NSF 25-511: Experiential Learning for Emerging and Novel Technologies (ExLENT)

Program Solicitation

Document Information

Document History

- **Posted:** November 18, 2024
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U.S. National Science Foundation
Directorate for Technology, Innovation and Partnerships
Innovation and Technology Ecosystems
Directorate for STEM Education
Division of Graduate Education
Division of Equity for Excellence in STEM
Research on Learning in Formal and Informal Settings
Division of Undergraduate Education

Micron Technology, Inc.

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

February 24, 2025

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Important Information And Revision Notes

The type of award has been updated from Cooperative Agreement to Standard or Continuing Grant.

The solicitation language now emphasizes that proposals should ensure all learners have positive and impactful experiences.

Proposers are encouraged to leverage *cross-sector* partnerships when developing a proposal.

Projects are expected to use the NSF Education and Training Application system (ETAP - https://etap.nsf.gov/) to manage and collect participant demographic information (See Special Award Conditions)

The update regarding Micron Foundation's contribution, as collaborating partner in this program and as previously articulated in Dear Colleague Letter NSF 25-016, has been incorporated directly into the solicitation.

The tracks mentioned in this document (Pivots, Beginnings, Explorations) are in reference to a participant's knowledge of, and interest in, navigating a career pathway in an emerging technology. More information about the tracks can be found below in Section II.

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:

Experiential Learning for Emerging and Novel Technologies (ExLENT)

Synopsis of Program:

Through this initiative, the Directorate for STEM Education (EDU) and the Directorate for Technology, Innovation and Partnerships (TIP), in partnership with Micron Technology, Inc. (Micron) through the Micron Foundation, seek to support experiential learning opportunities for individuals from all professional and educational backgrounds, resulting in increased access to, and interest in, career pathways in emerging technology fields (e.g., advanced manufacturing, advanced wireless, artificial intelligence, biotechnology, quantum information science, semiconductors, and microelectronics). As NSF seeks to support the development of technologies in such fields, similar support will be needed to foster and grow a science, technology, engineering, and mathematics (STEM) workforce comprising and enabling all Americans to contribute to such innovation. Large-scale challenges like advances in microelectronics or artificial intelligence also require a STEM workforce that brings varied perspectives and expertise to further accelerate the translation of science and engineering discoveries into large-scale solutions. Moreover, as current and new emerging technologies continue to evolve, unforeseen issues around security, safety and privacy will impact the preparation of the workforce. Emerging technologies are also dynamic and rapidly changing, with career entry and advancement often requiring "learning-by-doing" experience, even for those with some STEM education. Therefore, NSF recognizes that a competitive emerging technology workforce must include individuals from traditional and nontraditional education pathways as well as those individuals who may have “stopped” out of traditional educational pathways.

The ExLENT program will support experiential learning opportunities designed to provide cohorts of learners with the crucial skills needed to succeed in emerging technology fields and prepare them to enter the workforce ready to solve our Nation’s most pressing challenges. Furthermore, the ExLENT program will directly support NSF’s priority to enable all Americans the opportunity to become a part of the emerging technologies workforce[1], thereby assuring the Nation’s competitiveness in STEM.

Key goals of the program are to (1) expand access to career-enhancing experiential learning opportunities for all individuals, including adult learners interested in re-skilling and/or upskilling (e.g., those who face or who have faced significant barriers to accessing a formal STEM education); (2) promote cross-sector partnerships between organizations in emerging technology fields and those with expertise in workforce development; and (3) develop a workforce aligned with regional economies based on emerging technologies across the Nation, in alignment with the mission of the TIP Directorate.

Broadening Participation In Stem:

NSF recognizes the unique lived experiences of individuals from communities that are underrepresented and/or underserved in science, technology, engineering, and mathematics (STEM) and the barriers to inclusion and access to STEM education and careers. NSF highly encourages the leadership, partnership, and contributions in all NSF opportunities of individuals who are members of such communities supported by NSF. This includes leading and designing STEM research and education proposals for funding; serving as peer reviewers, advisory committee members, and/or committee of visitor members; and serving as NSF leadership, program, and/or administrative staff. NSF also highly encourages demographically diverse institutions of higher education (IHEs) to lead, partner, and contribute to NSF opportunities on behalf of their research and education communities. NSF expects that all individuals, including those who are members of groups that are underrepresented and/or underserved in STEM, are treated equitably and inclusively in the Foundation's proposal and award process.

NSF encourages IHEs that enroll, educate, graduate, and employ individuals who are members of groups underrepresented and/or underserved in STEM education programs and careers to lead, partner, and contribute to NSF opportunities, including leading and designing STEM research and education proposals for funding. Such IHEs include, but may not be limited to, community colleges and two-year institutions, mission-based institutions such as Historically Black Colleges and Universities (HBCUs), Tribal Colleges and Universities (TCUs), women's colleges, and institutions that primarily serve persons with disabilities, as well as institutions defined by enrollment such as Predominantly Undergraduate Institutions (PUIs), Minority-Serving Institutions (MSIs), and Hispanic Serving Institutions (HSIs).

"Broadening participation in STEM" is the comprehensive phrase used by NSF to refer to the Foundation's goal of increasing the representation and diversity of individuals, organizations, and geographic regions that contribute to STEM teaching, research, and innovation. To broaden participation in STEM, it is necessary to address issues of equity, inclusion, and access in STEM education, training, and careers. Whereas all NSF programs might support broadening participation components, some programs primarily focus on supporting broadening participation research and projects. Examples can be found on the NSF Broadening Participation in STEM website.

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.

- General Inquiries, telephone: (703) 292-5111, email: ExLENT@nsf.gov
- Rebecca Shearman, telephone: (703) 292-7403, email: rshearma@nsf.gov
- Karen Crosby, telephone: (703) 292-2124, email: kcrosby@nsf.gov
- Mary Crowe, telephone: (703) 292-5188, email: mcrowe@nsf.gov

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

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

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 25 to 35

ExLENT awards are expected to be up to three (3) years in duration with a total budget up to $1,000,000.

Anticipated Funding Amount: $30,000,000

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:

- 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 sub-awards 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 laboratories, professional societies and similar organizations located in the U.S. that are directly associated with educational or research activities.
- For-profit organizations: U.S.-based commercial organizations, including small businesses, with strong capabilities in scientific or engineering research or education and a passion for innovation.
- Tribal Nations: An American Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of the Interior acknowledges as a federally recognized tribe pursuant to the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. §§ 5130-5131.
- State and Local Governments including those entities interested in workforce development and education.

  Other Federal Agencies and Federally Funded Research and Development Centers (FFRDCs): Prospective proposers from Other Federal Agencies and Federally Funded Research and Development Centers (FFRDCs), including NSF sponsored FFRDCs, must follow the guidance in PAPPG Chapter I.E.2 regarding limitations on eligibility.

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.

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.
  - Full Proposals submitted via Grants.gov: *NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov* guidelines apply (Note: The *NSF Grants.gov Application Guide* is available on the Grants.gov website and on the NSF website at: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide).

B. Budgetary Information

- **Cost Sharing Requirements:**

  Inclusion of voluntary committed cost sharing is prohibited.

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

  Not Applicable

- **Other Budgetary Limitations:**

  Other budgetary limitations apply. Please see the full text of this solicitation for further information.

C. Due Dates

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

  February 24, 2025

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.

I. Introduction

The United States needs a STEM workforce with the skills required to rapidly accelerate and translate science and engineering discoveries into innovative technologies and wide-scale solutions. The NSF and the National Science Board recognize that emerging technology innovation requires identifying and developing American talent with unique and creative ideas that can shape the formation of new and breakthrough scientific fields and ensure the Nation's competitiveness in emerging technologies [1,2]. In support of NSF's goal to support the American STEM workforce, the STEM Education (EDU) and Technology, Innovation and Partnerships (TIP) directorates are investing in the Experiential Learning for Emerging and Novel Technologies (ExLENT) program to establish new pathways for all learners to pursue careers in emerging technology fields. Micron Technology, through the Micron Foundation, seeks to support these endeavors through collaborative partnership.

The goal of ExLENT is to expand the American workforce in emerging technology fields (e.g., advanced manufacturing, advanced wireless, artificial intelligence, biotechnology, quantum information science, semiconductors, and microelectronics) by increasing all learners' access to emerging technology career training and pathways through experiential learning opportunities. Ideal experiential learning opportunities place individuals in authentic workplace environments that foster learning by engaging in the process of identifying and solving real-world problems. Experiential learning, from internship and co-operative programs to service-based learning and research opportunities, has demonstrated success in attracting and retaining students in STEM fields at all educational levels[3]. Although these entry-level opportunities are becoming more common in higher education, access to experiential learning activities remains limited and particularly challenging for individuals not enrolled at a college or university. Further, individuals who have not followed traditional educational pathways into STEM fields, including military veterans, often have essential skills employers covet (i.e., time management, teamwork, communication, and leadership), yet they may not have access to the STEM-specific training and learning opportunities required for entering a career in an emerging technology field. Common barriers to obtaining STEM educational or professional training include 1) limited opportunities to participate in internships, certificate programs and other experiential learning activities; 2) financial, familial, and/or community

responsibilities; and 3) general unavailability of support services needed to engage in educational programs (childcare, transportation, resume writing, etc.)[4].

The ExLENT program requires proposals to address these barriers and to provide mechanisms (i.e., financial, social, and educational/professional support) to ensure participants have viable on-ramps into emerging technology careers. Creating such on-ramps to expand access to those who are not yet engaged in the STEM workforce and to enable the pursuit of careers in emerging technology fields requires broad-based support and expertise from a variety of sectors. Therefore, this program also aims to encourage cross-sector partnerships among companies; state, local, and tribal government offices; non-profits; schools; professional organizations; and/or institutions of higher education (including two-year and minority serving institutions (MSIs)) to provide experiential learning opportunities in emerging technology fields for all individuals. These cross-sector partnerships should capitalize upon the expertise that each partner brings to the program, resulting in a collaborative, coordinated program that will provide participants with pathways into emerging technology careers.

All ExLENT projects are expected to contribute to the knowledge base that informs best practices in STEM education. Projects are expected to have a well-designed plan for gathering and analyzing appropriate data and for assessing the effectiveness of specific strategies via formative and summative assessment. Projects can also demonstrate intellectual merit through evaluation of project activities, impacts, or outcomes. The ExLENT program expects that projects developed in response to this solicitation will reimagine and/or transform existing approaches to identifying, attracting, and retaining talent in emerging technology fields.

II. Program Description

The ExLENT program aims to connect industry, local government, agencies, schools, professional organizations, and/or non-profits in order to provide individuals the experiential STEM learning opportunities needed to accelerate the Nation's innovation capacity. Given the breadth of age and educational/professional experiences of potential learners, there will be no "one-size fits all" requirement for this program. Experiential learning opportunities supported by ExLENT can serve a broad range of learners including secondary school youth and adults at any stage of career development. Further, proposed experiential learning activities can range from fully immersive experiences, such as internships, to extensive course-based activities that are constructed by (or driven by) workplace partner input to approximate real-world experiences. See examples of experiential learning activities at: https://www.nsf.gov/pubs/_img/ehr/due/ExLinEmTechFigurefinal.jpg.

The ExLENT program seeks to fund new and/or existing cross-sectoral partnerships to design engaging activities that provide individuals with (1) the opportunity to gain new skills and (2) the resources necessary to successfully navigate a career path into emerging technology fields, whether they are exploring new careers, striving toward career entry, or seeking to upskill or reskill their capabilities. Proposals should leverage evidence-based best practices in experiential learning to attract learners to emerging technology careers; establish pathways into emerging technology fields for all individuals across all geographies; and to further develop and hone the talent of workers in these rapidly evolving fields. Successful proposals will outline a comprehensive program curriculum that includes:

- Experiential learning opportunities that provide participants with an enhanced understanding of the emerging technology landscape and training in the STEM entrepreneurial and technical skills that increase their employability.
- Workplace-driven career exploration activities that allow participants varied pathways into, and job opportunities in, emerging technology fields.
- Mentorship to support participants' professional development and pursuit of careers in emerging technology fields, providing them with paths beyond the ExLENT program.
- Establishment of a participant cohort designed to help participants develop a STEM career identity and a sense of community within the emerging technology fields.
- Intentional support from all stakeholders, regardless of background or geographic location, to create environments that value all perspectives critical for innovation and that promote a competitive, resilient emerging

technology workforce.

ExLENT Proposal Tracks

Recognizing that the familiarity with (and preparedness for) a career in an emerging technology field varies widely, this solicitation provides three tracks to best support the broad range of learners:

1. Pivots
2. Beginnings
3. Explorations

Regardless of track, proposals should identify the type(s) of participants they seek to support and outline the appropriate training, support, and mentorship activities to be provided for the intended participants (aligned with participant age and level of education/professional experience). Proposals should also include mechanisms to address barriers (e.g., economic, social, behavioral, and occupational) so that participants can fully contribute to and benefit from the economy of the future.

Track*: Pivots*

The Pivots track aims to attract individuals not currently enrolled in post-secondary educational programs, and have acquired useful skills such as time management, communication, and teamwork in non-emerging technology careers. This may include participants who require upskilling to work in emerging technology fields. Participants benefitting from this track should be highly motivated to change their career trajectory into an emerging technology field. Proposed projects should provide participants with experiential learning opportunities that build skills and competencies necessary for current professionals to pivot into careers in emerging technology fields.

Track*: Beginnings*

The Beginnings track aims to provide individuals possessing some existing STEM competencies (e.g., those with stackable certificates in STEM or those enrolled in associate's degree programs, etc.) with experiential learning opportunities that deepen knowledge and skills in emerging technology fields. Proposed projects should enable participants to pursue or advance their career in an emerging technology field.

Track: *Explorations*

The Explorations track aims to provide individuals with limited or no specialized STEM education the inspiration and opportunity to explore the potential of a career path in emerging technology fields. Proposed projects in this track should provide participants with experiential learning opportunities that build interest, motivation, and knowledge in emerging technology fields and identify pathways to careers in these areas. Proposals submitted to this track should focus on a wide range of participants and may include those enrolled in traditional education pathways (e.g., secondary school, college, and/or military). Alternatively, a proposal might focus on participants who are not enrolled in a traditional educational pathway (i.e., self-learners, members of incubators) who are inclined to explore hands-on learning and development opportunities in emerging technology fields.

Key Features of ExLENT Projects

Each ExLENT project should demonstrate an integrative and comprehensive approach that includes the following key features:

1. Provides pathways into the emerging technology workforce.
2. Allows for the participation of all individuals spanning the full range of backgrounds and experiences.
3. Provides *in situ* emerging technology-specific, competitively compensated, professional work experiences or emerging technology-specific career exploration for participants.
4. Where relevant, includes attention to issues of cybersecurity, safety, and/or privacy in considering applications of emerging technologies in professional settings and/or in other experiential learning opportunities.

5. Involves cross-sector partnerships between appropriate stakeholders committed to an integrated, collaborative network to best support participants.
6. Builds community between all those involved in the project by using a cohort model for engaging participants.
7. Provides both mentoring by peers and mentoring by experienced emerging technology professionals for participants that includes career development planning beyond program participation.
8. Includes plans that ensure all learners will have positive and impactful experiences, opportunity, and access regardless of their background or geographic location.
9. Includes a sustainability plan that explains how partners will continue to provide pathways into the emerging technology workforce after the project's conclusion.
10. Includes an evaluation plan that examines the extent to which the program delivered on its proposed activities.

Upon award, all ExLENT projects must use the NSF Education and Training Application system (ETAP - https://etap.nsf.gov/) to manage and collect participant demographic information. ETAP is a customizable common application system that connects individuals (such as students and teachers) with NSF-funded education and training opportunities and collects high-quality data from both applicants and participants in NSF-funded opportunities. Award recipients are also encouraged to use ETAP to manage participant applications.

References and notes:

1. The State of U.S. Science and Engineering in 2022 https://ncses.nsf.gov/pubs/nsb20221

2. STEM Labor Force of Today https://ncses.nsf.gov/pubs/nsb20212

3. Kuh, G.D. 2008 High-Impact Educational Practices: What They Are, Who Has Access to Them and Why They Matter. Report from the Association of American Colleges and Universities.

4. Hora, M., Chen, Z., Parrott, E. and Her, P. 2020. Problematizing college internships: Exploring Issues with access, program design and developmental outcomes. International Journal of Work-Integrated Learning 21(3): 235-252.

III. Award Information

Anticipated Type of Award: Standard or Continuing Grant

Estimated Number of Awards: 25-35

Anticipated Funding Amount: $30,000,000

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

Micron will co-fund as per the specifics of the partnership.

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 sub-awards 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 laboratories, professional societies and similar organizations located in the U.S. that are directly associated with educational or research activities.
- For-profit organizations: U.S.-based commercial organizations, including small businesses, with strong capabilities in scientific or engineering research or education and a passion for innovation.
- Tribal Nations: An American Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of the Interior acknowledges as a federally recognized tribe pursuant to the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. §§ 5130-5131.
- State and Local Governments including those entities interested in workforce development and education.

  Other Federal Agencies and Federally Funded Research and Development Centers (FFRDCs): Prospective proposers from Other Federal Agencies and Federally Funded Research and Development Centers (FFRDCs), including NSF sponsored FFRDCs, must follow the guidance in PAPPG Chapter I.E.2 regarding limitations on eligibility.

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.

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.

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.

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

1. Title Format: Begin the title with the Track of the project being submitted (i.e., Pivots, Beginnings or Explorations) followed by a colon, and the title of the proposal.

2. Cover Sheet: Prospective PIs should complete this sheet with all the requested information. Please make sure to check the "human subjects" box if applicable. Additional guidance on the use of Human Subjects is available in the PAPPG.

3. Project Summary: A one-page Project Summary must be provided, which consists of three parts: (1) a project overview, (2) a statement on the intellectual merit of the proposed activity, and (3) a statement on the broader impacts of the proposed activity. The first sentence of the overview must indicate the track of ExLENT project being submitted. The overview must describe the emerging technology field; the emerging technology learning experience(s) to be implemented and evaluated; the project partners; and a description of the intended participants, including the expected number of participants that will be supported.

4. Project Description: This section is limited to a maximum of 15 pages. A proposal must respond fully to the ExLENT Program Description in this program solicitation. The Project Description must include the following sections:

a. Project Overview, Rationale and Importance: The proposal must show how the project partners will collaborate to provide learners impactful and hands-on experiential learning opportunities in emerging technology fields appropriate for the given proposal track. The proposal should provide an overview of the project goals or objectives, include a rationale for how the work will increase interest in and/or access to emerging technology careers, and address the potential for intellectual merit and broader impacts within the context of the ExLENT program. The intellectual merit of a proposal should be grounded in practices that have found to be effective modes of experiential learning and/or that attract learners to emerging technology careers.

b. Experiential Learning Activities: To establish pathways into the emerging technology workforce, proposed projects should provide *in situ* emerging technology specific professional work experiences for participants OR provide emerging technology specific career exploration opportunities for participants. Recognizing that proposers know their intended audience best, the program allows for flexibility in approaches. Example activities include micro-internships, externships, apprenticeships, co-op experiences, course-based industry-driven problems, and/or any other immersive endeavor aligned with participant age and educational/professional experience. Further, these activities may be provided through cross-sector partnerships with industry including for-profit organizations; non-profit organizations; local, state, or tribal government offices and laboratories; or academic institutions. The proposal should describe how the activities will:

i. Use proven practices to inform the design of experiential learning activities appropriate for the age and education/career stages of the intended participants,

ii. Immerse participants in applied experiences,

iii. Provide for career and self-exploration, and

iv. Result in participants developing the interests, motivations, skills, knowledge, and professional competencies to pursue a career in an emerging technology field.

c. Cross-sector Partnerships: Successful experiential learning projects require effective collaboration between at least two partners who can demonstrate experience in offering experiential learning opportunities. For example, one partner could coordinate participants and provide mentorship experiences while the other partner(s) might provide the on-site experiential learning activities. Additional partners might expand the opportunities to new communities of learners.

Partners will work together to develop age and developmentally appropriate experiences that add the most educational value for the participants. Because the most successful cross-sector partnerships are fully integrated to optimally support participants, the proposal should include a collaboration plan that:

i. Defines the shared vision and goals of the cross-sector partnership,

ii. Clearly delineates roles and responsibilities of each partner,

iii. Provides a communication plan that outlines a general schedule of how and when partners will share information, and

iv. Articulates the benefits to the participants and each member of the cross-sector partnership.

d. Building Community via a Cohort Model for Participants: Educational research has established that the environment plays a significant role in building STEM identity. A supportive community can lead to an individual developing a STEM identity, increasing confidence and motivation. Proposals should describe plans to build respectful communities utilizing strategies appropriate to the project and may include in-person gatherings, digital platforms for resource sharing and/or tools used to help members stay connected even when not physically together.

e. Opening Doors to STEM Careers: Universal opportunity and access to training programs are central to the ExLENT program. The intellectual merit of a competitive proposal must:

i. Address how the project will be accessible to all individuals spanning the full range of backgrounds and experiences, especially individuals from groups underrepresented and/or underserved in STEM,

ii. Provide a clear plan on how the project will address the barriers that impact the access that all individuals have to STEM careers, and

iii. Evaluate the project's success creating supportive learning environments for all participants.

f. Sustainability and Scalability: Building sustainable cross-sector partnerships is a key metric of success for the ExLENT program. Proposals are required to have a plan to build and manage sustainable change (both within each organization and across the partnership) so that partners can continue to provide pathways into emerging technology careers after the project's conclusion. The plan may include mechanisms to further the work by connecting expertise from multiple sectors and other private and public funders. Proposals should also describe the potential for the model to be scaled and how scalability could be achieved.

g. Evaluation: Proposals should provide an evaluation plan to address the extent to which the project delivers on its proposed activities and expected outcomes. Evaluation plans should:

i. Articulate the evaluation questions relevant to the project's scope of work,

ii. Delineate the activities and data that will be employed to generate evidence addressing the evaluation questions and stipulate the project staff that will be responsible for this evidence,

iii. Include formative aspects that allow the PIs to make evidence-based decisions about changes in its activities, and the summative aspects should provide confirmation of impact regarding the intended population served,

iv. Outline the mechanisms for providing independent oversight and review of these activities (e.g., an independent, third-party evaluator or an external advisory board); for projects with external evaluators, PIs are encouraged to include reports of evaluation activities as part of their annual and final project reports, and

v. Include outcomes, performance measures, metrics, benchmarks, and an evaluation timetable, as well as a description of how formative evaluation will improve practice.

h. Generation of Knowledge: Projects are expected to contribute to knowledge by dissemination of results. ExLENT projects should strive to increase understanding about how experiential learning in emerging technology creates or informs pathways for all into emerging technology fields. All proposals should include a robust dissemination plan to share the project's implementation mechanisms, outcomes and/or other findings.

i. Broader Impacts: The Project Description must contain, as a separate section labeled 'Broader Impacts' within the narrative, a discussion of how the project will contribute more broadly to the achievement of societally relevant outcomes. Such outcomes in the context of ExLENT include, but are not limited to: development of a globally competitive emerging technology workforce; full participation of America's talent base, which includes communities that have been historically underrepresented or underserved in careers in emerging technologies; and increased cross-sector partnerships and collaborations (both domestic and international) between academia, industry, and others. Please note that, as specified in the PAPPG, a separate section labeled "Intellectual Merit" is not required within the Project Description for proposals submitted to this solicitation.

j. Results from Prior NSF Support: In cases where the prospective PI or any Co-PI has received more than one award (excluding amendments to existing awards), please report only the one award that is most closely related to the proposal.

5. References Cited: A References Cited section must be included in the proposal. Any literature cited should specifically relate to the motivation or design of the proposed project.

6. Budget: The focus of the ExLENT program is the experiential learning opportunities for participants, and the budget must reflect this principle. *Project costs must be used predominantly for participant support*, which may include such items as participant stipends, transportation, subsistence, etc. Refer to Chapter II of the PAPPG for additional guidance about participant support costs. Competitive stipends provided to participants to engage in the experiential learning program should reflect the stage of career (e.g., youth, early career, mid-career) and duration of in situ experiential learning (e.g., one month, six months, or year). Budgets should also reflect whether participants will be local, working remotely, temporarily relocating, etc. Costs in budget categories outside “Participant Support” should be used to support cohort and mentorship activities, efforts to ensure partner organizations are prepared to train/mentor learners of all backgrounds, administrative costs, and project evaluation. ExLENT projects may not charge participants an application or participation fee.

7. Facilities, Equipment and Other Resources: Provide a description of the facilities and major instrumentation that are available for the project. Photographs of physical space and equipment are not allowed.

8. Data Management and Sharing Plan: Proposers should provide a detailed data management and sharing plan. Transparency requires that the Federal agencies share how they are maximizing outcomes of Federal STEM investments and activities and ensuring broad benefit to the public. Proposers are highly encouraged to review the EDU Directorate-specific data management and sharing plan guidance, which can be accessed at STEM Education Data Management and Sharing Plan Guidance for Proposals and Awards - Directorate for STEM Education (EDU) | NSF - National Science Foundation.

9. Supplementary Documentation: The only items permitted in the Supplementary Documents section are (1) Mentoring Plan for ExLENT Participants and (2) Letters of Collaboration:

Mentoring Plan for ExLENT Participants (up to 2 pages): Mentoring provides opportunities to connect with role models and can strengthen STEM professional identity. Mentoring facilitates the development of STEM identity which can promote integration in emerging technology careers. In no more than two pages, as a supplementary document, provide a description of the mentoring activities that will be available for participants that include the following components:

a. Orientation: Establish goals for the mentoring relationship, expectations of the mentee and participants of each other, plans for communication, conflict resolution, and confidentiality.

b. Individual Development Plan: Identify goals, opportunities, time for reflection and analysis; and develop plans for providing next steps following a participant’s completion of the ExLENT program.

c. Competencies for a Successful Career: Communication, Career and Self-Development, Critical Thinking, Leadership, Professionalism, Teamwork, and Technology.

d. Networking: Identify meetings, individuals and places.

e. One-on-One Meetings: Plan regularly scheduled one-on-one meetings to gather feedback, to seek advice and to review progress.

Letters of collaboration indicating the partner's commitment and role in the proposed activities are required for all tracks. All letters of collaboration should follow PAPPG guidelines. Letters of support that merely endorse the project or offer nonspecific support for project activities must not be included and will result in the proposal being Returned without Review. Micron and Micron Foundation will not provide letters of collaboration and/or commitment for proposals submitted to the ExLENT program.

Appendices: Not permitted. The 15-page project description must contain all the information needed to describe the project. Proposals submitted with an appendix will be Returned Without Review.

B. Budgetary Information

Cost Sharing:

Inclusion of voluntary committed cost sharing is prohibited.

Other Budgetary Limitations:

Please see Section V.A.6 above for budget guidelines.

Budget Preparation Instructions:

Major research equipment purchases are not supported. The ExLENT program limits the purchase of equipment to software, probes, and specialized equipment needed to implement a specific project. General purpose equipment, such as computers, notepads, and cellphones are not supported.

ExLENT PI Conference: The budget must include funds to support travel (PI or PI's designee) to the annual ExLENT PI Conference. All award recipients are to showcase their progress at this annual conference.

C. Due Dates

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

  February 24, 2025

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/ProposalPreparationanc For Research.gov user support, call the Research.gov Help Desk at 1-800-381-1532 or e-mail rgov@nsf.gov. The Research.gov Help Desk answers general technical questions related to the use of the Research.gov system. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this funding opportunity.

For Proposals Submitted Via Grants.gov:

Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. Comprehensive information about using Grants.gov is available on the Grants.gov Applicant Resources webpage: https://www.grants.gov/applicants. In addition, the NSF Grants.gov Application Guide (see link in Section V.A) provides instructions regarding the technical preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: support@grants.gov. The Grants.gov Contact

Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this solicitation.

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

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/.

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.

Additional Solicitation Specific Review Criteria

1. To what extent does the project create opportunities for all Americans to participate in careers in emerging technology fields and to what extent does the project provide participants with pathways beyond the ExLENT program?

2. To what extent does the project reduce barriers so that all Americans can acquire the training and learning needed for careers in emerging technology?

3. To what extent does the project develop the interests, motivations, skills, knowledge and/or proficiencies of workers in emerging technology?

B. Review and Selection Process

Proposals submitted in response to this program solicitation will be reviewed by

Ad hoc Review and/or Panel Review.

Partner Pre-Award Engagement: Industrial partner, Micron has committed to providing annual contributions to NSF for the purpose of funding proposals awarded under this solicitation. Micron and their representatives are ineligible to participate in the merit review process and do not intend to serve as panel observers. NSF will be responsible for making all award decisions. Information about proposals submitted in response to this solicitation may be made available to the Micron Foundation along with other proposal information (including unattributed reviews, and if awarded, copies of annual and final annual project reports). Micron and Micron Foundation will be provided a listing of all award recipients funded under this solicitation. Eligible recipients will have the option to separately engage with Micron, including access to Micron subject matter experts.

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)*; and (5) any announcement or other NSF issuance that may be incorporated by reference in the award notice. Cooperative agreements also are administered in accordance with NSF Cooperative Agreement Financial and

Administrative Terms and Conditions (CA-FATC) and the applicable Programmatic Terms and Conditions. NSF awards are electronically signed by an NSF Grants and Agreements Officer and transmitted electronically to the organization via e-mail.

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

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

Administrative and National Policy Requirements

Build America, Buy America

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

Consistent with the requirements of the Build America, Buy America Act (Pub. L. 117-58, Division G, Title IX, Subtitle A, November 15, 2021), no funding made available through this funding opportunity may be obligated for infrastructure projects under 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:

Recipients will be required to include appropriate acknowledgment of the support of NSF partners, if applicable, and NSF in reports and/or publications on work performed under this award. An example of such an acknowledgement would be: "This material is based upon work supported by NSF grant #xxxxxxx under the NSF Experiential Learning for Emerging and Novel Technologies (ExLENT) program, which is jointly sponsored by NSF and the Micron Foundation."

All ExLENT projects must use the NSF Education and Training Application system (ETAP - https://etap.nsf.gov/) to manage and collect participant demographic information. Projects are also encouraged to use ETAP to manage participant applications.

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.

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

VIII. Agency Contacts

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

General inquiries regarding this program should be made to:

- General Inquiries, telephone: (703) 292-5111, email: ExLENT@nsf.gov
- Rebecca Shearman, telephone: (703) 292-7403, email: rshearma@nsf.gov
- Karen Crosby, telephone: (703) 292-2124, email: kcrosby@nsf.gov
- Mary Crowe, telephone: (703) 292-5188, email: mcrowe@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

For questions relating to Grants.gov contact:

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

IX. Other Information

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

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

About The National Science Foundation

The National Science Foundation (NSF) is an independent Federal agency created by the National Science Foundation Act of 1950, as amended (42 USC 1861-75). The Act states the purpose of the NSF is "to promote the progress of science;

[and] to advance the national health, prosperity, and welfare by supporting research and education in all fields of science and engineering."

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

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

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

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

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

The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for research and education in the sciences, mathematics, and engineering.
To get the latest information about program deadlines, to download copies of NSF publications, and to access abstracts of awards, visit the NSF Website at https://www.nsf.gov

- **Location:** 2415 Eisenhower Avenue, Alexandria, VA 22314
- **For General Information** (NSF Information Center)**:** (703) 292-5111
- **TDD (for the hearing-impaired):** (703) 292-5090
- **To Order Publications or Forms:**
  - Send an e-mail to: nsfpubs@nsf.gov
  - or telephone: (703) 292-8134
- **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/recipients 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