

Racial Equity in STEM Education (EDU Racial Equity)

PROGRAM SOLICITATION

NSF 22-634

REPLACES DOCUMENT(S):

PD 21-191Y



National Science Foundation
Directorate for STEM Education
Division of Graduate Education
Division of Equity for Excellence in STEM
Research on Learning in Formal and Informal Settings
Division of Undergraduate Education

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

January 17, 2023

December 05, 2023

October 08, 2024

October 14, 2025

IMPORTANT INFORMATION AND REVISION NOTES

All proposals should conceptualize systemic racism within the context of their proposal and describe how the proposed work will advance scholarship of racial equity and address systemic racism.

All proposals should have a knowledge generation component.

All proposals should be led by or in authentic partnership with those who experience inequities caused by systemic racism.

All proposals should center the voices, knowledge, and experiences of those who experience inequities caused by systemic racism.

Revision Notes

This solicitation replaces Program Description 21-191Y.

Proposals may request up to a total maximum project budget of \$5M.

Proposals may request up to a total maximum duration of 5 years.

The Project Summary should provide an overview of the work with clear indication of the central issue or purpose of the project, specify how the project addresses the solicitation-specific review criteria, and address Broader Impact and Intellectual Merit. It should include a list of five key words that best describe the central issue or purpose, theory, research methodology, the any specific STEM disciplinary content that is to be studied, and stakeholder communities, as appropriate.

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:

Racial Equity in STEM Education (EDU Racial Equity)

Synopsis of Program:

This solicitation aligns with the National Science Foundation (NSF) and the Directorate for STEM Education long-standing investments in the development of a diverse and well-prepared public and workforce, which was recently reinforced in the NSF Vision: "A nation that leads the world in science and engineering research and innovation, to the benefit of all, without barriers to participation," p. 9, NSF 2022-2026 Strategic Plan (https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf22068). The NSF Strategic Plan focuses on ensuring that U.S. research is an inclusive enterprise that benefits from the talent of all sectors of American society – a research enterprise that incorporates the rich demographic and geographic diversity of the nation. The strategic plan recognizes that the more people who engage in science, technology, engineering, and mathematics (STEM) research and the more diverse their backgrounds, the richer the range of questions asked. The result is a greater breadth of discovery and more creative solutions to societal challenges.

Racial inequities often create barriers to STEM knowledge generation, as well as access to and participation in all aspects of STEM education, research, and the workforce. In ongoing efforts to address these disparities, NSF EDU seeks to support bold, groundbreaking, and potentially transformative projects that contribute to advancing racial equity in STEM education and workforce development through practice and/or fundamental or applied research. EDU's mission builds from the NSF Strategic Plan, seeking "to achieve excellence in U.S. science, technology, engineering and mathematics (STEM) education at all levels and in all settings (both formal and informal) in order to support the development of a diverse and well-prepared workforce of scientists, technicians, engineers, mathematicians and educators and a well-informed citizenry that have access to the ideas and tools of science and engineering. The purpose of these activities is to enhance the quality of life of all citizens and the health, prosperity, welfare and security of the nation."

Collectively, proposals funded by this solicitation will: (1) substantively contribute to institutionalizing effective research-based practices, policies, and outcomes in STEM environments for those who experience inequities caused by systemic racism and the broader community; (2) advance scholarship and promote racial equity in STEM in ways that expand the array of epistemologies, perspectives, ideas, theoretical and methodological approaches that NSF funds; and (3) further diversify project leadership (PIs and co-PIs) and institutions funded by NSF.

Each proposal should include a rigorous plan to generate knowledge and/or evidence-based practice via fundamental or applied research. Projects may focus on, but are not limited to:

- building theory; developing research, evaluation, and assessment methods; conducting pilot projects and feasibility studies;
- testing approaches and interventions;
- assessing the potential, efficacy, effectiveness, and scalability of approaches and interventions;
- changing institutional, organizational, and structural practices and policies;
- establishing, cultivating, and assessing authentic partnerships with communities impacted by systemic racism; conducting syntheses, meta-syntheses, meta-analyses, and systematic literature reviews;
- convening conferences that explore a theory, topic, method, or issue related to the program goals in order to drive research and practice forward; and/or
- focusing on affective, behavioral, cultural, social components, and implications.

Prospective PIs are encouraged to send a one-page concept paper to EDURacialEquity@nsf.gov in advance of submitting a proposal.

Cognizant Program Officer(s):

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

- EDU Racial Equity, telephone: (703)292-5009, email: EDURacialEquity@nsf.gov

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

- 447.076 --- STEM Education

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 15 to 35

Awards may be up to five years in duration.

Anticipated Funding Amount: \$15,000,000 to \$25,000,000

The anticipated annual program budget includes new and continuing grants.

Estimated program budget and number of awards are subject to the availability of funds.

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.

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

There are no restrictions or limits.

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

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

B. Budgetary Information

- **Cost Sharing Requirements:**

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

Not Applicable
- **Other Budgetary Limitations:**

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

C. Due Dates

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

January 17, 2023

December 05, 2023

October 08, 2024

October 14, 2025

Proposal Review Information Criteria

Merit Review Criteria:

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

Award Administration Information

Award Conditions:

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

Reporting Requirements:

Standard NSF reporting requirements apply.

TABLE OF CONTENTS

Summary of Program Requirements

- I. **Introduction**
- II. **Program Description**
- III. **Award Information**
- IV. **Eligibility Information**
- V. **Proposal Preparation and Submission Instructions**
 - A. Proposal Preparation Instructions
 - B. Budgetary Information
 - C. Due Dates
 - D. Research.gov/Grants.gov Requirements
- VI. **NSF Proposal Processing and Review Procedures**
 - A. Merit Review Principles and Criteria
 - B. Review and Selection Process
- VII. **Award Administration Information**
 - A. Notification of the Award
 - B. Award Conditions
 - C. Reporting Requirements
- VIII. **Agency Contacts**
- IX. **Other Information**

I. INTRODUCTION

This solicitation aligns with the National Science Foundation's (NSF's) and the Directorate for STEM Education long-standing investments in the development of a diverse and well-prepared public and workforce, which was recently reinforced in the NSF Vision: "A nation that leads the world in science and engineering research and innovation, to the benefit of all, without barriers to participation," p. 9, NSF 2022-2026 Strategic Plan (https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf22068). The NSF Strategic Plan focuses on ensuring that U.S. research is an inclusive enterprise that benefits from the talent of all sectors of American society – a research enterprise that incorporates the rich demographic and geographic diversity of the nation. The strategic plan recognizes that the more people who engage in science, technology, engineering, and mathematics (STEM) research and the more diverse their backgrounds, the richer the range of questions asked. The result is a greater breadth of discovery and more creative solutions to societal challenges.

Racial inequities often create barriers to STEM knowledge generation, as well as access to and participation in all aspects of STEM education, research, and the workforce. In ongoing efforts to address these disparities, NSF EDU seeks to support bold, groundbreaking, and potentially transformative projects that contribute to advancing racial equity in STEM education and workforce development through practice and/or fundamental or applied research. EDU's mission builds from the NSF Strategic Plan, seeking "to achieve excellence in U.S. science, technology, engineering and mathematics (STEM) education at all levels and in all settings (both formal and informal) in order to support the development of a diverse and well-prepared workforce of scientists, technicians, engineers, mathematicians and educators and a well-informed citizenry that have access to the ideas and tools of science and engineering. The purpose of these activities is to enhance the quality of life of all citizens and the

health, prosperity, welfare and security of the nation.

II. PROGRAM DESCRIPTION

Collectively, proposals funded by this solicitation will: 1) substantively contribute to institutionalizing effective research-based practices, policies, and outcomes in STEM environments for those who experience inequities caused by systemic racism and the broader community; 2) advance scholarship and promote racial equity in STEM in ways that expand the array of epistemologies, perspectives, ideas, theoretical and methodological approaches that NSF funds; and 3) further diversify project leadership (PIs and co-PIs) and institutions funded by NSF.

Designing Projects that Meet Racial Equity in STEM Education Program Goals

Efforts to address systemic racism in STEM education are complementary to NSF's efforts in [Broadening Participation](#) in STEM. The portfolio of projects funded by this program should be diverse in theoretical approaches, epistemologies, and methodologies, yet all proposals should 1) conceptualize systemic racism in the context of the project, 2) be led by or in authentic partnership with communities impacted by systemic racism, and 3) articulate a rigorous plan to generate knowledge and/or evidence-based practice via fundamental or applied research.

Conceptualizing Systemic Racism: EDU recognizes that systemic racism is multifaceted and can be addressed in various ways, requiring varied approaches and diverse perspectives. Approaches may include but are not limited to how systemic racism influences STEM knowledge generation, STEM participation and experiences, and access and outcomes in STEM. As the constructs of systemic racism and racial equity may have different meanings in different settings, each proposal should conceptualize systemic racism within the bounds of the project context and indicate how racial equity is advanced by the proposed work. Contexts may include, but are not limited to: preK-12, two-year and four-year undergraduate, and graduate institutions; municipal organizations; STEM workplaces; and informal STEM contexts, such as museums, community organizations, and media.

Authentic Partnership and Leadership: Core to this funding opportunity are the voices, knowledge, and experiences of communities impacted by enduring racial inequities. Therefore, because racial inequities frequently produce long-enduring systemic barriers in STEM and beyond, the participation of these stakeholders should be at the center of the proposals, including, for example, being in project leadership and research positions, conceptualizing the proposal, making decisions, and interpreting and disseminating evidence and research results. It is expected that proposals will indicate how they are led by, or developed and led in authentic partnership with, individuals and communities who experience inequities caused by systemic racism. The proposed work should provide positive outcomes for the individuals and communities engaged and should foreground peoples' humanity, knowledge, experiences, and strengths.

Research Foci: Each proposal should articulate a rigorous plan to generate knowledge and/or evidence-based practice via fundamental or applied research. Projects may focus on, but are not limited to:

- building theory; developing research, evaluation, and assessment methods; conducting pilot projects and feasibility studies;
- testing approaches and interventions;
- assessing the potential, efficacy, effectiveness, and scalability of approaches and interventions;
- changing institutional, organizational, and structural practices and policies;
- establishing, cultivating, and assessing authentic partnerships with communities impacted by systemic racism; conducting syntheses, meta-syntheses, meta-analyses, and systematic literature reviews;
- convening conferences that explore a theory, topic, method, or issue related to the program goals in order to drive research and practice forward; and/or
- focusing on affective, behavioral, cultural, social components, and implications.

About EDU

For more information about EDU, visit <https://www.nsf.gov/dir/index.jsp?org=EDU>

Other Funding Opportunities

The Racial Equity in STEM Education program also accepts other types of Proposals per the PAPPG as (e.g., EAGER and RAPID). See the PAPPG and individual solicitations for descriptions and due dates.

Faculty Early Career Development (CAREER)

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503214

Research Experiences for Undergraduates (REU)

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5517

Research Coordination Networks (RCN)

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=11691

Resources

The following sites are potential resources for prospective PIs.

[EDU Racial Equity webpage](#) for upcoming office hours information and announcements

References

National Science Board – Vision 2030 (<https://www.nsf.gov/nsb/publications/2020/nsb202015.pdf>)

NSF 13-126 (https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf13126)

FAQs: NSF 13-127 (https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf13127)

NSF 2022-2026 Strategic Plan (https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf22068)

III. AWARD INFORMATION

Anticipated Type of Award: Continuing Grant or Standard Grant

Estimated Number of Awards: 15 to 35

Awards may be up to five years in duration.

Anticipated Funding Amount: \$15,000,000 to \$25,000,000

The anticipated annual program budget includes new and continuing grants.

Estimated program budget and number of awards are subject to the availability of funds.

Racial Equity can also fund awards made through the EAGER, RAPID, Research Coordination Networks (RCN) mechanisms, CAREER awards, and REU supplements.

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.

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

There are no restrictions or limits.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

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

- Full Proposals submitted via Research.gov: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the *NSF Proposal and Award Policies and Procedures Guide* (PAPPG). The complete text of the PAPPG is available electronically on the NSF website at: https://www.nsf.gov/publications/pub_summ.jsp?

[ods_key=pappg](#). Paper copies of the PAPPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from nsfpubs@nsf.gov. The Prepare New Proposal setup will prompt you for the program solicitation number.

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

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

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

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 are intended to supplement guidelines in the PAPPG and NSF Grants.gov Application Guide.

1. Cover Sheet: If human subjects will be involved in the research, the box on the cover sheet under HUMAN SUBJECTS should be checked. Proposers should refer to the NSF PAPPG for additional information related to Human Subjects' research.

2. Project Summary: Each proposal must have a summary of the proposed project not more than one page in length. It should consist of three sections:

Overview: Proposals should provide an overview of the central issue or purpose of the project. Within this overview, the proposing team should explicitly indicate how their project addresses each of the three solicitation specific review criteria. In addition, the overview should end with five keywords related to the project that best describe the central issue or purpose, theory, research methodology, the any specific STEM disciplinary content that is to be studied, and stakeholder communities, as appropriate.

Broader Impacts: The statement on broader impacts should describe the potential of the proposed activity to benefit society and contribute to the achievement of specific, desired societal outcomes. This section should specifically address how the project would provide positive outcomes for the individuals and communities engaged in the project.

Intellectual Merit: The statement on intellectual merit should describe the potential of the proposed activity to advance knowledge. This section should specifically address how the project will advance scholarship with respect to addressing systemic racism and advancing scholarship regarding racial equity in STEM education and workforce development. Specifically include the (1) theoretical or theory-building approach, (2) research questions or research problem statement, and (3) methodological approach.

3. Project Description (Narrative, 15 pages): All Racial Equity in STEM Education proposals should attend to the following:

A. Solicitation-Specific Review Criteria: For all Racial Equity projects, the proposer can decide where to include the information that addresses the following questions:

- How does the proposal conceptualize systemic racism with respect to the proposal topic or context? In what ways will the proposed work advance scholarship of racial equity and address systemic racism?
- In what ways are the voices, knowledge, and experiences of those who experience inequities caused by systemic racism at the center of the project?
- How is the project led by or in authentic partnership individuals and communities who experience inequities caused by systemic racism?

B. Narrative Elements: PIs should describe the composition, experience, and expertise of the project's Leadership Team, including the PI/Co-PI, senior personnel, subawardees, consultants, and others with key roles in the project.

The proposal should include a rigorous plan to generate knowledge and/or evidence-based practice via fundamental or applied research. This plan should specifically include the theoretical or theory-building approach, research questions or research problem statement (as applicable), and the methodological approach.

Proposals should also include a dissemination plan to proactively share what is learned with individuals and communities most impacted, as well as relevant leaders, policy makers, and other stakeholders.

C. Evaluation: All Racial Equity proposals should specify the evaluative processes they will employ to achieve the following **two** goals:

- Support iterative improvement. Evaluative processes should ensure that a project benefits from appropriate, rigorous, external input

throughout the life of the project. Such input is essential for research, practice, cultural relevance, equity, project monitoring, management, and continuous quality improvement. External feedback should enrich (and potentially challenge) the team's perspectives and processes, no matter the type of project being conducted. If appropriate to the project, an advisory board may serve in this capacity.

- Promote accountability. Evaluative processes should address questions such as: Is the project addressing its stated goals? What is the quality of the work? How has the work centered equity in the project design, implementation, and management?

D. Broader Impacts: 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, but it must be included, or the proposal may be returned without review. This section should specifically address how the project would provide positive outcomes for the individuals and communities engaged in the project.

E. Results from prior NSF support: It is not necessary or preferred that submitting teams have prior NSF support. However, if the PI or co-PIs have benefited from prior NSF support, it must be described. Describe results of prior NSF support for projects in which the PI or co-PI have been involved, such that reviewers can judge the quality and impact of that work. Refer to the PAPPG for specifics about what must be included. If the PI or co-PI(s) have not received prior NSF support, the heading "Results from prior NSF support" must still be included and should be followed with: "Not Applicable."

4. References Cited: Any literature cited should be specifically related 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. The References section is distinct from, and in addition to, the Project Description section.

5. Budgets & Budget Justification: Proposal budgets and project durations should be determined by the scope of the activities and prepared in accordance with the guidance in the PAPPG and this solicitation. Budgets cannot exceed a maximum request of \$5M, nor a project duration of over five years. All budgets, both proposer and subaward budgets (if applicable), must be accompanied by budget justifications that include itemizations corresponding to each Research.gov or Grants.gov budget line item and provide sufficient detail as to justify the expense and its relevance to achieving the project goals. Each budget justification, both for the proposer and each subwardee (if applicable), may be up to five pages in length. Budgets and budget justifications submitted to this solicitation should reflect an equitable distribution of funds based on the project scope and substantively value the range and types of participation in the project. For proposals with subawards, each subaward must include a separate budget and budget justification. The budget justification should include the basis for selecting the subawardee, an itemization and explanation of expenses, and consist of no more than five pages.

If equipment is requested, it must constitute essential components of the project deliverables.

All proposals should include under Travel (Line E) the cost for the PI and a community member, per project, to attend a two-day EDU Racial Equity Awardee meeting in even years (e.g., 2024 and 2026) at, or near, NSF, i.e., in the Washington, D.C. vicinity.

6. Facilities, Equipment & Other Resources: To assess the scope of the project, all organizational resources necessary for the project must be described in the Facilities, Equipment and Other Resources section (See PAPPG Chapter II). The description should be narrative in nature and **must not include any quantifiable financial information.**

7. Senior Personnel Documents

- **Biographical Sketches:** In accordance with the guidance contained in the PAPPG, a separate biographical sketch must be provided for each individual designated as senior personnel on the project.
- **Current and Pending Support:** In accordance with the guidance contained in the PAPPG, current and pending support information must be separately provided for each individual designated as senior personnel on the project.
- **Collaborators and Other Affiliations (COA) Information:** In accordance with the guidance contained in the PAPPG, COA information must be separately provided for each individual designated as senior personnel on the project.

8. Data Management Plan: Proposers should provide a detailed data management plan. Transparency requires that the Federal agencies share how they are maximizing outcomes of Federal STEM investments and activities and ensuring broad benefit to the public. Proposers are highly encouraged to review the EDU Directorate-specific data management plan guidance, which can be accessed at <https://www.nsf.gov/bfa/dias/policy/dmpdocs/ehr.pdf>.

9. Postdoctoral Researcher Mentoring Plan (if applicable): Required when funding is requested for postdoctoral scholars in Section B of the budget. See PAPPG Chapter II for instructions for the preparation of this item.

10. Other Supplementary Documents

Note: Supplementary Documents are distinct from Appendices, as stipulated in the PAPPG: *Appendices may not be included* unless a formal deviation has been authorized. See PAPPG Chapter II for more information about deviations.

Letters of Collaboration: Letters of collaboration from project consultants, advisors, distributors, and organizational partners are encouraged. Such letters should follow the requirements for Letters of Collaboration given in Chapter II of the PAPPG. However, letters of Support or

Endorsement from persons or institutions merely endorsing, but not involved with or making a substantial commitment to the project, are not allowed. **Proposals with Letters of Support or Endorsement will be returned without review.**

List of All Project Personnel: Provide a list of all project personnel in the Other Supplementary Documents section. Provide current, accurate information for all personnel and organizations involved in the project. Include current, accurate information for all personnel and institutions involved in the project. NSF staff will use this information in the merit review process to manage reviewer selection. This list must include all PIs, co-PIs, Senior Personnel, paid/unpaid Consultants or Collaborators, Subawardees, Postdocs, evaluator(s), 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. For example:

1. Ebony Johnson-Smith; XYZ University; PI
2. Thomas Patel; Community Organization, co-PI
3. John Garcia; University of PQR; Senior Personnel
4. Jane Brown; XYZ University; Postdoc
5. Jamal Green; ABC Inc.; Paid Consultant
6. Monica Chen; Welldone Research Organization; Subawardee
7. Eva Sanchez, Independent Evaluation LCC, Evaluator
8. Heather Smith, Community organization, Letter of Collaborator writer

Appendix: Not permitted. The 15 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.

B. Budgetary Information

Cost Sharing:

Inclusion of voluntary committed cost sharing is prohibited.

Other Budgetary Limitations:

Funding for the following are not supported by this program: capital expenses, vehicles, and projects whose primary focus is health or medicine.

C. Due Dates

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

January 17, 2023

December 05, 2023

October 08, 2024

October 14, 2025

D. Research.gov/Grants.gov Requirements

For Proposals Submitted Via Research.gov:

To prepare and submit a proposal via Research.gov, see detailed technical instructions available at: https://www.research.gov/research-portal/appmanager/base/desktop?_nfpb=true&_pageLabel=research_node_display&_nodePath=/researchGov/Service/Desktop/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 [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.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

The EDU Racial Equity program is interested in advancing scholarship related to racial equity, diversity in project leadership, and centering the voices of those who experience inequities caused by systemic racism as a components of a proposal's Intellectual Merit and/or Broader Impacts. In addition to considering the two general NSF Merit Review Criteria, reviewers will also be asked to respond to the following:

How does the proposal conceptualize systemic racism with respect to the proposal topic or context? In what ways will the proposed work advance scholarship of racial equity and address systemic racism?

- In what ways are the voices, knowledge, and experiences of those who experience inequities caused by systemic racism at the center of the project?
- How is the project led by or in authentic partnership with individuals and communities who experience inequities caused by systemic racism?

B. Review and Selection Process

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

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

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

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

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

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

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

B. Award Conditions

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

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

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:

Awardees agrees to work with an NSF third-party evaluator for the purpose of program evaluation.

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.

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:

- EDU Racial Equity, telephone: (703)292-5009, email: EDURacialEquity@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.

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** (703) 292-5111
(NSF Information Center):
- **TDD (for the hearing-impaired):** (703) 292-5090
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Send an e-mail to: nspfpubs@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
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