

# Methodology, Measurement, and Statistics (MMS)

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## PROGRAM SOLICITATION NSF 12-510

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### REPLACES DOCUMENT(S): NSF 08-561

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National Science Foundation

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

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

January 30, 2012

**Full Proposal Target Date(s):**

August 16, 2012

August 16, Annually Thereafter

January 16, 2013

January 16, Annually Thereafter

## IMPORTANT INFORMATION AND REVISION NOTES

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### Revision Summary

The modes of support description for Mid-Career Research Fellowships, Doctoral Dissertation Research Improvement Awards, and Research Experiences for Undergraduates Supplements have been changed to remove the previous limitation that was stated for indirect costs.

## SUMMARY OF PROGRAM REQUIREMENTS

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### General Information

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#### Program Title:

Methodology, Measurement, and Statistics (MMS)

#### Synopsis of Program:

The Methodology, Measurement, and Statistics (MMS) Program is an interdisciplinary program in the Social, Behavioral, and Economic Sciences that supports the development of innovative analytical and statistical methods and models for those sciences. MMS seeks proposals that are methodologically innovative, grounded in theory, and have potential utility for multiple fields within the social and behavioral sciences. As part of its larger portfolio, the MMS Program partners with a consortium of federal statistical agencies to support research proposals that further the development of new and innovative approaches to surveys and to the analysis of survey data.

The MMS Program supports a variety of different types of awards, including:

- 1) Regular Research Awards
- 2) Mid-Career Research Fellowships
- 3) Doctoral Dissertation Research Improvement Grants
- 4) Research Experience for Undergraduates (REU) Supplements

#### 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.*

- Cheryl L. Eavey - Program Director, 995 N, telephone: (703) 292-7269, email: [ceavey@nsf.gov](mailto:ceavey@nsf.gov)
- Steven Deitz - Science Assistant, telephone: (703) 292-4927, email: [sdeitz@nsf.gov](mailto:sdeitz@nsf.gov)
- Tracy N. Wigglesworth - Program Asst, telephone: (703) 292-4882, email: [twiggles@nsf.gov](mailto:twiggles@nsf.gov)

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

- 47.075 --- Social Behavioral and Economic Sciences

**Award Information**

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

**Estimated Number of Awards:** 30 to 40

**Anticipated Funding Amount:** \$3,700,000 (Approximately \$3.7 million will be awarded annually, contingent upon the availability of funds. Additional funds may be available from participating federal statistical agencies for competitive survey and statistical methodology proposals).

**Eligibility Information**

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**Who May Submit Proposals:**

Proposals may only be submitted by the following:

- Organization limit varies by the mode of support:
  - Regular Research Awards: No limitations (see the GPG for categories of proposers eligible to submit proposals to NSF).
  - Mid-Career Research Fellowships: US Academic Institutions.
  - Doctoral Dissertation Research Improvement Awards: US Academic Institutions.

See Section II. Program Description for detailed information about each mode of support.

**Who May Serve as PI:**

PI eligibility limit varies by the mode of support. See Section II. Program Description for detailed information about each mode of support.

**Limit on Number of Proposals per Organization:**

There are no restrictions or limits.

**Limit on Number of Proposals per PI or Co-PI:**

There are no restrictions or limits.

**Proposal Preparation and Submission Instructions**

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**A. Proposal Preparation Instructions**

- **Letters of Intent:** Not required
- **Preliminary Proposal Submission:** Not required
- **Full Proposals:**
  - Full Proposals submitted via FastLane: NSF Proposal and Award Policies and Procedures Guide, Part I: Grant Proposal Guide (GPG) Guidelines apply. The complete text of the GPG is available electronically on the NSF website at: [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=gpg](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg).
  - 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: [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=grantgovguide](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantgovguide)).

**B. Budgetary Information**

- **Cost Sharing Requirements:** Inclusion of voluntary committed cost sharing is prohibited.
- **Indirect Cost (F&A) Limitations:** Not Applicable
- **Other Budgetary Limitations:** Other budgetary limitations apply. Please see the full text of this solicitation for further information.

**C. Due Dates**

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

January 30, 2012

- **Full Proposal Target Date(s):**

August 16, 2012

August 16, Annually Thereafter

January 16, 2013

January 16, Annually Thereafter

## **Proposal Review Information Criteria**

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**Merit Review Criteria:** National Science Board approved criteria apply.

## **Award Administration Information**

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**Award Conditions:** Standard NSF award conditions apply.

**Reporting Requirements:** Standard NSF reporting requirements apply.

## **TABLE OF CONTENTS**

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### **Summary of Program Requirements**

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

## **I. INTRODUCTION**

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The Methodology, Measurement, and Statistics (MMS) Program is a standing, interdisciplinary program in the Directorate for Social, Behavioral, and Economic Sciences (SBE). MMS supports the development of innovative analytical and statistical methods and models for those sciences. The Program interacts with the other programs in SBE as well as other programs in the Foundation, most notably the Statistics Program in the Directorate for Mathematical and Physical Sciences (MPS). The Program also partners with a consortium of federal statistical agencies to support research proposals that further the development of new and innovative approaches to surveys and to the analysis of survey data.

## **II. PROGRAM DESCRIPTION**

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### **Program Mission Statement**

The MMS Program seeks proposals that are methodologically innovative, grounded in theory, and have potential utility for multiple fields within the social, behavioral, and economic sciences. Successful proposals often integrate across the following areas:

- The development, application, and extension of formal models and methodology for social and behavioral research, including methods for improving measurement. The proposed research must have implications for one or more of the social and behavioral sciences.
- The development of formal models that cross traditional disciplinary boundaries, including research on statistical methodology or statistical modeling having direct implications for one or more of the social and behavioral sciences.
- Research on methodological aspects of new or existing procedures for data collection, including methodology for survey research, and research to evaluate or compare existing data bases and data collection procedures.
- The collection of unique databases with cross disciplinary implications, especially when paired with developments in measurement or methodology.
- The organizational infrastructure of social and behavioral research.

The MMS Program supports a variety of different types of awards, including:

- 1) Regular Research Awards

- 2) Mid-career Research Fellowships
- 3) Doctoral Dissertation Research Improvement Grants
- 4) Research Experiences for Undergraduates (REU) Supplements

#### **Modes of Support**

##### **1) Regular Research Awards**

Most of the proposals submitted to the MMS Program fall into the category of regular research awards. With the exception of a long-standing partnership with a consortium of federal statistical agencies (described in detail below) and the occasional NSF Dear Colleague letter, the MMS Program does not solicit particular areas of research. Rather, the Program invites the community to submit a broad range of cutting-edge methodological research for the social, behavioral, and economic sciences.

The Program also supports some infrastructure-type activities for the social, behavioral, and economic sciences, including conferences and workshops. Infrastructure proposals must demonstrate the value of the proposed activities for the broader community of social, behavioral, and economic scientists. The full portfolio of active MMS awards is available on the [MMS Program Web Site](#).

##### *Research on Survey and Statistical Methodology*

Since 1999, the MMS Program has collaborated with a consortium of federal statistical agencies represented by the Interagency Council on Statistical Policy (ICSP) and the Federal Committee on Statistical Methodology (FCSM) to further the development of new and innovative approaches to surveys and to the analysis of survey data. The Federal Statistical System faces the challenge of gathering relevant and reliable data for the next decade and beyond. The potential for conducting surveys via the web, for example, raises a host of important methodological questions. Questions regarding the affects of nonresponse on the validity and reliability of survey data need to be addressed. The increasing use of multi-mode surveys, in part to address declining response, has raised new methodological challenges.

Researchers need to think creatively regarding the development of methods for survey research in the 21st century. Potential topics for consideration include, but are not limited to:

- a) Measurement Issues (e.g., Investigation of measurement implications of multi-mode surveys).
- b) Questionnaire Design (e.g., Applications of psychology or linguistics to questionnaire design).
- c) Survey Design and Technology (e.g., Methodological issues associated with web-based surveys or multi-mode surveys).
- d) Analytical Issues (e.g., Uses of administrative records or paradata to supplement surveys).
- e) Small Area Estimation (e.g., Improvements in current estimation methods).

Although proposals submitted in response to this solicitation may address any aspect of survey methodology, priority will be given to basic research proposals that are interdisciplinary in nature, have broad implications for the field in general, and have the greatest potential for creating fundamental knowledge of value to the Federal Statistical System. Because methodological problems often require knowledge and expertise from multiple disciplines, collaborations are especially encouraged among the relevant sciences, including the social sciences, linguistics, cognitive science, statistics, computer science, and economics. The Program encourages proposals where participating scientists are also advancing knowledge in their respective disciplines. Although survey methods proposals may be submitted to either one of the two MMS target dates, only proposals submitted to the January due date are guaranteed full consideration by the federal statistical agencies.

Grantees for awards funded with support from the federal statistical agencies may be invited to participate in a one- or two-day meeting in the Washington, DC area to report on their activities and interact with other grantees and federal agency staffers. Budget requests should include travel funds to accommodate that possibility.

##### *Information on Participating Federal Statistical Agencies*

The Interagency Council on Statistical Policy (ICSP) consists of the heads of the 14 largest statistical agencies and is chaired by the chief statistician of the Office of Management and Budget. It was formally established by the Paperwork Reduction Act of 1995 to discuss and determine statistical policy issues. The Federal Committee on Statistical Methodology (FCSM) consists of experts from within the Federal Statistical System who consider methodological issues of importance to the statistical system. The Federal Statistical System includes 10 agencies that have statistical activities as their principal mission and about 60 agencies that carry out statistical activities in conjunction with other missions, such as providing services or enforcing regulations.

Proposals may include the direct participation of consortium agencies. Consortium agencies include:

- Department of Agriculture (National Agricultural Statistics Service; Economic Research Service)
- Department of Commerce (Bureau of the Census; Bureau of Economic Analysis)
- Department of Education (National Center for Education Statistics)
- Department of Energy (Energy Information Administration)
- Department of Health and Human Services (National Center for Health Statistics)
- Department of Justice (Bureau of Justice Statistics)
- Department of Labor (Bureau of Labor Statistics)
- Department of Transportation (Bureau of Transportation Statistics)
- Department of Treasury (Statistics of Income Division, IRS)
- Social Security Administration

#### **2) Mid-Career Research Fellowships**

The MMS Program supports mid-career research fellowships in the social, behavioral, economic, and statistical sciences. The primary goal of the fellowships is to facilitate the development of innovative methods and models for understanding complex social and behavioral science phenomena. A secondary goal is to facilitate interactions across the social, behavioral, economic, statistical, and other relevant sciences.

In fulfillment of the primary goal, proposals must concretely demonstrate how the proposed fellowship activities will further the development of new methods for increased understanding of complex, substantive problems in the social and behavioral sciences. These new insights may result from the expansion of the investigator's personal research program or from collaborations established by the investigator with other researchers during the fellowship period.

To meet the secondary goal, investigators are expected to spend their fellowship period at a host location immersing themselves in an area of study outside their current areas of expertise. The host location may be at a different organization from the investigator's home organization or simply a different department within the home organization. For example, a statistician interested in developing methods for population projection may elect to spend the fellowship period in the sociology department on his home campus. Likewise, an economist interested in spatial externalities may select as a host location a geography department at a distant

institution. The selection of the host location must be justified in the body of the proposal, as well as the proposed fellowship activities. In order to assess the value added of the proposed training activity, information on any formal training in the area to be studied should also be included. In addition, the proposal must include a detailed letter of support signed by the department head or equivalent official at the host location outlining the nature of the relationship between the investigator and host location. The letter should be submitted as Supplementary Documentation.

It is expected that the selection of the host location will necessitate the crossing of disciplinary boundaries. Proposals may be jointly reviewed with the relevant disciplinary program at NSF; e.g., proposals involving interactions among statisticians and social, behavioral, or economic scientists may be jointly reviewed with the Statistics Program in the Directorate for Mathematical and Physical Sciences.

Mid-Career awards will be made for up to a twelve-month period. Applicants are encouraged to coordinate proposed activities with a sabbatical leave or other forms of release time. Allowable costs include a stipend, a special allowance, and a relocation allowance. The maximum stipend available for the duration of the award is \$60,000, including any applicable fringe benefits. Fringe benefits may be provided only if the host institution's rate allows this category of fellows in the covered group and must not exceed the host institution's approved fringe benefit rate. In addition to the stipend, a special allowance of \$3,000 is available at the Fellow's discretion and is intended for scientific supplies, travel, publication expenses, and other research related costs. At the discretion of the fellow, a relocation travel allowance of up to \$3,000 may be requested if the host location is different from the home institution. This relocation travel allowance is in addition to the stipend and special allowance and is not subject to the [cost principles](#). There is no dependency allowance.

The MMS Program accepts and reviews Mid-Career proposals for both the January and August due dates. Any qualified researcher may submit a proposal through normal institutional channels at either the home or host organization. To be qualified, the researcher must be employed at a U.S. academic institution. Although applications may be submitted from researchers at any level beyond the Ph.D., NSF especially encourages the submission of proposals from senior (post-tenure) researchers. An applicant may receive only one mid-career fellowship award under this solicitation or its successors.

### **3) Doctoral Dissertation Research Improvement Awards**

In an effort to improve the quality of dissertation research, the Methodology, Measurement, and Statistics Program accepts and reviews doctoral dissertation research proposals for both the January and August due dates. The proposal should describe the scientific significance of the proposed work, including its relationship to other current research, and the design of the project in sufficient detail to permit evaluation. If the project is already underway, the proposal should present and interpret progress to date. A research schedule should be included. Although the student cannot submit a proposal independently, it is expected that the intellectual input to the proposed research be predominantly that of the student. The funds are to be used for expenses associated with the conduct of the dissertation research that normally are not underwritten by the home institution.

The proposal must be submitted by a U.S. academic institution on behalf of the dissertation advisor and graduate student who is at the point of initiating or already conducting dissertation research. The advisor serves as the principal investigator and the student as the co-principal investigator. The student must be enrolled at a U.S. academic institution but does not need to be a U.S. citizen.

Doctoral Dissertation Research awards will be made for up to a 24-month period. These awards provide supplemental funds for items not usually available from the student's university; the awards are not intended to provide the full costs of a student's doctoral dissertation research. Funds may be used for valid research expenses, which include (but are not limited to) conducting field research in settings away from campus that would not otherwise be possible, data collection and sample survey costs, payments to subjects or informants, specialized research equipment, analysis and services not otherwise available, supplies, travel to archives, travel to specialized collections and facilities or field research locations, and partial living expenses for conducting necessary research away from the student's university. Funds are to be used exclusively for necessary expenses incurred in the actual conduct of the dissertation research. These funds may not be used as a stipend for the student, for tuition, textbooks, journals, or for the typing, reproduction, or publication costs of the student's dissertation. Although stipends are not permitted, an allowance for expenses during time away from the student's home institution may be allowed. Funds may be requested for research assistants only in special circumstances and should be carefully justified. The maximum amount that will be awarded for doctoral research is \$16,000 (including indirect costs). See the [SBE Doctoral Dissertation Research Improvement Grants solicitation](#) for additional information.

### **Research Experiences for Undergraduates (REU) Supplements**

To enhance undergraduate education and training in the development of methods for the social, behavioral, and economic sciences and to broaden the participation of underrepresented students in high-quality research projects, the MMS Program encourages the submission of REU supplements to ongoing MMS-supported research projects or as a component of proposals for new or renewal MMS awards. The supplement request should not exceed three pages and should describe the proposed student's involvement in the project, identifying the value of the student's participation both for the conduct of the research and for the student's academic development. The experience of the investigator in involving undergraduates in research should be discussed, including the results of prior REU supplement support (if applicable). If the student has been preselected, the supplement request should describe the grounds for selection and include a brief biographical sketch of the student. If the student has not been preselected, the supplement request should discuss the process and criteria for selecting the student. The MMS Program particularly encourages the submission of REU supplements to support the participation of women and other underrepresented groups in the research process.

Undergraduate student participants must be citizens or permanent residents of the United States or its possessions. Direct costs associated with an REU supplement may not exceed \$6,000. See the [NSF-wide Research Experience for Undergraduates \(REU\) solicitation](#) for additional information.

Investigators may submit REU supplement requests at any time. It is recommended, however, that the investigator contact the program officer prior to submission. The Program generally will consider no more than one REU supplement per award.

## **III. AWARD INFORMATION**

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

**Estimated Number of Awards:** 30 to 40

**Anticipated Funding Amount:** \$3,700,000 (Approximately \$3.7 million will be awarded annually, contingent upon the availability of funds. Additional funds may be available from participating federal statistical agencies for competitive survey and statistical methodology proposals).

## **IV. ELIGIBILITY INFORMATION**

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### **Who May Submit Proposals:**

Proposals may only be submitted by the following:

- Organization limit varies by the mode of support:
  - Regular Research Awards: No limitations (see the GPG for categories of proposers eligible to submit proposals to NSF).
  - Mid-Career Research Fellowships: US Academic Institutions.
  - Doctoral Dissertation Research Improvement Awards: US Academic Institutions.

See Section II. Program Description for detailed information about each mode of support.

### **Who May Serve as PI:**

PI eligibility limit varies by the mode of support. See Section II. Program Description for detailed information about each mode of support.

### **Limit on Number of Proposals per Organization:**

There are no restrictions or limits.

### **Limit on Number of Proposals per PI or Co-PI:**

There are no restrictions or limits.

## **V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS**

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### **A. Proposal Preparation Instructions**

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

- Full proposals submitted via FastLane: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF Grant Proposal Guide (GPG). The complete text of the GPG is available electronically on the NSF website at: [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=gpg](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg). Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from [nspubs@nsf.gov](mailto:nspubs@nsf.gov). Proposers are reminded to identify this program solicitation number in the program solicitation block on the NSF Cover Sheet For Proposal to the National Science Foundation. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.
- Full proposals submitted via Grants.gov: Proposals submitted in response to this program solicitation via Grants.gov should be prepared and submitted in accordance with the NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov. The complete text of the NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: ([http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=grantsgovguide](http://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) 292-7827 or by e-mail from [nspubs@nsf.gov](mailto:nspubs@nsf.gov).

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

Collaborative Proposals. All collaborative proposals submitted as separate submissions from multiple organizations must be submitted via the NSF FastLane system. Chapter II, Section D.4 of the Grant Proposal Guide provides additional information on collaborative proposals.

**Important Proposal Preparation Information:** FastLane will check for required sections of the full proposal, in accordance with *Grant Proposal Guide* (GPG) instructions described in Chapter II.C.2. The GPG requires submission of: Project Summary; Project Description; References Cited; Biographical Sketch(es); Budget; Budget Justification; Current and Pending Support; Facilities, Equipment & Other Resources; Data Management Plan; and Postdoctoral Mentoring Plan, if applicable. If a required section is missing, **FastLane will not accept the proposal**.

Please note that the proposal preparation instructions provided in this program solicitation may deviate from the GPG instructions. If the solicitation instructions do not require a GPG-required section to be included in the proposal, insert text or upload a document in that section of the proposal that states, "Not Applicable for this Program Solicitation." Doing so will enable FastLane to accept your proposal.

*Please note that per guidance in the GPG, the Project Description must contain, as a separate section within the narrative, a discussion of the broader impacts of the proposed activities. Unless otherwise specified in this solicitation, you can decide where to include this section within the Project Description.*

### **B. Budgetary Information**

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**Cost Sharing:** Inclusion of voluntary committed cost sharing is prohibited.

**Other Budgetary Limitations:**

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

## C. Due Dates

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

January 30, 2012

- **Full Proposal Target Date(s):**

August 16, 2012

August 16, Annually Thereafter

January 16, 2013

January 16, Annually Thereafter

## D. FastLane/Grants.gov Requirements

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**For Proposals Submitted Via FastLane:**

To prepare and submit a proposal via FastLane, see detailed technical instructions available at:

<https://www.fastlane.nsf.gov/a1/newstan.htm>. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail [fastlane@nsf.gov](mailto:fastlane@nsf.gov). The FastLane Help Desk answers general technical questions related to the use of the FastLane 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:

<http://www.grants.gov/web/grants/applicants.html>. In addition, the NSF Grants.gov Application Guide (see link in Section V.A) provides instructions regarding the technical preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: [support@grants.gov](mailto:support@grants.gov). The Grants.gov Contact Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this solicitation.

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

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

## VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

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

A comprehensive description of the Foundation's merit review process is available on the NSF website at:  
[http://nsf.gov/bfa/dias/policy/merit\\_review/](http://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 [Investing in Science, Engineering, and Education for the Nation's Future: NSF Strategic Plan for 2014-2018](#). These strategies are integrated in the program planning and implementation process, of which proposal review is one part. NSF's mission is particularly well-implemented through the integration of research and education and broadening participation in NSF programs, projects, and activities.

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

investing in building the knowledge that informs improvements in STEM teaching and learning.

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

## A. Merit Review Principles and Criteria

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

### 1. Merit Review Principles

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

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

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

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

### 2. Merit Review Criteria

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

The two merit review criteria are listed below. **Both** criteria are to be given **full consideration** during the review and decision-making processes; each criterion is necessary but neither, by itself, is sufficient. Therefore, proposers must fully address both criteria. ([GPG 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 [GPG Chapter II.C.2.d.i.](#), prior to the review of a proposal.

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

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

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

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

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

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

## **B. Review and Selection Process**

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

Reviewers will be asked to evaluate proposals using two National Science Board approved merit review criteria and, if applicable, additional program specific criteria. A summary rating and accompanying narrative will be completed and submitted by each reviewer. 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**

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### **A. Notification of the Award**

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

### **B. Award Conditions**

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

\*These documents may be accessed electronically on NSF's Website at [http://www.nsf.gov/awards/managing/award\\_conditions.jsp?org=NSF](http://www.nsf.gov/awards/managing/award_conditions.jsp?org=NSF). Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from [nsfpubs@nsf.gov](mailto:nsfpubs@nsf.gov).

More comprehensive information on NSF Award Conditions and other important information on the administration of NSF awards is contained in the NSF Award & Administration Guide (AAG) Chapter II, available electronically on the NSF Website at [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=aag](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag).

### **C. Reporting Requirements**

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For all multi-year grants (including both standard and continuing grants), the Principal Investigator must submit an annual project report to the cognizant Program Officer at least 90 days prior to the end of the current budget period. (Some programs or awards require submission of more frequent project reports). Within 90 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 Award & Administration Guide (AAG) Chapter II, available electronically on the NSF Website at

## VIII. AGENCY CONTACTS

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

General inquiries regarding this program should be made to:

- Cheryl L. Eavey - Program Director, 995 N, telephone: (703) 292-7269, email: [ceavey@nsf.gov](mailto:ceavey@nsf.gov)
- Steven Deitz - Science Assistant, telephone: (703) 292-4927, email: [sdeitz@nsf.gov](mailto:sdeitz@nsf.gov)
- Tracy N. Wigglesworth - Program Asst, telephone: (703) 292-4882, email: [twiggles@nsf.gov](mailto:twiggles@nsf.gov)

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 1-800-673-6188; e-mail: [fastlane@nsf.gov](mailto:fastlane@nsf.gov).

For questions relating to Grants.gov contact:

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

## IX. OTHER INFORMATION

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The NSF website provides the most comprehensive source of information on NSF Directorates (including contact information), programs and funding opportunities. Use of this website by potential proposers is strongly encouraged. In addition, "NSF Update" is an information-delivery system designed to keep potential proposers and other interested parties apprised of new NSF funding opportunities and publications, important changes in proposal and award policies and procedures, and upcoming NSF [Grants Conferences](#). Subscribers are informed through e-mail or the user's Web browser each time new publications are issued that match their identified interests. "NSF Update" also is available on NSF's website at [https://public.govdelivery.com/accounts/USNSF/subscriber/new?topic\\_id=USNSF\\_179](https://public.govdelivery.com/accounts/USNSF/subscriber/new?topic_id=USNSF_179).

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

## ABOUT THE NATIONAL SCIENCE FOUNDATION

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

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

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

*Facilitation Awards for Scientists and Engineers with Disabilities* provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See Grant Proposal Guide Chapter II, Section D.2 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 <http://www.nsf.gov>

- **Location:** 4201 Wilson Blvd. Arlington, VA 22230
- **For General Information** (703) 292-5111

(NSF Information Center):

• **TDD (for the hearing-impaired):** (703) 292-5090

• **To Order Publications or Forms:**

Send an e-mail to: [nsfpubs@nsf.gov](mailto:nsfpubs@nsf.gov)

or telephone: (703) 292-7827

• **To Locate NSF Employees:** (703) 292-5111

## PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; and project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to proposer institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies or other entities needing information regarding applicants or nominees as part of a joint application review process, or in order to coordinate programs or policy; and to another Federal agency, court, or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, [NSF-50](#), "Principal Investigator/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004), and [NSF-51](#), "Reviewer/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

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

Suzanne H. Plimpton  
Reports Clearance Officer  
Office of the General Counsel  
National Science Foundation  
Arlington, VA 22230

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