

# Historically Black Colleges and Universities - Excellence in Research (HBCU- EiR)

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## PROGRAM SOLICITATION NSF 20-542



**National Science Foundation**

Office of Integrative Activities

Directorate for Biological Sciences

Directorate for Computer and Information Science and Engineering

Directorate for Education and Human Resources

Directorate for Engineering

Directorate for Geosciences

Directorate for Mathematical and Physical Sciences

Directorate for Social, Behavioral and Economic Sciences

**Letter of Intent Due Date(s) (required)** (due by 5 p.m. submitter's local time):

July 23, 2020

Fourth Thursday in July, Annually Thereafter

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

October 06, 2020

First Tuesday in October, Annually Thereafter

## IMPORTANT INFORMATION AND REVISION NOTES

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This solicitation replaces the Excellence in Research track previously announced in [NSF 18-522](#).

The proposal must include a letter from the chair, dean or chief academic officer in the Supplementary Documents section. Further instructions are provided in Section V.A.

Any proposal submitted in response to this solicitation should be submitted in accordance with the revised *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) ([NSF 20-1](#)), which is effective for proposals submitted, or due, on or after June 1, 2020.

## SUMMARY OF PROGRAM REQUIREMENTS

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### General Information

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**Program Title:**

Historically Black Colleges and Universities - Excellence in Research (HBCU - EiR)

**Synopsis of Program:**

The Historically Black Colleges and Universities - Excellence in Research (HBCU-EiR) program was established in response to direction provided in the Senate Commerce and Justice, Science and Related Agencies Appropriations Subcommittee Report (Senate Report 115-139), and is built on prior and continuing efforts by the National Science Foundation (NSF) to strengthen research capacity at Historically Black Colleges and Universities (HBCUs). This report provided guidance to NSF to establish the HBCU Excellence in Research program "to provide opportunities for both public and private HBCUs, particularly for those who have not been successful in larger NSF Research & Related Activities competitions, in order to stimulate sustainable improvement in their research and development capacity" (<https://congress.gov/congressional-report/115th-congress/senate-report/139/1>). EiR supports such capacity building by funding research projects aligned with NSF's research programs. The program aims to establish stronger connections between researchers at HBCUs and NSF's research programs.

## 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.

- Claudia Rankins, EHR, telephone: (703) 292-8109, email: [crankins@nsf.gov](mailto:crankins@nsf.gov)
- Michelle Claville, EHR, telephone: (703) 292-7751, email: [mclavill@nsf.gov](mailto:mclavill@nsf.gov)
- Randy Phelps, OIA, telephone: (703) 292-5049, email: [rphelps@nsf.gov](mailto:rphelps@nsf.gov)
- Leah Nichols, OIA, telephone: (703) 292-2983, email: [lenichol@nsf.gov](mailto:lenichol@nsf.gov)
- Fay Cobb Payton, CISE, telephone: (703) 292-7939, email: [fpayton@nsf.gov](mailto:fpayton@nsf.gov)
- Kwabena Gyimah-Brempong, SBE, telephone: (703) 292-7466, email: [kgyimahb@nsf.gov](mailto:kgyimahb@nsf.gov)
- Jodie Jawor, BIO, telephone: (703) 292-7887, email: [jjawor@nsf.gov](mailto:jjawor@nsf.gov)
- Brandon Jones, GEO, telephone: (703) 292-4713, email: [mbjones@nsf.gov](mailto:mbjones@nsf.gov)
- Kathleen McCloud, MPS, telephone: (703) 292-8236, email: [kmcccloud@nsf.gov](mailto:kmcccloud@nsf.gov)
- Engin Serpersu, BIO, telephone: (703) 292-7124, email: [eserpers@nsf.gov](mailto:eserpers@nsf.gov)
- Paige Smith, ENG, telephone: (703) 292-7107, email: [psmith@nsf.gov](mailto:psmith@nsf.gov)
- Guebre X. Tessema, MPS, telephone: (703) 292-4935, email: [gtessema@nsf.gov](mailto:gtessema@nsf.gov)

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

- 47.041 --- Engineering
- 47.049 --- Mathematical and Physical Sciences
- 47.050 --- Geosciences
- 47.070 --- Computer and Information Science and Engineering
- 47.074 --- Biological Sciences
- 47.075 --- Social Behavioral and Economic Sciences
- 47.076 --- Education and Human Resources
- 47.079 --- Office of International Science and Engineering
- 47.083 --- Office of Integrative Activities (OIA)

## Award Information

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

**Estimated Number of Awards:** 25

**Anticipated Funding Amount:** \$10,000,000

## Eligibility Information

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### Who May Submit Proposals:

Proposals may only be submitted by the following:

- Proposals may only be submitted by accredited Historically Black Colleges and Universities (HBCUs) that have faculty members who conduct research in science and/or engineering and/or STEM education.

### Who May Serve as PI:

The Principal Investigator for an Excellence in Research Project must be a full-time faculty member or researcher at the HBCU from which the proposal is submitted.

### 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

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### A. Proposal Preparation Instructions

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

## B. Budgetary Information

- **Cost Sharing Requirements:**

Inclusion of voluntary committed cost sharing is prohibited.

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

Not Applicable

- **Other Budgetary Limitations:**

Not Applicable

## C. Due Dates

- **Letter of Intent Due Date(s) (required)** (due by 5 p.m submitter's local time):

July 23, 2020

Fourth Thursday in July, Annually Thereafter

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

October 06, 2020

First Tuesday in October, Annually Thereafter

## Proposal Review Information Criteria

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### Merit Review Criteria:

National Science Board approved criteria apply.

## Award Administration Information

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### Award Conditions:

Standard NSF award conditions apply.

### Reporting Requirements:

Standard NSF reporting requirements apply.

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### I. INTRODUCTION

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The Historically Black Colleges and Universities - Excellence in Research (HBCU-EiR) funding opportunity was established in response to direction provided in the Senate CJS Appropriations Subcommittee Report (Senate Report 115-138), and is built on prior and continuing efforts by the National Science Foundation (NSF) to strengthen research capacity at Historically Black Colleges and Universities (HBCUs). Senate Report 115-138 provided guidance to NSF to establish the HBCU Excellence in Research program, *to provide opportunities for both public and private HBCUs, particularly for those who have not been successful in larger NSF Research & Related Activities competitions, in order to stimulate sustainable improvement in their research and development capacity*. EiR supports such capacity building by funding research projects across all NSF Directorates.

### II. PROGRAM DESCRIPTION

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The primary goal of the EiR funding opportunity is to increase support for researchers at HBCUs interested in pursuing research in domains that align with NSF's research program areas. EiR is designed to establish stronger connections between researchers at HBCUs and NSF's research programs. EiR is administered by an agency-wide working group, comprised of representatives from all NSF Directorates and the Office of Integrative Activities (OIA). Proposals submitted to EiR are routed for review to the most appropriate research program(s) in one (or more) of the Directorates as identified by the principal investigator as the secondary program(s). Informed by that review process, the research programs involved provide advice to the EiR working group on the merit of the proposals.

Letters of intent are required so that the EiR Working Group can connect with prospective PIs via webinar to help facilitate the establishment of appropriate connections between prospective PIs and the most relevant NSF research program(s) prior to proposal submission. Interdisciplinary proposals are welcome.

**Prospective PIs are strongly encouraged to contact the cognizant program director(s) listed in this solicitation from the Directorate(s) that most aligns with their research interests for assistance identifying the most appropriate program to review their proposal. Prospective PIs are also strongly encouraged to contact the program director(s) from the most relevant research program(s) in advance of proposal submission to discuss the fit and appropriateness of their research idea for the NSF program(s).** Information about NSF's research programs may be found at [https://www.nsf.gov/about/research\\_areas.jsp](https://www.nsf.gov/about/research_areas.jsp), together with information about programs providing non-research funding opportunities. Please note, EiR only supports research proposals, not proposals that are primarily for equipment, curriculum development, or other non-research activities.

Project budgets and duration should be on a scope and scale commensurate with the projects typically supported by the research program(s) with which the proposal aligns, and appropriate to the proposed activities. Proposing PIs should review the selected program's portfolio of recently funded awards (see individual program web-pages or search for awards at <https://www.nsf.gov/awardsearch/advancedSearch.jsp>) and pay close attention to any guidance, if available, in the selected program's program description or solicitation to determine typical project budget sizes, duration and any other special requirements. Proposing PIs are also encouraged to ask the most relevant program director about typical funding levels in the research program where the proposal will be reviewed.

The EiR project should help to further the PI's research, improve research opportunities for students, and serve to improve research capacity at the institution. Proposals submitted to EiR must be research proposals as described in Part I, Chapter II.A-C of the PAPPG. EiR cannot accept any of the additional types of proposals described in Part I, Chapter II.E of the PAPPG. EiR may provide support for research instrumentation or other research tools not already available for the conduct of the proposed research. Such support should not exceed 20% of the proposed budget. PIs are advised to consult with the program director(s) in the relevant research program prior to submitting such a request.

PIs with no prior research funding or who have held no external research funding in the last three years should consider applying to the Research Initiation Awards track in the HBCU-UP solicitation ([https://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=5481](https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5481)). PIs who hold current HBCU-UP Research Initiation Awards are strongly encouraged to submit an EiR proposal.

PIs who have received significant funding through EiR or who have an established history of successful research funding should apply to NSF's research programs directly, not through the EiR mechanism. When making funding decisions, priority will be given to proposers who have not received significant support through prior EiR awards.

EiR proposals must be in fields of science, engineering, mathematics or education research that are typically supported by NSF programs to be found at [https://www.nsf.gov/funding/browse\\_all\\_funding.jsp](https://www.nsf.gov/funding/browse_all_funding.jsp).

### III. AWARD INFORMATION

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

**Estimated Number of Awards:** 25

**Anticipated Funding Amount:** \$10,000,000

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

## IV. ELIGIBILITY INFORMATION

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### Who May Submit Proposals:

Proposals may only be submitted by the following:

- Proposals may only be submitted by accredited Historically Black Colleges and Universities (HBCUs) that have faculty members who conduct research in science and/or engineering and/or STEM education.

### Who May Serve as PI:

The Principal Investigator for an Excellence in Research Project must be a full-time faculty member or researcher at the HBCU from which the proposal is submitted.

### 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

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### A. Proposal Preparation Instructions

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#### Letters of Intent (required):

Letters of Intent must contain the following information:

1. The project title, beginning with "Excellence in Research:" followed by the title.
2. The PI and Co-PI names, department(s), institution(s), phone number(s), and email address(es). The PI must be listed as the point of contact, not the institution's sponsored research representative.
3. The submitting institution's name.
4. A project synopsis (no more than 500 words) that describes the proposed research activities.
5. A line that clearly identifies the NSF research program(s), division(s) and the directorate(s) the PI believes to be most appropriate for the review of the EIR project.

NSF's EIR Working Group will invite all PIs and Co-PIs whose emails are provided in a Letter of Intent to participate in a webinar to discuss the unique nature of this program and answer questions prior to proposal submission.

#### Letter of Intent Preparation Instructions:

When submitting a Letter of Intent through FastLane in response to this Program Solicitation please note the conditions outlined below:

- Submission by an Authorized Organizational Representative (AOR) is required when submitting Letters of Intent.
- A Minimum of 0 and Maximum of 4 Other Senior Project Personnel are permitted
- A Minimum of 0 and Maximum of 5 Other Participating Organizations are permitted
- Submission of multiple Letters of Intent is permitted

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

- Full proposals submitted via FastLane: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG). The complete text of the PAPPG is available electronically on the NSF website at: [https://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=pappg](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg). Paper copies of the PAPPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from [nsfpubs@nsf.gov](mailto:nsfpubs@nsf.gov). Proposers are reminded to identify this program solicitation number in the program solicitation block on the NSF Cover Sheet For Proposal to the National Science Foundation. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.
- Full proposals submitted via Grants.gov: Proposals submitted in response to this program solicitation via Grants.gov should be prepared and submitted in accordance with the *NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov*. The complete text of the *NSF Grants.gov Application Guide* is available on the Grants.gov website and on the NSF website at: [https://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=grantsgovguide](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide). To obtain copies of the Application Guide and Application Forms Package, click on the Apply tab on the Grants.gov site, then click on the Apply Step 1: Download a Grant Application Package and Application Instructions link and enter the funding opportunity number, (the program solicitation number without the NSF prefix) and press the Download Package button. Paper copies of the Grants.gov Application Guide also may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from [nsfpubs@nsf.gov](mailto:nsfpubs@nsf.gov).

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

Collaborative Proposals. All collaborative proposals submitted as separate submissions from multiple organizations must be submitted via the NSF FastLane system. 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.

#### COVER SHEET

Program Solicitation Number. Select this solicitation.

NSF Unit of Consideration. First select "OIA Office of Integrative Activities" as the primary division and "Excellence in Research" as the primary program.

**Then select, as a secondary unit of consideration, the most appropriate division and program to which the proposal will be initially routed for review.**

Project Title. The project title must begin with "Excellence in Research." and follow with a succinct, informative title.

#### PROJECT DESCRIPTION

Follow PAPPG guidelines when writing the Project Description, but also pay attention to the following:

- Provide a brief description of the PI's overall research goals.
- Provide an outline of the general plan of work, including the research questions or hypotheses, the broad design of activities to be undertaken, and, where appropriate, a description of experimental methods and procedures. Proposers should address what they 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. The project activities must be well justified.
- Include a plan for scholarly dissemination of this research.

#### BUDGET AND BUDGET JUSTIFICATION

For preparation of these documents, follow the directions in the PAPPG. Simultaneously submitted collaborative proposals are allowed if all collaborating institutions are HBCUs. If this project involves a collaboration with a non-HBCU institution, it must be in the form of a subaward. If the project involves a collaboration with a non-HBCU institution(s), the budget for all non-HBCU partners must be well justified, may not total a substantial portion of the overall budget, and must be in the form of a subaward(s). No more than 20% of the budget can be allocated for equipment.

#### SUPPLEMENTARY DOCUMENTS:

Letters of collaboration:

1. The proposal must include a letter by the chair, dean or chief academic officer of the primary PI – The letter, which will be included as part of the consideration of the overall merits of the proposal, should convey that the PI's research and activities are supported by and advance research goals of the department and the institution, and that the institution is committed to the support and professional development of the PI. This letter should be no more than 2 pages in length.
2. If the project involves collaborative arrangements of significance, these arrangements should be described in the Project Description section of the proposal and documented through letters of collaboration. Letters of collaboration should follow the single-sentence format:

"If the proposal submitted by Dr. [insert the full name of the Principal Investigator] entitled [insert the proposal title] is selected for funding by the NSF, it is my intent to collaborate and/or commit resources as detailed in the Project Description or the Facilities, Equipment or Other Resources section of the proposal."

#### Proposal Compliance with Program Solicitation Requirements:

All Excellence in Research proposals will be checked for compliance with this program solicitation and the applicable version of the PAPPG.

## B. Budgetary Information

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#### Cost Sharing:

Inclusion of voluntary committed cost sharing is prohibited.

## C. Due Dates

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- **Letter of Intent Due Date(s) (required)** (due by 5 p.m. submitter's local time):

July 23, 2020

Fourth Thursday in July, Annually Thereafter

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

October 06, 2020

First Tuesday in October, Annually Thereafter

Excellence in Research proposals are evaluated by ad hoc reviews, panel reviews, or both.

## D. FastLane/Research.gov/Grants.gov Requirements

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### For Proposals Submitted Via FastLane or Research.gov:

To prepare and submit a proposal via FastLane, see detailed technical instructions available at: <https://www.fastlane.nsf.gov/a1/newstan.htm>. 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](https://www.research.gov/research-portal/appmanager/base/desktop?_nfpb=true&_pageLabel=research_node_display&_nodePath=/researchGov/Service/Desktop/ProposalPreparationandSubmission.html). For FastLane or Research.gov user support, call the FastLane and Research.gov Help Desk at 1-800-673-6188 or e-mail [fastlane@nsf.gov](mailto:fastlane@nsf.gov) or [rgov@nsf.gov](mailto:rgov@nsf.gov). The FastLane and Research.gov Help Desk answers general technical questions related to the use of the FastLane and Research.gov systems. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this funding opportunity.

### For Proposals Submitted Via Grants.gov:

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

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

Proposers that submitted via FastLane or 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

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

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

Proposers should also be aware of core strategies that are essential to the fulfillment of NSF's mission, as articulated in *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

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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 underrepresented minorities 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.

## B. Review and Selection Process

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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 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.

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## VII. AWARD ADMINISTRATION INFORMATION

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### A. Notification of the Award

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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

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

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

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

### C. Reporting Requirements

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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](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg).

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## VIII. AGENCY CONTACTS

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*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:

- Claudia Rankins, EHR, telephone: (703) 292-8109, email: [crankins@nsf.gov](mailto:crankins@nsf.gov)
- Michelle Claville, EHR, telephone: (703) 292-7751, email: [mclavill@nsf.gov](mailto:mclavill@nsf.gov)
- Randy Phelps, OIA, telephone: (703) 292-5049, email: [rphelps@nsf.gov](mailto:rphelps@nsf.gov)
- Leah Nichols, OIA, telephone: (703) 292-2983, email: [lenichol@nsf.gov](mailto:lenichol@nsf.gov)
- Fay Cobb Payton, CISE, telephone: (703) 292-7939, email: [fpayton@nsf.gov](mailto:fpayton@nsf.gov)
- Kwabena Gyimah-Brempong, SBE, telephone: (703) 292-7466, email: [kgyimahb@nsf.gov](mailto:kgyimahb@nsf.gov)
- Jodie Jawor, BIO, telephone: (703) 292-7887, email: [jjawor@nsf.gov](mailto:jjawor@nsf.gov)
- Brandon Jones, GEO, telephone: (703) 292-4713, email: [mbjones@nsf.gov](mailto:mbjones@nsf.gov)
- Kathleen McCloud, MPS, telephone: (703) 292-8236, email: [kmcccloud@nsf.gov](mailto:kmcccloud@nsf.gov)
- Engin Serpersu, BIO, telephone: (703) 292-7124, email: [eserpers@nsf.gov](mailto:eserpers@nsf.gov)
- Paige Smith, ENG, telephone: (703) 292-7107, email: [psmith@nsf.gov](mailto:psmith@nsf.gov)
- Guebre X. Tessema, MPS, telephone: (703) 292-4935, email: [gtessema@nsf.gov](mailto:gtessema@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](mailto:fastlane@nsf.gov).

Research.gov Help Desk e-mail: [rgov@nsf.gov](mailto:rgov@nsf.gov)

For questions relating to Grants.gov contact:

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

## IX. OTHER INFORMATION

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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

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

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

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

*Facilitation Awards for Scientists and Engineers with Disabilities (FASSED)* provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See the *NSF Proposal & Award Policies & Procedures Guide* Chapter II.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](mailto:nsfpubs@nsf.gov)
  - or telephone: (703) 292-7827
- **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  
 Office of the General Counsel  
 National Science Foundation  
 Alexandria, VA 22314

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