Enabling Partnerships to Increase Innovation Capacity (EPIIC)

PROGRAM SOLICITATION
NSF 23-528

National Science Foundation

Directorate for Technology, Innovation and Partnerships
  Innovation and Technology Ecosystems

Preliminary Proposal Due Date(s) *(required)* (due by 5 p.m. submitter's local time):

February 15, 2023

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

May 25, 2023

IMPORTANT INFORMATION AND REVISION NOTES

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:

Enabling Partnerships to Increase Innovation Capacity (EPIIC)

Synopsis of Program:

The purpose of this solicitation is to broaden participation in innovation ecosystems that advance emerging technologies (e.g., advanced manufacturing, advanced wireless, artificial intelligence, biotechnology, quantum information science, semiconductors and microelectronics) by supporting capacity-building efforts at institutions of higher education (IHEs) interested in growing external partnerships. Creation of this program is motivated by the commitment of the National Science Foundation (NSF), including the newly established NSF Directorate for Technology, Innovation and Partnerships (TIP), to accelerating scientific and technological innovation nationwide and empowering all Americans to participate in the U.S. research and innovation enterprise. Establishing more inclusive innovation ecosystems will require broad networks of partners working together in support of use-inspired research; the translation of such research to practice or commercial application; and the development of a skilled workforce. The NSF Regional Innovation Engines (NSF Engines) program, housed within the TIP Directorate, seeks to grow inclusive innovation ecosystems around the country. Growing such ecosystems will only be successful if all interested IHEs within a region are able to participate and contribute their unique set of skills and expertise. However, NSF appreciates many Minority-Serving Institutions (MSIs), Predominantly Undergraduate Institutions (PUIs), and two-year institutions lack the infrastructure and resources needed to grow external partnerships and effectively contribute to innovation ecosystems, and thus are currently unable to effectively engage with the NSF Engines program.

This solicitation aims to provide MSIs, PUIs, and two-year institutions with limited or no research capacity (see Section IV for details) with the support necessary to become equitable partners with teams competing under the current and subsequent NSF Engines program funding opportunities. Importantly, participation in this solicitation is not predicated on an existing partnership with organizations submitting an NSF Engines proposal. Rather, it is expected that the capacity-building efforts funded under this solicitation will provide significant innovation partnership opportunities irrespective of future participation in an NSF Engine.

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.

- Rebecca Shearman, telephone: (703) 292-7403, email: engines@nsf.gov

- Geoffrey Brown, telephone: (703) 292-4979, email: engines@nsf.gov

- Nina Maung-Gaona, telephone: (703) 292-4697, email: engines@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 --- STEM Education
- 47.079 --- Office of International Science and Engineering
- 47.083 --- Office of Integrative Activities (OIA)
- 47.084 --- NSF Technology, Innovation and Partnerships

Award Information

Anticipated Type of Award: Continuing Grant

Estimated Number of Awards: 15

Anticipated Funding Amount: $20,000,000

Each award will be made at the level of up to $400,000 per awardee institution commensurate with the scope and extent of the activities. Up to 50 institutions are expected to receive awards, depending upon availability of funds and the quality of proposals received.

Eligibility Information

Who May Submit Proposals:

Proposals may only be submitted by the following:

- Institutions of Higher Education (IHEs) - Two- and four-year IHEs (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Special Instructions for International Branch Campuses of US IHEs: If the proposal includes funding to be provided to an international branch campus of a US institution of higher education (including through use of subawards and consultant arrangements), the proposer must explain the benefit(s) to the project of performance at the international branch campus, and justify why the project activities cannot be performed at the US campus.

- The emphasis of this solicitation is to enable institutions, with limited or no research capacity, to create partnerships with external organizations to grow programs in workforce development, research and development (R&D), and/or the translation of research to practice in emerging technology fields. IHEs eligible to apply for funding under this solicitation are only those considered as neither R1 nor R2 institutions according to the 2021 Carnegie Classification of Institutions of Higher Education (http://carnegieclassifications.iu.edu/).

    Minority Serving Institutions (MSIs), Predominantly Undergraduate Institutions (PUIs), and two-year institutions (including community colleges and technical schools) that are not classified as R1 or R2 institutions are strongly encouraged to apply.

    Minority Serving Institutions (MSIs):

    MSIs include Historically Black Colleges and Universities (HBCUs), Hispanic-serving institutions (HSIs), Tribal colleges or universities (TCUs), and other institutions that enroll a significant percentage of underrepresented minority students as defined by the U.S. Department of Education. These other institutions include 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. For more information, please see the U.S. Department of Education's definitions and lists of eligible postsecondary institutions (Link to MSI definitions).

Who May Serve as PI:

The PI must hold a full-time administrative or faculty position at the proposing institution. Part-time administrators, adjunct faculty, and temporary hires are not eligible to serve as PI.

Preliminary proposals must identify up to three individuals from the submitting institution (including the PI) to participate in the EPIIC workshops, and at least one administrator is required to serve on this team. See Section II for details about the workshops. See Section V.A. for more details about the make-up of proposing teams.

Limit on Number of Proposals per Organization: 1

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

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Not required

- **Preliminary Proposals:** Submission of Preliminary Proposals is required. Please see the full text of this solicitation for further information.

- **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.
  - 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).

B. Budgetary Information

- **Cost Sharing Requirements:**

  Inclusion of voluntary committed cost sharing is prohibited.

- **Indirect Cost (F&A) Limitations:**

  Not Applicable

- **Other Budgetary Limitations:**

  Not Applicable

C. Due Dates

- **Preliminary Proposal Due Date(s)** *(required)* (due by 5 p.m. submitter's local time):

  February 15, 2023

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

  May 25, 2023

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:

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

The purpose of this solicitation is to broaden participation in innovation ecosystems in emerging technologies by supporting capacity-building efforts in growing external partnerships for institutions of higher education. Traditionally, those MSIs, PUIs, and two-year institutions with limited or no research capacity have been limited to partnerships with larger IHEs and industry in the area of workforce development. This solicitation aims to expand the opportunities for these institutions to participate in one or more aspects of an emerging innovation ecosystem, spanning workforce development, use-inspired research, and the translation of research to practice through the creation of new or expanded partnerships.

The goals of awards made under this solicitation are to enable awardees to:

- Create partnerships with external organizations to grow programs in workforce development, research and development (R&D), and/or the translation of research to practice in emerging technology fields; and
- Develop the capacity and institutional knowledge needed to build new partnerships and secure future external funding to support ongoing efforts in emerging technology fields and regional innovation ecosystems.

Awards made in response to full proposals under this solicitation will provide funding to support award management, relief time for faculty and staff for developing external partnerships, infrastructure, and resources to facilitate participation in future NSF solicitations.

II. PROGRAM DESCRIPTION

A. Intent

The Enabling Partnerships to Increase Innovation Capacity (EPIIC) program is intended to broaden participation in innovation ecosystems by supporting capacity-building efforts at institutions of higher education interested in growing external partnerships. Establishing innovation ecosystems requires broad networks of partners working together to create a virtuous cycle of use-inspired research, translation of those research results to practice, and the development of a skilled workforce. Further, diverse and inclusive innovation ecosystems that contribute to the long-term community economic health of a region require the engagement of all interested IHEs within a region to participate and contribute their unique set of skills and expertise. However, IHEs not currently classified as R1 or R2 institutions according to the 2021 Carnegie Classification of Institutions of Higher Education lack the infrastructure and resources needed to grow external partnerships and effectively contribute to innovation ecosystems, even though they are expected to play key roles within their region. This solicitation aims to provide these institutions with the support necessary to become equitable partners in innovation ecosystems.

The creation of this program is motivated by NSF's, including TIP's, commitment to accelerating scientific and technological innovation nationwide, particularly through the new NSF Regional Innovation Engine (NSF Engines) program. Importantly, participation in this solicitation is not predicated on an existing partnership with organizations submitting proposals under an NSF Engines solicitation. Furthermore, it is expected that the capacity-building efforts funded under this solicitation will provide significant innovation partnership opportunities irrespective of future participation in an NSF Engine.

MSIs, PUIs, and two-year institutions interested in using this capacity-building opportunity to develop the infrastructure needed to participate in an NSF Engine are especially encouraged to apply.

B. Desired Activities

Capacity-building efforts supported by this solicitation should focus on the resources, infrastructure, and expertise required for an institution to establish meaningful partnerships with external organizations to facilitate participation in the regional innovation ecosystem. Such efforts may include, but are not limited to:

- Growing corporate, community, and/or local government relations;
- Building external partnerships for nimble workforce development programs responsive to regional needs;
- Growing external partnerships to advance technology commercialization, especially those relevant to the regional innovation ecosystem; and/or
- Expanding the institution's research enterprise (e.g. research development, research administration, research leadership, etc.) through external partnerships.

Awards made in response to full proposals under this solicitation will provide funding to support a range of activities that are currently hard to accomplish within the institution, such as award management, relief time for faculty and staff for developing external partnerships, infrastructure, and resources to facilitate participation in future NSF solicitations.

C. Funding Process

Because participation in NSF funding opportunities may represent significant logistical challenges for this solicitation's intended audience, this program is employing a three-phase process to provide proposing teams guidance and mentorship generating project ideas and proposal development.

Phase 1. Submitting Preliminary Proposals: Phase 1 requires the submission of a brief preliminary proposal. Proposing teams will be selected to participate in Phase 2 based on their institution's need for capacity-building for innovation partnerships as supported by the preliminary proposal. See Section V.A. for instructions on writing preliminary proposals and Section VI.A. for details on the selection criteria.

Phase 2. EPIIC Workshops: The workshops will include virtual and in-person meetings designed to create an interactive and free-thinking environment where participants from a range of academic institutions immerse themselves in collaborative thinking processes to construct impactful approaches to identifying and improving infrastructure limitations that impede an institution's ability to meaningfully engage in cross-sector partnerships to advance efforts in workforce development, R&D, and translation of R&D results to practice.

The workshops will be led by a facilitator whose role is to assist in defining the institutional challenges and foster fruitful discussions among participants. The facilitator will be joined by a small number of mentors who are selected by NSF based on their expertise. The facilitator and mentors will take full part in the workshops, but they will not be eligible to receive funding under this collaborative activity.

The EPIIC workshops will include:

- Virtual Orientation: The workshops will begin with this 1.5-hour virtual kick-off meeting.
- Challenge Identification Workshops: This series of four half-day virtual events will allow participants to define the scope of the institutional challenges associated with partnership building.
- In-Person Solution Development and Cohort Formation Event: This three-day, in-person workshop will be used for solution ideation, solution selection and stewarding, and cohort building.
- Virtual Synchronous Feedback Session: This virtual meeting will allow participants to receive additional feedback from their peers shortly after the in-person event.
- Proposal Development: Teams invited to submit full proposals will receive additional mentor support to develop their proposals.

At the workshops, representatives from each participating institution will be expected to engage constructively in dialogue with one another, the facilitators, and mentors to develop collaborative proposals. They will work together to identify the impediments to developing successful partnerships and the strategies for ameliorating those impediments; and to develop, in cohorts, capacity-building projects.

Specific outcomes of the EPIIC workshops are expected to include:

- The specific challenges to establishing and growing partnerships with industry, state, local, and/or tribal governments, non-profits, etc. are identified;
- Meaningful, actionable solutions to these challenges are developed, and;
- Participating institutions self-organize to create cohorts based on common capacity-building goals and/or potential solutions.

Phase 3: At the conclusion of the workshops, a subset of teams will be invited to submit collaborative full proposals. Invitations to submit full proposals are conditioned upon full participation in the workshops by the proposing team.

Full proposals will be reviewed by NSF Program Officers and external reviewers following the merit review criteria outlined in the PAPPG and in Section VI.A. of this solicitation.

Dates and Locations for Required EPIIC Events

Event	Dates	Location
Virtual Short-Day Workshops	Orientation: **3/21** Challenge ID Session 1: **3/27** Challenge ID Session 2: **3/29** Challenge ID Session 3: **3/31** Challenge ID Session 4: **4/03**	Virtual
In-person Workshop	**4/11/23 - 4/13/23**	Atlanta, GA
Peer Feedback	**4/26/2023**	Virtual

The Preliminary proposal should NOT include a budget. Costs for participants' travel to the in-person workshop, accommodations, meals, and refreshments will be covered by NSF. However, all incidental costs incurred while at the event will be borne by the participants.

III. AWARD INFORMATION

Anticipated Type of Award: Continuing Grant

Estimated Number of Awards: 15

Anticipated Funding Amount: $20,000,000 subject to the availability of funds

Each award will be made at the level of up to $400,000 per awardee institution commensurate with the scope and extent of the activities. Up to 50 institutions are expected to receive awards, depending upon availability of funds and the quality of proposals received.

IV. ELIGIBILITY INFORMATION

Who May Submit Proposals:

Proposals may only be submitted by the following:

- Institutions of Higher Education (IHEs) - Two- and four-year IHEs (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Special Instructions for International Branch Campuses of US IHEs: If the proposal includes funding to be provided to an international branch campus of a US institution of higher education (including through use of subawards and consultant arrangements), the proposer must explain the benefit(s) to the project of performance at the international branch campus, and justify why the project activities cannot be performed at the US campus.

- The emphasis of this solicitation is to enable institutions, with limited or no research capacity, to create partnerships with external

organizations to grow programs in workforce development, research and development (R&D), and/or the translation of research to practice in emerging technology fields. IHEs eligible to apply for funding under this solicitation are only those considered as neither R1 nor R2 institutions according to the 2021 Carnegie Classification of Institutions of Higher Education (http://carnegieclassifications.iu.edu/).

Minority Serving Institutions (MSIs), Predominantly Undergraduate Institutions (PUIs), and two-year institutions (including community colleges and technical schools) that are not classified as R1 or R2 institutions are strongly encouraged to apply.

Minority Serving Institutions (MSIs):

MSIs include Historically Black Colleges and Universities (HBCUs), Hispanic-serving institutions (HSIs), Tribal colleges or universities (TCUs), and other institutions that enroll a significant percentage of underrepresented minority students as defined by the U.S. Department of Education. These other institutions include 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. For more information, please see the U.S. Department of Education's definitions and lists of eligible postsecondary institutions (Link to MSI definitions).

Who May Serve as PI:

The PI must hold a full-time administrative or faculty position at the proposing institution. Part-time administrators, adjunct faculty, and temporary hires are not eligible to serve as PI.

Preliminary proposals must identify up to three individuals from the submitting institution (including the PI) to participate in the EPIIC workshops, and at least one administrator is required to serve on this team. See Section II for details about the workshops. See Section V.A. for more details about the make-up of proposing teams.

Limit on Number of Proposals per Organization: 1

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

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Preliminary Proposals *(required)*: Preliminary proposals are required and must be submitted via Research.gov, even if full proposals will be submitted via Grants.gov.

Participation in the EPIIC workshops will be by invitation only from the pool of proposers who submitted preliminary proposals. Teams will be selected to participate in the EPIIC workshops based on their institution's need for capacity-building for innovation partnerships as supported by the preliminary proposal. See Section VI.A. for details about the selection criteria. Submitters will receive feedback from program staff indicating whether they have been invited to participate in the workshops.

Submission of this preliminary proposal will be considered an indication of the availability of everyone on the team to attend and participate in all virtual and in-person events listed above (see Dates and Locations for Required EPIIC Events).

Preliminary Proposal Set-Up: Select "Prepare New Preliminary Proposal" in Research.gov. Search for and select this solicitation title in Step 1 of the Preliminary Proposal wizard. The information in Step 2 is pre-populated by the system. In Step 3 select "Single proposal (with or without subawards). Separately submitted collaborative preliminary proposals will be returned without review.

Title: The preliminary proposal title should start with "EPIIC Preliminary Proposal: " followed by a descriptive title.

The required components of the preliminary proposal are given below. Page limitations given here will be strictly enforced. Proposers should review the most current PAPPG for specific information and format for the required sections.

The preliminary proposal should consist of five elements: a cover sheet, a project summary, a project description, biographical sketches, and current and pending support. No other sections are required or may be included in the preliminary proposal.

Cover Sheet.

Project Summary (1-page limit). The Project Summary must include three separate sections titled: Overview, Intellectual Merit, and Broader Impacts. The Overview should include:

1. MSI designation (if applicable)
2. A list of the team members (up to 3 including the PI) that will be participating in the workshops including their positions at the institution. At least one administrator is required.

The Intellectual Merit section may address the ways in which the institution can contribute to "best practices" that might be adopted by other institutions and the new opportunities that will arise through the partnerships to be developed through participation in this funding opportunity.

The Broader Impacts section may include but is not limited to, the full participation of MSIs, PUIs, and/or two-year institutions in their regional innovation ecosystems, and increased partnerships between these schools, industry, and other organizations.

Project Description (3-page limit). The Project Description must include the following:

1. Descriptive Statistics of the Institution.
   - Number of undergraduate, masters, and Ph.D. students from the previous academic year
   - Number of FTEs supporting the administration of sponsored research
   - A table of all federal research grants received by the institution in the past five years using the following format:

Agency Name	Total # of Awards from Agency in the last 5 years	Total Award Amount from Agency in last 5 years ($)

   Note: Only include awards that support research projects. Funding to support broadening participation, educational activities, outreach, workshops, etc. should not be included.

   If applicable, list all NSF Regional Innovation Engines proposals that you are participating in. Include the proposal number, title of the proposal, and lead organization and PI.

2. Description of up to three team members.

   Provide a brief description of the individuals who will participate in the workshops. Include an explanation of why each person is well-suited to contribute to the project. Justification may include both the position they hold at the institution and their individual skill set(s) that qualifies them for the role. At least one administrator is required.

3. Brief responses to the following:
   - What does your institution wish to gain from participating in the Enabling Partnerships to Increase Innovation Capacity (EPIIC) activity?
   - How does your institution currently support partnerships with external organizations?
4. Broader Impacts: Provide a brief description of how the project will contribute to the achievement of societally relevant outcomes. Such outcomes in the context of EPIIC include but are not limited to, the full participation of MSIs, PUIs, and/or two-year institutions in their regional innovation ecosystems, and increased partnerships between these schools, industry, and other organizations.

Senior Personnel Documents (required for each team member)

- **Biographical Sketch**
- **Current and Pending Support**

No appendices or supplementary documents may be submitted with the preliminary proposal. No budget is required with the preliminary proposal.

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.

Full proposals may ONLY be submitted by participants of the EPIIC workshops who are invited to submit a full proposal.

Full proposals should propose activities that will address the following:

- Meaningful, actionable solutions to the challenges identified at the EPIIC workshops; and
- Creation of cohorts based on common capacity-building goals and/or potential solutions.

The following information supplements the standard PAPPG or NSF Grants.gov Application Guide proposal preparation guidelines:

Title: The title should begin with "EPIIC: " followed by a descriptive title.

Cover Sheet: Include the NSF preliminary proposal number that was invited.

Project Summary: A one-page Project Summary must be provided, which consists of three parts: (1) a Project Overview, (2) a statement on the Intellectual Merit of the proposed activity, and (3) a statement of the Broader Impacts of the proposed activity. The project overview should summarize the problems/issues that the project will seek to overcome, the approach to be taken at the institutional level and with respect to cohort-level activities, and the expected outcomes. The Intellectual Merit section should discuss the ways in which the proposed project will lead to "best practices" that might be adopted by other institutions and the new opportunities that will arise through the partnerships to be developed through the proposed project.

Project Description: This section is limited to a maximum of 15 pages. A proposal must respond fully to the Program Description in this program solicitation. The Project Description should address the Intellectual Merit of the proposal and may include establishing lessons learned and best practices based on the outcomes of the proposed project. It must also address, in the order listed below, each of the following sections:

  a. **Project Overview, Rationale, and Importance:** The proposal must identify the capacity-building for innovation partnerships challenge that was identified during the EPIIC workshops that the PIs intend to address.
  b. **List of participating institutions**: For each academic institution provide:
     1. Name of the institution.
     2. State or U.S. territory.
     3. Name and position of each team member.
  c. **Individual Institutional Plans for Building Regional Innovation Partnerships**

     For each institution, provide the following:

     - A description of the current institutional partnerships and limitations to expanding partnerships.
     - Specific institutional goals for capacity-building and expanding partnerships over the award period.
     - A strategic plan for achieving those goals.

  d. **Collaborative plans for the cohort to provide mutual aid in achieving individual institutional goals**

     For example, cohort meetings, training or mentorship provided by external organizations, and shared resources.

     If an institution chooses not to participate in a cohort, use this section to justify this decision.

  e. **Evaluation plan:**
     - What are the measurable criteria for the success of the award?
     - What data will be collected prior to, during, and after the award?
     - How will best practices be identified?
  f. **Broader Impacts:** Proposals must include a description of broader impacts activities as described in the PAPPG.
  g. **Results from Prior NSF Support:** If the PI and co-PIs do not have any prior NSF support, please indicate so in this section.

Data Management Plan: Proposers should provide a detailed data management plan as required by the PAPPG.

Transparency requires that the Federal agencies share how they are maximizing outcomes of Federal STEM investments and activities and ensuring broad benefit to the public.

Special Information/Supplementary Documentation:

Under Other Supplementary Documents, proposers must include a copy of the letter of invitation to submit a full proposal. Proposers can also submit, at their discretion, one or more letters of collaboration, following the guidance for such documents in the NSF PAPPG.

Appendices: Not permitted. The 15-page Project Description must contain all the information needed to describe the project. Proposals submitted with an appendix will be returned without review.

B. Budgetary Information

Cost Sharing:

Inclusion of voluntary committed cost sharing is prohibited.

Budget Preparation Instructions:

Budget Preparation Instructions:

No budget is required for preliminary proposals.

Full Proposal Budgets: This program aims to support institutional capacity-building, specifically to facilitate the growth of external partnerships with regional organizations to advance research in emerging technologies, translation of research to practice, and/or workforce development activities. The full proposal budget should reflect capacity-building efforts to accomplish these goals. It may include more than two-months salary, with justification, and may also be used for administrative support and/or infrastructure.

Additionally, budgets should include funds for at least two attendees to an annual PI meeting to be held in the Atlanta area.

C. Due Dates

  - **Preliminary Proposal Due Date(s)** *(required)* (due by 5 p.m. submitter's local time):

    February 15, 2023

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

    May 25, 2023

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 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. 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 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.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

For Phase 1: Submitting Preliminary Proposals

Preliminary proposals will be reviewed based on the following criterion:

1. To what extent will the institution expand its innovation capacity through partnerships?

For Phase 2: EPIIC Workshops

Invitations to submit full proposals will be based on participation in workshop activities and will be assessed according to the following criteria:

1. To what extent did the team participate in all workshop activities?
2. To what extent did the team develop a project idea based on workshop activities?

For Phase 3: Submitting Full Proposals

1. To what extent does the full proposal address specific challenges to establishing external partnerships;
2. To what extent does the full proposal include meaningful, actionable solutions to the challenges being addressed;
3. To what extent will the intended outcomes of the proposed project enable the institution(s) to build impactful partnerships with external organizations to advance their efforts in R&D, translation of R&D to practice, and/or workforce development in emerging technologies?
4. To what extent does the proposed project (and budget) demonstrate a collaborative approach to addressing institutional challenges?

B. Review and Selection Process

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

Preproposals will be reviewed internally, and full proposals will be reviewed by external reviewers.

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

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.

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.

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:

Awardees are expected to attend annual PI meetings in the Washington D.C. area. These meetings will provide the opportunity for individual institutions and cohorts to report on successes, failures, and best practices. By the end of the award period, awardees will be expected to participate in drafting a collective report summarizing program outcomes and best practices.

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.

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.

PIs will be required to submit annual and final project reports that differ from the standard reporting format contained in Research.gov. Instructions for preparing and submitting such reports will be provided to the PI. This requirement is undergoing the information collection process and the clearance number will be included with the reporting requirements.

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:

- Rebecca Shearman, telephone: (703) 292-7403, email: engines@nsf.gov

- Geoffrey Brown, telephone: (703) 292-4979, email: engines@nsf.gov

- Nina Maung-Gaona, telephone: (703) 292-4697, email: engines@nsf.gov

For questions related to the use of NSF systems contact:

- NSF Help Desk: 1-800-673-6188

- Research.gov Help Desk e-mail: 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.

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**   (703) 292-5111
>   (NSF Information Center)**:**
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> - **TDD (for the hearing-impaired):**   (703) 292-5090
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>   or telephone: (703) 292-8134
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> - **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

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