

# NSF 24-548: Tribal Colleges and Universities Program Hub and Topical Interest Groups

## Program Solicitation

### Document Information

#### Document History

- **Posted:** February 21, 2024

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**National Science Foundation**  
Directorate for STEM Education  
Division of Equity for Excellence in STEM

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

July 1, 2024

TCUP Hub

September 03, 2024

TIGs



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## **Important Information And Revision Notes**

This solicitation is a component of the Tribal Colleges and Universities Program (TCUP) and does not supersede the program's solicitation [NSF 21-595](#). Collaborative proposals from submitted as separate submissions from multiple institutions in response to this solicitation must be submitted through [Research.gov](#).

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:**

Tribal Colleges and Universities Program Hub and Topical Interest Groups (TCUP Hub and TIGs)

#### **Synopsis of Program:**

This solicitation is offered for support of two types of projects, a TCUP Hub and faculty-led topical interest groups (TIGs).

The TCUP Hub will serve the entire TCUP-eligible community with activities such as convening workshops (including the TCUP Leaders' Forum), coordinating faculty/student exchanges, organizing professional development opportunities, and overseeing TCUP Fellowship opportunities with eligible agencies. The Hub will connect people and organizations to facilitate relationships, expand and diversify networks, and support TCUP faculty and staff in building capacity in areas they identify. It will curate shared resources, expertise, and experiences to build the capacity of TCUP institutions. Also, it will build and support a sense of community among all TCUP institutions and elevate the voices within them.

Only one Hub will be supported, either to a single institution or to a collaborative submission from multiple institutions. Interested parties may find that a collaborative submission from multiple institutions is more feasible, engaging two or more TCUP institutions to synergistically leverage their different strengths in realizing the Hub's mission. Multiple institutions submitting collaboratively may better

address the multiplicity of TCUP institutions, which vary geographically, administratively, and in modes of governance. Clearly, some activities may be best pursued by enlisting specialists as consultants. Two types of collaborative proposals are acceptable: simultaneous submission of proposals from multiple organizations submitting a unified set of certain proposal sections, as well as information unique to each organization, such as unique budgets, key personnel, and activities; or submission of a collaborative proposal from one organization, with collaborating institutions included through subawards (subawards are permitted only to TCUP-eligible institutions; proposers should confer with the TCUP program staff prior to submission). All collaborative proposals submitted from multiple organizations must be submitted via Research.gov.

Additionally, this solicitation is offered for support of independent, faculty-led topical interest groups (TIGs) that focus on professional development of faculty and formation of science, technology, engineering, and mathematics (STEM) discipline networks (e.g., engineering, genomics, Indigenous research, environmental science). Up to two new TIGs may be supported.

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<sup>1</sup> Executive Order 13021 defines Tribal Colleges and Universities ("tribal colleges") as those institutions cited in section 532 of the Equity in Educational Land-Grant Status Act of 1994 (7 U.S.C. 301 note), and other institutions that qualify for funding under the Tribally Controlled Community College Assistance Act of 1978, (25 U.S.C. 1801 et seq.), as well as Navajo Community College as authorized in the Navajo Community College Assistance Act of 1978, Public Law 95-471, Title II (25 U.S.C. 640a note). The term "Alaska Native-serving institution" means an institution of higher education that is an eligible institution under section 1058(b) of the Higher Education Act; and that, at the time of submission, has an undergraduate enrollment that is at least 20 percent Alaska Native students. The term "Native Hawaiian-serving institution" means an institution of higher education that is an eligible institution under section 1058(b) of the Higher Education Act; and that, at the time of submission, has an undergraduate enrollment that is at least 10 percent Native Hawaiian students. Most TCUP-eligible institutions of higher education are two-year or community colleges. See the Who May Submit Proposals section in this solicitation for further details.

**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.*

- Lura J. Chase, telephone: (703) 292-5173, email: [lchase@nsf.gov](mailto:lchase@nsf.gov)
- Regina Sievert, telephone: (703) 292-2808, email: [rsievert@nsf.gov](mailto:rsievert@nsf.gov)
- Nicole E. Gass, telephone: (703) 292-8378, email: [ngass@nsf.gov](mailto:ngass@nsf.gov)

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

- 47.076 --- STEM Education

**Award Information**

**Anticipated Type of Award:** Standard Grant or Continuing Grant

**Estimated Number of Awards:** 3

For the Hub, NSF anticipates making one award as a continuing grant to a single institution, or to multiple institutions acting collaboratively.

For the TIGs, NSF anticipates making up to two standard or continuing grants.

**Anticipated Funding Amount:** \$17,500,000

TCUP expects to support one TCUP Hub award, whether to a single institution or to multiple institutions acting collaboratively. Up to a total of \$1.5 million may be available for first-year support, and up to \$1.5 million for each subsequent year, contingent upon availability of funds and demonstration of adequate progress. However, the amount of NSF's investment in the Hub (either to a single institution or to multiple institutions acting collaboratively) will depend upon the needs, plans, and opportunities offered by the Hub. The TCUP Hub award will be made as a continuing grant, with an initial commitment of five years of support and the possibility of renewal for up to five additional years, if recommended based on evidence of adequate progress toward realizing Hub goals. Determination of the Hub's adequate progress will include a thorough assessment and may include a site visit.

TCUP expects to support up to two TIGs. The award size for a TIG is anticipated to be up to \$250,000 per year for up to five years. The awards will be made beginning in 2025.

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

**Eligibility Information**

**Who May Submit Proposals:**

Proposals may only be submitted by the following:

- Organizations eligible to submit TCUP proposals are federally recognized Tribal Colleges and Universities, Alaska Native-serving institutions and Native Hawaiian-serving institutions. Multiple campuses of one university system are normally encouraged to consider collaborative submissions. Executive Order 13021 defines Tribal Colleges and Universities ("tribal colleges") as those institutions cited in section 532 of the Equity in Educational Land-Grant Status Act of 1994 (7 U.S.C. 301 note), and other institutions that qualify for funding under the Tribally Controlled Community College Assistance Act of 1978, (25 U.S.C. 1801 et seq.), as well as Navajo Community College as authorized in the Navajo Community College Assistance Act of 1978, Public Law 95-471, Title II (25 U.S.C. 640a note). The term "Alaska Native-serving institution" means an institution of higher education that is an eligible institution under section 1058(b) of the Higher Education Act; and that, at the time of submission, has an undergraduate enrollment that is at least 20 percent Alaska Native students. The term "Native Hawaiian-serving institution" means an institution of higher education that is an eligible institution under section 1058(b) of the Higher Education Act; has a Carnegie classification of baccalaureate or associates college; and has, at the time of submission, an undergraduate enrollment that is at least 10 percent Native Hawaiian students. By signing and submitting the proposal, the proposer is certifying that they meet the eligibility criteria specified in this program solicitation. Willful provision of false information in this request and its supporting documents or in reports required under an ensuing award is a criminal offense (U.S. Code, Title 18, Section 1001). Eligibility may be verified by consulting the Integrated Postsecondary Education Data System (IPEDS) or other certified federal government data sources.

**Who May Serve as PI:**

For the TCUP Hub, the principal investigator (PI) is expected to be a senior academic officer or a senior STEM faculty member. Any prospective PI must demonstrate significant experience with and knowledge of the TCUP community of institutions, including their needs, their governance structure, and their accomplishments relevant to pertinent STEM discipline areas and status of instructional programs. For the TCUP TIGs, the PI is expected to be an experienced member of the TCUP STEM faculty with demonstrated

expertise in the subject matter focus of the TIG. Prospective PIs are encouraged to consult TCUP program staff prior to proposal submission.

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

For the TCUP Hub, only one proposal will be accepted per eligible institution, regardless of whether it is a single submission or a part of a set of collaborative proposals submitted by multiple institutions. No limit is set for the number of TIG proposals from any eligible institution, although the program retains the right to ensure geographic and institutional diversity in recommending awards.

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

There are no restrictions or limits.

**Proposal Preparation and Submission Instructions**

**A. Proposal Preparation Instructions**

- **Letters of Intent:** Not required
- **Preliminary Proposal Submission:** Not required
- **Full Proposals:**
  - Full Proposals submitted via Research.gov: *NSF Proposal and Award Policies and Procedures Guide (PAPPG)* guidelines apply. The complete text of the PAPPG is available electronically on the NSF website at: [https://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=pappg](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg).
  - Full Proposals submitted via Grants.gov: *NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov* guidelines apply (Note: The *NSF Grants.gov Application Guide* is available on the Grants.gov website and on the NSF website at: [https://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=grantsgovguide](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide)).

**B. Budgetary Information**

- **Cost Sharing Requirements:**

Inclusion of voluntary committed cost sharing is prohibited.
- **Indirect Cost (F&A) Limitations:**

Not Applicable
- **Other Budgetary Limitations:**

Not Applicable

**C. Due Dates**

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

July 1, 2024  
TCUP Hub  
September 03, 2024  
TIGs

**Proposal Review Information Criteria**

**Merit Review Criteria:**

National Science Board approved criteria apply.

### **Award Administration Information**

#### **Award Conditions:**

Standard NSF award conditions apply.

#### **Reporting Requirements:**

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

## **I. Introduction**

The Nation's Tribal colleges and universities were first established during a period of increased activism regarding Tribal sovereignty over education. The opportunity to train and educate Tribal citizens locally and in a culturally responsive manner proved so compelling that more than twenty Tribes chose to charter their own institutions of higher education within the first two decades (more have been established over time). The U.S. federal government committed to support the operations and instructional needs of this new education paradigm.

Soon after the initial establishment of these colleges, the federal government began to support STEM education at these institutions through early NSF programs, reaching its current pinnacle in the Tribal Colleges and Universities Program (TCUP). TCUP's singular focus on STEM instructional capacity building in TCUP-eligible institutions<sup>1</sup> quickly proved the hypothesis that investing in the colleges' visions was more effective than designing interventions for their adoption. The colleges began, and have continued, to add STEM courses, degrees, equipment, and facilities that enable their students to achieve top-tier STEM education while remaining within their communities, close to their homes and families.

Regardless of the curricular level, the key unit of change at the TCUP institutions is the faculty, so faculty growth, professional development, and retention remains a central focus of TCUP support. Faculty members are the intellectual architects of new or expanded STEM programming and, further, enable students to participate in research at levels that are out of reach of most students at comparably-sized institutions.

When one views the trajectory of STEM programming at TCUP institutions, it is undeniable that the STEM and STEM education faculty have grown in number, credentials, scholarship, and diversity. The demand on the community to support and engage such a significant faculty body is clear. Yet meeting that demand is beyond the scope of current TCUP funding opportunities, which are targeted inwardly or specifically; what is needed is a mechanism to connect faculty outwardly and broadly.

The National Science Foundation (NSF) supports research at the frontiers of knowledge, across all STEM fields and all levels of STEM education. NSF enables innovation and discovery in STEM by educating and preparing a diverse STEM workforce motivated to participate at the frontiers of science and STEM industries. NSF is committed to ensuring that the rich diversity of the nation's cultures is well represented in the STEM workforce and that individuals engaged in STEM fields are trained to participate fully in the global research enterprise, as articulated in the National Science Board's Vision 2030. To meet the challenges presented by the nation's increasing STEM needs, the Tribal Colleges and Universities Program is committed to enhancing the quality of STEM education and research at federally recognized Tribal Colleges and Universities, and a subset of Alaska Native-serving and Native Hawaiian-serving institutions that meet federal enrollment criteria for minority-serving status (please see eligibility section). TCUP seeks to support STEM education initiatives that prepare a STEM workforce that is broadly inclusive and capable of performing in an international research and development environment, thus ensuring that the U.S. remains a global STEM leader.

The purpose of this solicitation is two-fold. First, it is to support one Hub, either to a single institution or to a collaborative submission from multiple institutions, to conduct and coordinate activities that will foster the professional, managerial, and STEM growth of faculty and staff in TCUP-eligible institutions (TCUP Hub). Second, it is to support awards that initiate or expand working groups that pursue a defined and cohesive STEM or STEM education discipline focus (topical interest groups or TIGs). Activities of the Hub may include workshops to improve grantsmanship, strategic planning, program and

financial management of grants, and other needs expressed by the community. The Hub is expected to coordinate professional networks of TCUP faculty and key personnel; the TIGs are expected to provide STEM disciplinary growth and professional development support among TCUP STEM or STEM education faculty. All proposing institutions must meet TCUP eligibility.

## **II. Program Description**

In the two-plus decades of the Tribal Colleges and Universities Program's existence, STEM instructional and research capacity at TCUP institutions has grown significantly. Most TCUP awards have resulted in the establishment of new or expanded STEM programs of study, including courses, certificates, degrees, and research. At many TCUP institutions, awards resulted in higher level educational offerings, such as BS degrees in STEM or STEM education, and a few resulted in post-baccalaureate degrees. Additionally, many TCUP awards have supported an increase in the number STEM faculty and/or advancement of their credentials, including those of Indigenous STEM faculty members. However, as the STEM offerings, including research studies, at TCUP institutions have increased and diversified, and the academic collegiality among the TCUP STEM faculty has expanded, there has been no concomitant platform to support collaborative work or sharing. TCUP recognizes the need for such a platform to coordinate and support professional development in instruction, research, and grantsmanship, and to facilitate activities such as conferences, workshops, visiting professorships, and student exchanges. To this end, the program envisions the TCUP Hub, independent of a specific other award or funding strand, that can provide services to all TCUP-eligible institutions. The program also recognizes the need to support discipline-specific and faculty-led topical interest groups (TIGs) that engage colleagues in a professional collaboration around a STEM topic(s) of interest, providing targeted professional development focused on instruction and research.

### **TCUP Hub**

Given the limited number of eligible institutions, only one Hub is anticipated. The Hub may be proposed by a single institution, submitting alone; by a single institution submitting collaboratively through subawards; or by multiple institutions submitting collaboratively. Only TCUP-eligible institutions may submit or participate. Typical TCUP Hub roles should include organizing the annual TCUP Leaders' Forum, conducting informational seminars, and organizing workshops whose content focus is based on the needs of the community. To monitor and meet the needs of the TCUP community, a means of regular interactive communication with TCUP-eligible institutions should be proposed. Organizing/facilitating faculty collaborations, exchanges, or visitations in both virtual and in-person formats may be a compelling element. Dissemination of effective models and/or impacts might be a component that would benefit the program community. The TCUP Hub is expected to establish and meet regularly with an external advisory committee whose membership represents the three significant institution types (Tribal colleges and universities, Alaska Native-serving institutions, and Native Hawaiian-serving institutions) supported by TCUP. Given the nature of the work undertaken by the TCUP Hub, a reasonable portion of the funds may be used for facilities or acquisition of office space and for staffing requirements. Given the possibility of renewal, it is important for the Hub leaders to participate regularly in program monitoring activities, such as site visits and interim reporting on specific topics, such as the TCUP Leaders' Forum. The Hub should include active communication with the Native Science Report and other relevant communication platforms.

### **Topical Interest Groups**

The organic development in the last decade of STEM discipline-specific faculty communities focused on sharing instructional or research methods, practices, and discovery is evidence of the TCUP faculty's growing capacity for and interest in pushing into new reaches of scholarship. To honor and support that, TCUP offers an opportunity for lead institutions, under the direction of its STEM faculty, to take on administrative and logistical support of a TIG(s) whose role is to support the health maintenance of the TIG through activities such as fostering communication among members; coordinating symposia or other academic platforms to enable faculty knowledge and resources; inviting and providing honoraria for guest speakers; and supporting travel to professional meetings or similar venues. The program envisions multiple TIGs, each centered on a specific STEM subject area of interest and value to the community or of national interest, (e.g., genomics, data science; linguistics, Indigenous research methods). TIGs may focus on a range of work such

as developing tools and approaches related to STEM research and education designed to foster student and/or faculty success, opportunities for international activities, and the like.

### **III. Award Information**

**Anticipated Type of Award:** Standard Grant or Continuing Grant

**Estimated Number of Awards:** 3

For the Hub, NSF anticipates making one award as a continuing grant to a single institution, or to multiple institutions acting collaboratively.

For the TIGs, NSF anticipates making up to two standard or continuing grants.

**Anticipated Funding Amount:** \$17,500,000

TCUP expects to support one TCUP Hub award, whether to a single institution or to multiple institutions acting collaboratively. Up to a total of \$1.5 million may be available for first-year support, and up to \$1.5 million for each subsequent year, contingent upon availability of funds and demonstration of adequate progress. However, the amount of NSF's investment in the Hub (either to a single institution or to multiple institutions acting collaboratively) will depend upon the needs, plans, and opportunities offered by the Hub. The TCUP Hub award will be made as a continuing grant, with an initial commitment of five years of support and the possibility of renewal for up to five additional years, if recommended based on evidence of adequate progress toward realizing Hub goals. Determination of the Hub's adequate progress will include a thorough assessment and may include a site visit.

TCUP expects to support up to two TIGs. The award size for a TIG is anticipated to be up to \$250,000 per year for up to five years. The awards will be made beginning in 2025.

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

### **IV. Eligibility Information**

#### **Who May Submit Proposals:**

Proposals may only be submitted by the following:

- Organizations eligible to submit TCUP proposals are federally recognized Tribal Colleges and Universities, Alaska Native-serving institutions and Native Hawaiian-serving institutions. Multiple campuses of one university system are normally encouraged to consider collaborative submissions. Executive Order 13021 defines Tribal Colleges and Universities ("tribal colleges") as those institutions cited in section 532 of the Equity in Educational Land-Grant Status Act of 1994 (7 U.S.C. 301 note), and other institutions that qualify for funding under the Tribally Controlled Community College Assistance Act of 1978, (25 U.S.C. 1801 et seq.), as well as Navajo Community College as authorized in the Navajo Community College Assistance Act of 1978, Public Law 95-471, Title II (25 U.S.C. 640a note). The term "Alaska Native-serving institution" means an institution of higher education that is an eligible institution under section 1058(b) of the Higher Education Act; and that, at the time of submission, has an undergraduate enrollment that is at least 20 percent Alaska Native students. The term "Native Hawaiian-serving institution" means an institution of higher education that is an eligible institution under section 1058(b) of the Higher Education Act; has a Carnegie classification of baccalaureate or associates college; and has, at the time of submission, an undergraduate enrollment that is at least 10 percent Native Hawaiian students. By signing and submitting the proposal, the proposer is certifying that they meet the eligibility criteria specified in this program solicitation. Willful provision of false information in this request and its supporting documents or in reports required under an ensuing award is a criminal offense (U.S.



Code, Title 18, Section 1001). Eligibility may be verified by consulting the Integrated Postsecondary Education Data System (IPEDS) or other certified federal government data sources.

#### **Who May Serve as PI:**

For the TCUP Hub, the principal investigator (PI) is expected to be a senior academic officer or a senior STEM faculty member. Any prospective PI must demonstrate significant experience with and knowledge of the TCUP community of institutions, including their needs, their governance structure, and their accomplishments relevant to pertinent STEM discipline areas and status of instructional programs. For the TCUP TIGs, the PI is expected to be an experienced member of the TCUP STEM faculty with demonstrated expertise in the subject matter focus of the TIG. Prospective PIs are encouraged to consult TCUP program staff prior to proposal submission.

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

For the TCUP Hub, only one proposal will be accepted per eligible institution, regardless of whether it is a single submission or a part of a set of collaborative proposals submitted by multiple institutions. No limit is set for the number of TIG proposals from any eligible institution, although the program retains the right to ensure geographic and institutional diversity in recommending awards.

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

There are no restrictions or limits.

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

In determining which method to utilize in the electronic preparation and submission of the proposal, please note the following:

**Collaborative Proposals.** All collaborative proposals submitted as separate submissions from multiple organizations must be submitted via Research.gov. PAPPG Chapter II.E.3 provides additional information on collaborative proposals.

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

## **B. Budgetary Information**

### **Cost Sharing:**

Inclusion of voluntary committed cost sharing is prohibited.

### **C. Due Dates**

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

July 1, 2024

TCUP Hub

September 03, 2024

TIGs

## **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?](https://www.research.gov/research-portal/appmanager/base/desktop?_nfpb=true&_pageLabel=research_node_display&_nodePath=/researchGov/Service/Desktop/ProposalPreparation)

[\\_nfpb=true&\\_pageLabel=research\\_node\\_display&\\_nodePath=/researchGov/Service/Desktop/ProposalPreparation](https://www.research.gov/research-portal/appmanager/base/desktop?_nfpb=true&_pageLabel=research_node_display&_nodePath=/researchGov/Service/Desktop/ProposalPreparation)

For Research.gov user support, call the Research.gov Help Desk at 1-800-381-1532 or e-mail [rgov@nsf.gov](mailto:rgov@nsf.gov).

The Research.gov Help Desk answers general technical questions related to the use of the Research.gov system. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this funding opportunity.

### **For Proposals Submitted Via Grants.gov:**

Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. Comprehensive information about using Grants.gov is available on the Grants.gov Applicant Resources webpage: <https://www.grants.gov/web/grants/applicants.html>. In addition, the NSF Grants.gov Application Guide (see link in Section V.A) provides instructions regarding the technical preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: [support@grants.gov](mailto:support@grants.gov). The Grants.gov Contact Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this solicitation.

**Submitting the Proposal:** Once all documents have been completed, the Authorized Organizational Representative (AOR) must submit the application to Grants.gov and verify the desired funding opportunity and agency to which the application is submitted. The AOR must then sign and submit the application to Grants.gov. The completed application will be transferred to Research.gov for further processing.

The NSF [Grants.gov Proposal Processing in Research.gov informational page](#) provides submission guidance to applicants and links to helpful resources including the NSF [Grants.gov Application Guide](#), [Grants.gov Proposal Processing in Research.gov how-to guide](#), and [Grants.gov Submitted Proposals Frequently Asked Questions](#). Grants.gov proposals must pass all NSF pre-check and post-check validations in order to be accepted by Research.gov at NSF.

When submitting via Grants.gov, NSF strongly recommends applicants initiate proposal submission at least five business days in advance of a deadline to allow adequate time to address NSF compliance errors and resubmissions by 5:00 p.m. submitting organization's local time on the deadline. Please note that some errors cannot be corrected in Grants.gov. Once a proposal passes pre-checks but fails any post-check, an applicant can only correct and submit the in-progress proposal in Research.gov.

Proposers that submitted via Research.gov may use Research.gov to verify the status of their submission to NSF. For proposers that submitted via Grants.gov, until an application has been received and validated by NSF, the Authorized Organizational Representative may check the status of an application on Grants.gov. After proposers have received an e-mail notification from NSF, Research.gov should be used to check the status of an application.

## **VI. NSF Proposal Processing And Review Procedures**

Proposals received by NSF are assigned to the appropriate NSF program for acknowledgement and, if they meet NSF requirements, for review. All proposals are carefully reviewed by a scientist, engineer, or educator serving as an NSF Program Officer, and usually by three to ten other persons outside NSF either as *ad hoc* reviewers, panelists, or both, who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with oversight of the review process. Proposers are invited to suggest names of persons they believe are especially well qualified to review the proposal and/or persons they would prefer not review the proposal. These suggestions may serve as one source in the reviewer selection process at the Program Officer's discretion. Submission of such names, however, is optional. Care is taken to ensure that reviewers have no conflicts of interest with the proposal. In addition, Program Officers may obtain comments from site visits before recommending final action on proposals. Senior NSF staff further review recommendations for awards. A flowchart that depicts the entire NSF proposal and award process (and associated timeline) is included in PAPPG Exhibit III-1.

A comprehensive description of the Foundation's merit review process is available on the NSF website at: [https://www.nsf.gov/bfa/dias/policy/merit\\_review/](https://www.nsf.gov/bfa/dias/policy/merit_review/).

Proposers should also be aware of core strategies that are essential to the fulfillment of NSF's mission, as articulated in *Leading the World in Discovery and Innovation, STEM Talent Development and the Delivery of Benefits from Research - NSF Strategic Plan for Fiscal Years (FY) 2022 - 2026*. These strategies are integrated in the program planning and implementation process, of which proposal review is one part. NSF's mission is particularly well-implemented through the integration of research and education and broadening participation in NSF programs, projects, and activities.

One of the strategic objectives in support of NSF's mission is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions must recruit, train, and prepare a diverse STEM workforce to advance the frontiers of science and participate in the U.S. technology-based economy. NSF's contribution to the national innovation ecosystem is to provide cutting-edge research under the guidance of the Nation's most creative scientists and engineers. NSF also supports development of a strong science, technology, engineering, and mathematics (STEM) workforce by investing in building the knowledge that informs improvements in STEM teaching and learning.

NSF's mission calls for the broadening of opportunities and expanding participation of groups, institutions, and geographic regions that are underrepresented in STEM disciplines, which is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

### **A. Merit Review Principles and Criteria**

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

and for other purposes." NSF makes every effort to conduct a fair, competitive, transparent merit review process for the selection of projects.

## 1. Merit Review Principles

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

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

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

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

## 2. Merit Review Criteria

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

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

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

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

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

1. What is the potential for the proposed activity to

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

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

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

## **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 proposers whether their proposals have been declined or recommended for funding within six months. Large or particularly complex proposals or proposals from new recipients 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](https://www.nsf.gov/awards/managing/award_conditions.jsp?org=NSF). Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from [nsfpubs@nsf.gov](mailto:nsfpubs@nsf.gov).

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

### Administrative and National Policy Requirements

#### Build America, Buy America

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

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

### 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 annual project report, and a project outcomes report for the general public.

Failure to provide the required annual or final annual 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 annual project reports. Such reports provide information on accomplishments, project participants (individual and organizational), publications, and other specific products and impacts of the project. Submission of the report via Research.gov constitutes certification by the PI that the contents of the report are accurate and complete. The project outcomes report also must be prepared and submitted using Research.gov. This report serves as a brief summary, prepared specifically for the public, of the nature and outcomes of the project. This report will be posted on the NSF website exactly as it is submitted by the PI.

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

Given the comprehensive reach of the Hub, NSF may request interim reports on specific topics or following a significant event or process, such as the TCUP Leaders' Forum. Reasonable time will be allotted to respond to any additional requested reports or communication. Specifically, it is likely that periodic site visits involving the Hub leaders and other relevant participants may be requested by NSF. Reasonable time will be allotted to plan for and participate in such events.

## **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:

- Lura J. Chase, telephone: (703) 292-5173, email: [lchase@nsf.gov](mailto:lchase@nsf.gov)
- Regina Sievert, telephone: (703) 292-2808, email: [rsievert@nsf.gov](mailto:rsievert@nsf.gov)
- Nicole E. Gass, telephone: (703) 292-8378, email: [ngass@nsf.gov](mailto:ngass@nsf.gov)

For questions related to the use of NSF systems contact:

- NSF Help Desk: 1-800-381-1532
- Research.gov Help Desk e-mail: [rgov@nsf.gov](mailto:rgov@nsf.gov)

For questions relating to Grants.gov contact:

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

## **IX. Other Information**

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

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

## **About The National Science Foundation**

The National Science Foundation (NSF) is an independent Federal agency created by the National Science Foundation Act of 1950, as amended (42 USC 1861-75). The Act states the purpose of the NSF is "to promote the progress of science; [and] to advance the national health, prosperity, and welfare by supporting research and education in all fields of science and engineering."

NSF funds research and education in most fields of science and engineering. It does this through grants and cooperative agreements to more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations and other research organizations throughout the US. The Foundation accounts for about one-fourth of Federal support to academic institutions for basic research.

NSF receives approximately 55,000 proposals each year for research, education and training projects, of which approximately 11,000 are funded. In addition, the Foundation receives several thousand applications for graduate and postdoctoral fellowships. The agency operates no laboratories itself but does support National Research Centers, user facilities, certain oceanographic vessels and Arctic and Antarctic research stations. The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

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

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

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

The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for research and education in the sciences, mathematics, and engineering.

To get the latest information about program deadlines, to download copies of NSF publications, and to access abstracts of awards, visit the NSF Website at <https://www.nsf.gov>

- **Location:** 2415 Eisenhower Avenue, Alexandria, VA 22314
- **For General Information** (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](mailto:nsfpubs@nsf.gov)
  - or telephone: (703) 292-8134
- **To Locate NSF Employees:** (703) 292-5111

## Privacy Act And Public Burden Statements

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; and project reports submitted by proposers 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 proposers or nominees as part of a joint application review process, or in order to coordinate programs or policy; and to another Federal agency, court, or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See [System of Record Notices, NSF-50](#), "Principal Investigator/Proposal File and Associated Records," and [NSF-51](#), "Reviewer/Proposal File and Associated Records." Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

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

Suzanne H. Plimpton  
Reports Clearance Officer  
Policy Office, Division of Institution and Award Support  
Office of Budget, Finance, and Award Management  
National Science Foundation  
Alexandria, VA 22314

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