Human-Environment and Geographical Sciences Program (HEGS)

PROGRAM SOLICITATION
NSF 21-623

REPLACES DOCUMENT(S):
NSF 20-547

National Science Foundation

Directorate for Social, Behavioral and Economic Sciences
    Division of Behavioral and Cognitive Sciences

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

January 18, 2022

Third Tuesday in January, Annually Thereafter

August 16, 2022

Third Tuesday in August, Annually Thereafter

IMPORTANT INFORMATION AND REVISION NOTES

There are several important HEGS specific requirements that deviate from NSF's Proposal & Award Policies & Procedures Guide (PAPPG).

1. **Proposals Involving Multiple Organizations**: A single organization must be identified as the prime, and a single proposal describing the entire project must be submitted by that organization. Funds may be distributed among partner organizations via subawards from the prime organization budget on the standard NSF budget form should be submitted for each sub-awardee.
2. **Limit on Proposal Submissions:** Proposals that have been declined are not eligible for resubmission for one year from the original date of submission and must be substantially revised to be considered. This moratorium allows investigators the time required to digest the results of the merit review and revise their proposal accordingly. A proposal that has not been substantially revised will be returned without review as per the PAPPG.
3. **Limit on Number of Proposal per PI or Co-PI**: An individual may only be listed as a PI or co-PI on one proposal for one competition/deadline date. CAREER proposals that are submitted to HEGS are reviewed during HEGS' August competition/deadline, therefore PIs should not submit a second proposal for the August competition/deadline. Proposals exceeding the limit for any person will be returned without review in the reverse order received.
4. **On occasion HEGS will support Research Coordination Networks (RCNs)**. However, RCN proposals must convincingly demonstrate that the RCN is exploring a new, significant research direction, and that the RCN will constitute a new network of scientists and collaborations.
5. **Supplements to Existing Awards**. PIs must contact the cognizant program officer to discuss the potential for a supplemental award before submitting a supplemental request. Requests submitted without consultation with the cognizant program officer will be returned without review.

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:

Human-Environment and Geographical Sciences Program (HEGS)

Synopsis of Program:

The objective of the Human-Environment and Geographical Sciences Program is to support basic scientific research about the nature, causes

and/or consequences of the spatial distribution of human activity and/or environmental processes across a range of scales. Contemporary geographical research is an arena in which diverse research traditions and methodologies are valid. Recognizing the breadth of the field's contributions to science, the HEGS Program welcomes proposals for empirically grounded, theoretically engaged, and methodologically sophisticated, generalizable research in all sub-fields of geographical and spatial sciences.

Because the National Science Foundation's mandate is to support basic scientific research, the NSF Human-Environment and Geographical Sciences program does not fund research that takes as its primary goal humanistic understanding or applied research. HEGS welcomes proposals that creatively integrate scientific and critical approaches, and that engage rigorous quantitative, qualitative, or mixed methods in novel ways. However, a proposal that applies geographical/spatial methods to a social problem *but does not propose how that problem provides an opportunity to make a theory-testing and/or theory expanding contributions to geographical science will be returned without review.* HEGS supported projects are expected to yield results that will enhance, expand, and transform fundamental geographical theory and methods, and that will have positive broader impacts that benefit society. A proposal to the HEGS Program must also articulate how the results are generalizable beyond the case study.

It should be noted that HEGS is situated in the Behavioral and Cognitive Sciences Division of the Social, Behavioral and Economic Sciences Directorate at NSF. Therefore, it is critical that research projects submitted to the Human-Environment and Geographical Sciences Program *illustrate how the proposed research questions engage human dimensions relevant and important to people and societies.*

A proposal that fails to be responsive to these program expectations will be returned without review.

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.

- Jeremy Koster, Program Director, telephone: (703) 292-8740, email: jkoster@nsf.gov

- Tom Evans, Program Director, telephone: (703) 292-4891, email: tevans@nsf.gov

- May Yuan, Program Director, telephone: (703) 292-2206, email: mayuan@nsf.gov

- Cori J. Jacildone, Program Specialist, telephone: (703) 292-8740, email: cjacildo@nsf.gov

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

47.075 --- Social Behavioral and Economic Sciences

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 30 to 40

Anticipated number of awards annually is 30-40. HEGS generally recommends a total of 15 to 25 regular research project awards; 0 to 2 faculty early-career development (CAREER) awards; and 1 to 3 awards to support conferences, group travel, and/or other community-development activities; 0 to 1 research coordination network (RCN) awards.

Anticipated Funding Amount: $5,000,000 to $7,000,000

Anticipated Funding Amount is approximately $5,000,000 - $7,000,000, for all new and continuing awards combined, not including DDRIG awards, pending availability of funds. Regular research awards supported by HEGS range from **$40,000 to $400,000**; CAREER awards between **$400,000 and $500,000**; conferences, group travel, or other community-development activities awards between **$20,000 and $50,000**; research coordination network (RCN) awards between **$300,000 and $400,000**; RAPID awards between **$20,000 and $200,000**. All figures in the preceding sentences are totals that include both direct and indirect costs for the entire duration of the award. Somewhat larger funding amounts may be possible under limited circumstances, such as the receipt of funding support from other NSF programs to support a project with HEGS.

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: 1

An individual may only be listed as a PI or co-PI on one proposal for one competition/deadline date. CAREER proposals that are submitted to HEGS are reviewed during HEGS' August competition/deadline, therefore PIs should not submit a second proposal for the August competition/deadline. Proposals exceeding the limit for any person will be returned without review in the reverse order received.

Proposals that have been declined are not eligible for resubmission for one year from the original date of submission and must be substantially revised to be considered. This moratorium allows investigators the time required to digest the results of the merit review and revise their proposal accordingly. A proposal that has not been substantially revised will be returned without review as per the NSF Proposal & Award

Policies & Procedures Guide (PAPPG).

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Not required

- **Preliminary Proposal Submission:** Not required

- **Full Proposals:**

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

B. Budgetary Information

- **Cost Sharing Requirements:**

  Inclusion of voluntary committed cost sharing is prohibited.

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

  Not Applicable

- **Other Budgetary Limitations:**

  Not Applicable

C. Due Dates

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

  January 18, 2022

  Third Tuesday in January, Annually Thereafter

  August 16, 2022

  Third Tuesday in August, Annually Thereafter

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:

Standard NSF award conditions apply.

Reporting Requirements:

Standard NSF reporting requirements apply.

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I. INTRODUCTION

The objective of the Human-Environment and Geographical Sciences (HEGS) Program is to support basic scientific research about the nature, causes, and consequences of the spatial distribution of human activity and/or environmental processes across a range of scales. Projects about a broad range of topics may be appropriate for support if they enhance fundamental geographical knowledge, concepts, theories, methods, and their application to societal problems and concerns.

II. PROGRAM DESCRIPTION

The objective of the Human-Environment and Geographical Sciences Program is to support basic scientific research about the nature, causes and/or consequences of the spatial distribution of human activity and/or environmental processes across a range of scales. Contemporary geographical research is an arena in which diverse research traditions and methodologies are valid. Recognizing the breadth of the field's contributions to science, the HEGS Program welcomes proposals for empirically grounded, theoretically engaged, and methodologically sophisticated, generalizable research in all sub-fields of geographical and spatial sciences.

Because the National Science Foundation's mandate is to support basic scientific research, the NSF Human-Environment and Geographical Sciences program does not fund research that takes as its primary goal humanistic understanding or applied research. HEGS welcomes proposals that creatively integrate scientific and critical approaches, and that engage rigorous quantitative, qualitative, or mixed methods in novel ways. However, a proposal that applies geographical/spatial methods to a social problem *but does not propose how that problem provides an opportunity to make a theory-testing and/or theory expanding contributions to geographical science will be returned without review.* HEGS supported projects are expected to yield results that will enhance, expand, and transform fundamental geographical theory and methods, and that will have positive broader impacts that benefit society. A proposal to the HEGS Program must also articulate how the results are generalizable beyond the case study.

It should be noted that HEGS is situated in the Behavioral and Cognitive Sciences Division of the Social, Behavioral and Economic Sciences Directorate at NSF. Therefore, it is critical that research projects submitted to the Human-Environment and Geographical Sciences Program *illustrate how the proposed research questions engage human dimensions relevant and important to people and societies.*

A proposal that fails to be responsive to these program expectations will be returned without review.

III. AWARD INFORMATION

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 30 to 40

Anticipated number of awards annually is 30-40. HEGS generally recommends a total of 15 to 25 regular research project awards; 0 to 2 faculty early-career development (CAREER) awards; and 1 to 3 awards to support conferences, group travel, and/or other community-development activities; 0 to 1 research coordination network (RCN) awards; and 5-10 doctoral dissertation research improvement (DDRI) awards.

Anticipated Funding Amount: $5,000,000 to $7,000,000

Anticipated Funding Amount is approximately $5,000,000 - $7,000,000, for all new and continuing awards combined, not including DDRIG awards, pending availability of funds. Regular research awards supported by HEGS range from $40,000 to $400,000; CAREER awards between $400,000 and $500,000; conferences, group travel, or other community-development activities awards between $20,000 and $50,000; research coordination network (RCN) awards between $300,000 and $400,000; RAPID awards between $20,000 and $200,000. All figures in the preceding sentences are totals that include both direct and indirect costs for the entire duration of the award. Somewhat larger funding amounts may be possible under limited circumstances, such as the receipt of funding support from other NSF programs to support a project with HEGS.

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

IV. ELIGIBILITY INFORMATION

Who May Submit Proposals:

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: 1

An individual may only be listed as a PI or co-PI on one proposal for one competition/deadline date. CAREER proposals that are submitted to HEGS are reviewed during HEGS' August competition/deadline, therefore PIs should not submit a second proposal for the August competition/deadline. Proposals exceeding the limit for any person will be returned without review in the reverse order received.

Proposals that have been declined are not eligible for resubmission for one year from the original date of submission and must be substantially revised to be considered. This moratorium allows investigators the time required to digest the results of the merit review and revise their proposal accordingly. A proposal that has not been substantially revised will be returned without review as per the NSF Proposal & Award Policies & Procedures Guide (PAPPG).

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

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

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

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

Proposals Involving Multiple Organizations

In the case of a proposal involving multiple organizations, a single organization must be identified as the prime, and a single proposal describing the entire project must be submitted by that organization. Funds may be distributed among partner organizations via subawards from the prime organization.

A budget on the standard NSF budget format should be submitted for each subawardee. The requirement for a single organization to submit the sole proposal for a project is designed to facilitate effective coordination among participating organizations and to avoid difficulties that ensue in funded projects when individuals change organizations and/or cease to fulfill project responsibilities. Of the two types of collaborative proposal formats described in the PAPPG Chapter II.D.3, this solicitation allows only a single proposal submission with subawards administered by the prime organization. Direct submission of linked collaborative sets of proposals by multiple organizations is not permitted.

B. Budgetary Information

Cost Sharing:

Inclusion of voluntary committed cost sharing is prohibited.

C. Due Dates

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

January 18, 2022

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D. Research.gov/Grants.gov Requirements

For Proposals Submitted Via Research.gov:

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

For Proposals Submitted Via Grants.gov:

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

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

Proposers that submitted via Research.gov may use Research.gov to verify the status of their submission to NSF. For proposers that submitted via Grants.gov, until an application has been received and validated by NSF, the Authorized Organizational Representative may check the status of an application on Grants.gov. After proposers have received an e-mail notification from NSF, Research.gov should be used to check the status of an application.

VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

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

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

Proposers should also be aware of core strategies that are essential to the fulfillment of NSF's mission, as articulated in *Building the Future: Investing in Discovery and Innovation - NSF Strategic Plan for Fiscal Years (FY) 2018 – 2022*. These strategies are integrated in the program planning and implementation process, of which proposal review is one part. NSF's mission is particularly well-implemented through the integration of research and education and broadening participation in NSF programs, projects, and activities.

One of the strategic objectives in support of NSF's mission is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions must recruit, train, and prepare a diverse STEM workforce to advance the frontiers of science and participate in the U.S. technology-based economy. NSF's contribution to the national innovation ecosystem is to provide cutting-edge research under the guidance of the Nation's most creative scientists and engineers. NSF also supports development of a strong science, technology, engineering, and mathematics (STEM) workforce by investing in building the knowledge that informs improvements in STEM teaching and learning.

NSF's mission calls for the broadening of opportunities and expanding participation of groups, institutions, and geographic regions that are underrepresented in STEM disciplines, which is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

A. Merit Review Principles and Criteria

The National Science Foundation strives to invest in a robust and diverse portfolio of projects that creates new knowledge and enables breakthroughs in understanding across all areas of science and engineering research and education. To identify which projects to support, NSF relies on a merit review process that incorporates consideration of both the technical aspects of a proposed project and its potential to contribute more broadly to advancing NSF's mission "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes." NSF makes every effort to conduct a fair, competitive, transparent merit review process for the selection of projects.

1. Merit Review Principles

These principles are to be given due diligence by PIs and organizations when preparing proposals and managing projects, by reviewers when reading and evaluating proposals, and by NSF program staff when determining whether or not to recommend proposals for funding and while overseeing awards. Given that NSF is the primary federal agency charged with nurturing and supporting excellence in basic research and education, the following three principles apply:

- All NSF projects should be of the highest quality and have the potential to advance, if not transform, the frontiers of knowledge.
- NSF projects, in the aggregate, should contribute more broadly to achieving societal goals. These "Broader Impacts" may be accomplished through the research itself, through activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. The project activities may be based on previously established and/or innovative methods and approaches, but in either case must be well justified.
- Meaningful assessment and evaluation of NSF funded projects should be based on appropriate metrics, keeping in mind the likely correlation between the effect of broader impacts and the resources provided to implement projects. If the size of the activity is limited, evaluation of that activity in isolation is not likely to be meaningful. Thus, assessing the effectiveness of these activities may best be done at a higher, more aggregated, level than the individual project.

With respect to the third principle, even if assessment of Broader Impacts outcomes for particular projects is done at an aggregated level, PIs are expected to be accountable for carrying out the activities described in the funded project. Thus, individual projects should include clearly stated goals, specific descriptions of the activities that the PI intends to do, and a plan in place to document the outputs of those activities.

These three merit review principles provide the basis for the merit review criteria, as well as a context within which the users of the criteria can better understand their intent.

2. Merit Review Criteria

All NSF proposals are evaluated through use of the two National Science Board approved merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

The two merit review criteria are listed below. **Both** criteria are to be given **full consideration** during the review and decision-making processes; each criterion is necessary but neither, by itself, is sufficient. Therefore, proposers must fully address both criteria. (PAPPG Chapter II.C.2.d(i). contains additional information for use by proposers in development of the Project Description section of the proposal). Reviewers are strongly encouraged to review the criteria, including PAPPG Chapter II.C.2.d(i), prior to the review of a proposal.

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

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

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

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

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

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

Additional Solicitation Specific Review Criteria

HEGS seeks to assess the potential longer-term significance of research projects. As a complement to assessing the intellectual merit and the broader impacts of a proposed project, reviewers of proposals submitted to HEGS are asked to provide responses and ratings to the following two questions:

1. **As described in the proposal, what is the expected larger-scope, longer-term significance of the project if the project is conducted successfully?**

   Score of 5 - Extremely Significant

   Score of 4 - Very Significant

   Score of 3 - Moderately Significant

   Score of 2 - Mildly Significant

Score of 1 - Not Significant

2. **As described in the proposal, what is the likelihood that the project will be conducted successfully?**

Score of 5 - Extremely Likely to succeed

Score of 4 - Very Likely to succeed

Score of 3 - Moderate chances of success

Score of 2 - Minimal changes of success

Score of 1 - Unlikely to succeed

Proposals generally will be most competitive if both ratings assessing potential significance and likelihood of success are high.

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

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

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

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

B. Award Conditions

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

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

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

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:

- Jeremy Koster, Program Director, telephone: (703) 292-8740, email: jkoster@nsf.gov

- Tom Evans, Program Director, telephone: (703) 292-4891, email: tevans@nsf.gov

- May Yuan, Program Director, telephone: (703) 292-2206, email: mayuan@nsf.gov

- Cori J. Jacildone, Program Specialist, telephone: (703) 292-8740, email: cjacildo@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.

General inquiries should be submitted to HEGS-info@nsf.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.

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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.

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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.

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The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; and project reports submitted by 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
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