

Disaster Resilience Research Grants (DRRG)

PROGRAM SOLICITATION

NSF 22-593

REPLACES DOCUMENT(S):

NSF 20-581



National Science Foundation

Directorate for Engineering
Division of Civil, Mechanical and Manufacturing Innovation



National Institute of Standards and Technology

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

June 20, 2022

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

August 19, 2022

IMPORTANT INFORMATION AND REVISION NOTES

IMPORTANT WEBCAST: NSF and NIST will hold an informational webcast on June 2, 2022, at 2 pm EDT, to discuss the DRRG program and answer questions about this solicitation. More details about the webcast will be posted at <https://www.nist.gov/el/disaster-resilience/disaster-resilience-federal-funding-opportunity-fo> as they become available. The webcast will be archived and available for viewing for at least 3 months following the event.

REVISION NOTES:

New limit on number of proposals per PI or Co-PI.

Separately submitted collaborative proposals not permitted; collaborations should be managed via subawards.

New details required in Letters of Intent.

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:

Disaster Resilience Research Grants (DRRG)

Synopsis of Program:

With this joint solicitation, the NSF and the U.S Department of Commerce (DOC) National Institute for Standards and Technology (NIST) call

for proposals for research to advance fundamental understanding of disaster resilience in support of improved, science-based planning, policy, decisions, design, codes, and standards.

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.

- Jacqueline R. Meszaros, ENG/CMMI, telephone: (703) 292-7261, email: jmeszaro@nsf.gov
- Jason Averill, Chief, MSS Div, ENG Lab, NIST, telephone: (301) 975-2585, email: jason.averill@nist.gov

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

- 47.041 --- Engineering

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 8 to 12

Anticipated Funding Amount: \$3,100,000

It is anticipated that 8 to 12 awards will be made, with an award size of \$200,000 up to a maximum of \$400,000.

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

Eligibility Information

Who May Submit Proposals:

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:

An individual may be listed as a PI or co-PI on no more than one DRRG proposal submitted in response to this solicitation. Proposals exceeding the limit for any person will be returned without review in the reverse order received. There is no limit on the number of proposals on which an investigator may be listed as Lead of a Subaward or as Other Senior Personnel.

Proposal Preparation and Submission Instructions

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

B. Budgetary Information

- **Cost Sharing Requirements:**

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

Not Applicable
- **Other Budgetary Limitations:**

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

C. Due Dates

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

June 20, 2022

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

August 19, 2022

Proposal Review Information Criteria

Merit Review Criteria:

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

Award Administration Information

Award Conditions:

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

Reporting Requirements:

Additional reporting requirements apply. Please see the full text of this solicitation for further information.

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I. INTRODUCTION

Every year, communities across the United States suffer significant disasters from natural hazards, including droughts, earthquakes, floods, hurricanes, tornadoes, fires, and other natural hazards. While these sorts of adverse events cannot be eradicated, their consequences can be less disastrous if communities reduce their vulnerabilities and increase their resilience. Further, as average temperatures in the U.S. have risen in the last 50 years, many more extreme storms and fires have occurred. As this climate trend is expected to continue, improved adaptation and resilience to the new climate conditions, including extreme natural hazards, is growing more pressing.

Scientific and engineering research can contribute significantly to disaster resilience and climate adaptation by revealing fundamental principles with implications for action. This solicitation, therefore, seeks to catalyze research into disaster-resilience relevant phenomena in support of improved, science-based measures or mechanisms for improved resilience, including improved planning, policy, decisions, design, codes, and standards or other relevant mechanisms.

Two congressionally mandated interagency coordination programs — the [National Earthquake Hazards Reduction Program \(NEHRP\)](#) and the [National Windstorm Impacts Reduction Program \(NWIRP\)](#) — make NSF and NIST responsible to promote the nation's resilience to earthquake and windstorm hazards respectively. The Director of NSF and the Director of NIST serve as the senior leadership for both NEHRP and NWIRP, along with the FEMA Administrator and the Director of the USGS (for NEHRP) and the NOAA Administrator (for NWIRP).

For both NEHRP and NWIRP, NSF is responsible to advance fundamental understanding that can be used to achieve those goals and NIST is responsible to ensure that fundamental new insights are translated to practice, as well as to conduct applied research directly. The laws also direct the agencies to coordinate to achieve those goals. This solicitation is designed to help both agencies better meet their NEHRP and NWIRP responsibilities, as well as their overall missions, via collaboration.

In addition, for several years, [the OSTP-OMB priority memos](#) have encouraged all science and technology agencies to pursue work relevant to the resilience of the nation, particularly its critical infrastructure, to natural hazards. The memos have also strongly encouraged agencies to coordinate, collaborate, and partner in order to maximize the probability of achieving national priorities. This solicitation adheres to the spirit of those priorities.

Toward the goals and responsibilities listed above, this joint solicitation is designed to enable both NSF and NIST to collaborate and partner to, among other things:

- Encourage the nations' university-based research communities to pursue resilience-relevant research across the spectrum from fundamental to applied, in support of NEHRP and NWIRP;
- Enable agency staff (as well as the reviewing community) to better understand the range of research ideas and capabilities across the nation, across the fundamental to applied spectrum. Improved understanding will enable more effective policy design and coordination across agencies going forward;
- Convene all the awardees in a jointly designed annual PI meeting, that will (a) enable investigators to share research approaches and results; (b) ensure that findings are shared with Federal scientists and engineers with responsibility to improve resilience policies and standards; and (c) encourage discussion of potential new collaborations, including translational opportunities.

II. PROGRAM DESCRIPTION

With this joint solicitation, the NSF and the U.S Department of Commerce (DOC) National Institute for Standards and Technology (NIST) call for research proposals to advance fundamental knowledge related to disaster resilience. Advances in scientific and engineering methods and tools relevant to resilience are also of interest.

Natural hazards that are of interest include, but are not limited to:

- Windstorm events, including hurricanes and tornadoes;
- Water events, including hurricanes, sustained rain, both coastal and inland flood, and tsunamis;
- Wildland-urban interface fires;
- Earthquakes.

Terrorism, industrial accidents, and pandemics are not covered by this competition.

Projects that aim to address multi-hazard resilience phenomena are welcome.

Processes associated with disaster resilience that are of interest include, but are not limited to:

- Destructive forces associated with hazards, such as wind forces, seismic forces, water forces, and wildland-urban interface fire-related radiative, convective, or branding forces;
- Performance of structures and infrastructure in natural hazard events;
- Assessment of potential community-level disaster consequences, including characterization of risks, potential failures, and anticipated losses in support of planning and decision making;
- Development or assessment of alternatives for improving resilience that address prevention, preparedness, response, mitigation, or recovery;
- Diffusion, adoption and implementation of measures for resilience of households, organizations, or jurisdictions.

Entities associated with disaster resilience that are of interest include, but are not limited to:

- Structures;
- Infrastructures/Lifelines;
- Communities/National, State, Local, Tribal Territorial Jurisdictions;
- Households.

Disaster resilience-related policies and practices that are of interest include, but are not limited to:

- Building design practices, codes, and standards;
- Infrastructure design practices, codes, and standards;
- Community planning and decision making;
- Household planning and decision making;
- Land-use planning and decision making.

III. AWARD INFORMATION

Anticipated Type of Award: Continuing Grant or Standard Grant

Estimated Number of Awards: 8 to 12

Award Information:

It is anticipated that 8 to 12 awards will be made, with an award size of \$200,000 up to a maximum of \$400,000.

Anticipated Funding Amount: \$3,100,000

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

IV. ELIGIBILITY INFORMATION

Who May Submit Proposals:

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:

An individual may be listed as a PI or co-PI on no more than one DRRG proposal submitted in response to this solicitation. Proposals exceeding the limit for any person will be returned without review in the reverse order received. There is no limit on the number of proposals on which an investigator may be listed as Lead of a Subaward or as Other Senior Personnel.

Additional Eligibility Info:

Support for non-lead collaborating organizations should be requested as subawards. Separately submitted collaborative proposals are not allowed.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Letters of Intent (*required*):

Submission of Letters of Intent is required.

Letters of Intent (LOI) must include the names and institutions of the PI, Co-PIs, and Senior Personnel, as well as the names of any institutions that are anticipated to receive subawards. LOIs must also include a brief description of the proposed research and its relevance to national resilience.

LOIs must include keyword/key phrase indicators of areas of relevance for each of the following four categories. Choose only one per relevance area:

Relevant to the following natural hazard type(s):

- Windstorm events, including hurricanes and tornadoes;
- Water events, including hurricanes, sustained rain, both coastal and inland flood, and tsunamis;
- Wildland-urban interface fires;
- Earthquakes;
- Other (specify).

Relevant to the following disaster resilience processes:

- Destructive forces associated with hazards, such as wind forces, seismic forces, water forces, and wildland-urban interface fire-related radiative, convective, or branding forces;
- Performance of structures and infrastructure in natural hazard events;
- Assessment of potential community-level disaster consequences, including characterization of risks, potential failures, and anticipated losses in support of planning and decision making;
- Development or assessment of alternatives for improving resilience that address prevention, preparedness, response, mitigation, or recovery;
- Diffusion, adoption and implementation of measures for resilience of households, organizations, or jurisdictions;
- Other (specify).

Relevant to the following entity type(s):

- Structures;
- Infrastructures/Lifelines;
- Communities/National, State, Local, Tribal Territorial Jurisdictions;
- Households;

- Other (specify).

Relevant to the following types of disaster resilience policies and practices:

- Building design practices, codes, and standards;
- Infrastructure design practices, codes, and standards;
- Community planning and decision making;
- Household planning and decision making;
- Land-use planning and decision making;
- Other (specify).

LOIs are used for NSF-NIST planning purposes only; no feedback will be given to PIs regarding their LOIs.

Letter of Intent Preparation Instructions:

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

- Submission by an Authorized Organizational Representative (AOR) is not required when submitting Letters of Intent.
- Submission of multiple Letters of Intent is not permitted

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.

B. Budgetary Information

Cost Sharing:

Inclusion of voluntary committed cost sharing is prohibited.

Other Budgetary Limitations:

Proposals with total budgets between \$200,000 and \$400,000 are welcome.

Awardees are required to attend an annual grantees' meeting. Therefore, the budget category Domestic Travel should include costs of travel for at least one senior investigator to attend a 1.5-day meeting in the Washington, D.C. area each year. The goals of the grantees' meetings include: (a) provide an opportunity for investigators to share research approaches and results, (b) share findings and ideas with Federal scientists and engineers, and (c) encourage discussion of new potential collaborations.

C. Due Dates

- **Letter of Intent Due Date(s) (required)** (due by 5 p.m. submitter's local time):
June 20, 2022
- **Full Proposal Deadline(s)** (due by 5 p.m. submitter's local time):
August 19, 2022

D. Research.gov/Grants.gov Requirements

For Proposals Submitted Via Research.gov:

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

program staff contact(s) listed in Section VIII of this funding opportunity.

For Proposals Submitted Via Grants.gov:

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

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

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

VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

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

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

Proposers should also be aware of core strategies that are essential to the fulfillment of NSF's mission, as articulated in *Leading the World in Discovery and Innovation, STEM Talent Development and the Delivery of Benefits from Research - NSF Strategic Plan for Fiscal Years (FY) 2022 - 2026*. These strategies are integrated in the program planning and implementation process, of which proposal review is one part. NSF's mission is particularly well-implemented through the integration of research and education and broadening participation in NSF programs, projects, and activities.

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

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

A. Merit Review Principles and Criteria

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

1. Merit Review Principles

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

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

With respect to the third principle, even if assessment of Broader Impacts outcomes for particular projects is done at an aggregated level, PIs are expected to be

accountable for carrying out the activities described in the funded project. Thus, individual projects should include clearly stated goals, specific descriptions of the activities that the PI intends to do, and a plan in place to document the outputs of those activities.

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

2. Merit Review Criteria

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

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

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

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

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

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

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

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

Additional Solicitation Specific Review Criteria

For all proposals, it will be important to explain how resilience is being defined, how the phenomena to be studied relate to resilience, and how insights from the research might be used to improve resilience.

For proposals with relevance to earthquakes and windstorms, alignment with the strategic goals of the NEHRP or NWIRP program will be considered under Broader Impacts. The strategic plans are available here:

- [National Earthquake Hazard Reduction Program Strategic Plan](#)
- [National Windstorm Hazard Reduction Program Strategic Plan](#)

For proposals to be funded by NSF, it will be important to emphasize development of fundamental knowledge that could have implications for practice.

For proposals to be funded by NIST, the following additional criterion will be applied:

Under Broader Impacts, alignment with the goals of the four existing NIST Disaster Resilience Programs will be considered. Information about those programs and their goals are available here:

- Disaster and Failure Studies: <https://www.nist.gov/topics/disaster-failure-studies/about-disaster-and-failure-studies-program>
- Wildland-Urban Interface Fire: <https://www.nist.gov/el/fire-research-division-73300/wildland-urban-interface-fire-73305>

Earthquakes:

- <https://www.nist.gov/el/materials-and-structural-systems-division-73100/earthquake-engineering-group-73105>
- www.nehrp.gov

Windstorms:

- <https://www.nist.gov/el/materials-and-structural-systems-division-73100/national-windstorm-impact-reduction-program-nwirp>

NIST will consider the two evaluation criteria -- Intellectual Merit and Broader Impacts -- to be of roughly equal importance when making funding decisions.

B. Review and Selection Process

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

NSF will coordinate and manage the review of proposals jointly with NIST. Relevant information about proposals and reviews of proposals will be shared with NIST as appropriate.

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.

NSF Process: 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.

NIST Process: Principal Investigators of proposals selected for funding by NIST will receive specific instructions from NSF indicating that the proposal will be processed by NIST and will be withdrawn from further NSF funding consideration. Those Principal Investigators selected for funding by NIST will be instructed to provide a copy of the proposal to NIST for award processing. Proposers selected to receive awards from NIST will be contacted during the award processing phase to provide additional forms and documents to NIST, such as the "CD-511: Certification Regarding Lobbying", and the "Research & Related Budget (Total Fed + Non-Fed)," both of which are available at [this website](#), in accordance with NIST requirements.

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

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

B. Award Conditions

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

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

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

Special Award Conditions:

For awards funded by NIST:

A NIST award consists of: (1) the award notice on form CD-450, which includes any Specific Award Conditions applicable to the award; (2) the proposal and budget referenced in the award notice; (3) the applicable award conditions, such as the Department of Commerce Financial Assistance Standard Terms and Conditions and the Research Terms and Conditions; and (4) this announcement and any other documents that may be incorporated by reference in the award notice [see [DR - Additional Information for NIST Awards.pdf](#) for specific requirements]. NIST awards are signed by a NIST Grants Officer and transmitted electronically to the organization via e-mail.

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=papppg.

For awards issued by NIST, grantees will be required to submit:

1. **Financial Reports.** Each award recipient will be required to submit an SF-425, Federal Financial Report on a semi-annual basis for the periods ending March 31 and September 30 of each year. Reports will be due within 30 days after the end of the reporting period to the NIST Grants Officer and Grants Specialist named in the award documents. A final financial report is due within 120 days after the end of the project period to the Federal Program Officer, NIST Grants Officer and Grants Specialist named in the award documents.
2. **Research Performance Progress Report (RPPR).** Each award recipient will be required to submit an RPPR to the Federal Program Officer, NIST Grants Officer, and Grants Specialist named in the award documents on a semi-annual basis for the periods ending March 31 and September 30 of each year. A final RPPR shall be submitted within 120 days after the expiration date of the award, and publication citation information as well as links to publicly available data shall be submitted as soon as they become available. If a recipient's Data Management Plan (DMP) has changed since their last submission of a technical progress report, the recipient must include their revised DMP in the next technical progress report following the revision to the DMP.
3. **Patent and Property Reports.** From time to time, and in accordance with the Uniform Administrative Requirements and other terms and conditions governing the award, the recipient may be required to submit property and patent reports.
4. **Recipient Integrity and Performance Matters.** In accordance with Section 872 of Public Law 110-417 (as amended; see 41 U.S.C. § 2313), if the total value of a recipient's currently active grants, cooperative agreements, and procurement contracts from all Federal awarding agencies exceeds \$10,000,000 for any period of time during the period of performance of an award made under this NOFO, then the recipient shall be subject to the requirements specified in Appendix XII to 2 C.F.R. Part 200, <http://go.usa.gov/cTBwC>, for maintaining the currency of information reported to SAM that is made available in FAPIIS about certain civil, criminal, or administrative proceedings involving the recipient.

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:

- Jacqueline R. Meszaros, ENG/CMMI, telephone: (703) 292-7261, email: jmeszaro@nsf.gov
- Jason Averill, Chief, MSS Div, ENG Lab, NIST, telephone: (301) 975-2585, email: jason.averill@nist.gov

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

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

For questions relating to Grants.gov contact:

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

IX. OTHER INFORMATION

The NSF website provides the most comprehensive source of information on NSF Directorates (including contact information), programs and funding opportunities. Use of this website by potential proposers is strongly encouraged. In addition, "NSF Update" is an information-delivery system designed to keep potential proposers and other interested parties apprised of new NSF funding opportunities and publications, important changes in proposal and award policies and procedures, and upcoming NSF [Grants Conferences](#). Subscribers are informed through e-mail or the user's Web browser each time new publications are issued that match their identified interests. "NSF Update" also is available on [NSF's website](#).

Grants.gov provides an additional electronic capability to search for Federal government-wide grant opportunities. NSF funding opportunities may be accessed via this mechanism. Further information on Grants.gov may be obtained at <https://www.grants.gov>.

ABOUT THE NATIONAL SCIENCE FOUNDATION

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

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

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

Facilitation Awards for Scientists and Engineers with Disabilities (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
 - or telephone: (703) 292-8134
- **To Locate NSF Employees:** (703) 292-5111

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; and project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to proposer institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies or other entities needing information regarding applicants or nominees as part of a joint application review process, or in order to coordinate programs or policy; and to another Federal agency, court, or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See [System of Record Notices](#), NSF-50, "Principal Investigator/Proposal File and Associated Records," and NSF-51, "Reviewer/Proposal File and Associated Records." Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

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

Suzanne H. Plimpton
Reports Clearance Officer
Policy Office, Division of Institution and Award Support
Office of Budget, Finance, and Award Management
National Science Foundation
Alexandria, VA 22314

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