

NSF 24-551: Hispanic-Serving Institutions: Enriching Learning, Programs, and Student Experiences

Program Solicitation

Document Information

Document History

- **Posted:** February 21, 2024

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National Science Foundation

Directorate for STEM Education

Division of Undergraduate Education

Division of Equity for Excellence in STEM

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

June 04, 2024

Educational Instrumentation (EI)

February 12, 2025

Second Wednesday in February, Annually Thereafter

Implementation and Evaluation Projects (IEP), Educational Instrumentation (EI)



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Important Information And Revision Notes

Prospective principal investigators are encouraged to read this solicitation carefully. The HSI:ELPSE solicitation is a part of the larger Improving Undergraduate STEM Education: Hispanic Serving Institutions *program* at NSF. The HSI program anticipates releasing a separate solicitation in Summer 2024 that will offer additional opportunities aligned with the program goals. HSI:ELPSE and this forthcoming solicitation will replace [NSF 22-611](#) (Improving Undergraduate STEM Education: Hispanic-Serving Institutions).

The Implementation and Evaluation (IEP) Track has been revised and now has two levels. IEP Level 2 proposals have several required elements beyond those for Level 1 proposals, including the need for a research plan and a detailed letter of support from upper-level administrators that addresses sustainability.

This solicitation includes a new Educational Instrumentation Track with a goal to increase access to the computing resources and/or laboratory instrumentation needed to provide high quality undergraduate education in STEM. Eligibility is restricted to Primarily Undergraduate Institutions and institutions in EPSCoR jurisdictions.

The HSI program accepts planning and conference proposals at any time. Prospective PIs should contact an HSI program officer prior to submission to receive important feedback and permission to submit as detailed in the NSF PAPPG. See Section II, Program Description, for additional information.

The HSI program team will host webinars in which key features and expectations of the HSI:ELPSE solicitation will be discussed. Information regarding the webinars will be posted to the HSI program webpage for this solicitation.

An individual may be listed as PI or co-PI on at most two HSI:ELPSE proposals per submission deadline.

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:

Hispanic-Serving Institutions: Enriching Learning, Programs, and Student Experiences (HSI:ELPSE)

Synopsis of Program:

Hispanic Serving Institutions (HSIs) are an important component of the nation's higher education ecosystem and play a critical role in realizing the National Science Board's vision for a more diverse and capable science and engineering workforce^{1,2}. Aligned with this vision and the NSF Strategic Plan³, the goals of the NSF HSI Program are to:

1. Enhance the quality of undergraduate science, technology, engineering, and mathematics (STEM) education at HSIs.
2. Increase the recruitment, retention, and graduation rates of students pursuing associates or baccalaureate degrees in STEM at HSIs.

Meeting these goals requires institutions to understand and embrace their students' strengths, challenges, and lived experiences. While this can happen in many ways and across many parts of an institution, the Hispanic Serving Institutions: Enriching Learning, Programs, and Student Experiences (HSI:ELPSE) solicitation is specifically focused on studying and improving the student experience in the following settings:

- STEM courses, particularly for students pursuing STEM degrees;
- Certificate, minor, and/or degree programs;
- Academic departments or divisions; and
- Schools and colleges that represent a part of the entire institution (e.g., a School of Engineering or a College of Natural Sciences).

Institutions are encouraged to consider how their mission and designation as an HSI could re-imagine and/or strengthen courses, degree programs, departments, or divisions. The HSI:ELPSE solicitation welcomes projects that look to implement, test and refine promising practices and/or conduct research related to broadening participation or improving recruitment, retention, graduation and other positive outcomes for undergraduates in STEM.

The HSI:ELPSE solicitation supports projects that are purposefully designed to meet students where they are, accounting for both their assets and the challenges they may face. Identities and experiences are not determined solely by membership in a single monolithic population of students (e.g., Hispanic, first-generation, commuter, etc.). Consequently, institutions are expected to use institutional data to identify equity gaps, identify areas of need, and unpack the factors that shape students' individual realities and shared experiences. Perspectives gained from these data should be central to the design of the project.

This solicitation includes the following tracks:

- Implementation and Evaluation Projects (IEP): Levels 1 and 2
- Educational Instrumentation (EI)

Please see below for specific information about each track. Generally, proposals to the IEP track will center on one or more of the following: courses; curricular improvements; pedagogy; support structures inside and outside of the classroom; degree programs; and student pathways.

The HSI:ELPSE solicitation will also consider proposals designed to increase access to computing resources and/or laboratory instrumentation needed to provide high-quality undergraduate STEM education at the following types of institutions: (1) HSIs in EPSCoR jurisdictions; and (2) HSI Primarily Undergraduate

Institutions (PUIs) in all other (non-EPSCoR) jurisdictions. Please see the discussion of the Educational Instrumentation Track below for specific 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.

- Michael J. Ferrara, telephone: (703) 292-2635, email: mferrara@nsf.gov
- Sonja Montas-Hunter, telephone: (703) 292-7404, email: smontash@nsf.gov
- James Alvarez, telephone: (703) 292-2323, email: jalvarez@nsf.gov
- Sonal S. Dekhane, telephone: (703) 405-8977, email: sdekhane@nsf.gov
- Elsa Gonzalez, telephone: (703) 292-4690, email: elgonzal@nsf.gov
- Julio G. Soto, telephone: (703) 292-2973, email: jgsoto@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: 23 to 33

The program anticipates making:

- 7 - 9 Educational Instrumentation awards
 - Project length: Up to two years
 - Award Size: \$200,000
- 10 - 14 IEP Level 1 awards
 - Project length: Up to three years
 - Award Size: \$500,000
- 6 - 10 IEP Level 2 awards
 - Project length: Up to five years ;
 - Award Size: \$1,000,000

Anticipated Funding Amount: \$19,000,000

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:

- To be eligible for funding in the IEP Track, an institution must meet the following criteria:
 1. Be an accredited institution of higher education.
 2. Offer Undergraduate STEM educational programs that result in certificates or degrees.
 3. Satisfy the definition of an HSI as specified in section 502 of the Higher Education Act of 1965 (20 U.S.C. 1101a). In particular, institutions will be required to submit an updated

eligibility letter from the U.S. Department of Education as a supplementary document.

4. Be designated as an HSI by the U.S. Department of Education (<https://www2.ed.gov/about/offices/list/ope/ides/eligibility.html#tips>) at the time of submission. Documentation from the Department of Education confirming HSI status must be submitted as a supplemental document.

- To be eligible for funding in the Educational Instrumentation Track, the institution must meet the four criteria listed above at the time of submission and:
 1. Be an eligible Primarily Undergraduate Institution (PUI). Eligible PUIs are accredited colleges and universities (including two-year community colleges) that award Associates degrees, Bachelor's degrees, and/or Master's degrees in NSF-supported fields, but have awarded 20 or fewer Ph.D./D.Sci. degrees in all NSF-supported fields during the combined previous two academic years; or
 2. Be located in an EPSCoR jurisdiction at the time of submission.

A current list of EPSCoR jurisdictions can be found here:
<https://new.nsf.gov/funding/initiatives/epscor/state-websites>.

Who May Serve as PI:

There are no restrictions or limits.

Limit on Number of Proposals per Organization:

Educational Instrumentation Proposals: Eligible institutions may submit up to two proposals per year.

Implementation and Evaluation Proposals: Eligible institutions may submit up to a total of three IEP proposals per solicitation deadline, regardless of level. An institution may, for example, submit three Level 1 IEP proposals, or one Level 1 IEP proposal and two Level 2 IEP proposals in the same deadline.

Limit on Number of Proposals per PI or co-PI: 2

An individual may be listed as PI or Co-PI on at most two proposals per submission deadline.

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):

June 04, 2024

Educational Instrumentation (EI)

February 12, 2025

Second Wednesday in February, Annually Thereafter

Implementation and Evaluation Projects (IEP), Educational Instrumentation (EI)

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 Hispanic Serving Institution (HSI) Program is supported by the National Science Foundation (NSF) as a cross-divisional effort with multiple funding opportunities that support the nation's colleges that have been designated as Hispanic Serving Institutions. This program is part of a Foundation-wide effort to accelerate improvements in the quality and effectiveness of undergraduate education in all STEM fields including the learning, social, behavioral, and economic sciences. With Congressional support, the NSF uses this program to build capacity at institutions of higher education that typically do not receive high levels of NSF grant funding.

The HSI:ELPSE solicitation supports the two goals shared amongst all current and previous funding opportunities in the NSF HSI Program:

1. Enhance the quality of undergraduate science, technology, engineering, and mathematics (STEM) education at HSIs.
2. Increase the recruitment, retention, and graduation rates of students pursuing associates or baccalaureate degrees in STEM at HSIs.

The HSI designation comes from a set of criteria employed by the US Department of Education⁴. Beyond these quantitative criteria, however, HSIs represent a diverse collection of institutions that serve students with many

intersecting characteristics. The HSI program celebrates the capacity for HSI-educated individuals to bring their experiences to scientific and societal problems and develop unique ideas, methods, and potential solutions⁵.

The HSI:ELPSE solicitation welcomes proposals from the breadth of two- and four-year Hispanic Serving Institutions across the nation⁶. Within each HSI's unique context, the HSI:ELPSE solicitation encourages institutions to adopt and operationalize student-centered frameworks and work to ensure that the institution is adequately prepared to serve their students.

The HSI:ELPSE solicitation seeks to build upon the organizational capacity of HSIs to support activities that meet the goals of the HSI program and demonstrate potential to broaden participation in STEM disciplines. To this end, the solicitation and the tracks discussed below reflect two core principles.

1. Each HSI is unique. Student outcomes are intricately connected to each institution's strengths and challenges, shaped by local contexts, guided by bold leaders, and inclusive of a complex set of stakeholders.
2. Enriching the student experience in a way that supports student learning and positive outcomes requires institutions to move beyond monolithic demographic descriptors and examine the intersecting characteristics and lived realities that can be applied to students as individuals and in groups.

Ideally, successful projects will allow institutions to move towards and/or sustain a population of STEM students with characteristics, enrollment patterns, and outcomes that align with those for the entirety of the student body. Meeting those goals may require institutions to go beyond solely sorting students into coarse demographic groups as they examine whether their practices and policies fully address the needs of their students.

Each individual student has an identity that reflects several distinct characteristics such as first-generation status, gender, ethnicity, academic major, race, financial need, and many others. All HSI:ELPSE proposals should be designed with an intersectional lens that acknowledges and accounts for the intersection of student characteristics and experiences.

The use of an intersectional lens is meant to strengthen proposals' efforts to focus authentically on students' assets and needs. For instance, institutions with a high proportion of commuter students should carefully consider how students' time on campus might impact the scheduling and delivery of certain project components. As another example, if a project plans to offer undergraduate research or other experiential learning opportunities, then consideration should be given for the inclusion of stipends to allow working students to participate without sacrificing income that could be necessary for basic needs or educational expenses.

II. Program Description

Overview

The HSI:ELPSE solicitation is specifically focused on studying and improving student experiences and outcomes in the following settings:

- STEM courses, particularly for students pursuing STEM degrees;
- Certificate, minor, and/or degree programs;
- Academic departments or divisions; and
- Schools and colleges that represent a part of the entire institution (e.g., a School of Engineering or a College of Natural Sciences).

Subject to the specific requirements of each track detailed below, the HSI:ELPSE solicitation welcomes proposals aligned with one or both of the following areas:

Courses, Curricula, and Pedagogy: Efforts that have a direct impact on students' classroom experiences and progression through degree programs. These projects might center on innovations in one or more of the following areas: specific courses; majors, minors or certificate programs; non-majors STEM courses; full- and part-time faculty pedagogy;

course-based undergraduate research or internship opportunities; or academic supports within or outside of the classroom.

Institutional Structures and Pathways: Efforts that study and/or improve systems and opportunities that go beyond students' direct experiences in their courses and degree programs. Projects of this type might center on innovations in one or more of the following: 2-year to 4-year transfer pathways; dual-enrollment or dual-degree programs; academic advising; faculty or staff professional development; growth towards being Hispanic-serving; preparation for graduate studies or the STEM workforce; department-, division-, or college-based undergraduate research and internship programs.; Projects with a focus on this theme should make use of disaggregated institutional data to support the need of the project and contextualize the proposed project's aims and activities.

The examples provided do not by any means constitute an exhaustive list, and proposers are encouraged to explore any factors that impact outcomes for undergraduate STEM students at their institution.

Project Tracks

This solicitation accepts proposals in two projects tracks. Additional opportunities for planning and conference proposals are also discussed below.

Implementation and Evaluation Projects (IEP) Track

The track welcomes projects looking to implement, adapt, or study promising practices and also invites theoretically grounded, methodologically rigorous research projects on undergraduate experiences in STEM at HSIs. IEP projects include activities that are anticipated to support research and efforts to improve the HSI undergraduate experience for STEM majors and for non-majors enrolled in STEM courses.

Examples include, but are not limited to, the following types of activities:

- redesigning STEM courses, degree programs, student support systems, or practices;
- developing new STEM courses, certificates, minors and degree programs;
- enacting professional development for faculty, staff, and administrators to implement student-centered pedagogy, advising, leadership or other practices;
- conducting research studies to better understand aspects of undergraduates' STEM experiences in the focal areas of the HSI:ELPSE solicitation (courses, programs, departments, and schools/colleges);
- developing institutions' understanding of their students, practices, and HSI designation, particularly institutions that have been recently classified as HSIs; and
- building out the data infrastructure and methodologies that would allow an institution to collect and conduct thorough analyses of student data.

Proposals can focus on improving student learning and outcomes, broadening participation of historically underrepresented student groups in STEM at HSIs, or other efforts aligned with the HSI:ELPSE solicitation's areas of focus. The IEP track is intended to be a broad opportunity, and encourages the submission of high-risk, high reward approaches with transformative potential.

Common Expectations for Level 1 and Level 2 IEP Projects: There are two funding levels that determine the maximum budget, timeline, and scope for the proposed projects. The following elements are expected within **all IEP proposals**, regardless of funding level:

- Proposals are expected to address at least one of the goals of the HSI program and be aligned with one or more of the areas described above: Courses, Curricula, and Pedagogy; or Institutional Structures and Pathways.
- Proposals should be evidence-based, which could include indigenous knowledge and other traditions that may be transmitted outside of the traditional scholarly literature. Project components should be supported as appropriate by a review of the relevant literature.

- Proposals should be situated in the context of the institution and must include an Institutional Data Narrative as part of the proposal's 15-page Project Description that uses data, disaggregated to the extent that is feasible for proposers, to provide insights into the institution and its students.
- Activities, supports, evaluation and, if required, research plans must be designed using an intersectional lens. Specifically, proposers are encouraged to discuss how the project components account for students' intersecting membership in populations described by demographic characteristics and/or lived experiences (e.g., low-income, commuter, parenting, first-generation, or veteran status).
- Collaborative proposals from either single or multiple institutions must use a portion of the Management Plan to describe the roles of all senior personnel as well as the nature of the collaboration between institutions. It is imperative that all collaborating institutions have a clear and appropriate voice in the leadership and execution of the project as it applies to their students.
- **All IEP proposals** must include a detailed evaluation plan, executed by an experienced and independent evaluator, that will provide both formative and summative feedback on the project's progress towards its stated goals. Each evaluation plan should include clear evaluation questions, quantitative and/or qualitative data streams beyond baseline institutional research data, specified methods for data analysis, and a mechanism for providing a written evaluation report to the project team at least annually. Please see "Proposal Preparation and Submission Instructions" below for additional information about the expectations for project evaluation.
- **All IEP proposals** that plan to financially support undergraduate students, for instance as tutors, peer mentors, research assistants, or other trainees must include a student mentoring plan of maximum 1 page as a supplemental document. This document should discuss specific strategies that will be utilized to provide academic, professional, and other valuable types of mentoring to these students. A student mentoring plan is not required if a project solely intends to provide incentives to students serving as research subjects without additional training requirements or duties. This solicitation specific required plan is separate and distinct from the mentoring plan required by the PAPPG for proposals that request funding to support postdoctoral scholars or graduate students.

Proposals may involve single operational units or departments of a college or multiple disciplines within a single division, school, or college at the institution. Collaborative proposals from multiple institutions or organizations are also welcome. Please see the Proposal Preparation Section below for additional guidelines regarding the submission of a complete proposal.

IEP Level 1: Up to 3 Years with a maximum budget of \$500,000.

Awards at this level will support early-stage or exploratory projects that look to enrich the student experience, improve teaching and learning, broaden participation in undergraduate STEM, or improve student outcomes at HSI. While IEP Level 1 proposals should be evidence-based as discussed above, they may be more exploratory and would generally be of a smaller scale than IEP Level 2 proposals.

The core activities of Level 1 projects may be wholly novel or may center on the replication and validation of promising approaches or high impact practices that may be novel at the institution. While STEM education or broadening participation research plans are welcome in Level 1 IEP proposals, they are not required. However, in the absence of a research plan, proposals must describe a plan to generate knowledge through the analysis and broad dissemination of data and outcomes obtained through project evaluation.

Level 1 IEP proposals are welcome to submit letters of collaboration from internal or external partners including faculty, administrators, corporations, non-profits or other entities as appropriate. These letters should adhere to the guidelines outlined in Chapter II.D.2.i.(iv) of the NSF PAPPG and should not be letters of support as described in that section.

IEP Level 2: Up to 5 Years with a maximum budget of \$1,000,000

IEP Level 2 projects are supported for up to five years and should include efforts that are beyond the proof-of-concept stage and have potential to result in sustainable positive outcomes that align with the goals of the HSI program. Level 2 projects have a scale and scope beyond what would typically be expected for IEP Level 1 projects.

Level 2 projects must include substantial educational research plans intended to generate new knowledge that may improve our understanding of how to build institutional capacity at HSIs, to meet the goals of enhancing the quality of undergraduate student experiences in STEM, and/or improving the recruitment, retention, and graduation rates of students pursuing STEM degrees at HSIs. Research plans should include specific and actionable research questions, be theoretically grounded, and draw from data streams that look beyond those traditional institutional research measures. The HSI program has no methodological preference and welcomes qualitative, quantitative and mixed-methods studies as appropriate given the foci of each proposed study.

Specific plans to sustain and institutionalize successful project components should be included as part of the Project Description. All IEP Level 2 proposals must include letters of support from upper-level institutional administrators, at the Dean level or higher, with responsibility for faculty affairs and/or undergraduate STEM education in the proposal's focal unit(s). These letters should outline concrete mechanisms and institutional commitments for institutionalization and sustainability of the project activities and should be uploaded as supplemental documents.

Level 2 IEP proposals are welcome to submit additional letters of collaboration from internal or external partners including faculty, administrators, corporations, non-profits or other entities as appropriate. These letters should adhere to the guidelines outlined in Chapter II.D.2.i.(iv) of the NSF PAPPG and should not be letters of support as described in that section.

Educational Instrumentation (EI) Track: Up to 2 years with a maximum budget of \$200,000.

The goal of the Educational Instrumentation (EI) Track is to increase access to the computing resources and/or laboratory instrumentation needed to provide high quality undergraduate education in STEM. The EI track welcomes proposals centered on instrumentation to improve educational experiences and outcomes in any STEM discipline represented across NSF's Directorates and Divisions.

Eligibility: The EI track is open to all HSIs in EPSCoR jurisdictions and to HSI Primarily Undergraduate Institutions (PUIs) in all other (non-EPSCoR) jurisdictions. Eligible PUIs are accredited colleges and universities (including two-year community colleges) that award associate degrees, bachelor's degrees, and/or master's degrees in NSF-supported fields but have awarded 20 or fewer Ph.D./D.Sci. degrees across all NSF-supported fields during the combined previous two academic years.

Institutions may submit at most two EI proposals each year.

Focus: All proposals to the EI track should be to support instrumentation and/or computing resources used primarily for undergraduate STEM courses. Examples include, but are not limited to:

- Instrumentation to be used by majors and non-majors engaged in traditional laboratory instruction, course-based undergraduate research experiences, or other activities occurring within one or more STEM courses at the proposing institution.
- Hardware to be used in computer laboratories specifically dedicated to students in one or more STEM degree programs. The requested equipment should support specific courses but might also be used by majors engaged in undergraduate research, internships, cooperative learning or other experiential opportunities.

As noted in the PAPPG, the acquisition cost of equipment includes modifications, attachments, and accessories necessary to make an item of equipment usable for the purpose for which it will be purchased.

The project description for EI proposals is limited to six (6) pages and should address how the requested equipment will impact recruitment, retention, graduation and other positive outcomes for undergraduate STEM students. This should, at a minimum, include the following:

- a discussion of the need for the requested equipment;
- a discussion of how students would benefit from the requested equipment, along with the estimated number of students that would directly benefit each year over at least a two-year period;
- a description of the courses, degree programs, and other opportunities impacted;

- plans for maintenance and procurement of necessary consumables as needed;
- plans for faculty, staff, or student training as necessary; and
- a discussion of how the project team will assess progress, document outcomes, and evaluate success in achieving project goals.

Restrictions: The EI track will not support proposals that include the following:

- Instrumentation and/or computing facilities intended primarily to support undergraduate research experiences in specific investigators' labs.
- Sustaining infrastructure and/or building systems. This category includes (but is not limited to) the installation of or upgrades to infrastructure related to the supply of power, ventilation, water or research gases, routine multi-purpose computer networks, standard safety features, and other general-purpose systems (e.g., toxic waste removal systems and telecommunications equipment).
- Construction, renovation, or modernization of rooms, buildings, or research facilities. This category refers to any space where educational activities occur, whether "bricks-and-mortar", mobile, or virtual.
- General purpose computer labs, software, or related requests that are not primarily dedicated to undergraduate STEM courses, regardless of their use by majors or non-majors.

Proposals seeking support for the above items or activities are subject to return without review (if noncompliance is established prior to review) or decline (if noncompliance is established during the merit review process).

Budget Guidelines for EI Proposals: The following guidelines are in effect for EI proposals.

- At most 10% of the proposal budget, including indirect costs, may be devoted to training activities for faculty or staff responsible for the use and maintenance of the requested equipment. Such requests should be carefully justified, and in general should only be made if there is specific, demonstrable need and no comparable equipment is already in use at the institution. Salary support, including fringe benefits and indirect costs, may only be requested for individuals providing such training and would contribute to the 10% maximum. Travel costs associated with training for operations and maintenance may be an eligible expense but must also be well-justified.
- Necessary software and a limited supply of essential consumables may be requested and should be carefully justified. EI funds may not be used for paper, ink, or other consumable materials necessary for printing or regular use of standard computing resources.

Additional Opportunities

Planning Proposals: The HSI:ELPSE solicitation welcomes planning proposals at any time to develop, organize, and/or strengthen key data, human, and educational resources. Proposers should refer to Chapter II.F.1 of the NSF PAPPG for specific budget and proposal preparation guidelines relating to planning proposals and should note the target dates provided for this mechanism. As detailed in the PAPPG, PIs must contact a program director on the HSI:ELPSE solicitation to discuss their proposal idea and determine if a planning grant is appropriate. Furthermore, written permission to submit a planning proposal must be obtained from an HSI program director and uploaded at the time of submission.

Planning proposals can focus on the development of a future submission to the IEP track or can be centered on institutional efforts to better serve their undergraduate STEM students. Examples of planning proposals include, but are not limited to the following:

- identifying or developing models, frameworks, research or evaluation designs central to the development of a strong future submission to the HSI:ELPSE solicitation;
- developing or revising strategic plans for STEM education that leverage student-centered frameworks and practices;

- strengthening collaborations among faculty, administration, and staff in STEM departments, divisions, schools, or colleges;
- strengthening collaborations among institutions of higher education, including two-year colleges and rural institutions;
- establishing partnerships with industry and/or community organizations;
- piloting systems and approaches to collect, organize, and analyze student data;
- offering leadership training, substantial retreats, or other mechanisms allowing administrators or one or more units within the institution to explore student-centered practices.

Workshops and Conferences: Proposals for workshops and conferences addressing topics that contribute to the goals of the HSI Program may be submitted at any time following consultation with an HSI Program Officer. Proposals for conferences that seek to address critical challenges in undergraduate STEM education at HSIs, including issues related to recruitment, retention, completion, and transfer are particularly encouraged. Non-profit organizations and other institutions that are not HSIs are eligible to submit conference proposals. These institutions may include, but are not limited to K-12 schools, community-based organizations, and professional organizations that are working to support the goals of the HSI program. Information regarding the preparation of a Conference proposal can be found in the PAPPG Chapter II.F.9.

III. Award Information

Anticipated Type of Award: Continuing Grant or Standard Grant

Estimated Number of Awards: 23 to 33

The program anticipates making:

- 7 - 9 Educational Instrumentation awards
 - Project length: Up to two years
 - Award Size: \$200,000
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Anticipated Funding Amount: \$19,000,000

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:

- To be eligible for funding in the IEP Track, an institution must meet the following criteria:
 1. Be an accredited institution of higher education.
 2. Offer Undergraduate STEM educational programs that result in certificates or degrees.
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eligibility letter from the U.S. Department of Education as a supplementary document.

4. Be designated as an HSI by the U.S. Department of Education (<https://www2.ed.gov/about/offices/list/ope/ides/eligibility.html#tips>) at the time of submission. Documentation from the Department of Education confirming HSI status must be submitted as a supplemental document.

- To be eligible for funding in the Educational Instrumentation Track, the institution must meet the four criteria listed above at the time of submission and:
 1. Be an eligible Primarily Undergraduate Institution (PUI). Eligible PUIs are accredited colleges and universities (including two-year community colleges) that award Associates degrees, Bachelor's degrees, and/or Master's degrees in NSF-supported fields, but have awarded 20 or fewer Ph.D./D.Sci. degrees in all NSF-supported fields during the combined previous two academic years; or
 2. Be located in an EPSCoR jurisdiction at the time of submission.

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Who May Serve as PI:

There are no restrictions or limits.

Limit on Number of Proposals per Organization:

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Limit on Number of Proposals per PI or co-PI: 2

An individual may be listed as PI or Co-PI on at most two proposals per submission deadline.

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 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 instructions supplement guidance in the PAPPG:

Project Data Form: A Project Data Form must be submitted as part of all proposals. The information on this form is used to direct proposals to appropriate reviewers and to determine the characteristics of projects supported by the NSF Division of Undergraduate Education (DUE). In Research.gov, this form will appear as a required section of the proposal only after the HSI:ELPSE solicitation number has been selected in Step 1 of the Proposal Creation Wizard. Grants.gov users should refer to Section VI.5.2. of the NSF Grants.gov Application Guide for specific instructions on how to submit the DUE Project Data Form.

Cover Sheet: Review the regulations regarding Human Subjects ([Research Involving Human Subjects](#)). Please note that Human Subjects regulations also govern activities that have to do with safeguarding individually identifiable information such as student and faculty surveys and data. Therefore, projects submitted to this program may need to be reviewed by the Human Subjects Institutional Review Board (IRB) for the institution. If the project will be IRB reviewed, please indicate on the cover sheet that the review is pending. If the proposal has already been IRB reviewed and found to be exempt, please indicate so on the cover sheet and include the Exemption Number. If the IRB has already given approval of the activities include a letter from the IRB as a Supplementary Document and indicate the IRB Approval Date on the cover sheet. Please note that an award cannot be made unless the IRB process has been completed and documentation has been received by the program director prior to recommending the award.

Project Summary: Each proposal must have a summary of the proposed project of not more than one page in length. The Project Summary should be informative and understandable to a range of practitioners/instructors, researchers, evaluators, equity experts, and scientific experts working in the STEM Education field. The Project Summary should contain each of the following three sections.

- *Overview:* Describe the focus of the proposed project, the kinds of activities to be undertaken, and a statement of the objectives and approaches/methods to be employed.
- *Intellectual Merit:* Describe the potential for the project to advance knowledge through practice or research.
- *Broader Impacts:* Describe the potential of the proposed activity to benefit society and contribute to the achievement of specific, desired societal outcomes.

Project Description: The project description should follow the requirements outlined in the NSF PAPPG and this solicitation. Specific guidelines for each project track appear next.

Project Descriptions for IEP Proposals: The project description for IEP proposals is limited to 15 single-spaced pages. The Project Description must explain the project's motivating rationale, goals, objectives, deliverables, and describe how they address the goals of the HSI program. The following sections must be included in the 15-page project description with a bold heading.

- **Results from Prior NSF Support:** If applicable the Project Description must include a section on results from prior NSF support. This must include support for projects pertaining to the proposed project that the PI or any of the co-PIs have been involved with (including sub-awards from NSF supported projects). This section should be aligned with the requirements given in the NSF PAPPG and contain specific outcomes and results to demonstrate

the impact of the project. If the project team has had no prior support pertaining to the new proposal, this should be stated in the proposal. It is not required to have prior support to be successful in the HSI program.

- **Project Rationale, Significance and Objectives:** The proposal should contain specific objectives that address the goals of the HSI program. The project rationale should build a compelling case for the proposed work, its approach, and how the work will advance knowledge regarding STEM education at HSIs. Proposals are expected to build on prior fundamental and/or applied research in STEM education or provide theoretical and empirical justification for the proposed project as needed. Justification may be accomplished through a combination of relevant literature, institutional data, and summaries of results from prior work.
- **Broader Impacts:** Please note that per guidance in Chapter II of the NSF PAPPG, the Project Description must contain a separate section within the narrative labeled "Broader Impacts." This section should provide a discussion of the Broader Impacts of the proposed activities. Proposers may decide where to include this section within the Project Description.
- **Institutional Data Narrative:** All IEP proposals must include an Institutional Data Narrative as part of the Project Description to demonstrate the need for and potential benefits of the project. Proposers are encouraged to make appropriate use of disaggregated data in order to examine the intersectional identities of their students. This data may use any metrics that are appropriate for the project and may be tabular, graphical, or narrative in nature.
- **Commitment and Sustainability:** All IEP proposals must document an institutional commitment to faithfully carry out the project. All proposals must demonstrate an institutional commitment to build upon or sustain any successful results of the project beyond the funding period.
- **Knowledge Generation:** All IEP proposals must clearly describe efforts to generate knowledge through assessment, research, and/or evaluation. Projects must be situated in the existing practice, literature, and theory in the context of STEM education at an HSI and address questions of significance to those who work in and support HSIs. Assessing impact of efforts as part of knowledge generation may be carried out by the PI and co-PIs or in partnership with an education researcher, evaluator, institutional research offices or other colleagues with measurement expertise.
- **Project Evaluation:** All IEP proposals must include a detailed evaluation plan, executed by an experienced and independent evaluator, that will provide both formative and summative feedback on the project's progress towards its stated goals. Evaluation plans for IEP proposals should: (1) describe the aspects of the proposed project to be evaluated, (2) demonstrate the alignment between project activities and evaluation efforts, and (3) provide the design of the evaluation plan, including mechanisms for formative evaluation. Furthermore, evaluation plans for IEP proposals should include clear evaluation questions, quantitative and/or qualitative data streams beyond baseline institutional research data, specified methods for data analysis, and a mechanism for providing a written evaluation report to the project team at least annually. The selected project evaluator should be independent from the project team but may be an individual from the same institution who has expertise in evaluation and assessment. If the submitting organization requires external evaluation consultants to be selected through a competitive bid process after an award is made, the proposer should mention the policy and describe the plans to select and collaborate with the evaluator once an award is made. Proposals without a named evaluator due to such a restriction should still include an evaluation plan reflecting the guidance provided above.
- **Project Management Plan:** All proposals should include a project management plan indicating the roles and responsibilities of anyone serving as PI, co-PI, or senior personnel on the proposed project. Multi-institutional proposals including subawards should describe how project management responsibilities will be distributed across institutions as appropriate. The description provided should enable reviewers to assess the alignment of the team's experience and professional capabilities that are relevant to the proposed project. The project management plan may additionally describe other contributors as appropriate for the project, including STEM professionals, collaborators, researchers, advisory board members, evaluators, consultants, and contractors.
- **Dissemination Plan:** All IEP projects must include a plan to disseminate project outcomes to interested stakeholders and members of the HSI community. Innovative approaches beyond publications and conference presentations that will strategically engage specific or broad audiences are encouraged.

Project Descriptions for EI Proposals: The project description for EI proposals is limited to six (6) pages and should address how the requested equipment will impact recruitment, retention, graduation and other positive outcomes for undergraduate STEM students. Other components of an Equipment Proposal are noted in the PAPPG Chapter II.F.10. This should, at a minimum, include the following:

- a discussion of the need for the requested equipment;
- a discussion of how students would benefit from the requested equipment, along with the estimated number of students that would directly benefit each year over at least a two-year period;
- a description of the courses, degree programs, and other opportunities impacted;
- plans for maintenance and procurement of necessary consumables as needed;
- plans for faculty, staff, or student training as necessary; and
- a discussion of how the project team will assess progress, document outcomes, and evaluate success in achieving project goals.

The following sections as described above must be included in the 6-page project description with a bold heading:

- **Results from Prior NSF Support**
- **Broader Impacts**
- **Project Management Plan**
- **Commitment and Sustainability**

References Cited: A References Cited section must be included. Literature cited should specifically relate to the proposed project, and the Project Description should make clear how each reference has played a role in the motivation for or design of the project. References could draw from the literature on broadening participation, discipline-based education research, STEM teaching and learning, or higher education as appropriate for the specific aims of the project. If no references are cited, the section should state that no references were cited.

Facilities, Equipment & Other Resources: See PAPPG Chapter II.D.2.g.

Senior Personnel Documents: See PAPPG Chapter II.D.2.h.

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 Directorate-specific data management and sharing plan guidance, which can be accessed at <https://www.nsf.gov/bfa/dias/policy/dmpdocs/ehr.pdf>.

Mentoring Plan (if applicable): Required when funding is requested to support postdoctoral scholars or graduate students. See PAPPG Chapter II for instructions for the preparation of this item.

Special Information and Supplementary Documents: Please refer to the PAPPG Chapter II for additional guidance on Supplementary Documents. There is a distinction between supplementary documents and an appendix. Documents outside of what is described below may be interpreted as an appendix and can result in the proposal being returned without review.

- **Letters of Collaboration:** Proposals are encouraged to include letters of collaboration from internal and external partners and project contributors outside of the project PIs and co-PIs. The format of these letters should closely align with the suggested language provided in the PAPPG.
- **Letters of Support from Key Administrators (IEP Level 2 Projects Only):** All IEP Level 2 proposals must include letters of support from upper-level institutional administrators, at the level of Dean or higher, with responsibility for academic affairs and/or undergraduate STEM education in the proposal's focal unit(s). These letters should

outline concrete mechanisms for institutionalization and sustainability of the project activities and should be uploaded as supplemental documents.

- **Biographical Sketch of the External Evaluator:** If an evaluator is named in the proposal, then a biographical sketch can be included as a supplementary document. This must follow the NSF format for biosketches and must not be a resume, CV, or quote for services.
- **Letter of Eligibility:** The Institutions submitting an IEP or EI proposal to the HSI:ELPSE program must be a Hispanic Serving Institution as defined by law in Section 502 of the Higher Education Act of 1965 (20 U.S.C. 1101a). A copy of the most recent Letter of Eligibility from the Department of Education must be included as a supplementary document. For collaborative proposals from multiple institutions, each submitting institution must be a Hispanic Serving Institution and submit an Eligibility Letter. For collaborative proposals from a single institution, an Eligibility Letter is required only from the lead institution.
- **Student Mentoring Plan:** All IEP proposals that plan to financially support undergraduate students, for instance as tutors, peer mentors, research assistants, or other trainees must include a student mentoring plan of maximum 1 page as a supplemental document. This document should discuss specific strategies that will be utilized to provide academic, professional, and other valuable types of mentoring to these students. A student mentoring plan is not required if a project solely intends to provide incentives to students serving as research subjects without additional training requirements or duties. This solicitation specific required plan is separate and distinct from the mentoring plan required by the PAPPG for proposals that request funding to support postdoctoral scholars or graduate students.

Note for Planning and Conference Proposals: Please note that all planning and conference proposal submissions should adhere to the relevant guidelines, including restrictions on the length of the Project Description, given in the PAPPG. See Section II, Program Description, for additional information.

B. Budgetary Information

Cost Sharing:

Inclusion of voluntary committed cost sharing is prohibited.

Other Budgetary Limitations:

Collaborative Funding for non-HSIs:

- The HSI:ELPSE solicitation welcomes collaborative proposals. If collaboration involves non-lead institutions that are not HSIs, they must be included as a subaward (PAPPG Chapter II.E.3.a). Collaborative proposals involving non-HSIs must not be submitted as Collaborative Proposals from Multiple Institutions (PAPPG Chapter II.E.3.b).

HSI:ELPSE project funds may not be used for:

- Student scholarships (please see the S-STEM, SFS, or Robert Noyce Teacher Scholarship programs for scholarships for students).
- Equipment or instrumentation that does not significantly improve instructional capability
- Teaching aids (e.g., films, slides, projectors, "drill and practice" software).
- Vehicles, trailers, laboratory furnishings, or general utility items such as office equipment, benches, tables, desks, chairs, storage cases, and routine supplies.
- Maintenance equipment and maintenance or service contracts.
- Modification, construction, or furnishing of laboratories or other buildings.
- Installation of equipment or instrumentation (as distinct from the on-site assembly of multi-component instruments--which is an allowable charge).

In accordance with 2 CFR § 200.413, the salaries of administrative and clerical staff should normally be treated as indirect costs (F&A). Direct charging of these costs may be appropriate only if all the conditions specified in 2 CFR § 200.413 are met.

Budget Preparation Instructions:

Budgetary Information: Budgets and budget justifications submitted to this solicitation should reflect an equitable distribution of funds based on the proposed scope of the project. All budget requests must be consistent with the proposed scope and duration of the project in its track and cannot exceed the maximum permitted in its track. Proposers to the HSI:ELPSE solicitation should provide a budget for each year of support requested. The following additional requirements also apply:

- **Required Travel for PI Meeting:** All proposals should budget for representatives of the project's PI team to attend biannual HSI program PI meeting throughout the life of the project. Collaborative proposals should include funds for at least one team member from each collaborating institution to participate in these meetings.
- **Student Financial Support:** Financial support, such as salaries and stipends, may be provided to student participants in the HSI:ELPSE solicitation. Financial support, however, may only be provided to students who are U.S. citizens, nationals, or permanent residents.
- **Professional Development Support:** In proposals that involve professional development workshops, reasonable travel and subsistence costs (lodging and meals) during the workshop may be included in the project budget. Funds may also be requested for a reasonable stipend for participants. These funds should be described in the budget justification.
- **Evaluation:** All IEP proposal budgets must include funds for project evaluation commensurate with the work described in the evaluation plan. Planning proposals may also include funds for evaluation as needed. Institutions that require a competitive bid process for external evaluators should mention the requirement in the project description, particularly if that requirement precludes naming a specific evaluator in the submission.

Budget Guidelines for EI Proposals: The following guidelines are in effect for EI proposals.

- At most 10% of the proposal budget, including indirect costs, may be devoted to training activities for faculty or staff responsible for the use and maintenance of the requested equipment. Such requests should be carefully justified, and in general should only be made if there is specific, demonstrable need and no comparable equipment is already in use at the institution. Salary support, including fringe benefits and indirect costs, may only be requested for individuals providing such training and would contribute to the 10% maximum. Travel costs associated with training for operations and maintenance may be an eligible expense but must also be well-justified.
- Necessary software and a limited supply of essential consumables may be requested and should be carefully justified. EI funds may not be used for paper, ink, or other consumable materials necessary for printing or regular use of standard computing resources.

C. Due Dates

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

June 04, 2024

Educational Instrumentation (EI)

February 12, 2025

Second Wednesday in February, Annually Thereafter

Implementation and Evaluation Projects (IEP), Educational Instrumentation (EI)

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/ProposalPreparation 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/web/grants/applicants.html>. In addition, the NSF Grants.gov Application Guide (see link in Section V.A) provides instructions regarding the technical preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: support@grants.gov. The Grants.gov Contact Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this solicitation.

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

For IEP proposals:

How effectively does the design of project activities (e.g., student supports, evaluation, research, etc.) take into account students' membership in populations described by demographic characteristics or lived experiences (e.g., low-income, commuter, parenting, first-generation, or veteran status)?

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. 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 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:

HSI Program Evaluation: Projects are required to cooperate and participate in additional program efforts to gather data and information to support HSI program monitoring and evaluation. Projects are furthermore required to participate, if asked, in any efforts to synthesize and disseminate program outcomes via current or future HSI-Net Centers.

Open Access to Project Products: Developers of new materials are required to license all work (except for computer software source code, discussed below) created with the support of the grant under either the 3.0 Unported or 3.0 United States version of the Creative Commons Attribution (CC BY), Attribution-ShareAlike (CC BY-SA), or Attribution-NonCommercial-ShareAlike (CC BY-NC-SA) license. These licenses allow subsequent users to copy, distribute, transmit, and adapt the copyrighted work and requires such users to attribute the work in the manner specified by the grantee. Notice of the specific license used would be affixed to the work and displayed clearly when the work is made available online. For general information on these Creative Commons licenses, please visit <http://creativecommons.org/licenses/> [↗](#).

It is expected that computer software source code developed or created with NSF funds be released under an intellectual property license that allows others to use and build upon the work. The grantee may release all new source code developed or created with IUSE grant funds under an open license acceptable to the Free Software Foundation (<https://www.gnu.org/licenses/> [↗](#)) and/or the Open-Source Initiative (<https://opensource.org/license> [↗](#)).

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.

All HSI program awardees are required to submit an annual evaluation report for the project in each annual and final project report.

The following topics should be addressed in all annual project reports for awards in the EI track:

- Status of order, delivery, and installation of the project-funded equipment;
- Summary of any training activities provided for student or faculty users;
- Summary of regular maintenance performed during the reporting period;
- Discussion of any unexpected maintenance that was required during the reporting period;
- Brief description of courses (including laboratory courses), research projects, and other activities that were enabled by the project-funded equipment;
- Total number students and total number of undergraduate students utilizing the equipment; and
- Estimated overall person-hours of usage across all project-funded equipment;

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:

- Michael J. Ferrara, telephone: (703) 292-2635, email: mferrara@nsf.gov
- Sonja Montas-Hunter, telephone: (703) 292-7404, email: smontash@nsf.gov
- James Alvarez, telephone: (703) 292-2323, email: jalvarez@nsf.gov
- Sonal S. Dekhane, telephone: (703) 405-8977, email: sdekhane@nsf.gov
- Elsa Gonzalez, telephone: (703) 292-4690, email: elgonzal@nsf.gov
- Julio G. Soto, telephone: (703) 292-2973, email: jgsoto@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 (FASSED) 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
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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

X. Appendix

References:

¹ National Science Board, Vision 2030, https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsb202015

² Building the Future Investing in Innovation and Discovery: NSF Strategic Plan 2018-2022.
https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf18045

³ National Science Foundation Strategic Plan. https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf22068

⁴ Hispanic-Serving Institutions Division - Home Page. <https://www2.ed.gov/about/offices/list/ope/ides/hsidivision.html>

⁵ National Academies of Sciences, Engineering, and Medicine. (2019). Minority serving institutions: America's underutilized resource for strengthening the STEM workforce. National Academies Press.

⁶ Núñez, A.M., 2014. Advancing an intersectionality framework in higher education: Power and Latino postsecondary opportunity. In Higher education: Handbook of theory and research (pp. 33-92). Springer, Dordrecht.

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