Advancing Informal STEM Learning (AISL) Equity Resource Center (AISL-ERC)

PROGRAM SOLICITATION
NSF 22-556

National Science Foundation

Directorate for Education and Human Resources
    Research on Learning in Formal and Informal Settings

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

    May 10, 2022

IMPORTANT INFORMATION AND REVISION NOTES

1. This solicitation is for AISL Equity Resource Center proposals only.
2. Full proposals involving multiple organizations may only be submitted from a lead organization with other collaborating organizations included as subawardees.
3. The Project Description may be up to 20 pages.

Important Information

Innovating and migrating proposal preparation and submission capabilities from FastLane to Research.gov is part of the ongoing NSF information technology modernization efforts, as described in Important Notice No. 147. In support of these efforts, research proposals submitted in response to this program solicitation must be prepared and submitted via Research.gov or via Grants.gov, and may not be prepared or submitted via FastLane.

Any proposal submitted in response to this solicitation should be submitted in accordance with the revised *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) (NSF 22-1), which is effective for proposals submitted, or due, on or after October 4, 2021.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

    Advancing Informal STEM Learning (AISL) Equity Resource Center

Synopsis of Program:

    The Advancing Informal STEM Learning (AISL) program funds research and practice focused on the range of informal STEM learning experiences and environments that comprise life-long learning. As an NSF broadening participation emphasis program, AISL recognizes that an intentional and explicit strategy that advances equity is key to effectively building research and practice capacity in the informal STEM learning field. To that end, the National Science Foundation seeks proposals to create an AISL Equity Resource Center (AERC) to advance equity within the informal STEM learning field through community building; supporting and extending infrastructures; technical assistance; and communications. For the purposes of this solicitation, the program does not define or bound the concept of equity. Instead, this call allows the proposer to both define equity in relation to the needs of informal STEM learning field and design and deploy creative approaches that promote equity across the informal STEM learning field. Overall, the AISL program seeks an AERC that will serve public and professional communities in the informal STEM learning field through the following functions:

    1. Cultivate a multi-sector, diverse community dedicated to promoting equity in informal STEM learning experiences and environments.
    2. Raise the visibility and impact of equity-focused research and practice in the informal STEM learning field and its contributions to the overall STEM endeavor.
    3. Support AISL PIs, prospective PIs, and partners in enacting their commitments to equity with respect to research and practice.
    4. Promote equitable practices that support the AISL program.

    Through these functions, the AISL program seeks to make clear that advancing equity is imperative to advancing informal STEM learning experiences and environments and their value to individuals, communities, and the nation.

    The primary audiences for AERC are individuals and organizations that want to grow their ability to design and conduct equity-focused, evidence-based innovations in informal STEM research, programming, or both. The stakeholders served by the center should include, but are not limited to, AISL PIs and partners; prospective AISL PIs and partners; and additional equity-focused, evidence-based research and practice

innovators in informal STEM. AERC should envision, design, and develop creative strategies for actualizing equity in the informal STEM learning field. The AERC approaches to leadership, activities, and evaluation should similarly enact commitments to equity. AISL has had a resource center since 2007. The award for the current AISL resource center expires in August 2022; this solicitation updates the existing functions for an AISL resource center.

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.

- The AISL Program, telephone: 703-292-8616, email: DRLAISL@nsf.gov

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

- 47.076 --- Education and Human Resources

Award Information

Anticipated Type of Award: Cooperative Agreement

Estimated Number of Awards: 1

In FY2022, one (1) AISL Equity Resource Center will be made pending the availability of funds.

Anticipated Funding Amount: $10,000,000

One award with a five (5) year duration.

Eligibility Information

Who May Submit Proposals:

The categories of proposers eligible to submit proposals to the National Science Foundation are identified in the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG), Chapter I.E. Unaffiliated individuals are not eligible to submit proposals in response to this solicitation.

Who May Serve as PI:

There are no restrictions or limits.

Limit on Number of Proposals per Organization:

There are no restrictions or limits on number of proposals per organization.

NOTE: Collaborative proposals from multiple organizations as described in the PAPPG Chapter II.D.3.b are not allowed. Full proposals involving multiple organizations may only be submitted from a lead organization with other collaborating organizations included as subawardees as described in the PAPPG Chapter II.D.3.a.

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:**

    Not Applicable

C. Due Dates

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

    May 10, 2022

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.

TABLE OF CONTENTS

I. INTRODUCTION

About the Advancing Informal STEM Learning Program

The AISL program is situated within the Division of Research on Learning in Formal and Informal Settings (DRL). DRL's mission is to cultivate and catalyze fundamental and applied research and development (R&D) to improve the learning of science, technology, engineering, and mathematics for the nation.

The goals of the AISL program are:

1. Enhance access to and relevance of STEM for learners of all ages, identities, and lived experiences by centering equity, belonging, access, justice, ethics, diversity, and inclusion in the conception, leadership, design, development, and research and evaluation of informal STEM learning experiences and environments;
2. Promote an expansive vision of STEM learning, including interest and awareness, knowledge and understanding, skills and practices, behaviors and ways of knowing, and identity formation. Such STEM learning may occur through intentionally designed informal experiences and environments as well as through learning that emerges in unexpected ways and places. [1]
3. Promote and enhance a broad range of theoretical and empirical foundations for informal STEM learning that use innovative methods to address questions of importance to those who work and learn in informal STEM education settings;
4. Support the establishment, maintenance, and study of the physical, technological, and social infrastructures needed to advance and sustain the

informal STEM learning field;

5. Promote equitable collaboration among and across researchers, practitioners, and learners/communities in order to catalyze the relevance and the creative and innovative potential of informal STEM learning for the future.
6. Build the STEM discipline and education expertise of the informal STEM learning field's community of professionals, volunteers, caregivers, and all those who seek to facilitate their own learning or that of others; and
7. Support bold approaches to combating misinformation and disinformation about STEM content and practices. Enable learners to participate in and understand the research processes and practices of science, technology, engineering and mathematics so that they can make informed judgements and decisions as STEM intersects with their daily lives.

[1] National Research Council. 2009. *Learning Science in Informal Environments: People, Places, and Pursuits*. Washington, DC: The National Academies Press. https://doi.org/10.17226/12190.

II. PROGRAM DESCRIPTION

This solicitation updates the functions of an AISL resource center by seeking proposals for an AISL Equity Resource Center (AERC). The AERC should be visionary and centered on and committed to actualizing equity in informal STEM learning experiences and environments among those directly and indirectly involved with the AISL program. The leadership and management of AERC should reflect the center's commitments to equity. Equity is intentionally not defined in this solicitation, as it may be considered in multiple ways and contexts in relation to the informal STEM learning field. Proposers should define equity as they deem most appropriate to their intended work.

AERC aims to engage individuals and organizations with an interest in and need to grow their ability to design and conduct equity-focused, evidence-based innovations in informal STEM research, programming, or both. This audience includes:

1. **Current AISL Principal Investigators (PIs) and project partners** on AISL-funded awards.
2. **Prospective AISL PIs and project partners** who want to develop competitive proposals that (a) center the voices and experiences of the learners (public or professional) who are impacted by the project and (b) enact their projects through powerful, equitable, and well-informed partnerships.
3. **Other innovators who seek to use equity- and evidence-focused approaches in their work**, such as informal STEM professionals (e.g., educators, librarians, museum personnel, media producers); researchers interested in exploring informal STEM settings, theories, or findings; and leaders and policymakers who are looking for evidence to inform their decision-making.

As the resource center for the AISL program, AERC is specifically invited to envision, design, and develop creative approaches to providing the following four functions:

1. **Cultivate a multi-sector, diverse community dedicated to promoting equity in informal STEM learning experiences and environments.**
   a. Strengthen community-building, networking, and the capacity of informal STEM learning innovators and stakeholders to drive change and transform the field's work and impact through advances in equity, access, belonging, diversity, ethics, inclusion, and/or justice in both research and practice.
   b. Create synergies with existing organizations and institutions that focus on equity and/or learning STEM in informal environments. These entities may include professional associations, other NSF centers, among others.
   c. Enlist the interest and support of industry, decisionmakers, practitioners, media, and other sectors to advance equity as a means of amplifying the informal STEM learning community's reach and impact.
2. **Raise the visibility and impact of equity-centered research and practice in the informal STEM learning field and its contributions to the overall STEM endeavor.**
   a. Promote and develop compelling communications about informal STEM learning and its contributions and value towards equity in STEM.
   b. Identify common themes and trends across the AISL portfolio.
   c. Provide AISL awardees (PIs and project partners) with opportunities to highlight their work to a broad range of stakeholders interested in equity-focused, evidenced-based innovation in informal STEM.
3. **Support AISL PIs, prospective PIs, and partners in enacting their commitments to equity with respect to research and practice.**
   a. Provide AISL awardees (PIs and project partners) with opportunities to deepen connections across projects and to participate in continuous learning and improvement, with a specific focus on equitable practices.
   b. Provide technical assistance to prospective AISL PIs and prospective partners, with emphases on developing competitive proposals that enact equity in their preparation and project design.
4. **Promote equitable practices that support the AISL program.**
   a. Provide visibility and support for the AISL program, its funding calls, and other NSF funding opportunities and policies relevant to the informal STEM education field and stakeholders. AERC will provide enhanced supports for groups and communities engaged with informal STEM education who seek greater participation in decision-making around ISE research and practice.
   b. Communicate findings from AISL-funded projects, identify themes and findings from across the AISL portfolio, and disseminate insights to the informal STEM learning field. Communication strategies should enhance the reach of findings across stakeholders in an equitable fashion. Some parts of this function may require coordination with NSF for data collection activities.
   c. Host biennial AISL Awardee Meetings to share emerging findings and challenges with respect to equitable research and practice within informal STEM education. This meeting will be organized in collaboration with NSF.

It is requested that one of the mechanisms to fulfill these functions should be a virtual infrastructure, which may include elements like a website, a digital resource repository, social media, and/or other means to connect stakeholders with resources, the AISL program, and one another. Outside of this request, the AISL program has intentionally left unspecified the mechanisms for fulfilling these functions in order to encourage creative approaches driven by proposers.

III. AWARD INFORMATION

NSF anticipates making one (1) AERC award with a maximum duration of five years, contingent on availability of funds and receipt of competitive proposals. The award will be made as a Cooperative Agreement, with an initial commitment for five years of support and the possibility of a renewal, (see PAPPG, Chapter V.A.

Traditional Renewal). The total amount of NSF's investment in the AERC will depend upon the needs, plans, and opportunities offered by the AERC, as well as the availability of NSF funds.

IV. ELIGIBILITY INFORMATION

Who May Submit Proposals:

The categories of proposers eligible to submit proposals to the National Science Foundation are identified in the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG), Chapter I.E. Unaffiliated individuals are not eligible to submit proposals in response to this solicitation.

Who May Serve as PI:

There are no restrictions or limits.

Limit on Number of Proposals per Organization:

There are no restrictions or limits on number of proposals per organization.

NOTE: Collaborative proposals from multiple organizations as described in the PAPPG Chapter II.D.3.b are not allowed. Full proposals involving multiple organizations may only be submitted from a lead organization with other collaborating organizations included as subawardees as described in the PAPPG Chapter II.D.3.a.

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.

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

The following instructions supplement guidelines in the NSF *PAPPG* and NSF *Grants.gov Application Guide*:

1. Title

Title of Proposed Project: The title of the proposed project must begin with: **"AISL-ERC:"**

2. Project Description

The Project Description is limited to 20 pages and must comply with all formatting requirements of the most current PAPPG II.C.2.d. In addition to the requirements outlined in the NSF PAPPG, proposals should address the following elements in the project description:

a. **Rationale and Activities**

Proposers should define their vision for equity in informal STEM learning. They should present a clear theory of action to illustrate how they will achieve this vision and to serve as the basis for the center's work. Include descriptions of the AERC's purpose, overarching goals, proposed mechanisms to achieve center functions, and expected outcomes, citing relevant literature to contextualize the approaches proposed for addressing the four AERC functions. This description should have enough detail for reviewers to evaluate the quality and expected outcomes of the center.

b. **Management Plan**

Describe the plan for implementing the resource center over a five-year period. This section should include descriptions of AERC staff positions,

partners, and evaluator(s)/advisory board(s); roles and responsibilities of each; and the time and effort each will devote to AERC activities. This section should include a project timeline with milestones.

c. **Evaluation Plan**

The proposal should outline an evaluation plan that stems from the theory of action and includes both formative (or developmental) and summative components. The plan should lay out a schedule for annual review; identify external evaluator(s) (and possible additional advisory board(s)); and explain how evaluation activities map to the center's theory of action. Ongoing formative (developmental) evaluation should describe how data will be used to inform the resource center's approaches and decision-making and include management and performance indicators of progress for assessing the project's implementation processes and adaptations. The summative evaluation should assess the impact of the project activities and progress toward the center's overall goals and objectives. Consider consulting the American Evaluation Association website for more information about developmental evaluations, and the following NSF publication for formative and summative evaluation plans: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf02057.

3. Other Required Sections

Per guidance in the PAPPG, the Project Description must contain, as a separate section within the narrative, a section labeled "Broader Impacts." Proposers can decide where to include this section within the Project Description. The proposal must also describe "Results of Prior NSF Support" for related projects in which the PI or co-PI have been involved, as outlined in the PAPPG.

4. Budget and Budget Justification

Budgets should be prepared in accordance with the guidance in the PAPPG or NSF Grants.gov Application Guide and include up to five pages of budget justification. The budget justification should be in narrative form and include detailed explanations for each line item with budget resources listed in the budget. For proposals with subawards, each subaward must include a separate budget and budget justification of no more than five pages.

Note: Full proposals involving multiple organizations may only be submitted from a lead organization with other collaborating organizations included as subawardees.

5. Supplementary Documentation

a. **Data Management Plan (DMP)**

Proposals must include a Supplementary Document of no more than two pages labeled "Data Management Plan." This supplementary document should describe how the proposal will conform to NSF policy on data collection, storage, and sharing and also the dissemination and sharing of findings and products. The DMP should support the sharing of data, products, and methods in a manner that others can understand, validate, and replicate findings (see Chapter II.C.2.j of the PAPPG for full policy implementation). All data collected by the Center must also align with the "Data Management for NSF EHR Directorate Proposals and Awards" guidance, which may be found here: https://www.nsf.gov/bfa/dias/policy/dmpdocs/ehr.pdf.

For additional information on the NSF Data Management Plan Requirements, see: https://www.nsf.gov/bfa/dias/policy/dmp.jsp. DMPs will be reviewed by panelists and program directors and should be written with sufficient clarity and detail to support proposal processing and the merit review process. Generic DMPs should be avoided. Further, the products and methods should be described in such a way that others can understand, validate, and replicate findings.

b. **Postdoctoral Researcher Mentoring Plan**

Proposals that request funding to support postdoctoral researchers must develop a comprehensive mentoring plan for the postdoctoral researcher(s). The plan should be uploaded under "Mentoring Plan" in the supplementary documentation section, and include a description of the mentoring activities that will be provided for such individuals. Mentoring activities provided to postdoctoral researchers supported on the project will be evaluated under the Intellectual Merit and Broader Impacts review criteria. For additional information regarding postdoctoral researcher mentoring plans, see Chapter II.C.2.j of the PAPPG.

c. **Letters of Collaboration**

Letters of Collaboration from project partners may be included. A description of Letters of Collaboration, and suggested text is included in the NSF PAPPG (NSF 22-1). Letters of support from persons endorsing the project but not making a substantial commitment to the project are not allowed.

d. **List of Project Personnel**

In addition to guidance provided in the PAPPG on required Special Information and Supplementary Documents, please provide a list of all project personnel in the Supplementary Document section. Provide current, accurate information for all personnel and organizations involved in the project. NSF staff will use this information in the merit review process to manage reviewer selection. The list must include all PIs, co-PIs, Senior Personnel, paid/unpaid Consultants or Collaborators, Subawardees, Postdocs, project-level advisory committee members, and writers of letters of collaboration. This list should be numbered and include in this order Full name, Organization(s), and Role in the project, with each item separated by a semi-colon. Each person listed should start a new numbered line.

e. **Appendix**

Not permitted. The 20 pages of the Project Description should contain all the information needed to describe the project. Proposals submitted with an Appendix will be returned without review.

6. Single Copy Documents

Collaborators and Other Affiliations Information

Collaborators & Other Affiliations (COA) information specified in the PAPPG should be submitted using the instructions and spreadsheet template found at https://nsf.gov/bfa/dias/policy/coa.jsp.

B. Budgetary Information

Cost Sharing:

Inclusion of voluntary committed cost sharing is prohibited.

C. Due Dates

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

    May 10, 2022

D. Research.gov/Grants.gov Requirements

For Proposals Submitted Via Research.gov:

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

For Proposals Submitted Via Grants.gov:

Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. Comprehensive information about using Grants.gov is available on the Grants.gov 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 the NSF FastLane system for further processing.

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 *Building the Future: Investing in Discovery and Innovation - NSF Strategic Plan for Fiscal Years (FY) 2018 – 2022*. 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.C.2.d(i). contains additional information for use by proposers in development of the Project Description section of the proposal). Reviewers are strongly encouraged to review the criteria, including PAPPG Chapter II.C.2.d(i), prior to the review of a proposal.

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

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

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

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

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

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

Additional Solicitation Specific Review Criteria

1. In what ways does the proposal present a clear understanding of the needs, strengths, and interests of current and potential AISL PIs and project partners, with a specific focus on equitable practices in informal STEM education?
2. In what ways does the proposal reflect a nuanced understanding of the needs, strengths, and interests of informal STEM learning field, particularly with regards to equity in both research and practice contexts?

B. Review and Selection Process

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

In addition to the two NSF Merit Review Criteria, there are two solicitation-specific criteria. See text below.

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

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

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

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

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

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

B. Award Conditions

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

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

Special Award Conditions:

Ensuring Adequate COVID-19 Safety Protocols

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

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

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

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

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

        1. The fifty States;
        2. The District of Columbia;
        3. The commonwealths of Puerto Rico and the Northern Mariana Islands;
        4. The territories of American Samoa, Guam, and the United States Virgin Islands; and

5. The minor outlying islands of Baker Island, Howland Island, Jarvis Island, Johnston Atoll, Kingman Reef, Midway Islands, Navassa Island, Palmyra Atoll, and Wake Atoll.

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

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the Principal Investigator must submit an annual project report to the cognizant Program Officer no later than 90 days prior to the end of the current budget period. (Some programs or awards require submission of more frequent project reports). No later than 120 days following expiration of a grant, the PI also is required to submit a final project report, and a project outcomes report for the general public.

Failure to provide the required annual or final project reports, or the project outcomes report, will delay NSF review and processing of any future funding increments as well as any pending proposals for all identified PIs and co-PIs on a given award. PIs should examine the formats of the required reports in advance to assure availability of required data.

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

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.

The AISL Equity Resource Center will be required to submit annual and evaluation reports on progress and plans, which will be used as a basis for performance review and determining the obligation of continuing grant increments. Annual reviews of progress will include a set of management and performance indicators and will also take the form of site visit(s) or reverse site visit(s).

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:

- The AISL Program, telephone: 703-292-8616, email: DRLAISL@nsf.gov

For questions related to the use of FastLane or Research.gov, contact:

- FastLane and Research.gov Help Desk: 1-800-673-6188
- FastLane Help Desk e-mail: fastlane@nsf.gov.
- 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.

This is the main email inbox for the AISL program.

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.E.6 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 awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to proposer institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies or other entities needing information regarding applicants or nominees as part of a joint application review process, or in order to coordinate programs or policy; and to another Federal agency, court, or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See System of Record Notices, NSF-50, "Principal Investigator/Proposal File and Associated Records," and NSF-51, "Reviewer/Proposal File and Associated Records." Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

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

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