

# EPSCoR Research Infrastructure Improvement Program: Track-2 Focused EPSCoR Collaborations (RII Track-2 FEC)

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## PROGRAM SOLICITATION NSF 22-633

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### REPLACES DOCUMENT(S): NSF 22-523

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National Science Foundation  
Office of Integrative Activities

#### Letter of Intent Due Date(s) (*required*) (due by 5 p.m. submitter's local time):

December 20, 2022

Third Tuesday in December, Annually Thereafter

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

January 24, 2023

Fourth Tuesday in January, Annually Thereafter

## IMPORTANT INFORMATION AND REVISION NOTES

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Only jurisdictions that meet the EPSCoR [eligibility](#) criteria may submit proposals to the Research Infrastructure Improvement Program Track-2 (RII Track-2 FEC) competition.

- The topical focus area for the FY 2023/2024 competition is: "advancing climate change research and resilience capacity to expand opportunities for disproportionately affected communities."
- Proposals for the FY 2023/2024 competition may be submitted either as (i) a collaborative proposal from multiple organizations or (ii) a collaborative proposal from one organization with support for non-lead collaborating organizations requested as subawards.
- Each submitting organization may serve as lead on only one proposal. However, an organization may serve as a non-lead in a collaborative submission or subawardee on any number of additional proposals.
- Each submission must have at least two collaborators (specifically as PI or co-PI) who are from an organization in a different eligible EPSCoR jurisdiction.
- An investigator may serve as Principal Investigator (PI) or Co-PI on only one RII Track-2 FEC award at any given time. However, the investigator may serve as Senior Personnel on any number of RII Track-2 FEC submissions or awards.

#### Important Information

Innovating and migrating proposal preparation and submission capabilities from FastLane to Research.gov is part of the ongoing NSF information technology modernization efforts, as described in [Important Notice No. 147](#). In support of these efforts, proposals submitted in response to this program solicitation must be prepared and submitted via Research.gov or via Grants.gov and may not be prepared or submitted via FastLane.

Any proposal submitted in response to this solicitation should be submitted in accordance with the revised *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) ([NSF 22-1](#)), which is effective for proposals submitted, or due, on or after October 4, 2021.

## SUMMARY OF PROGRAM REQUIREMENTS

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### General Information

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#### Program Title:

EPSCoR Research Infrastructure Improvement Program: Track-2 Focused EPSCoR Collaborations (RII Track-2 FEC)

#### Synopsis of Program:

## This document has been archived and replaced by NSF 24-573.

The Established Program to Stimulate Competitive Research (EPSCoR) is designed to fulfill the mandate of the National Science Foundation (NSF) to promote scientific progress nationwide. NSF EPSCoR eligibility is based on a jurisdiction's recent five-year history of total funds awarded by NSF relative to the Foundation's total research budget for that same period. The current table of eligible jurisdictions is available on the NSF EPSCoR website (see RII [eligibility](#)).

Through this program, NSF establishes partnerships with government, higher education, and industry that are designed to affect sustainable improvements in a jurisdiction's research infrastructure, Research and Development (R&D) capacity, and hence, its R&D competitiveness.

RII Track-2 FEC builds interjurisdictional collaborative teams of EPSCoR investigators in Science, Technology, Engineering, and Mathematics (STEM) focus areas consistent with the [National Science Foundation 2022-2026 Strategic Plan](#). Projects are investigator-driven and must include researchers from at least two EPSCoR eligible jurisdictions with complementary expertise and resources necessary to address challenges, which neither party could address as well or rapidly independently. RII Track-2 FEC projects have a comprehensive and integrated vision to drive discovery and build sustainable STEM capacity that exemplifies individual, institutional, geographic, and disciplinary diversity. Additionally, the projects' STEM research and education activities seek to broaden participation through the strategic inclusion and integration of diverse individuals, institutions, and sectors. In addition, NSF EPSCoR recognizes that the development of early-career faculty from backgrounds that are traditionally underrepresented in STEM fields is critical to sustaining and advancing research capacity. The integration and inclusion of Minority-serving Institutions (MSIs), women's colleges, Primarily Undergraduate Institutions (PUIs), and two-year colleges is a critical component of this sustainable STEM capacity.

For FY 2023/2024, the topical focus area of RII Track-2 FEC is: "**advancing climate change research and resilience capacity to expand opportunities for disproportionately affected communities.**"

### 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](mailto:jswanson@nsf.gov)
- Jose Colom-Ustariz, telephone: (703) 292-7088, email: [jcolom@nsf.gov](mailto:jcolom@nsf.gov)
- Eric W. Lindquist, telephone: (703) 292-7127, email: [elindqui@nsf.gov](mailto:elindqui@nsf.gov)
- Andrea Johnson, telephone: (703) 292-5164, email: [andjohns@nsf.gov](mailto:andjohns@nsf.gov)
- Jeanne Small, telephone: (703) 292-8623, email: [jsmall@nsf.gov](mailto:jsmall@nsf.gov)
- Chinonye Whitley, telephone: (703) 292-8458, email: [cnnakwe@nsf.gov](mailto:cnnakwe@nsf.gov)

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

- 47.041 --- Engineering
- 47.049 --- Mathematical and Physical Sciences
- 47.050 --- Geosciences
- 47.070 --- Computer and Information Science and Engineering
- 47.074 --- Biological Sciences
- 47.075 --- Social Behavioral and Economic Sciences
- 47.076 --- Education and Human Resources
- 47.079 --- Office of International Science and Engineering
- 47.083 --- Office of Integrative Activities (OIA)
- 47.084 --- NSF Technology, Innovation and Partnerships

## Award Information

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**Anticipated Type of Award:** Cooperative Agreement

**Estimated Number of Awards:** 10

Up to 10 awards each in FY 2023 and FY 2024

**Anticipated Funding Amount:** \$10,000,000 to \$15,000,000

Estimated program budget, number of awards and average award size/duration are subject to the quality of proposals and availability of funds.

## Eligibility Information

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### Who May Submit Proposals:

Proposals may only be submitted by the following:

- Only jurisdictions that meet the EPSCoR [eligibility](#) criteria and are one of the types of organization listed below may submit proposals to the Research Infrastructure Improvement Program Track-2 (RII Track-2 FEC) competition.

Organizations located in RII-eligible jurisdictions:

- 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 (e.g., that award their own degrees, have independent administrative structures, admissions policies, alumni associations, etc.) within multi-campus systems 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 to discuss eligibility as early as possible and at least six weeks before submitting such a proposal.
- Not-for-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.

Proposals may be submitted either as a collaborative from multiple organizations or from one organization with support for collaborators requested as subawards.

**Who May Serve as PI:**

Principal Investigators of proposed RII Track-2 FEC projects must be affiliated and employed by eligible organizations in EPSCoR jurisdictions.

Each EPSCoR jurisdiction participating in a proposed project must be represented by a PI or at least one co-PI. The PI and co-PIs must all have research expertise relevant to the focus area of the research being proposed.

PIs and Co-PIs on current NSF EPSCoR RII Track-2 FEC awards with end dates (including any No Cost Extensions) beyond October 31, 2023/2024 (for the respective FY2023/2024 competitions) are not eligible to submit proposals as a PI or Co-PI in this competition.

**Limit on Number of Proposals per Organization: 1**

An organization may 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. An organization may serve as a non-lead on any number of additional proposals.

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

An individual cannot serve as PI or co-PI on more than one RII Track-2 FEC project, both currently awarded or in this competition, but may serve as senior personnel on any number of RII Track-2 FEC proposals or awards.

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## **Proposal Preparation and Submission Instructions**

### **A. Proposal Preparation Instructions**

- **Letters of Intent:** Submission of Letters of Intent is required. Please see the full text of this solicitation for further information.
- **Preliminary Proposal Submission:** Not required
- **Full Proposals:**
  - Full Proposals submitted via Research.gov: *NSF Proposal and Award Policies and Procedures Guide (PAPPG)* guidelines apply. 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](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg).
  - Full Proposals submitted via Grants.gov: *NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov* guidelines apply (Note: 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](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide)).

### **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**

- **Letter of Intent Due Date(s) (required)** (due by 5 p.m. submitter's local time):
  - December 20, 2022
  - Third Tuesday in December, Annually Thereafter
- **Full Proposal Deadline(s)** (due by 5 p.m. submitter's local time):
  - January 24, 2023
  - Fourth Tuesday in January, Annually Thereafter

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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**

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### **Award Conditions:**

Additional award conditions apply. Please see the full text of this solicitation for further information.

### **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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### **A. EPSCoR Mission and Goals**

The mission of EPSCoR is to enhance research competitiveness of targeted jurisdictions (states, territories, commonwealth) by strengthening STEM capacity and capability.

EPSCoR goals are to:

- Catalyze research capability across and among jurisdictions;
- Establish STEM professional development pathways;
- Broaden participation of diverse groups/institutions in STEM;
- Effect engagement in STEM at national and global levels; and
- Impact jurisdictional economic development.

### **B. Criteria for Eligibility to Participate in the Research Infrastructure Improvement Track-2: Focused EPSCoR Collaborations (RII Track-2 FEC)**

Research Infrastructure Improvement Program Track-2 (RII Track-2 FEC)

Eligibility to take part in this competition is based on a jurisdiction's recent five-year history of total funds awarded by NSF relative to the Foundation's total research budget for that same period. The current table of eligible jurisdictions is available on the NSF EPSCoR website (see RII [eligibility](#)). Only EPSCoR eligible organizations may take part in this competition.

### **C. RII Track-2 FEC Program**

Well-designed collaborative strategies are essential to EPSCoR's goal of enhancing the competitive position of research and research-based education in science and engineering. This approach can help overcome impediments posed by limited infrastructure or human capital within a single jurisdiction and can enable broad engagement at the frontiers of discovery and innovation in science and engineering.

This Research Infrastructure Improvement Track-2: Focused EPSCoR Collaborations (RII Track-2 FEC) solicitation responds directly to national studies and community input, including reports from the [2022 2M Study of the Established Program to Stimulate Competitive Research \(EPSCoR\) report](#) and the [National Science Foundation 2022-2026 Strategic Plan](#). RII Track-2 FEC seeks to build nationally and internationally competitive collaborative teams of EPSCoR investigators by providing a mechanism to coalesce investigator expertise into a critical mass for a sustained, effective research and education partnership toward NSF priorities.

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.

## **II. PROGRAM DESCRIPTION**

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The primary driver for RII Track-2 FEC investments is the need to build STEM-driven, interjurisdictional research collaborations with the potential to be nationally and internationally competitive. The Project Description should include a strong rationale for the collaboration and demonstrate that the partnership is designed to facilitate discovery and innovation in the focus area, which neither party could address as well, or as rapidly, alone. RII Track-2 FEC projects are unique in their integration of researchers into collaborative teams across EPSCoR jurisdictions, and must develop a diverse, well-prepared, STEM-enabled workforce necessary to sustain research competitiveness. Moreover, NSF EPSCoR recognizes that the demographics of the United States is changing and therefore to be competitive, EPSCoR jurisdictions must be intentional regarding broadening participation in projects through diversity and inclusion of individuals traditionally underrepresented in STEM. Therefore, the recruitment and/or development of early-career faculty who are traditionally underrepresented in STEM fields as well as the involvement of traditionally underrepresented groups at all levels of this project, including at the postdoctoral researcher, student, and K-12, are critical in achieving this goal and must be an integral component of the proposed project.

Over the long term, RII Track-2 FEC investments are expected to result in sustained improvements in research competitiveness, enabling EPSCoR investigators to successfully pursue significant opportunities of national and international importance in science and engineering research and education. Moreover, specific to this solicitation, it is expected that previous NSF and other federal agency investments will be leveraged and translated into advancing our understanding of the effects of climate change as well as climate resilience on individuals and communities disproportionately affected by this phenomenon in the involved jurisdiction(s). Non-EPSCoR and international collaborations may be included, but no EPSCoR funds should be directed to these organizations.

Central to the success of the proposal is a clear demonstration that the collaboration is well-positioned to produce outcomes that cannot be obtained through the efforts of a team in a single jurisdiction working alone. The proposal must clearly identify the roles and contributions of each partner in the project, the anticipated increases in research capacity and competitiveness, the projected workforce development and educational plan and outcomes, and the benefits to the jurisdictions, nation, and society. It is expected that these collaborations be balanced, with participating jurisdictions each contributing to and benefiting from projects at levels that are appropriate to their capabilities.

To ensure maximum impact of available programmatic funds, requests for RII Track-2 FEC funding must:

- Add significantly to the research capacity of the participating jurisdictions in the designated focus area;
- Contribute to the advancement of research and innovation in the proposal's focus area;
- Illustrate how the participating jurisdictions' research capacities will be positively impacted by the collaborative effort;
- Outline clear plans for the recruitment and/or development of early-career faculty who are underrepresented in the chosen STEM field;
- Engage the full diversity of the participating jurisdictions' resources including two- and four-year colleges, Minority-serving institutions, and local and state industry in STEM workforce development;
- Engage and collaborate with social and economic scientists to understand and assess the societal implications of emerging, innovative and disruptive technologies towards climate resilience on impacted communities; and
- Present a detailed plan to demonstrate the potential for economic impact of the endeavor and present a sustainability plan for obtaining subsequent, sustained non-EPSCoR funding from federal, jurisdictional, or private sector sources.

**Note: In all instances, clear specification of research and education goals, performance metrics, evaluation, management, and a timetable for achieving goals are also requirements.**

RII Track-2 FEC proposals are expected to be STEM-driven collaborations and the PI and co-PIs should all be active researchers in the associated focus area of the proposal. Proposals should clearly explain how the proposed research, education and workforce development activities will create or increase the capacity for the jurisdictions involved to participate in climate change and resilience research, especially how it pertains to vulnerable populations. Proposals must include a timetable or strategic plan for achieving those goals, and/or a logic model with a clearly articulated theory of change that identifies appropriate indicators of progress towards the desired outcomes.

### **Current Topic Focus Area**

RII Track-2 FEC proposals must be aligned with the following focus area: "advancing climate change research and resilience capacity to expand opportunities for disproportionately affected communities." Climate change is an important component of global environmental change and addressing, and mitigating, its effects is a key national priority. As a major societal challenge, climate change has profound consequences for the habitability and sustainability of the planet, while also affecting the nation's food, water, energy, economies, security, and quality of life through its impacts on human health, agriculture, ecosystems and water resources. Disproportionately affected communities are considered more susceptible to these impacts and adaptation and mitigation strategies related to climate change and resiliency must be based on robust scientific findings affecting and involving these communities. Participation in climate change research with disproportionately affected individuals as the centerpiece, will potentially advance science and engineering, enhance the contribution of EPSCoR jurisdictions to the well-being of our nation's citizens, and promote economic stability and recovery in EPSCoR jurisdictions.

### **Broadening Participation**

EPSCoR's mission of enhancing the research competitiveness of targeted jurisdictions by strengthening STEM capacity and capability serves as foundation to a program goal to "broaden the participation of diverse groups and institutions in STEM." By leveraging current and previous NSF substantial investments, as well investments from other federal agencies, in the research underlying or supporting climate change and resiliency research, this solicitation seeks to create a significant and collective impact on targeted jurisdictions by advancing the quality of life of disproportionately affected populations and thus enhancing jurisdictions' awareness of the socio-economic impact of climate change. Proposals submitted for the 2023/2024 RII Track-2 FEC competition could leverage already documented outcomes from any project (or projects) related to previous investments in climate change across multiple jurisdictions and collectively bring those outcomes together to address new opportunities that focus on disproportionately affected communities that are historically more vulnerable to the effects of climate change within the targeted jurisdiction(s). As a result, these projects are expected to create or establish a solid pathway towards benefiting and impacting the jurisdictions in mitigating and adapting to, and/or understanding climate change events in concert with a diverse STEM workforce.

### **Social Perspectives**

Moreover, to understand the impacts of climate change and its effect on disproportionately affected populations in the jurisdiction(s), it is critical to understand its

influence from a social perspective and its 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 these populations, the development of innovative educational plans to prepare a skilled technical workforce, at all levels, (K-12, two-year college, undergraduate, and graduate students, as well as university faculty), to adapt to and understand climate change and climate resiliency and the social and economic impacts on the jurisdiction(s). To do this, NSF EPSCoR envisions the convergence of multidisciplinary and diverse teams that span the sciences, engineering, social sciences, and innovation research to understand and build the science, scale it up, and ground it within the perspective of socio-economic implications. Proposals should include a vision for how the project will be sustained and include a description of any plans for technology transfer, if applicable, and innovation education to demonstrate how research activities will help the community in question. In addition, partnerships with companies, innovation experts, non-governmental organization (NGOs), local communities, and relevant local and State government and other stakeholders are expected to allow the project to have a significant impact in the jurisdictions involved. Furthermore, 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 in participating jurisdictions and directly contribute to building a skilled workforce in areas associated to climate change and climate resiliency. Additionally, STEM talent must be cultivated in populations traditionally underrepresented in STEM in order for jurisdictions to keep pace with changing workforce needs. Accordingly, proposals should include a strong commitment to building a diverse workforce. The inclusion and involvement of two- and four-year colleges, Primarily Undergraduate Institutions, women's colleges, and Minority-serving Institutions that serve individuals traditionally underrepresented in STEM is strongly recommended. Involvement and mentoring of early-career faculty is required and a detailed mentoring plan that leverages national best practices for STEM mentoring is expected. More information on NSF's commitment to broadening participation can be found in the [National Science Foundation 2022-2026 Strategic Plan](#).

The proposed research and education activities, innovation, workforce development, diversity, sustainability, and other project activities should be closely tied to the focus area of "advancing climate change research and resilience capacity to expand opportunities for disproportionately affected communities."

### III. AWARD INFORMATION

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Up to 10 awards for a total funding of \$15,000,000 each in FY 2023 and FY 2024 are anticipated, pending the availability of funds.

The RII Track-2 FEC award amount is based on the number of eligible jurisdictions participating in the project. If organizations from two RII-eligible EPSCoR jurisdictions collaborate on a proposal, the award amount may not exceed \$1 million per year for up to four years (\$4 million maximum total). If organizations from three or more RII-eligible EPSCoR jurisdictions collaborate on a proposal, the award amount may not exceed \$1.5 million per year for up to four years (\$6 million maximum total). Program budget, number of awards and average award size/duration are subject to the quality of proposals and availability of funds.

### IV. ELIGIBILITY INFORMATION

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#### Who May Submit Proposals:

Proposals may only be submitted by the following:

- Only jurisdictions that meet the EPSCoR [eligibility](#) criteria and are one of the types of organization listed below may submit proposals to the Research Infrastructure Improvement Program Track-2 (RII Track-2 FEC) competition.

Organizations located in RII-eligible jurisdictions:

- 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 (e.g., that award their own degrees, have independent administrative structures, admissions policies, alumni associations, etc.) within multi-campus systems 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 to discuss eligibility as early as possible and at least six weeks before submitting such a proposal.
- Not-for-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.

Proposals may be submitted either as a collaborative from multiple organizations or from one organization with support for collaborators requested as subawards.

#### Who May Serve as PI:

Principal Investigators of proposed RII Track-2 FEC projects must be affiliated and employed by eligible organizations in EPSCoR jurisdictions.

Each EPSCoR jurisdiction participating in a proposed project must be represented by a PI or at least one co-PI. The PI and co-PIs must all have research expertise relevant to the focus area of the research being proposed.

PIs and Co-PIs on current NSF EPSCoR RII Track-2 FEC awards with end dates (including any No Cost Extensions) beyond October 31, 2023/2024 (for the respective FY2023/2024 competitions) are not eligible to submit proposals as a PI or Co-PI in this competition.

#### Limit on Number of Proposals per Organization: 1

An organization may 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. An organization may serve as a non-lead on any number of additional proposals.

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

An individual cannot serve as PI or co-PI on more than one RII Track-2 FEC project, both currently awarded or in this competition, but may serve as senior personnel on any number of RII Track-2 FEC proposals or awards.

## **V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS**

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### **A. Proposal Preparation Instructions**

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**Letters of Intent (required):**

A Letter of Intent (LOI) must be submitted by the Authorized Organizational Representative (AOR) of the submitting organization by the LOI due date. Proposals received that are not preceded by an LOI from the AOR of the submitting organization will be returned without review.

The LOI contains "Synopsis" and "Other Comments" text data fields. LOIs should use these fields to describe, in as much detail as possible, the research to be addressed by the proposal. LOIs will be used solely in preparation for merit review. LOIs will not be seen by reviewers or used in any manner to judge the merit of the proposed research. Due to the space limitations, it is in the proposer's best interest to provide information on the proposed research topics only and to avoid providing extraneous information such as: prior accomplishments, motivation for the research, information on the qualifications of the project participants, etc. However, the LOI should indicate participating EPSCoR jurisdictions in the project.

A list of science/research keywords should be entered under the "Research Keywords" entry to assist NSF EPSCoR staff in preparing for proposal review.

**Letter of Intent Preparation Instructions:**

When submitting a Letter of Intent through Research.gov in response to this Program Solicitation please note the conditions outlined below:

- Submission by an Authorized Organizational Representative (AOR) is required when submitting Letters of Intent.
- A Minimum of 0 and Maximum of 4 Other Senior Project Personnel are permitted
- A Minimum of 0 and Maximum of 99 Other Participating Organizations are permitted
- Research Keywords are required when submitting Letters of Intent
- Submission of multiple Letters of Intent is not permitted

**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](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](mailto: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](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](mailto: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.D.3 provides additional information on collaborative proposals.

See PAPPG Chapter II.C.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 Research Infrastructure Improvement Program: Track-2 Focused EPSCoR Collaborations (RII Track-2 FEC) competition and supplement the NSF PAPPG and NSF Grants.gov Application Guide:

- RII Track-2 FEC proposals may only be submitted by organizations in the RII-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 "RII Track-2 FEC:" 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 participating jurisdictions should have at least one individual designated as PI or co-PI on the proposal.

**2. Project Summary (1 page maximum).** 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 objectives and methods to be employed; expected impacts of the proposed activities; and plans for sustaining collaborations

and impacts beyond the award period. At the end of the Broader Impacts section, indicate the Letter of Intent (LOI) number, 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 for which NSF support is being requested will lead to sustainable impacts. In addition to the requirements contained in the NSF PAPPG, including a separate section labeled **Broader Impacts**, the Project Description must articulate clear plans for elements described below.

The Project Description may not exceed 20 pages, including text, as well as any graphic or illustrative materials. Maximum page limitations also apply to specific subsections of the Project Description. Note that if the maximum page limit for each subsection is used, the total number of pages will exceed the maximum allow for the Project Description. Proposals that exceed the page limitations or that do not contain all items described below will be returned without review.

In addition to the separate section labeled **Broader Impacts** requirement by the PAPPG, the Project Description must contain the following subsections:

**3.1 Status and Overview (2 pages maximum).** Describe the motivation and rationale for establishing the collaboration, and how the proposed project addresses the identified research focus area for this competition.

**3.2 Results from Relevant Prior Support (2 pages maximum).** Describe results from relevant prior NSF support and other prior federal or other investments of the PIs and co-PIs in the last five years. This section should include a description of the activities and impacts of previous NSF awards, including major accomplishments in both intellectual merit and broader impacts towards the theme of this RII Track-2 FEC competition.

**3.3 Research, Collaboration, and Workforce Development (18 pages maximum).** The project's Research, Collaboration, and Workforce Development component is 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 scientific 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 novelty and/or originality of the proposed approach. In addition to providing explicit evidence for the intellectual merit and broader impacts of the research and education activities, this section should:

- Identify the faculty-level participants and estimate the numbers of postdoctoral, graduate, and undergraduate research participants. Briefly outline the resources (available and planned) to accomplish the research goals.
- Establish the means of developing a coordinated, collaborative approach involving investigators across different organizations, jurisdictions and disciplines. Describe interactions with other groups and organizations among the jurisdictions, and at the national and international levels, as appropriate. The research and education program description must demonstrate how the collaboration will advance research, education, and workforce development. The narrative should demonstrate how the collaboration's activities would advance the frontiers of knowledge and future research competitiveness of the participating jurisdictions in the proposed research areas.
- Provide relevant baseline data regarding any of the research, education, workforce development, or other project targets and goals. For example, in cases where quantitative goals or targets are proposed, baseline data regarding the current situation or past performance should be given.

**3.3.1 Research impact in affected populations.** Given the topic of this solicitation "advancing climate change research and resilience capacity to expand opportunities for disproportionately affected communities," it is expected that projects are catalytic, multi-jurisdiction investments in research and education infrastructure. In particular, the target population should be clearly defined as should the relationship of the research and its impacts within the proposal.

**3.3.2 Interjurisdictional Collaborations and Partnerships.** Interdisciplinary collaborative research brings with it the challenge of developing productive high-performing research teams involving multiple researchers from different organizations and disciplinary expertise. This section must clearly present the rationale for the composition of the teams, a description of the leadership structure, and the context for establishing the collaboration. The research expertise of the PIs and co-PIs must be explained in the context of the proposed research activities. Coordination and synergy among the collaborators should be summarized and the role of each of the faculty-level investigators should be clearly defined. Mechanisms that foster collaboration across the teams, such as all hands meetings, and risk-mitigation strategies should be described. The compelling ways in which the project leadership plans to coordinate the activities into a cohesive project should be presented, with well-articulated goals and strategies to achieve them.

This section must include a specific discussion of how the collaborative effort will positively impact each participating jurisdiction and its respective target population by leveraging the proposed climate change and climate resilience research, including methodologies and metrics for measuring success. Proposals should also explain how each participating jurisdiction will contribute to and benefit from the proposed collaboration in a meaningful and distinct way.

**3.3.3 Sustainability of the Team.** A detailed plan for long-term sustainability of the proposed activities and infrastructure (physical, cyber, and human) beyond the lifespan of the project is required. Plans should clearly delineate what the expected research impacts will be on the jurisdiction(s) involved and how they could holistically tie into affecting populations of the jurisdiction(s) involved. The plan must provide realistic, annual metrics to assess the short and long-term economic impacts of this project. This could include realistic timelines for new submissions of proposals to NSF and other federal and state programs by the project team in the focus area topic, or industry and state partnerships that lead to alternative pathways to sustainability. The plan should also include how proposed new faculty hires, if any, will be supported beyond the award period.

**3.3.4 Workforce Development.** The scope of RII Track-2 FEC activities must include STEM workforce development activities that are integrated with the research and education components of the project and contribute to the preparation of a diverse, new cadre of skilled researchers, innovators, and educators who represents the diversity of the nation.

The workforce development plan must include explicit efforts for the recruitment and/or development of early-career faculty in the project's research activities. It should also describe in detail the mechanisms to attract and mentor these individuals, to enable their development and success as educators and researchers, and their specific contributions to achieving the project's goals in the focus area. For the purposes of this solicitation, early-career faculty are defined as those who are employed as assistant professors in tenure track (or equivalent) positions, or research assistant professors at the time of submission of the proposal, or who are hired in to such a position during the award period.

The research and educational training for postdoctoral, graduate and undergraduate trainees should be designed to develop a workforce that is able to integrate as appropriate within the chosen industry as defined by the project. This should provide them with skills to work easily across disciplinary and other perceived boundaries and to interface with stakeholders such as academe, industry, government, and the general public. This can include the involvement of K-12, two- year and four-year colleges, as well as Minority-serving institutions with the intent to develop an inclusive workforce appropriate to populate new niches that are created through the project's activities. In particular, the proposed program should



present an implementation strategy, informed by national best practices for building research competencies, and research mentoring. The implementation strategy should include an initial baseline assessment, clearly articulated goals, milestones, and timelines.

### **3.4 Evaluation and Assessment Plan (2 pages maximum).**

An independent expert evaluator must provide annual evaluation and assessment of the project. In addition, quantitative collection is required as part of the centralized project output data collection (see below) and should be used in concert with any additional quantitative or qualitative data collected by the required independent evaluator.

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

In addition to the project-specific evaluation, all RII Track-2 FEC awardees will also be required to participate in a centralized project outcomes data-collection activity coordinated by NSF EPSCoR and carried out by its designated entity. This activity is intended to facilitate standardized, accurate metrics tracking across projects and to complement the projects' individual evaluation and assessment efforts.

**3.5 Management and Implementation Plan (2 pages Maximum).** Proposals must include a comprehensive plan for the project's management, including the roles and responsibilities of key personnel, how the PI and Co-PIs plan to communicate and coordinate with each other and the project team, how the centralized project output data-collection will be integrated into their evaluation mechanisms as described above, and how the project's administrative requirements will be managed across all areas. The plan should describe the responsibilities of any administrative staff who are expected to support the project on a full or part-time basis.

Proposals must also include a clear implementation plan and timeline that will contain an outline for how this project will bring together previous documented research outcomes and build on them through this proposal. This should contain details of how the research will be coordinated across jurisdictions to bring it to meet the needs of the target industry and relevant jurisdiction(s) for eventual implementation.

**4. Budget and Budget Justification.** See Section V.B. below for 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.

### **6. Senior Personnel Documents**

- **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. Do not include biographical sketches for members of External Advisory Committees or Boards.
- **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.
- **Collaborators and Other Affiliations (COA) Information.** In accordance with the guidance contained in the PAPPG, COA information must be separately provided for each individual designated as senior personnel on the project.

### **7. Other Supplementary Documents (in addition to those required by the PAPPG)**

- List of Participants. Provide a list of participating senior investigators (faculty level and equivalent) by name, organization, and departmental affiliation.
- List of all institutions and companies involved in the project (including location).
- No Letters of Collaboration should be included for both the established and new collaborations included in this project, as the role and extent of involvement should be clearly outlined in the Project Description. However, up to a maximum of five Letters of Commitment of two pages or less from other partners or jurisdictional officials may be included to support commitment that will be relied upon beyond the collaboration among the core project investigators.

## **B. Budgetary Information**

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### **Cost Sharing:**

Inclusion of voluntary committed cost sharing is prohibited.

### **Other Budgetary Limitations:**

- Funding requests can be for durations of up to 4 years. The allowed RII Track-2 FEC award amount depends on the number of participating EPSCoR jurisdictions. If organizations from two RII-eligible EPSCoR jurisdictions collaborate on a proposal, the total award amount may not exceed \$1 million per year. If institutions from three or more RII-eligible EPSCoR jurisdictions collaborate on a proposal, the total award amount may not exceed \$1.5 million per year.
- Budgets should include sufficient funding for participation in annual jurisdictional and regional EPSCoR conferences, and in one RII Track-2 FEC kickoff meeting for all PIs and all co-PIs at the NSF Headquarters in Year 1 only.
- RII Track-2 FEC projects are expected to host or facilitate project-wide meetings (virtual, hybrid, and/or in-person) such as EPSCoR all-hands workshops and/or science symposia which include support for student (undergraduate and graduate as appropriate) participants of the RII Track-2 FEC project.
- 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 sub awardee organizations). Each subaward must include a separate budget justification of no more than five pages (see PAPPG Chapter II.C.2.g).
- If the proposal is being submitted as a "Submission of a collaborative proposal from multiple organizations," follow the instructions in PAPPG Chapter

II.D.3 regarding budget submissions.

- Organizations or institutions submitting proposal budgets with Subawards (Line G5 on the Proposal Budget) must be able to verify that the lead institution has established a system to monitor the subawards issued on Federally sponsored projects and that appropriate agreements are in place with subrecipients.
- Subawards to institutions in non-EPSCoR jurisdictions are not allowed.
- Financial compensation for any independent evaluator(s) involved in the project must be included in the budget of the submitting organization under Consultant Services. No other form of financial compensation for external evaluation services is allowed.
- Proposal budgets must comply with guidance in 2 CFR 200 and the current *NSF Proposal and Award Policies and Procedures Guide (PAPPG)*. 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 EPSCoR'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.

Proposals with budgets that depart from these instructions will be considered not responsive and may be returned without review.

## C. Due Dates

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- **Letter of Intent Due Date(s) (required)** (due by 5 p.m. submitter's local time):

December 20, 2022

Third Tuesday in December, Annually Thereafter

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

January 24, 2023

Fourth Tuesday in January, Annually Thereafter

## D. Research.gov/Grants.gov Requirements

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### 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](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](mailto: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 VIII 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](mailto: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 the NSF FastLane system 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

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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/](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

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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 engineering research and education. 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.C.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.C.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 for the RII Track-2 FEC competition 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 in the jurisdictions (including physical, cyber, and human resources)? How will the proposed activities contribute to the national and international reputations of the project participants and participating institutions? What is the potential of the project to improve the ability of the participating institutions and participants to compete for and successfully conduct innovative research projects in the future?
- **Interjurisdictional Collaboration** - Do the research activities in different jurisdictions support and foster a balanced, sustained, collaborative effort such that each participant is contributing to and benefitting from the project at an appropriate level? Is the scope of work such that no single jurisdiction could accomplish the goals individually? Are the projects well administered and does the project present plans for sustaining the effort in the jurisdiction(s) beyond the scope of the award?
- **Workforce Development** - What is the potential for the proposed activities to recruit and/or develop early-career faculty in the focus area of the proposal and prepare them for sustained productivity? What is the potential for the proposed activities to sustain a pathway of highly skilled students and postdoctoral fellows who are underrepresented in associated disciplines and industries, can excel in this focus area, and succeed in careers in academia and/or industry? In an effort to prepare a workforce that is able to engage in the industries relating to climate change, how effectively will diverse populations (e.g., of individuals traditionally underrepresented in STEM, persons with disabilities, economically disadvantaged, rural, and/or first-generation college students) and institutions (e.g., Minority-serving institutions and 2- and 4-year institutions) be engaged in the research and education activities? What novel and effective ways are proposed to achieve the workforce development goals?
- **Jurisdictional Impacts** - What is the potential to achieve meaningful and sustained impacts within the jurisdictions with respect to their education capacity, economic development, and quality of life? How will the plans and activities lead to sustainable improvements in a diverse workforce preparation and research competitiveness of the jurisdictions? How do the proposed activities promote organizational connections and linkages within the jurisdictions, and between private and public sectors? How does the project advance innovation, technology transfer, and potential commercialization?
- **Integration of Project Elements** - How well are the different aspects - research, education, workforce development, sustainability, project coordination, and evaluation - described and integrated in the project? What are the innovative ways in which the project addresses these components in tandem? What benefits or added value will be realized as a result of integrating the project elements? 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?

## B. Review and Selection Process

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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

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## A. Notification of the Award

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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, will be provided automatically to the Principal Investigator. (See Section VI.B. for additional information on the review process.)

## B. Award Conditions

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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](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](mailto:nsfpubs@nsf.gov).

More comprehensive information on NSF Award Conditions and other important information on the administration of NSF awards is contained in the NSF *Proposal & Award Policies & Procedures Guide* (PAPPG) Chapter VII, available electronically on the NSF Website at [https://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=pappg](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg).

### 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.

#### Special Award Conditions:

Any cooperative agreement awarded in response to this solicitation will contain the following term and condition:

#### Ensuring Adequate COVID-19 Safety Protocols

(a) This clause implements Section 3(b) of Executive Order 14042, *Ensuring Adequate COVID Safety Protocols for Federal Contractors*, dated September 9, 2021 (published in the Federal Register on September 14, 2021, 86 FR 50985). Note that the Department of Labor has included "cooperative agreements" within the definition of "contract-like instrument" in its rule referenced at Section 2(e) of this Executive Order, which provides:

For purposes of this order, the term "contract or contract-like instrument" shall have the meaning set forth in the Department of Labor's proposed rule, "Increasing the Minimum Wage for Federal Contractors," 86 Fed. Reg. 38816, 38887 (July 22, 2021). If the Department of Labor issues a final rule relating to that proposed rule, that term shall have the meaning set forth in that final rule.

(b) The awardee must comply with all guidance, including guidance conveyed through Frequently Asked Questions, as amended during the performance of this award, for awardee workplace locations published by the Safer Federal Workforce Task Force (Task Force Guidance) at <https://www.saferfederalworkforce.gov/contractors/>.

(c) *Subawards*. The awardee must include the substance of this clause, including this paragraph (c), in subawards at any tier that exceed the simplified acquisition threshold, as defined in Federal Acquisition Regulation 2.101 on the date of subaward, and are for services, including construction, performed in whole or in part within the United States or its outlying areas. That threshold is presently \$250,000.

(d) *Definition*. As used in this clause, *United States or its outlying areas* means:

1. The fifty States;
2. The District of Columbia;
3. The commonwealths of Puerto Rico and the Northern Mariana Islands;
4. The territories of American Samoa, Guam, and the United States Virgin Islands; and
5. The minor outlying islands of Baker Island, Howland Island, Jarvis Island, Johnston Atoll, Kingman Reef, Midway Islands, Navassa Island, Palmyra Atoll, and Wake Atoll.

(e) The Foundation will take no action to enforce this article, where the place of performance identified in the award is in a U.S. state or outlying area subject to a court order prohibiting the application of requirements pursuant to the Executive Order (hereinafter, "Excluded State or Outlying Area"). A current list of such Excluded States and Outlying Areas is maintained at <https://www.saferfederalworkforce.gov/contractors/>.

#### TBD - Programmatic Terms and Conditions:

Programmatic Terms and Conditions, if applicable, are outcomes of the proposal specific merit review process.

#### TBD - Financial and Administrative Terms and Conditions:

EPSCoR funds must be expended within EPSCoR jurisdictions.

## C. Reporting Requirements

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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.

More comprehensive information on NSF Reporting Requirements and other important information on the administration of NSF awards is contained in the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) Chapter VII, available electronically on the NSF Website at [https://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=pappg](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg).

The annual and final reports must include identification of numbers of women and members of other underrepresented groups in faculty and staff positions and as participants in the activities funded by the award.

## VIII. AGENCY CONTACTS

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*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: [jswanson@nsf.gov](mailto:jswanson@nsf.gov)
- Jose Colom-Ustariz, telephone: (703) 292-7088, email: [jcolom@nsf.gov](mailto:jcolom@nsf.gov)
- Eric W. Lindquist, telephone: (703) 292-7127, email: [elindqui@nsf.gov](mailto:elindqui@nsf.gov)
- Andrea Johnson, telephone: (703) 292-5164, email: [andjohns@nsf.gov](mailto:andjohns@nsf.gov)
- Jeanne Small, telephone: (703) 292-8623, email: [jsmall@nsf.gov](mailto:jsmall@nsf.gov)
- Chinonye Whitley, telephone: (703) 292-8458, email: [cnnakwe@nsf.gov](mailto:cnnakwe@nsf.gov)

For questions related to the use of FastLane or Research.gov, contact:

- FastLane and Research.gov Help Desk: 1-800-673-6188
- FastLane Help Desk e-mail: [fastlane@nsf.gov](mailto:fastlane@nsf.gov)
- Research.gov Help Desk e-mail: [rgov@nsf.gov](mailto:rgov@nsf.gov)

For questions relating to Grants.gov contact:

- Grants.gov Contact Center: If the Authorized Organizational Representatives (AOR) has not received a confirmation message from Grants.gov within 48 hours of submission of application, please contact via telephone: 1-800-518-4726; e-mail: [support@grants.gov](mailto:support@grants.gov).

## IX. OTHER INFORMATION

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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

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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."

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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* (FASSED) 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.E.6 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.

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- **Location:** 2415 Eisenhower Avenue, Alexandria, VA 22314
- **For General Information**  
(NSF Information Center): (703) 292-5111
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  - 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  
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