Research Coordination Networks (RCN)

PROGRAM SOLICITATION  
NSF 23-529

REPLACES DOCUMENT(S):  
NSF 17-594

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

Proposals Accepted Anytime

Submission deadlines vary by program. RCN proposals should be submitted to a particular NSF program according to the program's submission dates; PIs should consult program websites and contact cognizant program officers for guidance.

IMPORTANT INFORMATION AND REVISION NOTES

Budget information has been updated to reflect that divisions and programs may, at their discretion, accept budgets over the recommended limit of $500K.

The Directorates for Computer and Information Science and Engineering (CISE), Engineering (ENG), Social, Behavioral and Economic Science (SBE), and Technology, Innovation and Partnerships (TIP) and the NSF Growing Research Access for Nationally Transformative Equity and Diversity (NSF GRANTED) program all require written permission from the cognizant program officer to submit RCN proposals.

Proposals submitted in response to this program solicitation must be prepared and submitted via Research.gov or via Grants.gov and may not be prepared or submitted via FastLane.

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

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:
Research Coordination Networks (RCN)

Synopsis of Program:
The goal of the RCN program is to advance a field or create new directions in research or education by supporting groups of investigators to communicate and coordinate their research, training and educational activities across disciplinary, organizational, geographic, and international boundaries. The RCN program provides opportunities to foster new collaborations, including international partnerships where appropriate, and address interdisciplinary topics. Innovative ideas for implementing novel networking strategies, collaborative technologies,
training, broadening participation, and development of community standards for data and meta-data are especially encouraged. RCN awards are not meant to support existing networks; nor are they meant to support the activities of established collaborations. RCN awards also do not support primary research. Rather, the RCN program supports the means by which investigators can share information and ideas; coordinate ongoing or planned research activities; foster synthesis and new collaborations; develop community standards; and in other ways advance science and education through communication and sharing of ideas. Additional information about the RCN program and its impacts may be found in Porter et al. 2012 Research Coordination Networks: Evidence of the relationship between funded interdisciplinary networking and scholarly impact. BioScience, 62: 282-288

Proposed networking activities directed to the RCN program should focus on a theme to give coherence to the collaboration, such as a broad research question or a particular technology or a unique approach to address a current challenge. PIs are encouraged to consider approaches that enhance the geographic diversity of participation in the chosen theme.

Participating programs in the Directorates for Biological Sciences (BIO), Computer and Information Science and Engineering (CISE), Geosciences (GEO), STEM Education (EDU), Engineering (ENG), Social, Behavioral and Economic Sciences (SBE), and Technology, Innovation and Partnerships (TIP) will accept RCN proposals. PIs are encouraged to discuss suitability of an RCN topic with a program officer that manages the appropriate program. For proposals submitted to the CISE, ENG, SBE and TIP directorates consultation PRIOR to submission is mandatory (see Proposal Preparation instructions for supplementary documents). The NSF Growing Research Access for Nationally Transformative Equity and Diversity (NSF GRANTED) program welcomes inquiries about potential RCN proposals aimed at strengthening the capability of institutions of higher education to develop, submit, and manage research proposals and awards.

Other NSF solicitations accept proposals similar to RCN but for narrowly defined themes. Please see section IX. Other Information of this solicitation for a listing of these programs. PIs are strongly advised to contact the appropriate Program Officer before submitting an RCN proposal.

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.

- Peter H. McCartney, telephone: (703) 292-8470, email: pmccartn@nsf.gov

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

- 47.041 — Engineering
- 47.050 — Geosciences
- 47.070 — Computer and Information Science and Engineering
- 47.074 — Biological Sciences
- 47.075 — Social Behavioral and Economic Sciences
- 47.076 — STEM Education
- 47.083 — Office of Integrative Activities (OIA)
- 47.084 — NSF Technology, Innovation and Partnerships

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant or Cooperative Agreement

Estimated Number of Awards: 16 to 20

The actual number of awards varies across disciplinary research programs.

Anticipated Funding Amount: $7,500,000 to $12,500,000

This annual amount is approximate, includes new and continuing increments, and is subject to availability of funds and the discretion of divisions and offices. In recent years NSF has supported an average of 18 RCN projects with a total investment of $10 million each year.

Eligibility Information

Who May Submit Proposals:

Proposals may only be submitted by the following:

- Institutions of Higher Education (IHEs) - Two- and four-year IHEs (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Special Instructions for International Branch Campuses of US IHEs: If the proposal includes funding to be provided to an international branch campus of a US institution of higher education (including through use of subawards and consultant arrangements), the proposer must explain the benefit(s) to the project of performance at the internationally branch campus and justify why the proposed activity cannot be performed at the US campus.
- Non-profit, non-academic organizations: Independent museums, observatories, research labs, professional societies and similar organizations in the U.S. associated with educational or research activities.

Who May Serve as PI:

There are no restrictions or limits.

Limit on Number of Proposals per Organization:

There are no restrictions or limits.

Limit on Number of Proposals per PI or co-PI:
Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

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

B. Budgetary Information

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

C. Due Dates

- Full Proposal Deadline(s) (due by 5 p.m. submitter's local time):
  Proposals Accepted Anytime
  Submission deadlines vary by program. RCN proposals should be submitted to a particular NSF program according to the program's submission dates; PIs should consult program websites and contact cognizant program officers for guidance.

Proposal Review Information Criteria

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

Award Administration Information

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

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

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I. INTRODUCTION

NSF Research Coordination Networks (RCN) are designed to foster communication and promote new collaboration among scientists, engineers and educators with diverse expertise and who share a common interest in a new or developing area of science, engineering or technology translation. By encouraging the formation of new groups and networks, the RCN program will advance fields and create novel directions and opportunities for fundamental and applied research as well as science education. It is anticipated that this program will contribute to further progress in all areas of science, education and engineering, and strengthen collaborative and interdisciplinary research, the geographic diversity of participation in research and industrial and international partnerships. However, RCN awards are intended to foster networking activities and thus will not directly support costs related to primary research. RCN awards can be used for synthesis activities where existing data and collaboration are utilized to advance knowledge in disciplinary and cross-disciplinary areas. Past RCN awards can be found on the RCN program page at: https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=11691&org=DBI&from=home.

II. PROGRAM DESCRIPTION

Support will be provided for groups of investigators to communicate and coordinate their efforts across disciplinary, organizational, institutional, geographical and/or international boundaries. The objectives are to facilitate open communication and exchange of information and resources; to integrate research, education, and/or infrastructure, including cyberinfrastructure, activities of scientists, educators, and engineers working independently on topics of common interest; to nurture a sense of community among young scientists, educators, and engineers; and to minimize isolation and maximize cooperation so as to eliminate unnecessary duplication of efforts.

RCN proposals should focus on a research question, topic or particular technology, approaches, or development of standards relevant to one or more participating NSF programs. Consideration will be given to all well-justified, cohesive proposals advancing research coordination in a field or combination of fields under the purview of the NSF directorates and offices listed under the Summary for Program Requirements, or interdisciplinary networks that cross between directorates.

RCN proposals can be up to 5 years in duration and with typical budget requests up to $500,000. Maximum allowable budgets may vary by division and program. Investigators are strongly encouraged to contact the appropriate program officers from the RCN Contacts page prior to submission for guidance on suitability of the topic and any budget requirements specific to that program. If an RCN project is relevant to multiple programs, divisions, or directorates, the investigator is advised to consult with each of the appropriate programs regarding suitability. Note that some Directorates and programs (CISE, ENG, SBE, TIP, and GRANTED) require consultation with the program prior to submission for all RCN proposals.

All RCN proposals must conform to the following seven guidance items:

1. Topic/Focus of Research Coordination. RCN proposals should identify a clear theme as the focus of its activities.

   Investigators should spell out the theoretical and/or methodological foundations of the network’s proposed activities, and should specify: what questions will be addressed; what activities will be undertaken; what new groups of investigators will be brought together; what products will be generated by network activities; and how information about the network and opportunities to participate will be disseminated. The proposal should also outline the expected benefits of the network’s activities in moving a field forward and the implications for the broader community of researchers and educators. If the proposed activity is an extension of a previous or current RCN award, the proposal should clearly demonstrate how a continuation of that past activity would address new questions or substantially expand on the previous goals.

2. Principal Investigator (PI). Although research coordination networks are expected to involve investigators from multiple sites, a single organization must serve as the submitting organization for each proposal. Of the two types of collaborative proposal formats described in the Proposal and Award Policies and Procedures Guide (PAPPG), this solicitation allows only a single proposal submission with subawards administered by that lead organization. Separately submitted collaborative proposals are not permitted. The PI is the designated contact person for the project and is expected to provide leadership in fully coordinating and integrating the activities of the network. Strong, central leadership and clear lines of responsibility are essential for successful networking.

3. Steering Committee. Members of the steering committee will be network participants who assume key roles in the leadership and/or management of the proposed project. The steering committee should be representative of the communities of participants that will be brought together through the RCN award. It must include all co-PIs, if any are listed on the cover page of the proposal, and any other senior personnel, including any foreign collaborators involved as leaders or otherwise considered senior personnel. Therefore, the steering committee constitutes all the senior personnel for the RCN proposal. The names and home organization of each steering committee member should be listed in the submitted proposal's Project Summary.

4. Network Participants. The size of a network is expected to vary depending on the theme and the needs of the proposed activity. The network may be regional, national, or international (if allowed by the respective NSF program). It is expected that a proposed network will involve investigators at diverse organizations (academic, educational, professional societies, and industrial). The inclusion of new researchers, post-docs, graduate students, and undergraduates is encouraged. Specific efforts to increase the participation of communities traditionally underserved in science and engineering (including but not limited to Blacks/African Americans, Latino/Hispanic Americans, American Indians, Alaska Natives, Native Hawaiians and Other Pacific Islanders, women, and persons with disabilities), those at Minority-Serving Institutions (MSIs), and/or those located in Established Program to Stimulate Competitive Research (EPSCoR) jurisdictions must be included. In the proposal, an initial network of likely participants should be identified.
However, there should be clearly developed mechanisms to maintain openness, ensure access, and actively promote participation by interested parties outside of the initial participants in the proposed network. It is important to establish a climate of inclusion and equity to ensure access to research outcomes in ways that benefit the broader scientific community.

5. Coordination/Management Mechanism. The proposal should include a clearly defined Management Plan. The plan should include a description of the specific roles and responsibilities of the PI and the steering committee. Mechanisms for allocating funds, such as support for the work of a steering committee, should be clearly articulated. The plan should include provisions for flexibility to allow the structure of the steering committee and participant group to change over time as membership and the network’s foci evolve. Mechanisms for assessing progress and the effectiveness of the networking activities should be part of the Management Plan.

6. Information and Material Sharing. The goals of this program are to promote effective communication and to enhance opportunities for collaboration. Proposers are expected to develop and present a clearly delineated understanding of individual member’s rights to ideas, information, data and materials produced as a result of the award that is consistent with the goals of the program. Infrastructure plans to support the communication and collaboration should be described. When the proposed activity involves generation of community resources such as databases or unique materials, a plan for their timely release and the mechanism of sharing beyond the membership of the RCN must be described in the Data Management Plan. In addition, a plan for long-term maintenance of such resources must be described without assuming continued support from NSF.

7. International Participation. NSF encourages international collaboration, where appropriate, and it is anticipated that many RCN projects will include participants, including steering committee members, from outside the U.S. International collaborations should clearly strengthen the proposed project activities. As NSF funding predominantly supports participation by U.S. participants, network participants from institutions outside the US are encouraged to seek support from their respective country’s funding organizations. NSF funds may not be used to support the expenses of the international scientists and students at their home organization. For RCN projects that involve international partners, NSF funds may be used for the following:

- Travel expenses for US scientists and students participating in exchange visits integral to the RCN project
- RCN-related expenses for international partners to participate in networking activities while in the U.S.
- RCN-related expenses for US participants to conduct networking activities in the international partner’s home laboratory.

III. AWARD INFORMATION

Anticipated Type of Award: Standard Grant or Continuing Grant or Cooperative Agreement

Estimated Number of Awards: 16 to 20; varies across disciplinary research programs.

Anticipated Funding Amount: $7,500,000 to $12,500,000

This annual amount is approximate, includes new and continuing increments, and is subject to availability of funds and the discretion of divisions and offices. In recent years NSF has supported an average of 18 RCN projects with a total investment of $10 million each year.

IV. ELIGIBILITY INFORMATION

Who May Submit Proposals:

Proposals may only be submitted by the following:

- Institutions of Higher Education (IHEs) - Two- and four-year IHEs (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Special Instructions for International Branch Campuses of US IHEs: If the proposal includes funding to be provided to an international branch campus of a US institution of higher education (including through use of subawards and consultant arrangements), the proposer must explain the benefit(s) to the project of performance at the international branch campus, and justify why the project activities cannot be performed at the US campus.
- Non-profit, non-academic organizations: Independent museums, observatories, research labs, professional societies and similar organizations in the U.S. associated with educational or research activities.

Who May Serve as PI:

There are no restrictions or limits.

Limit on Number of Proposals per Organization:

There are no restrictions or limits.

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

There are no restrictions or limits.

Additional Eligibility Info:

Organization Limit: Although the Research Coordination Networks are expected to be multi-organizational, a single organization must serve as the lead and all other organizations as subawardees. Separate collaborative proposals will not be accepted.
V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

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

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

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

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

The following exceptions and additions apply to proposals submitted to this Program:

Before submitting an RCN proposal: Read this entire solicitation and identify the programs that overlap your discipline or the area of potential research. Use the NSF organization listing at https://www.nsf.gov/staff/orglist.jsp to narrow the directorate, division, and program most aligned with the theme or focus of the proposed RCN project. Proposers interested in submitting RCN proposals are strongly encouraged to contact the NSF program officer in their area of research, education, or integrative activities prior to proposal submission for guidance on program participation and to determine project suitability to the program, budget guidance, and applicable submission deadlines. This step is especially important for cross-disciplinary proposals and mandatory for proposals to be submitted to CISE, ENG, SBE, TIP, or the Office of Integrative Activities (OIA) for the NSF Grant Program.

Proposal Set-up: Select “Prepare New Full Proposal” in Research.gov. Search for and select the RCN program solicitation in Step One of the Full Proposal Wizard. (Grants.gov Users: The program solicitation number will be pre-populated by Grants.gov on the NSF Grant Application Cover Page.)

In Step Two, Where to Apply, proposers should select the directorate, division and program or cluster appropriate to the proposal topic. Programs within the division that you selected will appear automatically in the “Select Program” drop down menu. Consult with the divisional representative for guidance as to which program you should select. (Grants.gov users should refer to Section VI.1.2. of the NSF Grants.gov Application Guide for specific instructions on how to designate the NSF Unit of Consideration.) An informative title for the proposed project, that begins with “RCN:” must be provided.

Cover Sheet: Often proposals are co-reviewed by two or more NSF disciplinary units and, as appropriate, the NSF Office of Integrative Activities (OIA) and Office of International Science and Engineering (OISE). For proposals with an international dimension, the country or countries involved should be reported on the cover sheet.

Project Summary: The Project Summary may not be more than one page in length, and must consist of three labeled parts: (1) an Overview that includes a description of the proposed RCN activities and objectives, and a listing of steering committee members along with their home organizations; (2) a statement of the Intellectual Merit of the proposed RCN project, indicating how it will advance understanding in a field of science or integrative activity; and (3) the Broader Impacts of the proposed work, including mechanisms for actively promoting participation by all interested parties.

Project Description (maximum 15 pages): The following exceptions and additional items should be noted.

1. "Results from Prior NSF Support" need not be included unless the proposed activity is clearly a logical extension of an activity supported by NSF, in which case the prior activity and how it relates to the proposed activity should be described (in up to 5 pages to be counted within the 15-page limit).

2. In addition to describing the RCN objectives, scientific rationale, specific networking activities, and the special features stated in Section II above, the Project Description should also address aspects of network Management, and Coordination, as a part of the 15 pages, as described below. All major organizational collaborations should be described and justified in terms of how each serves the needs or enhances the goals of the network.

3. The Project Description should include a separate section labeled "Broader Impacts". This section should describe the broader impacts of the proposed activities and addres Participant Diversity, as described below.

Management Plan. Describe plans and procedures for the development and assessment of the proposed activity. Include formal mechanisms to ensure fair and equitable allocation of group resources. Clearly define the responsibilities for leadership and the role of the PI and the steering committee. Delineate the procedures used for the selection of initial network participants, the plans for maintaining an appropriate degree of openness and for continually encouraging the involvement of additional interested parties. Means for self-evaluation of progress toward the network goals should be presented as an important part of the management plan.

Coordination Plan. If the proposed network will interface with an established network or group, or if there is a similar activity being planned or ongoing in other countries, describe the plans for coordination and cooperation among the relevant networks.

Increasing Diversity. A Research Coordination Network is an important opportunity for encouraging the involvement of investigators from underrepresented groups (women, underrepresented minorities, and persons with disabilities), early- career investigators, and investigators located in a diverse range of organizations. Describe (1) a well-designed plan to increase participation of members from communities traditionally underserved in STEM and includes a description of recruitment methods and activities to foster a climate of inclusion and equity; (2) a plan to involve investigators at a variety of organizational settings; (3) if applicable, a plan to include new researchers, post-docs, and students; and (4) how the plans for increasing diversity are integrated with the proposed project plan.
For Proposals Submitted Via Research.gov:

RCN proposals can be up to 5 years in duration and budgets should not exceed $500,000 without explicit permissions from the program accepting the proposal.

Other Budgetary Limitations:

Inclusion of voluntary committed cost sharing is prohibited.

Cost Sharing:

Inclusion of voluntary committed cost sharing is prohibited.

B. Budgetary Information

Cost Sharing:

Inclusion of voluntary committed cost sharing is prohibited.

Other Budgetary Limitations:

Funds from this program may not support independent, individual research projects of the participants; nor are they to be used as a mechanism for a mini-grant awarding program.

RCN proposals can be up to 5 years in duration and budgets should not exceed $500,000 without explicit permissions from the program accepting the proposal.

C. Due Dates

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

Proposals Accepted Anytime

Submission deadlines vary by program. RCN proposals should be submitted to a particular NSF program according to the program's submission dates; PIs should consult program websites and contact cognizant program officers for guidance.

D. Research.gov/Grants.gov Requirements

For Proposals Submitted Via Research.gov:

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

For Proposals Submitted Via Grants.gov:

Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. Comprehensive information about using Grants.gov is available on the Grants.gov portal.
NSF is the primary federal agency charged with nurturing and supporting excellence in basic research and education, the following three principles apply:

1. **Merit Review Principles**

   - Every effort to conduct a fair, competitive, transparent merit review process for the selection of projects.
   - Promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes.” NSF makes 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 understand across all areas of science and engineering research and education. To identify which projects to support, NSF relies on a merit review process that involves consideration of both the technical aspects of a proposed project and its potential to contribute more broadly to advancing NSF’s mission.”
   - 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.
   - One of the strategic objectives in support of NSF’s mission is to foster integration of research and education and broadening participation in NSF programs, projects, and activities.
   - NSF’s mission calls for the broadening of opportunities and expanding participation of groups, institutions, and geographic regions that are underrepresented in STEM disciplines, which is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

A. **Merit Review Principles and Criteria**

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

1. Merit Review Principles

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

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

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

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

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

The two merit review criteria are listed below. Both criteria are to be given full consideration during the review and decision-making processes; each criterion is necessary but neither, by itself, is sufficient. Therefore, proposers must fully address both criteria. (PAPPG Chapter II.D.2.d(i), contains additional information for use by proposers in development of the Project Description section of the proposal). Reviewers are strongly encouraged to review the criteria, including PAPPG Chapter II.D.2.d(i), prior to the review of a proposal.

When evaluating NSF proposals, reviewers will be asked to consider what the proposers want to do, why they want to do it, how they plan to do it, how they will know if they succeed, and what benefits could accrue if the project is successful. These issues apply both to the technical aspects of the proposal and the way in which the project may make broader contributions. To that end, reviewers will be asked to evaluate all proposals against two criteria:

- **Intellectual Merit**: The Intellectual Merit criterion encompasses the potential to advance knowledge; and
- **Broader Impacts**: The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.

The following elements should be considered in the review for both criteria:

1. What is the potential for the proposed activity to
   a. Advance knowledge and understanding within its own field or across different fields (Intellectual Merit); and
   b. Benefit society or advance desired societal outcomes (Broader Impacts)?
2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
3. Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
4. How well qualified is the individual, team, or organization to conduct the proposed activities?
5. Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?

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

Proposers are reminded that reviewers will also be asked to review the Data Management Plan and the Postdoctoral Researcher Mentoring Plan, as appropriate.

**Additional Solicitation Specific Review Criteria**

RCN proposals will be evaluated for their creativity, innovation, and potential to advance, transform, or establish new areas of science, engineering, technology translation or education.

RCN proposals will be evaluated on their approach to creating new networks of scientists and researchers who have not previously worked together and to fostering convergence and collaboration through the proposed project. RCN proposals cannot use resources to fund primary research or to sustain existing networks.

For all RCN proposals involving international collaborations, reviewers will consider: mutual benefits; true intellectual collaboration with the foreign partner(s); benefits to be realized from the expertise and specialized skills, facilities, sites and/or resources of the international counterpart; and active engagement of U.S. students and early-career researchers in the RCN activities.

**B. Review and Selection Process**

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

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

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

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

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

A. Notification of the Award

Notification of the award is made to the submitting organization by an NSF Grants and Agreements Officer. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See Section VI.B. for additional information on the review process.)

B. Award Conditions

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

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


Administrative and National Policy Requirements

Build America, Buy America

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

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

Special Award Conditions:

Ensuring Adequate COVID-19 Safety Protocols

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

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

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

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

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

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

(1) The fifty States;

(2) The District of Columbia;

(3) The commonwealths of Puerto Rico and the Northern Mariana Islands;

(4) The territories of American Samoa, Guam, and the United States Virgin Islands; and


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


PIs must provide the names and institutional affiliations of all RCN participants, including students, in project reports and must maintain a website for dissemination of RCN information, including opportunities for participation.

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:
- Peter H. McCartney, telephone: (703) 292-8470, email: pmccartn@nsf.gov

For questions related to the use of NSF systems contact, contact:
- NSF Help Desk: 1-800-673-6188
- Research.gov Help Desk e-mail: rgov@nsf.gov

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

RCN Contacts available at https://www.nsf.gov/bio/ef/rcn_contacts.jsp

IX. OTHER INFORMATION

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

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

Two inter-directorate programs accept RCN proposals:

For instructions on submitting RCN proposals to either of these programs please read the programs’ solicitations.

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 severa thousand applications for graduate and postdoctoral fellowships. The agency operates no laboratories itself but does support National Research Centers, user facilities, certain oceanographic vessels and Arctic and Antarctic research stations. The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

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

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

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

| Location: | 2415 Eisenhower Avenue, Alexandria, VA 22314 |
| Location: | (703) 292-5111 |
| TDD (for the hearing-impaired): | (703) 292-5090 |
| To Order Publications or Forms: | Send an e-mail to: nsfpubs@nsf.gov |
| To Order Publications or Forms: | or telephone: (703) 292-8143 |
| To Locate NSF Employees: | (703) 292-5111 |

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

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

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

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