

EPSCoR Research Infrastructure Improvement Program

Track-1:

(RII Track-1)

PROGRAM SOLICITATION

NSF 16-557



National Science Foundation

Office of Integrative Activities

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

July 05, 2016

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

August 02, 2016

IMPORTANT INFORMATION AND REVISION NOTES

- A letter of Intent (LOI) is required to compete in the RII Track-1 competition. LOIs must be submitted by the Authorized Organizational Representative (AOR) of the submitting institution via FastLane on or before the LOI due date.
- Only eligible EPSCoR jurisdictions (see [eligibility](#) table) with current RII Track-1 awards that expire before October 1, 2017 and those without a current RII Track-1 award may compete in the FY 2017 RII Track-1 competition.
- RII Track-1 proposals may request up to \$20 million total for 5 years.
 - Funding requests must be for a duration of 5 years.
 - Budget requests are no longer limited to \$4 million per year; however, the total request may not exceed \$20 million.
- Revisions to the Project Description will not be accepted after the full proposal deadline.
- There are important requirements for the proposal Project Description. Proposals which do not conform to the Proposal Preparation and Submission Instructions may be returned without review. (See V.A. Proposal Preparation Instructions).
 - The page limit for the Project Description is 35 pages.
 - Relevant baseline data must be provided to support efforts to engage students, distinct groups, or populations, especially in the Workforce Development and Diversity Plans (See 4.3.1 Workforce Development and 4.4 Diversity Plan under V.A. Proposal Preparation Instructions.)
 - Budget tables must be included in the Project Description. (See 4.8.3 Summary Tables of Requested NSF Support, under V.A. Proposal Preparation Instructions.)
- Proposals must include fully searchable PDF versions of complete and accurate lists of participants and conflicts of interest. (See V.A.10 Supplementary Documents).
- An explanation of the source, nature, amount and availability of the required cost sharing must be provided in the budget justification (see the Grant Proposal Guide ([GPG Chapter II C.2.g.xi](#)) and V.A.10 Budget Justification below).

Any proposal submitted in response to this solicitation should be submitted in accordance with the revised *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) ([NSF 16-1](#)), which is effective for proposals submitted, or due, on or after January 25, 2016.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

EPSCoR Research Infrastructure Improvement Program Track-1: (RII Track-1)

Synopsis of Program:

The Experimental 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 (see [eligibility](#) table). 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.

Research Infrastructure Improvement Track-1 (RII Track-1) awards provide up to \$20 million total for 5 years to support physical, human, and cyberinfrastructure improvements in research areas selected by the jurisdiction's EPSCoR steering committee as having the best potential to improve future R&D competitiveness of the jurisdiction.

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.

- Sean C. Kennan, telephone: (703) 292-7575, email: skennan@nsf.gov
- Robert Coyne, telephone: (703) 292-2257, email: rcoyne@nsf.gov
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- C. Susan Weiler, telephone: (703) 292-7860, email: sweiler@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: 7

Anticipated Funding Amount: \$28,000,000 in FY 2017 (pending quality of proposals and availability of funds).

Eligibility Information

Who May Submit Proposals:

Proposals may only be submitted by the following:

- Only jurisdictions that meet the EPSCoR [eligibility](#) criteria may submit proposals to the Research Infrastructure Improvement Program Track-1 (RII Track-1) competition. In addition, only eligible EPSCoR jurisdictions with current RII Track-1 awards that expire before October 1, 2017 and those without current RII Track-1 awards may compete in the FY 2017 RII Track-1 competition. The jurisdiction's EPSCoR steering committee must designate a fiscal agent/proposing organization as the responsible recipient for the RII Track-1 award. This must be the employing organization of the Project Director. The jurisdiction must have in place a Science and Technology (S&T) Plan in order to submit an RII Track-1 proposal.

Who May Serve as PI:

The Project Director and Principal Investigators of proposed EPSCoR projects must be affiliated with research universities, agencies, or organizations within the participant jurisdiction. In addition, the Project Director must be the lead Principal Investigator and be employed by the fiscal agent/proposing organization.

Limit on Number of Proposals per Organization: 1

An eligible EPSCoR jurisdiction may submit only one Research Infrastructure Improvement Track-1 (RII Track-1) proposal in response to this solicitation. In addition, only the designated fiscal agent/proposing organization, acting on behalf of a jurisdiction's EPSCoR steering committee, may submit the RII Track-1 proposal.

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

An investigator may serve as Principal Investigator (PI) or Co-PI on only **one** RII Track-1 project.

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, Part I: Grant Proposal Guide (GPG) Guidelines apply. The complete text of the GPG is available electronically on the NSF website at: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg.
 - 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:**

Cost Sharing is required. Please see the full text of this solicitation for further information.

- **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):

July 05, 2016

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

August 02, 2016

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 advance excellence in science and engineering research and education in order to achieve sustainable increases in research, education, and training capacity and competitiveness that will enable EPSCoR jurisdictions to have increased engagement in areas supported by NSF.

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 diverse individuals, institutions, and organizations in the project's science and engineering research and education initiatives;
- effect sustainable engagement of project participants and partners, the jurisdiction, the national research community, and the general public through data-sharing, communication, outreach, and dissemination; and,
- impact research, education, and economic development beyond the project at academic, government, and private sector levels.

B. Criteria for Eligibility to Participate in the Research Infrastructure Improvement Track-1: (RII Track-1)

Research Infrastructure Improvement Program Track-1 (RII Track-1) [eligibility](#) is based on two primary considerations:

- A jurisdiction's demonstrated commitment to develop its research foundation and to improve the quality of science, technology, engineering, and mathematics (STEM) research conducted at its universities and colleges, and
- A jurisdiction's most recent three-year history of research funds awarded by NSF relative to the Foundation's total research budget for that same period.

Regarding the second consideration, 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 averaged over the most recent three year period (see [eligibility](#) table). Adjustments are made in the rare instances where a single large NSF-funded national or international facility skews the data.

A newly eligible jurisdiction must have received a planning grant and have developed a jurisdiction Science and Technology (S&T) Plan before an RII proposal can be submitted. A "new" EPSCoR-eligible jurisdiction is defined as a State, US Territory, or US Commonwealth that (1) previously did not qualify via the established 0.75 percent criterion, but is declared eligible under the most recent publication of the annual NSF EPSCoR eligibility list and (2) has demonstrated commitment to developing their research bases. Planning grant proposals can be submitted at any time following the most recent declaration of eligibility.

Newly eligible jurisdictions may seek such planning support to formulate a documented vision consistent with the jurisdiction's S&T Plan and an implementation design for their research, education, and innovation strategies. An expected outcome from any supported planning activity is the submission of a competitive RII proposal and proposals to NSF, which combine capacity-building with capability enhancement for addressing bold opportunities characterized by regional relevance and national importance.

A jurisdiction wishing to submit a planning grant proposal must notify NSF EPSCoR of the intent to submit with a brief description of the intended planning activities and then meet with NSF EPSCoR officials to discuss the conceptual project, potential partners and estimated cost. Depending on the outcome of these discussions, the jurisdiction may be invited to submit an EPSCoR planning proposal, in accordance with NSF's grant proposal guidelines.

Any currently participating EPSCoR jurisdiction that does not meet the 0.75 percent eligibility criterion in a given fiscal year for an RII competition will continue to be eligible for EPSCoR Co-Funding and Outreach funding for the subsequent three years.

Please see information available at the [NSF EPSCoR Website](#) for eligibility and other information pertaining to the program.

II. PROGRAM DESCRIPTION

RII Track-1 Program Description

The research and education program is the central piece of the RII Track-1 proposal. The intellectual merit and broader impacts of the proposed activities provide the rationale for the requested infrastructure investments that, in turn, enhance the overall research capacity and competitiveness of the jurisdiction. These proposals are unique in their jurisdiction-wide scope and complexity; in their integration of individual researchers, institutions, and organizations; and in their role in developing the diverse, well-prepared, STEM-enabled workforce necessary to sustain research competitiveness and catalyze economic development.

Essential to EPSCoR's goal of enhancing the competitive position of jurisdictions' research and education in science and engineering is a well-designed jurisdiction-wide S&T Plan, which must be in place in order to submit an RII Track-1 proposal. The S&T Plan establishes jurisdiction-wide goals and objectives and provides a framework that guides the jurisdiction's utilization of resources from EPSCoR and other stakeholders to achieve them. The S&T Plan should be informed by the jurisdiction's Economic Development Plan (if applicable) and should describe innovation pathways for bringing outputs and outcomes of the proposed RII Track-1 research to the marketplace. The S&T Plan must be included in supplementary documentation (see: V. Proposal Preparation and Submission Instructions).

Each jurisdiction must establish and utilize an EPSCoR steering committee that works closely with leaders in academe, government, and the private sector. The committee will identify potential R&D improvement strategies and activities that are consistent with the S&T Plan and most likely to advance the development of a nationally competitive academic R&D capability. The strategies for academic R&D capability are expected to promote activities in support of EPSCoR program goals (see I.A EPSCoR Mission and Goals, above).

In preparation for submitting a proposal, the EPSCoR steering committee of the jurisdiction is expected to have undertaken a recent comprehensive analysis of the strengths, barriers, and opportunities for further development of its institutions in support of overall objectives in research, education, and innovation. The steering committee should evaluate the maturity of ongoing efforts as well as the potential new research directions and their alignment with the state S&T plan. An EPSCoR RII Track-1 proposal must describe how the research and other project elements will align with the jurisdiction's S&T Plan as well as the strategy and implementation mechanisms to develop, use, and sustain the diverse human, physical, and technological resources within the jurisdiction.

Successful proposals provide sound platforms and opportunities for enhanced academic R&D competitiveness by a jurisdiction's colleges and universities, including implementation mechanisms that have a high probability of realizing stated goals and objectives and pragmatic plans for generation of sustained non-EPSCoR support. It is expected that the infrastructure improvement strategies will enable targeted research areas to become viable for securing new sources of future non-EPSCoR funding.

Infrastructure enhancement strategies should focus available resources on research, education, and innovation activities that are consistent with specified long-term jurisdictional and regional objectives. In conjunction with this focus, the proposed education activities, innovation projects, workforce development efforts, and other project activities should be integrated with identified research theme(s). EPSCoR strives for improvements that will significantly increase the R&D capacity of a jurisdiction to enable stronger competitiveness in NSF, including large scale and cross-cutting opportunities.

A. Examples of RII Track-1 Activities

Examples of RII Track-1 activities for jurisdictional research and educational infrastructure improvement include, but are not limited to:

- Pursuit of hypothesis- and problem-driven research that requires a comprehensive and integrative approach to a grand challenge in a scientific area of global, national, regional, or jurisdictional importance/relevance;
- Support for competitive levels of "start-up" funding for new faculty (this should connect to the thematic area(s) or new and emerging areas as outlined in the proposal);
- Support for competitive levels of strategic funding to attract and/or retain established faculty who are active researchers in areas aligned with the thematic areas of the proposal;
- Development of meaningful partnerships, including jurisdictional and regional collaborations, among EPSCoR jurisdiction-based colleges and universities; strong intellectual engagement of participants from institutions of higher education in EPSCoR jurisdictions and nationally recognized centers of R&D activity (e.g., federal and industrial R&D laboratories, NSF-sponsored research centers, and academic institutions with nationally-recognized research capabilities); and productive partnerships between the jurisdiction's universities and the private sector in the region. Of special value are those alliances that increase linkages between EPSCoR researchers and their counterparts in research and/or technology-based small businesses and thereby increase the competitiveness of the jurisdiction's S&T entrepreneurial talent for federal Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) grants;
- Integration of research and education by establishing research training groups for undergraduate or graduate students, or similar appropriate mechanisms, to encourage multidisciplinary research-based educational experiences and connections with the private sector, industry, and national laboratories;
- Support for faculty and student teams that include persons with disabilities and are diverse in gender, race, and ethnicity that will result in a strong, quantifiable impact on the STEM workforce;
- Support for the acquisition of equipment for research and other discovery-based learning activities;
- Support for projects targeting the full diversity of institutions across the jurisdiction, including 2-year, 4-year, and minority-serving institutions; and,
- Support for activities that promise extraordinary outcomes including revolutionizing disciplines, creating new fields, or disrupting accepted theories and perspectives.

All proposed activities should be related to and integrated with the proposed research themes. EPSCoR RII Track-1 support should not duplicate other available federal, jurisdictional, or institutional resources and should increase scientific competitiveness at the national or regional level.

B. Eligible Organizations and Institutions

Proposals requesting funds for research infrastructure improvement may include support for academic, for-profit, and non-profit organizations, as well as individuals employed by such organizations (for additional details, see next paragraph). Cooperative programs among research universities within EPSCoR jurisdictions or between a jurisdiction's research universities and predominately undergraduate institutions, especially minority serving institutions, qualify for EPSCoR support.

In all cases, the Project Director and Principal Investigators of proposed EPSCoR projects must be affiliated with research universities, agencies, or organizations within the participant jurisdiction. In addition, the Project Director must be the lead Principal Investigator and be employed by the fiscal agent/proposing organization. Whereas the proposed project may employ collaborations between EPSCoR and non-EPSCoR including international 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 science, technology, engineering, and mathematics disciplines and activities detailed in the [NSF Proposal and Award Policy and Procedures Guide \(PAPPG\)](#) found on the NSF website.

III. AWARD INFORMATION

Anticipated Type of Award: Cooperative Agreement

Estimated Number of Awards: 7

Duration: Award duration of up to 5 years

Anticipated Funding Amount: \$28,000,000 in FY 2016 (pending quality of proposals and availability of funds)

Limitation of Awards:

- RII Track-1 award amount not to exceed \$20 million total for 5 years.
- Estimated program budget, number of awards and average award size/duration are subject to the quality of proposals and availability of funds.
- Eligible jurisdictions with active awards will be allowed to have a maximum overlap period of six months for two active RII Track-1 awards (i.e., the start date of a new award may not occur earlier than six months before the end date of a previous award). In cases where no-cost extensions are employed, the maximum overlap for two awards still cannot exceed six months.

IV. ELIGIBILITY INFORMATION

Who May Submit Proposals:

Proposals may only be submitted by the following:

- Only jurisdictions that meet the EPSCoR [eligibility](#) criteria may submit proposals to the Research Infrastructure Improvement Program Track-1 (RII Track-1) competition. In addition, only eligible EPSCoR jurisdictions with current RII Track-1 awards that expire before October 1, 2017 and those without current RII Track-1 awards may compete in the FY 2017 RII Track-1 competition. The jurisdiction's EPSCoR steering committee must designate a fiscal agent/proposing organization as the responsible recipient for the RII Track-1 award. This must be the employing organization of the Project Director. The jurisdiction must have in place a Science and Technology (S&T) Plan in order to submit an RII Track-1 proposal.

Who May Serve as PI:

The Project Director and Principal Investigators of proposed EPSCoR projects must be affiliated with research universities, agencies, or organizations within the participant jurisdiction. In addition, the Project Director must be the lead Principal Investigator and be employed by the fiscal agent/proposing organization.

Limit on Number of Proposals per Organization: 1

An eligible EPSCoR jurisdiction may submit only one Research Infrastructure Improvement Track-1 (RII Track-1) proposal in response to this solicitation. In addition, only the designated fiscal agent/proposing organization, acting on behalf of a jurisdiction's EPSCoR steering committee, may submit the RII Track-1 proposal.

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

An investigator may serve as Principal Investigator (PI) or Co-PI on only **one** RII Track-1 project.

Additional Eligibility Info:

A newly eligible jurisdiction must have received a planning grant and have developed a jurisdiction S&T Plan before an RII proposal can be submitted (see RII Eligibility I.B above).

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Letters of Intent (required):

A 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 a "Synopsis" text data field which is limited by FastLane to 2,500 characters. LOIs should use this space to describe, in as much detail as possible, the research topic areas to be addressed by the project. LOIs will be used to identify science research topics 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 therefore 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.

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 Grant Proposal Guide ([GPG 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 allowed
- A Minimum of 0 and Maximum of 99

Other Participating Organizations are allowed
- Research keywords is required when submitting Letters of Intent
- Submission of multiple Letters of Intent is not allowed

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 Grant Proposal Guide (GPG). The complete text of the GPG is available electronically on the NSF website at: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg. Paper copies of the GPG 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 Chapter II.C.2 of the [GPG](#) 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 GPG instructions.

The following instructions are specific to proposals submitted to the Research Infrastructure Improvement Program Track-1 (RII Track-1) competition and supplement the NSF GPG and NSF Grants.gov Application Guide:

- The jurisdiction's EPSCoR steering committee shall designate a fiscal agent/proposing organization for the project. This must be the employing organization of the Project Director/Lead Principal Investigator.
- Separately submitted collaborative RII Track-1 proposals will not be accepted and will be returned without review.
- The proposal section labeled Project Description may not exceed 35 pages, including text and 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 35 page limitation.

PROPOSAL REQUIREMENTS

The RII Track-1 Proposal must include the following elements:

1. NSF Cover Sheet

- The project title must begin with "RII Track-1:" and follow with an informative title.
- If the research will involve vertebrate animals or human subjects, the appropriate boxes on the Cover Sheet must be checked and the IACUC (Institutional Animal Care and Use Committee) or IRB (Institutional Review Board) application dates and relevant assurance numbers must be given if available at the time of proposal submission. If the project involves either vertebrate animals or human subjects, and the appropriate boxes are not checked on the Cover Sheet, the proposal may be returned without review. Projects must provide the IACUC or IRB certifications and documentation to NSF when requested.

2. Project Summary (1 page maximum). Provide a clear vision for and description of the proposed RII Track-1 project and its potential impact. Briefly describe the proposed scope, activities in research and education, and their integration. 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.

3. Table of Contents. Generated automatically by the system.

PROJECT DESCRIPTION REQUIREMENTS

The proposal must adhere strictly to the page limits, organization, headings, and subheadings described below, including all required tables. The Project Description may not be revised or altered after the full proposal deadline. Proposals that do not adhere to these requirements will be returned without review.

4. Project Description (35 pages maximum). The project description is the centerpiece of the RII Track-1 proposal. In addition to the requirements contained in [GPG Chapter II C.2.d](#), the project description must include clear, succinct goals, objectives, and activities for proposed research, education, workforce development, and sustainability beyond the project period. This section of the proposal should present the activities to be facilitated by the RII Track-1 project in a clear, compelling way and describe how the requested NSF support will enable successful pursuit of the project goals and lead to increased competitiveness for NSF (non-EPSCoR) funding. The project description must contain:

4.1 Status and Overview (3 pages maximum). Describe the current status of the jurisdiction's academic R&D enterprise, including the strengths, barriers, and opportunities for development of the academic institutions in support of overall R&D objectives. The proposal narrative should provide a convincing rationale for the project's scientific vision and indicate how the overall strategy, proposed implementation mechanisms, and infrastructure support will mitigate the identified barriers and improve academic research competitiveness.

4.2 Results from Relevant Prior NSF 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 RII awards, including major accomplishments in both intellectual merit and broader impacts. New hires from previous RII awards, their retention status, and the highlights of their research and education accomplishments including external grants, should be described. This section should indicate how many of the prior RII Track-1 awards' participants are part of this proposal. In addition, this section should summarize the coordination and synergy among EPSCoR and other NSF investments in the jurisdiction.

4.3 Research and Education Program (25 pages maximum). The Research and Education 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. For each area proposed, provide a concise description of the 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 each focus area in the context of other efforts in the field (with appropriate references), state the major challenges, and comment on novelty and/or originality of the proposed approach. The Research and Education 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. Any proposed activities to develop, improve, and deploy cyberinfrastructure must be integrated with and appropriate to the pursuit of the RII Track-1 project goals. Innovative use of cyberinfrastructure and technologies to broadly engage institutions, organizations, and sectors across the jurisdiction is encouraged.

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

Identify the senior leadership 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 multiple investigators and institutions. Describe interactions with other groups and organizations within the jurisdiction and at the national and international levels. The research and education program description must clearly demonstrate how each research focus area, theme, or component contributes to the jurisdiction's strategy for the advancement of future research, education, and innovation. The narrative should demonstrate how the activities are aligned with the jurisdiction's S&T Plan, and how they will advance the frontiers of knowledge and the jurisdiction's future competitiveness in the proposed research areas.
- Provide well-documented data and other evidence, including clear references and citations to data sources, to support claims throughout the Project Description. Research and Education, Workforce Development, and Diversity targets and goals should be substantiated by clear descriptions of the state of the art and current challenges in the research themes, educational arena, or academic environment, as appropriate. It is imperative that relevant baseline data be provided to support efforts to engage students, distinct groups, or populations, especially in the Workforce Development and Diversity Plans.

4.3.1 Workforce Development. The scope of RII Track-1 activities must include specific STEM workforce development activities that are integrated with the research and education program and contribute to the preparation of a new cadre of competitive researchers, innovators, and educators. The proposed program should present an implementation strategy with initial baseline assessment, clearly articulated goals, milestones, and timelines. Plans should include opportunities for faculty (especially early career faculty) and training opportunities for students; the students may be at any level of the STEM education continuum. The proposal should describe mentoring and professional development of students, junior or postdoctoral researchers, and early career faculty. Efforts that focus on high school and undergraduate education must describe the basis for their inclusion and their relevance to the research and education program. The narrative should indicate synergies between proposed workforce development activities and other NSF investments in the jurisdiction that focus on strengthening STEM workforce development. The workforce development plan should include baseline data as appropriate.

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

4.3.2 Seed Funding and Emerging Areas. This mechanism provides flexibility for the RII Track-1 to respond quickly and effectively to new opportunities and pursue high risk and high impact and transformative research. Briefly describe the mechanisms that will be employed to catalyze research in emerging areas including anticipated funding amounts and durations for seed projects. Seed funding through the RII Track-1 is not intended to provide a substitute for NSF individual investigator funding. The criteria and mechanisms for selecting and evaluating projects must be clearly described in terms of current needs and long-term sustainability.

4.4 Diversity Plan (2 pages maximum). The diversity plan should be integral to building capacity within a jurisdiction and ensuring that available human and institutional resources play a meaningful role in the pursuit of the goals of the project. This includes diversity of all types (individual, disciplinary, institutional, geographic, etc.). RII Track-1 project narratives should describe the current diversity status within the jurisdiction's S&T enterprise and provide plans for its improvement with specific milestones. Describe the basis for the choice in diversity improvement strategies. Activities that facilitate the entry of women, members of underrepresented groups, and persons with disabilities into the STEM pipeline, develop student career options, or expand institutional participation are particularly encouraged.

Diversity Plans must be supported by specific, well-documented baseline data, including clear references and citations to data sources. **Baseline data constitutes explicit, quantitative evidence (i.e., enrollment numbers, graduation rates, population statistics, etc.) that demonstrate the current status of the targeted population(s) or demographic(s) for the proposed effort(s).** Activities to increase, or achieve explicit levels of, the participation of specific groups or populations (esp. students) in proposed activities should be supported by data demonstrating the current rates or numbers of participation. If a strategy is being adapted from another successful project, cite the source of the activity and provide relevant data. It is imperative that relevant baseline data be provided to support efforts to engage distinct groups or populations. Reviewers will be instructed to consider the feasibility of proposed activities and in particular whether sufficient and accurate baseline data have been provided regarding the proposed goals for broadening participation and enhancing diversity (see VI.A. Merit Review Principles and Criteria, below).

4.5 Partnerships and Collaborations (3 pages maximum). Partnerships allow leveraging of resources and promote sustainability. Partnerships may seed science, engineering, and education collaborations that promote innovation and STEM pipeline development and can range in scope from intra-jurisdictional to inter-jurisdictional, regional, national, or international. Proposed activities should demonstrate how the anticipated partnerships and collaborations directly contribute to the attainment of project goals, increase research competitiveness, build and strengthen the STEM pipeline, provide opportunities for commercialization of research and education products, or pave the way for economic development. Proposed partnerships and collaborations may involve unfunded partners or stakeholders in the project. All activities should be detailed with clearly articulated goals, milestones, and timelines. The Partnerships and Collaborations section should specifically articulate partnerships with large NSF or other federally funded projects, including cyberinfrastructure resources, if applicable.

4.6 Communication and Dissemination Plan (2 pages maximum). Communication and dissemination are essential for successful collaboration, development of a diverse, well-trained STEM workforce and a scientifically informed citizenry. The dissemination of scientific results to stakeholders and citizens builds scientific literacy and strengthens educational and research capacity throughout jurisdictions. The Communication and Dissemination plan should have a strong connection to the Research and Education Plan; activities should be linked to specific project goals. It should indicate mechanisms for communication among project teams, activities that promote sharing of data and findings, and ways to broadly disseminate results. The proposal should clearly describe plans for two-way communication with stakeholders and broad dissemination of the project's results and impacts.

4.7 Sustainability Plan (3 pages maximum). RII Track-1 programs are catalytic, jurisdiction-wide investments in research and education infrastructure. A detailed plan for long-term sustainability of the proposed activities beyond the lifespan of the project is required.

4.7.1 Education and Human Resources Development. Describe the education and human resources development goals for sustainability, provide a rationale for those goals, and indicate desired outcomes for the 5-year period of the award and beyond. Indicate milestones and timelines for their achievement. Describe how the research, education, and partnership opportunities support the science, technology, and education goals of the jurisdiction. Outline plans for faculty and student recruitment and retention activities, training, mentoring, and related activities, including conferences, workshops, and summer schools, as appropriate.

4.7.2 Post RII Track-1 extramural funding. Successful RII Track-1 programs form the basis for leveraging and/or obtaining non-EPSCoR funding from the NSF as well as other extramural sources. Describe the vision and specific plans for sustaining the research and education activities beyond the duration of RII Track-1 support. Present a detailed strategy and timeline to generate subsequent, sustained, non-EPSCoR funding from federal, jurisdictional, or private sector sources. Include strategic, achievable goals for proposal submissions to NSF from RII participants during the award period.

4.8 Management, Evaluation and Assessment Plan (6 pages maximum). A comprehensive plan for management, as well as the evaluation and assessment of the RII Track-1 project must be included.

4.8.1 Project Management Team. The project management team is responsible for implementing the proposed activities and managing all aspects of the project. It is critical that the team be sufficient in number, diversity, and levels of expertise to assume technical and administrative oversight and accomplishment of project milestones. The management structure of the project should include descriptions of:

- EPSCoR steering committee: The committee should be composed of representatives from academe, government, and the private sector. Its role in project governance, including specific management responsibilities for the NSF EPSCoR project should be clearly detailed. In order to avoid conflicts of interests in project governance and leadership, the RII Track-1 Project Director, PIs, and co-PIs must not serve as voting members, Chairs, or co-Chairs of the EPSCoR steering committee of the submitting jurisdiction. In addition, RII participants may not serve on the EPSCoR steering committees of other jurisdictions.
- EPSCoR project management team: The roles and responsibilities of the Project Director (and Co-Directors or Co-PIs), administrative support personnel, and other team members must be clearly defined. A succession plan for key personnel should be included. The institutional affiliations and aggregate demographics for each team associated with the RII Track-1 project should be provided. The description of the project management should include mechanisms to effectively use resources and respond to emerging opportunities as they develop. Furthermore, the efforts of the management team's leadership in assessing project performance and enhancing public understanding of the role of science in service to society should be described.
- External Advisory Boards: RII Track-1 projects may utilize External Advisory Boards or Committees to provide advice and feedback on the project activities to the Project Director and management team. Where such boards or committees are utilized the proposal should describe their charge and provide the institutional affiliations and aggregate demographics, where known. Projects with external advisory boards are expected to forward reports, recommendations, and responses to such feedback to NSF EPSCoR for review. Recommendations that would constitute changes to the scope of the project if implemented may not be acted on without prior approval from NSF EPSCoR.

4.8.2 Evaluation and Assessment.

The project design should incorporate mechanisms to evaluate, assess, monitor, and provide meaningful feedback on progress, outcomes, and impacts of the project. This section should summarize proposed milestones and metrics that the project team will use to assess and evaluate progress and achievements of all required elements of the proposed project during the award period and beyond. This section should also specify the mechanisms for how the results and recommendations from evaluation and assessment will be fed back into project goals, milestones and metrics to ensure continual progress and attainment of project goals, targets, and impacts during the project period. Targets for all project elements, including research, education, and workforce development activities, should be accompanied by appropriate baseline data. Research goals, metrics, and milestones are an important aspect of the evaluation and assessment plan and these should be clearly specified. The description should include annual metrics, and milestones that will be used to assess progress.

Formative and summative assessment of project goals, milestones and metrics is required. In addition, to facilitate EPSCoR program-level evaluation, projects must provide data and cooperate with NSF staff and/or their contractors for such program-level endeavors.

The Evaluation and Assessment Plan must include annual review and evaluation of RII Track-1 project activities by an independent, external evaluator(s) during the award period. Reports prepared by the evaluator(s) must be submitted to NSF EPSCoR with the annual report. The project team's response to the external evaluation must also be included. The external evaluator(s) may only be financially compensated as a consultant(s) (see V.B Other Budgetary Limitations, below).

4.8.3 Summary Tables of Requested NSF Support. Proposals which do not include both of the following Budget Tables (A and B) as the last subsection of the Management and Evaluation section of the Project Description may be returned without review. The tables count towards the page limits for both the Project Description and the Management and Evaluation section.

Budget Table A: Summary of Requested NSF Support by Institution. In tabular form summarize the overall support levels planned for each participating institution (in \$K). For each entry in the Table include indirect costs. Column totals must equal the total budget requested from NSF for the period shown.

Awardee	Year 1 (\$K)	Year 2 (\$K)	Year 3 (\$K)	Year 4 (\$K)	Year 5 (\$K)	5- Year TOTAL	%
Lead Institution (Name)							
Participating Institution (Name) <i>(repeat for each organization participating in RII Track-1)</i>							
Total							100%

Budget Table B: Summary of Requested NSF Support by Project Activity. In tabular form as follows, summarize the overall support levels (in \$K) planned for each of the major project activities. Provide separate entries for each research area including salaries and fringe benefits for participants, seed funding, and relevant equipment. For all other entries, include an estimated cost of the implementation of the proposed plans. Support for graduate students should normally be included under research or education, not under the workforce development plan or other sections. Educational activities may be included under the relevant research areas as appropriate when those research and education activities are truly integrated. Include only other educational activities in the Education category.

Activity	Year 1 (\$K)	Year 2 (\$K)	Year 3 (\$K)	Year 4 (\$K)	Year 5 (\$K)	Total (\$K)	% of Total
Research Area 1 (Title) salaries and fringe benefits							
Research Area 1 Equipment							
Research Area 2 (Title) salaries and fringe benefits							
Research Area 2 Equipment							
Research Area 3, (as needed)							
Education							
Workforce Development							
Cyberinfrastructure							
Seed Funding							

Diversity Plan							
Partnerships and Collaborations							
Communications and Outreach Plan							
Sustainability Plan							
Management (include all administrative expenses)							
Evaluation and Assessment							
Indirect Cost							
Other (specify)							
Total							100%

5. References Cited in the Project Description should be listed here. See [GPG Chapter II section C.2.e](#). While there is no page limitation for references, this section must include bibliographic citations only and must not be used to provide parenthetical information outside of the Project Description page limitations.

6. Biographical Sketches. Include biographical sketches for all key personnel including each faculty and equivalent level participant according to standard NSF grant proposal guidelines. It is recommended to include biographical sketches for any named collaborators whose expertise is crucial to the success of the project. Biographical sketches for named collaborators, who are not senior personnel (listed in the budget pages) should be uploaded under Supplementary Documentation.

7. Budget pages and budget justification. Complete budget pages for each year of support (1-5). The submitting institution must provide a complete budget justification that may not exceed 3 pages. A five-year cumulative budget will be automatically generated by FastLane or Grants.gov. Also provide separate budget and budget justification pages for each organization receiving a sub-award. The budget justification for each sub-award may not exceed 3 pages. Identify and provide justification for all faculty level and equivalent personnel expected to receive greater than two months of salary annually. Provide also an explanation of the source, nature, amount and availability of the required cost sharing consistent with the guidelines provided by the Grant Proposal Guide ([GPG Chapter II C.2.g.xi](#)).

8. Current and Pending Support. List 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 [GPG Chapter II section C.2.h](#). Current and Pending Support are not required for named collaborators who are not senior personnel.

9. Facilities, Equipment, and Other Resources

See Guidance on Facilities, Equipment, and Other Resources ([GPG Chapter II section C.2.i](#)).

10. Supplementary Documentation

10.1. Lists of Participants and Conflicts. The Project Director (lead PI) is responsible for ensuring that all information needed to identify individual and organizational participants and conflicts of interest are provided to NSF EPSCoR in the manner described below. Upon receiving a Letter of Intent from an eligible lead PI at an eligible institution within an eligible EPSCoR jurisdiction (as described under eligibility, above), NSF EPSCoR will email a set of spreadsheet templates and instructions to the submitting PI (Project Director). These templates must be fully completed and submitted through FastLane or Grants.gov according to the instructions, in searchable PDF format, as supplementary documentation by the full proposal deadline. The templates must list all participants, participating organizations, and conflicted individuals as described in items a-c below and in the emailed instructions.

Proposals which do not include fully searchable PDF versions of complete and accurate lists of individual and organizational participants and conflicts of interest in the exact formats provided by NSF EPSCoR may be returned without review.

a. *List of Participants.* Provide a list of all participating senior investigators (faculty level and equivalent), anyone who will receive financial support through the project (including named subcontractors), and other key personnel (including named advisory board members, external evaluators, and collaborators). This list must identify the roles of the participating individuals as specified in the template instructions. Give the full first and last names, organizational, and departmental affiliations of all such individuals. Include in this list any named key personnel who are responsible for specific intellectual contributions or activities of the project, even if they would not receive funding from the project, are not affiliated with any of the participating institutions, or are external to the jurisdiction. It is highly recommended to include biographical sketches for all such individuals. Do not list individuals who are not named and do not have a role specified in the proposal.

b. *List of Participating Organizations.* Provide a list of all organizations (including, but not limited to: academic and research institutions, companies, government agencies, and non-profit organizations) that will participate in, contribute to, or directly benefit from the proposed project. This list must identify the roles of the participating organizations as specified in the template instructions. Include in this list: the submitting institution (primary awardee), all funded institutions (sub-awardees), any organizations that will contract with the project (subcontractors) including the external evaluators if the contract will go to an organization, and any organization that will provide facilities or support including access to laboratory equipment or internships.

c. *List of Conflicts.* (Note, this requirement is separate from, and in addition to, the requirement for senior personnel to submit conflicts and collaborators information under Single Copy Documents as required by the GPG – see 11 below). Provide conflicts of interest for all persons in the List of Participants. Conflicted individuals to be identified for each project participant include:

- The Ph.D. dissertation advisor(s) and principal postdoctoral sponsor(s) of the participant (do not list Ph.D. committee members who were not the direct thesis advisor(s)).
- All Ph.D. dissertation advisees (not just those supervised within the last 48 months; do not list Ph.D. students who were not directly supervised by the participant or for whom the participant merely served on the thesis committee).
- Postdoctoral advisees within the last 5 years. List only those postdoctoral researchers for whom the individual served as the principal advisor/sponsor.
- Collaborators within the last 48 months. Collaborators include co-authors, co-PIs (includes both current and pending proposals), postdoctoral advisors and advisees, and colleagues with whom the participant is engaged in research. (It is not necessary to list collaborators who are themselves named in the List of Participants; do not list individuals who have merely shared or received data, software, or other intellectual property).
- Co-editors within the last 24 months.

The list must include the full first and last names and affiliations of all conflicted individuals for each project participant and identify the nature of the COI as specified in the template instructions. Do not list 1) personnel who are simply employees of an institution or company involved in the project or 2) colleagues who are not collaborators or close personal friends.

10.2. Letters of Commitment. Include only official letters with specific commitments of resources from participating institutions, organizations anticipated to receive subawards or subcontracts, and organizations that will provide resources for the project. The content of these letters should be confined to the specific commitments and not include general statements of support for the project, the institutions, or investigators. Examples may include commitments to: collaborate on one or more aspects of the proposed research; share data or facilities; provide training or educational opportunities, experiences, or internships; serve in a formalized advisory capacity to the project; support the recruitment and hiring of faculty or other key personnel; provide institutional support for specific activities stated in the proposal. Letters must not be used to describe the research, education, or other project activities (including evaluation and assessment). Letters that include such descriptions, including methods or approaches or qualifications of project participants, will not be allowed. Any commitments of direct financial support must be strictly limited to and consistent with the required cost sharing and must comply with all guidelines governing cost sharing (See Cost Sharing under V.B. Budgetary Information, below). Scan your signed letters and upload them into the Supplementary Documents section of FastLane or Grants.gov, but do not send originals.

Do not submit letters of support which do not provide specific commitments of resources.

10.3. The jurisdiction's most recent Science & Technology Plan.

10.4. A Postdoctoral Researcher Mentoring Plan (maximum of 1 page) and a Data Management Plan (maximum of 2 pages). See the [GPG Chapter II, section C.2.j](#) for details.

11. Single Copy Documents

Collaborators & Other Affiliations Information. In addition to other documents that may be required, the GPG requires that each individual identified as senior project personnel submit information on collaborators and other affiliations as single copy documents (see the [GPG Chapter II, section C.1.e](#) for details). *The GPG requirement does NOT alleviate the requirement to submit a list of conflicts for all project participants under supplementary documents as described above under 10.1.c., above.*

B. Budgetary Information

Cost Sharing:

Cost Sharing is required.

Cost sharing at a level of at least, and no more than, 20 percent of the amount requested from NSF is required for all proposals submitted in response to this solicitation. Proposals that do not include cost sharing of at least, and no more than, 20 percent of the amount requested from NSF may be returned without review.

All cost sharing amounts are subject to audit. Failure to provide the level of cost-sharing reflected in the approved award budget may result in termination of the NSF award, disallowance of award costs, and/or refund of award funds to NSF.

The proposed cost sharing must be shown on Line M on the proposal budget. For purposes of budget preparation, the cumulative cost sharing amount must be entered on Line M of the first year's budget. Should an award be made, the organization's cost sharing commitment, as specified on the first year's approved budget, must be met prior to award expiration.

Such cost sharing will be an eligibility, rather than a review criterion. Proposers are advised not to exceed the mandatory cost sharing level or amount specified in the solicitation.

When mandatory cost sharing is included on Line M, and accepted by the Foundation, the commitment of funds becomes legally binding and is subject to audit. When applicable, the estimated value of any in-kind contributions also should be included on Line M. An explanation of the source, nature, amount and availability of any proposed cost sharing must be provided in the budget justification. Contributions may be made from any non-Federal source, including non-Federal grants or contracts, and may be cash or in-kind. 2 CFR § 200.306 describes criteria and procedures for the allowability of cash and in-kind contributions in satisfying cost sharing and matching requirements. It should be noted that contributions derived from other Federal funds or counted as cost sharing toward projects of another Federal agency must not be counted towards meeting the specific cost sharing requirements of the NSF award.

Failure to provide the level of cost sharing required by the NSF solicitation and reflected in the NSF award budget may result in termination of the NSF award, disallowance of award costs and/or refund of award funds to NSF by the awardee.

Other Budgetary Limitations:

Proposals that do not adhere to the following budget guidelines may be returned without review:

- Funding requests must be for a duration of 5 years and up to \$20 million.
- There is no longer a restriction on the amount requested annually, but the total request is still limited to \$20 million.
- Budgets should include sufficient funding for participation in annual jurisdictional and regional EPSCoR conferences. In addition, budgets should request support for key jurisdiction personnel to participate in the annual Project Directors/Project Administrators meeting, the biennial National EPSCoR Conference, and in evaluative activities including site visits and reverse site visits.
- Budgets for participating institutions must be included as subawards to the budget of the submitting institution. Only the budget of the submitting institution may include subawards (i.e., no subawards may appear in the budgets of sub-awardee institutions).
- 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 the external evaluator(s) 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 will be allowed.

C. Due Dates

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

July 05, 2016

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

August 02, 2016

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 the [GPG](#) as 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 [Investing in Science, Engineering, and Education for the Nation's Future: NSF Strategic Plan for 2014-2018](#). 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. (GPG 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 GPG 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-1 competition will also consider the following specific aspects of intellectual merit and broader impacts, as applicable:

Research Capacity: What is the potential of the project to advance the relevant fields of science and engineering while simultaneously enhancing research competitiveness and developing research capacity and infrastructure (including physical, cyber, and human resources) in the jurisdiction? How will the proposed activities contribute to the national and international recognition of the project participants and participating institutions? What is the potential of the project to increase the capacity of the participating institutions and capability of project participants to propose and implement research activities in the future?

Jurisdictional Impacts: What is the potential to achieve meaningful and sustained impacts within and throughout the jurisdiction with respect to education capacity (including workforce preparation), economic development (including innovation, technology transfer, and potential commercialization), and quality of life? How well aligned are the goals and objectives of the research and education program with those of the jurisdiction S&T Plan? How do the proposed activities promote organizational connections and linkages within the jurisdiction, as well as between private and public sectors? How well do the proposed partnerships and collaborations advance the project goals? How well does the project leverage past accomplishments and existing resources, especially those from prior RII funding and NSF, jurisdictional, and regional investments?

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

Integration of Project Elements: How well are the project elements (esp. education, workforce development, and diversity) aligned and integrated with the research activities? What are the added value and benefits that can be achieved uniquely through integrating the project elements with research via an RII project? What is the potential of the project to reach its education and workforce development goals and objectives as a result of the proposed research, and vice versa? What is the level of integration among shared facilities and research partners?

In addition, reviewers will be instructed to consider the feasibility of proposed activities and in particular whether sufficient and accurate baseline data has been provided regarding the proposed project goals.

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 Award & Administration Guide (AAG)* Chapter II, available electronically on the NSF Website at https://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag.

Special Award Conditions:

The annual and final reports must provide the aggregate numbers of women and members of other underrepresented groups in STEM fields participating as faculty, staff, graduate students, or undergraduate students in the activities funded by the award.

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 Award & Administration Guide* (AAG) Chapter II, available electronically on the NSF Website at https://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag.

NSF EPSCoR will conduct performance effectiveness reviews during the award. These reviews may include site visits, reverse site visits, and/or video teleconferencing. Continued funding will be contingent upon both the annual project reports and the results of performance effectiveness reviews.

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:

- Sean C. Kennan, telephone: (703) 292-7575, email: skennan@nsf.gov
- Robert Coyne, telephone: (703) 292-2257, email: rcoyne@nsf.gov
- Timothy M. VanReken, telephone: (703) 292-7378, email: tvandreke@nsf.gov
- Uma D. Venkateswaran, telephone: (703) 292-7732, email: uvenkate@nsf.gov
- C. Susan Weiler, telephone: (703) 292-7860, email: sweiler@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 provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See Grant Proposal Guide Chapter II, Section D.2 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:** 4201 Wilson Blvd. Arlington, VA 22230
- **For General Information** (NSF Information Center): (703) 292-5111
- **TDD (for the hearing-impaired):** (703) 292-5090
- **To Order Publications or Forms:**
 - Send an e-mail to: nsfpubs@nsf.gov
 - or telephone: (703) 292-7827
- **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 Systems of Records, [NSF-50](#), "Principal Investigator/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004), and [NSF-51](#), "Reviewer/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004). 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
Office of the General Counsel
National Science Foundation
Arlington, VA 22230

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