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

PROGRAM SOLICITATION
NSF 18-589

REPLACES DOCUMENT(S):
NSF 18-502

National Science Foundation

Office of Integrative Activities

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

November 26, 2018

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

January 25, 2019

IMPORTANT INFORMATION AND REVISION NOTES

The following EPSCoR jurisdictions are RII-eligible for the FY 2019 RII Track-2 FEC competition: Alabama, Alaska, Arkansas, Delaware, Guam, Hawaii, Idaho, Kansas, Kentucky, Louisiana, Maine, Mississippi, Montana, Nebraska, Nevada, New Hampshire, North Dakota, Oklahoma, Puerto Rico, Rhode Island, South Carolina, South Dakota, Vermont, US Virgin Islands, West Virginia, and Wyoming.

- There is a limit of a single proposal from each submitting organization.
- Each proposal must have at least one collaborator from an academic institution or organization in a different RII-eligible EPSCoR jurisdiction as a co-Principal Investigator (co-PI).
- There must be one co-PI listed on the cover page from each participating jurisdiction. Proposals that depart from these guidelines will be returned without review.
- For FY 2019, RII Track-2 FEC, all proposals must promote collaborations among researchers in EPSCoR jurisdictions and emphasize the recruitment/development of diverse early career faculty and STEM education and workforce development on the single topic: "Harnessing Big Data to solve problems of national importance."
- Inclusion of Primarily Undergraduate Institutions or Minority Serving Institutions as partners is strongly encouraged.
- The extent and quality of the inter-jurisdictional collaborations must be clearly articulated.
- A letter of Intent (LOI) is required for the FY 2019 RII Track-2 FEC competition. LOIs must be submitted by the Authorized Organizational Representative of the submitting institution via FastLane on or before the LOI due date. Any proposal submitted without a prior Letter of Intent will be returned without review.
- PIs and Co-PIs on current NSF EPSCoR RII Track-2 awards with end dates later than October 31, 2019 are not eligible to submit proposals as a PI or Co-PI in this competition.
- Proposal must be submitted as "Submission of a collaborative proposal from one organization" with support for non-lead collaborating institutions requested as subawards (PAPPG Chapter II.D.3.a). Proposals that depart from these guidelines will be returned without review.
- The project title must begin with "RII Track-2 FEC:" and follow with an informative title in the topic area.
- Allowable RII Track-2 FEC award amounts depend on the number of participating EPSCoR jurisdictions. If two RII-eligible EPSCoR jurisdictions collaborate on a proposal, the award amount may not exceed $1 million per year. If three or more RII-eligible EPSCoR jurisdictions collaborate on a proposal, the award amount may not exceed $1.5 million per year. In either case, awards are for a maximum of four years.
- The project team must cooperate with NSF EPSCoR's programmatic evaluation and assessment activities. Awardees are expected to work with EPSCoR and/or its designated entity for centralized project data collection and provide all required data in a timely manner. See Section V.B for corresponding budget requirements. This data collection complements but does not replace individual evaluation and assessment activities. Awardees are still required to fulfill NSF Reporting requirements.
- Page limits apply. See Section V.
- At the bottom of the Project Summary, PIs should indicate the Letter of Intent (LOI) number, and the NSF Directorate, Division, and Program that most closely aligns with the proposal's research focus.
- No Letter of Collaboration should be included in the Supplementary Documents. See Section V.A.10. A maximum of five letters of support may be included. See Section V.A.10.
- List of all institutions and companies involved in the project must include location.
- Collaborators and Other Affiliations Information *:* Proposers should follow the guidance specified in Chapter II.C.1.e of the NSF PAPPG.

Any proposal submitted in response to this solicitation should be submitted in accordance with the revised *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) (NSF 18-1), which is effective for proposals submitted, or due, on or after January 29, 2018.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

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

Synopsis of Program:

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. A jurisdiction is eligible to participate in EPSCoR programs if its level of NSF research support is equal to or less than 0.75 percent of the total NSF research and related activities budget for the most recent three-year period. Through this program, NSF establishes partnerships with government, higher education, and industry that are designed to effect 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 scientific focus areas consistent with NSF priorities. Projects are investigator-driven and must include researchers from at least two RII-eligible jurisdictions with complementary expertise and resources necessary to tackle those projects, which neither party could address as well or rapidly alone. The Science, Technology, Engineering, and Mathematics (STEM) research and education activities should seek to broaden participation through the strategic inclusion and integration of different types of individuals, institutions, and sectors throughout the project. Proposals must describe a comprehensive and integrated vision to drive discovery and build sustainable STEM capacity that exemplifies diversity of all types (individual, institutional, geographic, and disciplinary). The development of diverse early-career faculty is a critical component of this sustainable STEM capacity. For FY 2019, RII Track-2 FEC proposals are invited on a single topic: "Harnessing the Data Revolution to solve problems of national importance."

A single proposal is submitted for a project. Support for non-lead collaborating institutions should be requested as subawards. Separately submitted collaborative proposals are not allowed. Each participating EPSCoR jurisdiction must have at least one co-PI on the project. Proposals that do not comply with these requirements will be considered not responsive, and will be returned without review.

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, Program Director, telephone: (703) 292-2898, email: jswanson@nsf.gov

- Andrew V. Ogram, Program Director, telephone: (703) 292-7374, email: aogram@nsf.gov

- Sean Kennan, telephone: (703) 292-7575, email: skennan@nsf.gov

- Jeanne Small, telephone: (703) 292-8623, email: jsmall@nsf.gov

- Timothy VanReken, telephone: (703) 292-7378, email: tvanreke@nsf.gov

- Uma Venkateswaran, telephone: (703) 292-7732, email: uvenkate@nsf.gov

- Chinonye Whitley, telephone: (703) 292-8458, email: 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)

Award Information

Anticipated Type of Award: Cooperative Agreement

Estimated Number of Awards: 5

in FY 2019

Anticipated Funding Amount: $5,000,000 to $7,500,000

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

Eligibility Information

Who May Submit Proposals:

Proposals may only be submitted by the following:

- Jurisdictions that meet the EPSCoR eligibility criteria. For the FY2019 RII Track-2 FEC competition, these are: Alabama, Alaska, Arkansas, Delaware, Guam, Hawaii, Idaho, Kansas, Kentucky, Louisiana, Maine, Mississippi, Montana, Nebraska, Nevada, New Hampshire, North Dakota, Oklahoma, Puerto Rico, Rhode Island, South Carolina, South Dakota, Vermont, US Virgin Islands, West Virginia, and Wyoming.

  Organizations located in RII-eligible jurisdictions:

  - Institutions of higher education (Ph.D.-granting and non-Ph.D. -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.

Who May Serve as PI:

Principal Investigators of proposed RII Track-2 FEC projects must be affiliated with eligible organizations in EPSCoR jurisdictions. In addition, the lead Principal Investigator must be employed by the proposing organization.

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 disciplinary research expertise in the focus area of the research being proposed.

PIs and Co-PIs on current NSF EPSCoR RII Track-2 awards with end dates later than October 31, 2019 are not eligible to submit proposals as a PI or Co-PI in this competition.

Limit on Number of Proposals per Organization: 1

Only one RII Track-2 FEC proposal may be submitted in response to this solicitation by an organization in a RII-eligible jurisdiction.

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

Investigators cannot be PI or co-PI on more than one proposal.

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 FastLane: *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:**

  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):

  November 26, 2018

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

  January 25, 2019

Proposal Review Information Criteria

Merit Review Criteria:

National Science Board approved criteria. Additional merit review considerations 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

A. EPSCoR Mission and Goals

The mission of EPSCoR is to assist the National Science Foundation in its statutory function "to strengthen research and education in science and engineering throughout the United States and to avoid undue concentration of such research and education." EPSCoR goals are to:

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

B. Criteria for Eligibility to Participate in the Research Infrastructure Improvement Track-2: Focused

EPSCoR Collaborations (RII Track-2 FEC)

The following EPSCoR jurisdictions are RII-eligible for the FY 2019 RII Track-2 FEC competition: Alabama, Alaska, Arkansas, Delaware, Guam, Hawaii, Idaho, Kansas, Kentucky, Louisiana, Maine, Mississippi, Montana, Nebraska, Nevada, New Hampshire, North Dakota, Oklahoma, Puerto Rico, Rhode Island, South Carolina, South Dakota, Vermont, US Virgin Islands, West Virginia, and Wyoming.

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 National Academy of Sciences, the EPSCoR 2020 workshop, the EPSCoR 2030 workshop and NSF priorities. 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.

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 increase scientific competitiveness at the national or regional level.

II. PROGRAM DESCRIPTION

RII Track-2 FEC Program Description

The primary driver for RII Track-2 FEC investments is the need to build investigator-driven, interjurisdictional research collaborations that have the potential to be nationally and internationally competitive. The project description must 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 rapidly alone. RII Track-2 FEC proposals are unique in their integration of researchers into collaborative teams, and must develop a diverse, well-prepared, STEM-enabled workforce necessary to sustain research competitiveness. The recruitment and/or development of diverse early-career faculty 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, so that EPSCoR investigators can more successfully pursue significant opportunities of national and international importance in science and engineering research and education. Non-EPSCoR and international collaborations may be included, but no EPSCoR funds should be directed to these institutions.

Central to the success of the proposal is the 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 benefitting from projects at levels that are appropriate to their capabilities.

To ensure maximum impact of limited EPSCoR funds, requests for funding must:

- Add significantly to the research capability of the participating jurisdictions in a 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 diverse early-career faculty;
- Engage the full diversity of the participating jurisdictions' resources in STEM workforce development; and
- Present a detailed strategy to generate 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, and a timetable for achieving goals is a requirement for EPSCoR support.

In FY 2019, RII Track-2 FEC proposals must be aligned with the following focus area: "Harnessing Big Data to solve problems of national importance." Solutions to many of the pressing problems facing society may require the integration of teams of scientists and engineers and the analysis of large and complex data sets arising from multi-disciplinary projects. Proposals submitted for the FY19 RII Track-2 FEC competition should be firmly placed in the context of NSF's "Harnessing the Data Revolution," one of NSF's Ten Big Ideas, and must address a specific and compelling problem related to a scientific topic area of national importance. The proposals should clearly identify and motivate the importance and relevance of the chosen topic area in the context of complex data sets and the current status of ongoing work in the area. Projects should demonstrate a multi-disciplinary nature, with the analysis of complex, quantitative and/or qualitative data sets as the central activity. Development of algorithms and software frameworks for the integration of the diverse data sets may be included in the proposal.

Successful proposals will emphasize how new information can be obtained from better connections among data sources, utilization of data (including data from multiple facilities, techniques, and/or instruments), and how this will be used to address the specific problem of national importance. Proposers are encouraged to take advantage of existing data sets, where available. The creation of large-scale databases *per se* is not the focus of this solicitation, although the development and enhancement of such databases may be proposed as one element towards producing the final provisioning of data-enabled cyberinfrastructure that significantly increases the value of these data as well as their insights, predictions, and ultimate applicability.

Proposals may focus on any area of science or engineering that NSF supports, and the scientific questions addressed should present clear focus on projects that require solutions through the use of complex data sets. RII Track-2 support may leverage, but should not duplicate, other available federal, jurisdictional, or organizational resources.

Furthermore, the anticipated needs of the future workforce mandate that data science skills be incorporated broadly across education programs; therefore, projects should develop strong educational programs for analysis of complex data sets that can be implemented across institutions of higher learning in participating jurisdictions. Additionally, NSF and EPSCoR recognize that STEM talent must be cultivated in underrepresented populations of individuals, such that proposals should include a strong commitment to building a diverse workforce. The inclusion and involvement of diverse educational institutions (e.g., Primarily Undergraduate Institutions and Minority Serving Institutions) and under-represented minorities in STEM is strongly recommended, and involvement and mentoring of early-career faculty is required. More information on NSF's commitment to broadening participation can be found in the "Framework for Action Report."

Proposals that do not align with this focus area will be returned without review. The proposed research and education activities, innovation, workforce development, diversity, sustainability, and other project activities should be closely tied to the focus area.

The proposed RII Track-2 FEC activities should not duplicate other ongoing RII activities or any other activities in the jurisdictions, but may leverage and build upon the existing infrastructure.

Eligible Organizations and Activities

RII Track-2 FEC proposals may include support for academic, jurisdictional, profit and non-profit organizations, as well as eligible individuals employed by such organizations. In addition, cooperative programs among research institutions within or across EPSCoR jurisdictions, or between jurisdictions' research and predominantly undergraduate institutions, especially minority serving institutions within the jurisdictions, qualify for EPSCoR support.

In all cases, PIs of proposed EPSCoR projects must be affiliated with institutions of higher education, agencies, or organizations within the participating jurisdictions. The PI and co-PIs must all have disciplinary expertise in the research area being proposed. Whereas the proposed project may employ collaborations between EPSCoR and non-EPSCoR participants, EPSCoR funding can only be requested and used for the EPSCoR-based components. In addition, all activities carried out under an EPSCoR award are subject to the restrictions concerning eligible STEM disciplines and activities detailed in the NSF PAPPG found on the NSF website at https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg

III. AWARD INFORMATION

The RII Track-2 FEC award amount is restricted based on the number of eligible jurisdictions participating in the project. If institutions 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. If institutions 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. Program budget, number of awards and average award size/duration are subject to the quality of proposals and availability of funds.

IV. ELIGIBILITY INFORMATION

Who May Submit Proposals:

Proposals may only be submitted by the following:

- Jurisdictions that meet the EPSCoR eligibility criteria. For the FY2019 RII Track-2 FEC competition, these are: Alabama, Alaska, Arkansas, Delaware, Guam, Hawaii, Idaho, Kansas, Kentucky, Louisiana, Maine, Mississippi, Montana, Nebraska, Nevada, New Hampshire, North Dakota, Oklahoma, Puerto Rico, Rhode Island, South Carolina, South Dakota, Vermont, US Virgin Islands, West Virginia, and Wyoming.

  Organizations located in RII-eligible jurisdictions:

  - Institutions of higher education (Ph.D.-granting and non-Ph.D. -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.

Who May Serve as PI:

Principal Investigators of proposed RII Track-2 FEC projects must be affiliated with eligible organizations in EPSCoR jurisdictions. In addition, the lead Principal Investigator must be employed by the proposing organization.

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 disciplinary research expertise in the focus area of the research being proposed.

PIs and Co-PIs on current NSF EPSCoR RII Track-2 awards with end dates later than October 31, 2019 are not eligible to submit proposals as a PI or Co-PI in this competition.

Limit on Number of Proposals per Organization: 1

Only one RII Track-2 FEC proposal may be submitted in response to this solicitation by an organization in a RII-eligible jurisdiction.

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

Investigators cannot be PI or co-PI on more than one proposal.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Letters of Intent *(required)*:

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

The LOI contains "Synopsis" and "Other Comments" text data fields, each of which is limited by FastLane to 2,500 characters. 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 panelists or used in any manner to judge the merit of the proposed research. Due to the space limitations, it is in the proposers' 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 which EPSCoR jurisdictions are participating in the proposal.

A list of science/research keywords should be entered under the "research keywords" entry to assist NSF EPSCoR staff in preparing for proposal review. For additional information regarding LOI submission please see the PAPPG Chapter I.D.1.

Letter of Intent Preparation Instructions:

When submitting a Letter of Intent through FastLane 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 Grants.gov or via the NSF FastLane system.

- Full proposals submitted via FastLane: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the *NSF Proposal & Award Policies & 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) 292-7827 or by e-mail from nsfpubs@nsf.gov. Proposers are reminded to identify this program solicitation number in the program solicitation block on the NSF Cover Sheet For Proposal to the National Science Foundation. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.
- 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) 292-7827 or by e-mail from nsfpubs@nsf.gov.

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 institutions in the RII-eligible EPSCoR jurisdictions listed in Section IV of this solicitation. No institution may submit more than one proposal.
- The proposal section labeled Project Description may not exceed 20 pages, including text, as well as any graphic or illustrative materials. Page limitations also apply to specific subsections of the proposal. Proposals that exceed the page limitations or that do not contain all items described below will be returned without review.

Note: Proposals that use the maximum number of pages in each subsection of the Project Description will not be in compliance with the overall 20 page limitation.

The RII Track-2 FEC proposal must include the following elements:

1. **NSF Cover Sheet.** The project title must begin with "RII Track-2 FEC:" and follow with an informative title in the topic area. The PI must be a researcher from the submitting jurisdiction and all other participating jurisdictions should have at least one co-PI listed on the cover sheet.
2. **Project Summary (1 page maximum).** Provide an overview, which briefly describes: 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. In separate statements provide a succinct summary of the intellectual merit and broader impacts of the proposed project. Proposals that do not contain the Project Summary, including an overview and separate statements on intellectual merit and broader impacts will not be accepted by FastLane or will be returned without review. At the bottom of the Project Summary, PIs should indicate the Letter of Intent (LOI) number, and the NSF Directorate, Division, and Program that most closely aligns with the proposal's research focus.
3. **Table of Contents.** The Table of Contents is automatically generated and cannot be edited.
4. **Project Description (20 pages maximum).** The project description is the centerpiece of the RII Track-2 FEC proposal. 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 long-lasting impacts. In addition to the requirements contained in PAPPG Chapter II C.2.d, the project description must articulate clear plans for research, diverse workforce development (with particular emphasis on early-career faculty; see Section 4.3.2), project evaluation, and sustainability of activities beyond the project period. Proposals should also include a strong rationale for the establishment of the interjurisdictional collaboration and demonstrate that the collaboration is well positioned to produce results that cannot be obtained by researchers in a single jurisdiction. The project description must clearly document the role of each jurisdiction and institution in the project activities as well as the expected contributions of each faculty-level participant in achieving the proposed collaborative activities and goals. It should also define the leveraging role for the proposed NSF EPSCoR RII Track-2 FEC project within the broader context of other NSF investments and present a viable plan for increasing competitiveness in the focus area of the proposal. A timeline for meeting the project goals and milestones must be included. The requested NSF support should be consistent with the project scope and activities. The project description must include an implementation plan that details how the collaboration will be coordinated and the roles and responsibilities of key personnel. A clear description of how the project builds future leadership

in the focus area of the proposal through the recruitment, training, and participation of junior faculty should be provided. An evaluation plan should be included that describes mechanisms for formative and summative evaluation of the project's progress and how the project leadership will respond to evaluation findings and adjust strategies, if needed, to accomplish goals during the course of the project.

Elements of the project description are:

4.1 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 the FY 2018 competition.

4.2 Results from Relevant Prior Support (2 pages maximum). A section on results from relevant prior NSF support must be included and the relevance of that support to the proposed activities explained. 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. In addition, this section should summarize the coordination and synergy among EPSCoR and other NSF investments in the jurisdiction.

4.3 Research, Collaboration, and Workforce Development (18 pages maximum). The Research, Collaboration, and Workforce Development program is the focal point from which all other project elements derive. This plan is the primary element that will be judged during the merit review process for intellectual merit and broader impacts according to NSF merit review procedures. Provide a concise description of the long-term research and education goals and intellectual focus, and describe the planned activities in sufficient detail to enable their scientific merit and broader impacts to be assessed. Present 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. Include detailed plans for recruitment or development of diverse early-career faculty, and plans to prepare them for future leadership roles. The Research, Collaboration, and Workforce Development description must contain sufficient details regarding the scientific hypotheses, goals, and research and training methods (laboratory, field, theoretical, computational, or other) such that experts in the field of proposed research or closely related fields may accurately judge the intellectual merit and broader impacts of the proposed research.

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.
- Clearly establish the means of developing a coordinated, collaborative approach involving investigators across different institutions and jurisdictions. 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).

4.3.1 Interjurisdictional Collaborations and Partnerships. Interdisciplinary collaborative research brings with it the challenge of developing productive high-performing research teams involving multiple researchers from different institutions 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 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. Explain how each participating jurisdiction will contribute to and benefit from the proposed collaboration in a meaningful and distinct way. Specify how the project will benefit from the RII Track-2 FEC framework for pursuing the collaborative activities.

4.3.2 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.

The workforce development plan must include explicit efforts for the recruitment and/or development of diverse early-career faculty in the project's research activities. 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 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 postdocs and students should be designed to 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. The proposed program should present an implementation strategy with initial baseline assessment, clearly articulated goals, milestones, and timelines.

4.4 Evaluation and Assessment Plan (2 pages maximum). The development of the Evaluation and Assessment plan should occur as an integral part of the project design to aid in the identification of outcomes and impacts for goals and objectives. Provide a formative and summative evaluation and assessment plan, 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 document how the collaborative efforts are strengthened with time. Summarize how the metrics will be used to assess and evaluate the impacts and achievements of the project activities. The plan must detail annual metrics that indicate how the project is progressing towards developing and strengthening collaborations and meeting project goals, as well as mechanisms and strategies for course corrections based on evaluation feedback. It is expected that an expert evaluator will provide annual evaluation and assessment of the project. In addition to the project-specific evaluation, all RII Track-2 FEC awardees will also be required to participate in a centralized project output 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. The proposal budget must include funds for this activity. See Budget Information (section B below).

4.5 Sustainability Plan (2 pages maximum). Provide a plan for long-term sustainability of the proposed activities. Describe the strategy for sustaining the impacts and achievements of the project beyond the award performance period. The plan must provide realistic, annual metrics for submissions of proposals to specific NSF programs by the project team in the focus area topic. The plan should also include how proposed new faculty hires, if any, will be supported beyond the award period.

5. **References Cited.** References cited in the project description should be listed in this section. See PAPPG Chapter II Section C.2.e. While there is no established page limitation for the references, this section must include bibliographic citations only and must not be used to provide parenthetical information outside of the 20 -page Project Description.
6. **Biographical Sketches.** Include a biographical sketch for each faculty-level participant and evaluator according to standard NSF proposal guidelines. See PAPPG Chapter II Section C.2.f.
7. **Budget Pages and Budget Justification.** The budget should be consistent with and appropriate to the scope of the activities presented in the project description. Prepare budget pages for each year of support and a budget justification (not to exceed five pages). A cumulative budget page will be automatically generated. Budgets for participating institutions in the collaboration should be included in the lead institution's budget as subawards. Each institution that receives a subaward must also submit a separate budget and budget justification (not to exceed five pages). See Budget Information (section B below).
8. **Current and Pending Support.** List the current and pending support for each faculty-level and equivalent investigator. (Include this proposal at the top of the list of current and pending support.) See PAPPG Chapter II Section C.2.h.
9. **Facilities, Equipment, and Other Resources.** Each EPSCoR jurisdiction in the collaboration should provide a description of available facilities, equipment, and other relevant resources. See PAPPG Chapter II Section C.2.i.
10. **Supplementary Documentation (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, the role and extent of involvement should be clearly outlined in the project description.
    - Up to a maximum of five Letters of Support from partnering institutions/organizations or jurisdictional officials may be included.
11. **Single Copy Documents (Collaborators & Other Affiliations - COA - Information)**

Proposers should follow the guidance specified in Chapter II.C.1.e of the NSF PAPPG. Grants.gov Users: The COA information must be provided through use of the COA template and uploaded as a PDF attachment.

B. Budgetary Information

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 institutions from two RII-eligible EPSCoR jurisdictions collaborate on a proposal, the award amount may not exceed $1 million per year. If institutions from three or more RII-eligible EPSCoR jurisdictions collaborate on a proposal, the 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 kickoff meeting at the NSF Headquarters in year 1 only.
- Budget should include support for NSF centralized project data collection activities (estimated at $12,500 per year to be entered in budget line G.6:Other).
- Budgets for participating institutions must be included as sub awards to the budget of the submitting institution. Only the budget of the submitting institution may include sub awards (i.e., no sub awards may appear in the budgets of sub awardee institutions). Each sub award must include a separate budget justification of no more than five pages (see PAPPG Chapter II section 2.g).
- Subawards to institutions in non-EPSCoR jurisdictions are not allowed. NSF EPSCoR reserves the right to disallow any such costs prior to making an award.
- Financial compensation for any external evaluator(s) involved in the project must be included in the budget of the submitting institution under NSF budget line G.3(Consultant Services). No other form of financial compensation for external evaluation services is allowed.

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

C. Due Dates

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

    November 26, 2018

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

    January 25, 2019

D. FastLane/Grants.gov Requirements

For Proposals Submitted Via FastLane:

To prepare and submit a proposal via FastLane, see detailed technical instructions available at: https://www.fastlane.nsf.gov/a1/newstan.htm. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail fastlane@nsf.gov. The FastLane Help Desk answers general technical questions related to the use of the FastLane 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: http://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 the NSF FastLane system for further processing.

Proposers that submitted via FastLane are strongly encouraged to use FastLane 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 *Building the Future: Investing in Discovery and Innovation - NSF Strategic Plan for Fiscal Years (FY) 2018 – 2022*. 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.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 underrepresented minorities 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:

- The responsiveness of the proposed project to the identified programmatic focus area: "Harnessing Big Data to solve problems of national importance."
- 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 - Are the PI and co-PIs active researchers in the focus areas being proposed, with recent publications or extramural awards in the focus area indicating that they can form the intellectual nucleus for a sustained collaborative effort? How do the research activities in different jurisdictions support and foster a sustained collaborative effort? Is the scope of work such that no single jurisdiction could accomplish the goals individually? Is the collaboration balanced, among jurisdictions and institutions, such that each participant is contributing to and benefitting from the project at an appropriate level?
- 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 pipeline of highly skilled students and postdoctoral fellows that can excel in this focus area and succeed in careers in academia and/or industry? How effectively will diverse populations (e.g., of women and underrepresented groups 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? Inclusion of partners from Primarily Undergraduate Institutions or Minority Serving Institutions in research is strongly recommended.
- 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 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, innovation, 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

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 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 a Grants Officer in the Division of Grants and Agreements. 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) 292-7827 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.

Special Award Conditions:

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.

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 the EPSCoR jurisdiction.

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.

Additional reporting requirements apply. Please see the "Special Award Conditions" section.

VIII. AGENCY CONTACTS

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

General inquiries regarding this program should be made to:

- John-David Swanson, Program Director, telephone: (703) 292-2898, email: jswanson@nsf.gov

- Andrew V. Ogram, Program Director, telephone: (703) 292-7374, email: aogram@nsf.gov

- Sean Kennan, telephone: (703) 292-7575, email: skennan@nsf.gov

- Jeanne Small, telephone: (703) 292-8623, email: jsmall@nsf.gov

- Timothy VanReken, telephone: (703) 292-7378, email: tvanreke@nsf.gov

- Uma Venkateswaran, telephone: (703) 292-7732, email: uvenkate@nsf.gov

- Chinonye Whitley, telephone: (703) 292-8458, email: cnnakwe@nsf.gov

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 1-800-673-6188; e-mail: fastlane@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 http://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.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.

> 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.
>
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>
> - **Location:**   2415 Eisenhower Avenue, Alexandria, VA 22314
>
> - **For General Information**   (703) 292-5111
>   (NSF Information Center)**:**
>
> - **TDD (for the hearing-impaired):**   (703) 292-5090

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        or telephone: (703) 292-7827

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