is critical to team effectiveness, describe the managerial processes used to integrate the team.

B. Institutional Configuration: Describe the institutional configuration given the proposed vision for the E-RISE RII. Discuss the value added by each partner in meeting the key elements of E-RISE RII projects and their ability to carry out the assigned tasks. Discuss the value added by each partner to the overall E-RISE RII.

C. Diversity and Culture of Inclusion: Describe the vision and plans for nurturing a culture of inclusion to ensure diverse participation in the E-RISE RII. A culture of inclusion has many important aspects that are essential for deep collaboration, including the participation of members from a variety of scientific
backgrounds and training that is necessary for true convergent research and innovation. A culture of inclusion must also foster participation of members from diverse talent pools that have not yet been fully tapped in STEM, and a diversity of partner institutions, including industry and practitioner, that will bring different perspectives to bear on the goals of the project. The vision for diversity and inclusion should go well beyond numbers and include a description of the integration and roles of diverse participants in the project.

E-RISE RII is committed to enhancing the diversity and inclusion of all underrepresented populations in STEM. The proposal should describe preliminary ideas to create and nurture a culture of inclusion to foster the engagement of all E-RISE RII participants, including those from a diverse range of scientific backgrounds and training and those from groups that are historically underrepresented in the scientific topic of choice. This section should include evidence-based and intentional programming to support diversity and a culture of inclusion that integrate with the entire E-RISE RII. Suitable metrics to assess the E-RISE RII’s diversity and inclusion goals should be described, and feedback loops should be in place for independent assessment and continuous improvement of diversity and inclusion in all dimensions of E-RISE RII operation. This section should also include a description of plans for recruiting, mentoring, and retaining undergraduates, graduate students, and members of the research and leadership team from groups historically underrepresented in STEM.

IV. Results from Relevant Prior Support

Describe results from relevant prior NSF support and other prior federal or other investments of the PI and co-PIs in the last five years. This section should include a description of the activities and impacts of relevant previous NSF awards, including major accomplishments in both intellectual merit and broader impacts towards the chosen scientific topic of the project.

4. Budget and Budget Justification.

A four-year cumulative budget will be automatically generated by Research.gov or Grants.gov. Separate budget and budget justification pages must also be provided for each organization receiving a subaward. All faculty-level and equivalent personnel expected to receive greater than two months of salary annually must be identified, and justification must be provided. Support for all members of the project leadership team must be included in the budget.

Budgets should allow for travel and contracting expenses necessary to participate in NSF EPSCoR award monitoring and oversight activities, and to engage in national and jurisdictional EPSCoR events. In particular:

- The independent evaluator must be retained as a consultant to the project.
- Newly awarded E-RISE RII projects are required to hold a strategic planning meeting within 90 days of the project award date. Funds should be allocated to host this meeting, with the entire leadership team in attendance.
- Projects are required to host a Site Visit in Project Year 3. Funds should be allocated to ensure an appropriate team of project participants can attend the Site Visit, and to provide meeting space for the Site Visit.
- The travel budget should include funds for an appropriate team of project participants to attend annual EPSCoR PI meetings and the biennial National EPSCoR Conference.
- Projects are expected to host or facilitate jurisdiction-wide meetings in the home jurisdiction such as EPSCoR all-hands workshops, E-RISE RII meetings, and/or science symposia that include support for student (undergraduate and graduate as appropriate) participants of the E-RISE RII project. Engagement with NSF EPSCoR is expected for these events.

See Section V.B. below for additional information and guidance.

5. Facilities, Equipment, and Other Resources. Provide a description of relevant available facilities, equipment, and other resources relevant to the project for each EPSCoR jurisdiction in the collaboration.


Biographical Sketches. In accordance with the guidance contained in the PAPPG, a separate biographical sketch must be provided for each individual designated as senior personnel on the project. It is permitted to include biographical sketches for any named collaborators ("Other Personnel") whose expertise is crucial to the success of the project, including the independent evaluator(s). If doing so, these biographical sketches must be uploaded in the Other Personnel Biographical Information section in Research.gov and they must conform to NSF guidelines for biographical sketches. Biographical sketches for members of External Advisory Committees or Boards should not be included.

Current and Pending Support. In accordance with the guidance contained in the PAPPG, current and pending support information must be separately provided for each individual designated as senior personnel on the project.

7. Supplementary Documentation.

7.1. Lists of Participants and Participating Organizations.

a. List of Participants. Provide an alphabetical (by last name) list of all participating senior investigators (faculty level and equivalent), anyone named in the proposal who will receive financial support through the project (including subcontractors), and other key personnel (including advisory board members, independent evaluators, and collaborators). This list must identify the roles of participants as follows:

- PI: the Principal Investigator of the project as indicated on the Cover Sheet;
- Co-PI: co-investigator as indicated on the Cover Sheet;
- Funded: any funded participant whose name appears in the proposal including Budget lines A or B;
-Evaluator: any individual independent evaluator who is named in the proposal;
- Consultant: any named individual (other than the independent evaluator(s)), who will receive a subcontract or consultant fees under budget lines G.3 or G.6;
- Advisory: any individual named in the proposal as an advisor to the project including as a member of an external advisory board; and
- Unfunded: any collaborator or participant named in the proposal with a specified role but who will not receive salary or other payment.

Give the full first and last names and organizational affiliations of all such individuals. List only those individuals who are named and have roles specified in the proposal.

b. List of Participating Organizations. Provide a list of all organizations (including, but not limited to: academic and research institutions, companies, government agencies, and non-profit organizations) that will participate in, contribute to, or directly benefit from the proposed project. This list must identify the roles of the participating organizations as follows:

- Primary awardee(s): the submitting organization as indicated on the Cover Sheet if submitting as a "Submission of a collaborative proposal..."
Other Budgetary Limitations:

B. Budgetary Information

Cost Sharing:

Inclusion of voluntary committed cost sharing is prohibited.

Other Budgetary Limitations:

Other Budgetary Limitations:

- Funding requests must be for a duration of four (4) years, with a maximum total budget of $7,000,000. There is no restriction on the amount requested annually.
- Financial compensation for the independent evaluator(s) must be included in the budget of the submitting organization under NSF budget line G.3 (Consultant Services). No other form of financial compensation for these services will be allowed.
- EPSCoR funding must only be requested for and expended in EPSCoR jurisdictions. EPSCoR funding may not be used to support participants from or activities in non-EPSCoR jurisdictions.
- Subawards to organizations in non-EPSCoR jurisdictions are not permitted.
- If the proposal is being submitted as a "Submission of a collaborative proposal from one organization," budgets for participating organizations must be included as subawards to the budget of the submitting organization. Only the budget of the submitting organization may include subawards (i.e., no subawards may appear in the budgets of subawardee organizations). Each subaward must include a separate budget justification of no more than five pages (see PAPPG Chapter II.D.2.f).
- If the proposal is being submitted as a "Submission of a collaborative proposal from multiple organizations," follow the instructions in PAPPG Chapter II.E.3 regarding budget submissions.

Proposing entities are cautioned to ensure that all costs proposed are allowable (allocable, reasonable, and necessary), especially those costs associated with Participant Support (Line F on the Proposal Budget). Costs typically considered to be for entertainment, incentive, or promotional purposes should be sufficiently detailed in the budget justification to support the programmatic relevance and need. In general, costs for entertainment, amusement, advertising/promotional purposes are unallowable and may not be requested. However, among EPScR's programmatic goals are emphases on establishing STEM development pathways and broadening participation of diverse groups in STEM, that can include "Bridge" programs designed to prepare high school students for the transition to college. This may include entertainment, amusement, and/or promotional costs related to STEM enrichment activities covering a range of possible career paths or activities focusing on cohort-building and maintaining healthy work-life balance. These categories of activities are consistent with the overall program goal of preparing students for the difficult high school to college transition. This may include residential programs for minor students whose supervisory requirements may require different choices than would be appropriate for adult students. When costs typically considered as entertainment, amusement, and promotion are necessary to accomplish the proposed objectives, they must be included in the budget and justified in the budget justification.

C. Due Dates

- **Full Proposal Deadline(s)** (due by 5 p.m. submitter's local time):
  - January 16, 2024
  - August 13, 2024
  - August 12, 2025
  - Second Tuesday in August, Annually Thereafter

D. Research.gov/Grants.gov Requirements

For Proposals Submitted Via Research.gov:

To prepare and submit a proposal via Research.gov, see detailed technical instructions available at: https://www.research.gov/research-portal/appmanager/base/desktop?_nfpb=true&_pageLabel=research_node_display&_nodePath=/researchGov/Service/Desktop/ProposalPreparationandSubmission.html. For Research.gov user support, call the Research.gov Help Desk at 1-800-673-6188 or e-mail rgov@nsf.gov. The Research.gov Help Desk answers general technical questions related to the use of the Research.gov system. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VII of this funding opportunity.

For Proposals Submitted Via Grants.gov:

Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. Comprehensive information about using Grants.gov is available on the Grants.gov Applicant Resources webpage: https://www.grants.gov/web/grants/applicants.html. In addition, the NSF Grants.gov Application Guide (see link in Section V.A) provides instructions regarding the technical preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: support@grants.gov. The Grants.gov Contact Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this solicitation.

**Submitting the Proposal:** Once all documents have been completed, the Authorized Organizational Representative (AOR) must submit the application to Grants.gov and verify the desired funding opportunity and agency to which the application is submitted. The AOR must then sign and submit the application to Grants.gov. The completed application will be transferred to Research.gov for further processing.

Proposers that submitted via Research.gov may use Research.gov to verify the status of their submission to NSF. For proposers that submitted via Grants.gov, until an application has been received and validated by NSF, the Authorized Organizational Representative may check the status of an application on Grants.gov. After proposers have received an e-mail notification from NSF, Research.gov should be used to check the status of an application.

VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

Proposals received by NSF are assigned to the appropriate NSF program for acknowledgement and, if they meet NSF requirements, for review. All proposals are carefully reviewed by a scientist, engineer, or educator serving as an NSF Program Officer, and usually by three to ten other persons outside NSF either as ad hoc reviewers, panelists, or both, who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with oversight of the review process. Proposers are invited to suggest names of persons they believe are especially well qualified to review the proposal and/or persons they would prefer not review the proposal. These suggestions may serve as one source in the reviewer selection process at the Program Officer's discretion. Submission of such names, however, is optional. Care is taken to ensure that reviewers have no conflicts of interest with the proposal. In addition, Program Officers may obtain comments from site visits before recommending final action on proposals. Senior NSF staff further review recommendations for awards. A flowchart that depicts the entire NSF proposal and award process (and associated timeline) is included in PAPPG Exhibit III-1.

A comprehensive description of the Foundation's merit review process is available on the NSF website at: https://www.nsf.gov/bfa/dias/policy/merit_review/.

Proposers should also be aware of core strategies that are essential to the fulfillment of NSF's mission, as articulated in Leading the World in Discovery and Innovation, STEM Talent Development and the Delivery of Benefits from Research - NSF Strategic Plan for Fiscal Years (FY) 2022 - 2026. These strategies are integrated in the program planning and implementation process, of which proposal review is one part. NSF's mission is particularly well-implemented through the integration of research and education and broadening participation in NSF programs, projects, and activities.
One of the strategic objectives in support of NSF's mission is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions must recruit, train, and prepare a diverse STEM workforce to advance the frontiers of science and participate in the U.S. technology-based economy. NSF's contribution to the national innovation ecosystem is to provide cutting-edge research under the guidance of the Nation's most creative scientists and engineers. NSF also supports development of a strong science, technology, engineering, and mathematics (STEM) workforce by investing in building the knowledge that informs improvements in STEM teaching and learning.

NSF's mission calls for the broadening of opportunities and expanding participation of groups, institutions, and geographic regions that are underrepresented in STEM disciplines, which is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

### A. Merit Review Principles and Criteria

The National Science Foundation strives to invest in a robust and diverse portfolio of projects that creates new knowledge and enables breakthroughs in understanding across all areas of science and research and education and to identify which projects to support, NSF relies on a merit review process that incorporates consideration of both the technical aspects of a proposed project and its potential to contribute more broadly to advancing NSF's mission "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes." NSF makes every effort to conduct a fair, competitive, transparent merit review process for the selection of projects.

#### 1. Merit Review Principles

These principles are to be given due diligence by PIs and organizations when preparing proposals and managing projects, by reviewers when reading and evaluating proposals, and by NSF program staff when determining whether or not to recommend proposals for funding and while overseeing awards. Given that NSF is the primary federal agency charged with nurturing and supporting excellence in basic research and education, the following three principles apply:

- **All NSF projects should be of the highest quality and have the potential to advance, if not transform, the frontiers of knowledge.**
- **NSF projects, in the aggregate, should contribute more broadly to achieving societal goals.** These "Broader Impacts" may be accomplished through the research itself, through activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. The project activities may be based on previously established and/or innovative methods and approaches, but in either case must be well justified.
- **Meaningful assessment and evaluation of NSF funded projects should be based on appropriate metrics, keeping in mind the likely correlation between the effect of broader impacts and the resources provided to implement projects.** If the size of the activity is limited, evaluation of that activity in isolation is not likely to be meaningful. Thus, assessing the effectiveness of these activities may best be done at a higher, more aggregated, level than the individual project.

With respect to the third principle, even if assessment of Broader Impacts outcomes for particular projects is done at an aggregated level, PIs are expected to be accountable for carrying out the activities described in the funded project. Thus, individual projects should include clearly stated goals, specific descriptions of the activities that the PI intends to do, and a plan in place to document the outputs of those activities.

These three merit review principles provide the basis for the merit review criteria, as well as a context within which the users of the criteria can better understand their intent.

#### 2. Merit Review Criteria

All NSF proposals are evaluated through use of the two National Science Board approved merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

The two merit review criteria are listed below. **Both** criteria are to 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. (PAPPG Chapter II.D.2.d(i); contains additional information for use by proposers in development of the Project Description section of the proposal). Reviewers are strongly encouraged to review the criteria, including PAPPG Chapter II.D.2.d(i), prior to the review of a proposal.

When evaluating NSF proposals, 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 proposal and the way in which the project may make broader contributions. To that end, reviewers will be asked to evaluate all proposals against two 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 to the PI (either at the home organization or through collaborations) to carry out the proposed activities?**

Broader impacts may be accomplished through the research itself, through the activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. NSF values the advancement of scientific knowledge and activities that contribute to achievement of societally relevant outcomes. Such outcomes include, but are not limited to: full participation of women, persons with disabilities, and other underrepresented groups in science, technology, engineering, and mathematics (STEM); improved STEM education and educator development at any level; increased public scientific literacy and public engagement with science and technology; improved well-being of individuals in society; development of a diverse, globally competitive STEM workforce; increased partnerships between academia, industry, and others; improved national security; increased economic competitiveness of the United States; and enhanced infrastructure for research and education.
Proposers are reminded that reviewers will also be asked to review the Data Management Plan and the Postdoctoral Researcher Mentoring Plan, as appropriate.

Additional Solicitation Specific Review Criteria

Reviewers will also consider the following specific aspects of intellectual merit and broader impacts, as applicable.

- Connection and potential impact of the project to jurisdictional research capacity building and EPSCoR goals
  
  What is the potential of the project to advance the relevant fields of STEM research while simultaneously enhancing jurisdictional research competitiveness and developing jurisdictional research capacity and infrastructure in the topic area of choice? How will the proposed activities contribute to the national and international recognition of the project participants and participating organizations? How will the proposed project contribute to EPSCoR goals and mission? Is the project connected to the needs of the jurisdiction as as supported by the jurisdiction’s S&T plan?

- Development of a skilled workforce that is relevant to the project and its outcomes
  
  What is the potential for the proposed activities to sustain a pathway of highly skilled students and postdoctoral fellows including those who are traditionally underrepresented in associated disciplines and industries, who can excel in this focus area, and who can succeed in careers in academia and/or industry? What novel and effective ways are proposed to achieve the workforce development goals?

- Support of diversity and a culture of inclusion of different institution types and sectors (e.g., academia, industry and government)
  
  How well does the proposal describe how the project will embody diversity, equity, inclusion, and accessibility throughout all of its activities? Are there clear, measurable goals and metrics specified?

- Plan towards sustainability and societal impact
  
  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? Does the project present a clear plan for sustainability that effectively leverages potential current and future investments that can ultimately allow this team to significantly contribute to the field and jurisdiction over the long term? Does the project present plans that demonstrate the potential and consideration of the realization of societal impacts to the jurisdiction and its stakeholders from its work in a time-bound manner?

- Plan for project management, leadership, and partnerships
  
  Does the proposal provide a reasonable plan for forming a visionary and effective leadership team? Does the proposal describe a well-informed process by which all necessary disciplines, skills, perspectives, and capabilities will be brought together to form an interdependent, multidisciplinary, and diverse leadership team that can work and communicate effectively? Is the set of partners identified appropriate for addressing the proposed work? Does the proposal have a set of partners from multiple organizations that have clear, deep and meaningful roles? Does the Strategic Plan and Evaluation and Assessment Plan provide evidence that each project element will be well executed?

B. Review and Selection Process

Proposals submitted in response to this program solicitation will be reviewed by Ad hoc Review and/or Panel Review.

Reviewers will be asked to evaluate proposals using two National Science Board approved merit review criteria and, if applicable, additional program specific criteria. A summary rating and accompanying narrative will generally be completed and submitted by each reviewer and/or panel. The Program Officer assigned to manage the proposal’s review will consider the advice of reviewers and will formulate a recommendation.

After scientific, technical and programmatic review and consideration of appropriate factors, the NSF Program Officer recommends to the cognizant Division Director whether the proposal should be declined or recommended for award. NSF strives to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. Large or particularly complex proposals or proposals from new awardees may require additional review and processing time. The time interval begins on the deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director acts upon the Program Officer's recommendation.

After programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements or the Division of Acquisition and Cooperative Support for review of business, financial, and policy implications. After an administrative review has occurred, Grants and Agreements Officers perform the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at their own risk.

Once an award or declination decision has been made, Principal Investigators are provided feedback about their proposals. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers or any reviewer-identifying information, are sent to the Principal Investigator/Project Director by the Program Officer. In addition, the proposer will receive an explanation of the decision to award or decline funding.

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

Notification of the award is made to the submitting organization by an NSF Grants and Agreements Officer. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program administering the program. Verbatim copies of reviews, not including the identity of the reviewer,
B. Award Conditions

An NSF award consists of: (1) the award notice, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award notice; (4) the applicable award conditions, such as Grant General Conditions (GC-1); or Research Terms and Conditions* and (5) any announcement or other NSF issuance that may be incorporated by reference in the award notice. Cooperative agreements also are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC) and the applicable Programmatic Terms and Conditions. NSF awards are electronically signed by an NSF Grants and Agreements Officer and transmitted electronically to the organization via e-mail.

*These documents may be accessed electronically on NSF’s Website at https://www.nsf.gov/awards/managing/award_conditions.jsp?org=NSF. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from nsfpubs@nsf.gov.


Administrative and National Policy Requirements

Build America, Buy America

As expressed in Executive Order 14005, Ensuring the Future is Made in All of America by All of America’s Workers (86 FR 7475), it is the policy of the executive branch to use terms and conditions of Federal financial assistance awards to maximize, consistent with law, the use of goods, products, and materials produced in, and services offered in, the United States.

Consistent with the requirements of the Build America, Buy America Act (Pub. L. 117-58, Division G, Title IX, Subtitle A, November 15, 2021), no funding made available through this funding opportunity may be obligated for an award unless all iron, steel, manufactured products, and construction materials used in the project are produced in the United States. For additional information, visit NSF’s Build America, Buy America webpage.

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the Principal Investigator must submit an annual project report to the cognizant Program Officer no later than 90 days prior to the end of the current budget period. (Some programs or awards require submission of more frequent project reports). No later than 120 days following expiration of a grant, the PI also is required to submit a final project report, and a project outcomes report for the general public.

Failure to provide the required annual or final project reports, or the project outcomes report, will delay NSF review and processing of any future funding increments as well as any pending proposals for all identified PIs and co-PIs on a given award. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF’s electronic project-reporting system, available through Research.gov, for preparation and submission of annual and final project reports. Such reports provide information on accomplishments, project participants (individual and organizational), publications, and other specific products and impacts of the project. Submission of the report via Research.gov constitutes certification by the PI that the contents of the report are accurate and complete.

The project outcomes report also must be prepared and submitted using Research.gov. This report serves as a brief summary, prepared specifically for the public, of the nature and outcomes of the project. This report will be posted on the NSF website exactly as it is submitted by the PI.


It will be a requirement of the award that the annual or final report must include an estimate of the funds expected to remain unobligated at the end of the current report period, as part of the “Changes/Problems” section (“Changes that have significant impact on expenditures”). If that estimate is greater than 20% of the current year award amount, the PI also must provide a plan and timeline for expenditure of those funds in the annual/final report.

VIII. AGENCY CONTACTS

Please note that the program contact information is current at the time of publishing. See program website for any updates to the points of contact.

General inquiries regarding this program should be made to:

- John-David Swanson, telephone: (703) 292-2898, email: jsawson@nsf.gov
- Pinhas Ben-Tzvi, telephone: (703) 292-8246, email: pbentzvi@nsf.gov
- Jose Colom-Ustariz, telephone: (703) 292-7088, email: jcolom@nsf.gov
- Andrea Johnson, telephone: (703) 292-5164, email: ANJOHNS@nsf.gov
- Casonya M. Johnson, telephone: (703) 292-2658, email: casjohns@nsf.gov
- Eric W. Lindquist, telephone: (703) 292-7127, email: elindqui@nsf.gov
- John-David Swanson, telephone: (703) 292-2898, email: jsawson@nsf.gov
- Jose Colom-Ustariz, telephone: (703) 292-7088, email: jcolom@nsf.gov
- Andrea Johnson, telephone: (703) 292-5164, email: ANJOHNS@nsf.gov
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- Casonya M. Johnson, telephone: (703) 292-2658, email: casjohns@nsf.gov
- Eric W. Lindquist, telephone: (703) 292-7127, email: elindqui@nsf.gov
- Jeanne R. Small, telephone: (703) 292-8623, email: jsmall@nsf.gov
- Chinonye Whitley, telephone: (703)292-8458, email: cwhitley@nsf.gov

For questions related to the use of NSF systems contact:
IX. OTHER INFORMATION

The NSF website provides the most comprehensive source of information on NSF Directorates (including contact information), programs and funding opportunities. Use of this website by potential proposers is strongly encouraged. In addition, "NSF Update" is an information-delivery system designed to keep potential proposers and other interested parties apprised of new NSF funding opportunities and publications, important changes in proposal and award policies and procedures, and upcoming NSF Grants Conferences. Subscribers are informed through e-mail or the user's Web browser each time new publications are issued that match their identified interests. "NSF Update" also is available on NSF's website.

Grants.gov provides an additional electronic capability to search for Federal government-wide grant opportunities. NSF funding opportunities may be accessed via this mechanism. Further information on Grants.gov may be obtained at https://www.grants.gov.

ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) is an independent Federal agency created by the National Science Foundation Act of 1950, as amended (42 USC 1861-75). The Act states the purpose of the NSF is "to promote the progress of science; [and] to advance the national health, prosperity, and welfare by supporting research and education in all fields of science and engineering."

NSF funds research and education in most fields of science and engineering. It does this through grants and cooperative agreements to more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations and other research organizations throughout the US. The Foundation accounts for about one-fourth of Federal support to academic institutions for basic research.

NSF receives approximately 55,000 proposals each year for research, education and training projects, of which approximately 11,000 are funded. In addition, the Foundation receives several thousand applications for graduate and postdoctoral fellowships. The agency operates no laboratories itself but does support National Research Centers, user facilities, certain oceanographic vessels and Arctic and Antarctic research stations. The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

Facilitation Awards for Scientists and Engineers with Disabilities (FASED) provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See the NSF Proposal & Award Policies & Procedures Guide Chapter II.F.7 for instructions regarding preparation of these types of proposals.

The National Science Foundation has Telephonic Device for the Deaf (TDD) and Federal Information Relay Service (FIRS) capabilities that enable individuals with hearing impairments to communicate with the Foundation about NSF programs, employment or general information. TDD may be accessed at (703) 292-5090 and (800) 281-8749, FIRS at (800) 877-8339.

The National Science Foundation Information Center may be reached at (703) 292-5111.

The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for research and education in the sciences, mathematics, and engineering.

To get the latest information about program deadlines, to download copies of NSF publications, and to access abstracts of awards, visit the NSF Website at https://www.nsf.gov

- Location: 2415 Eisenhower Avenue, Alexandria, VA 22314
- For General Information (NSF Information Center): (703) 292-5111
- TDD (for the hearing-impaired): (703) 292-5090
- To Order Publications or Forms:
  - Send an e-mail to: nspubs@nsf.gov
  - or telephone: (703) 292-8134
- To Locate NSF Employees: (703) 292-5111
PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; and project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to proposer institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies or other entities needing information regarding applicants or nominees as part of a joint application review process, or in order to coordinate programs or policy; and to another Federal agency, court, or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See System of Record Notices, NSF-50, "Principal Investigator/Proposal File and Associated Records," and NSF-51, "Reviewer/Proposal File and Associated Records." Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

An agency may not conduct or sponsor, and a person is not required to respond to, an information collection unless it displays a valid Office of Management and Budget (OMB) control number. The OMB control number for this collection is 3145-0058. Public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding the burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to:

Suzanne H. Plimpton
Reports Clearance Officer
Policy Office, Division of Institution and Award Support
Office of Budget, Finance, and Award Management
National Science Foundation
Alexandria, VA 22314