

Partnerships in Astronomy & Astrophysics Research and Education (PAARE)

PROGRAM SOLICITATION NSF 08-562

REPLACES DOCUMENT(S): NSF 07-561



National Science Foundation
Directorate for Mathematical & Physical Sciences
Division of Astronomical Sciences

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

- August 12, 2008
- August 03, 2009
- August 3, Annually Thereafter

IMPORTANT INFORMATION AND REVISION NOTES

A revised version of the **NSF Proposal & Award Policies & Procedures Guide** (PAPPG), [NSF 13-1](#), was issued on October 4, 2012 and is effective for proposals submitted, or due, on or after January 14, 2013. Please be advised that the guidelines contained in [NSF 13-1](#) apply to proposals submitted in response to this funding opportunity. Proposers who opt to submit prior to January 14, 2013, must also follow the guidelines contained in [NSF 13-1](#).

Please be aware that significant changes have been made to the PAPPG to implement revised merit review criteria based on the National Science Board (NSB) report, [National Science Foundation's Merit Review Criteria: Review and Revisions](#). While the two merit review criteria remain unchanged (Intellectual Merit and Broader Impacts), guidance has been provided to clarify and improve the function of the criteria. Changes will affect the project summary and project description sections of proposals. Annual and final reports also will be affected.

A by-chapter summary of this and other significant changes is provided at the beginning of both the [Grant Proposal Guide](#) and the [Award & Administration Guide](#).

Please note that this program solicitation may contain supplemental proposal preparation guidance and/or guidance that deviates from the guidelines established in the [Grant Proposal Guide](#).

A revised version of the **NSF Proposal & Award Policies & Procedures Guide** (PAPPG), [NSF 11-1](#), was issued on October 1, 2010 and is effective for proposals submitted, or due, on or after January 18, 2011. Please be advised that the guidelines contained in [NSF 11-1](#) apply to proposals submitted in response to this funding opportunity. Proposers who opt to submit prior to January 18, 2011, must also follow the guidelines contained in [NSF 11-1](#).

Cost Sharing: The PAPPG has been revised to implement the National Science Board's recommendations regarding cost sharing. Inclusion of voluntary committed cost sharing is prohibited. In order to assess the scope of the project, all organizational resources necessary for the project must be described in the Facilities, Equipment and Other Resources section of the proposal. The description should be narrative in nature and must not include any quantifiable financial information. Mandatory cost sharing will only be required when explicitly authorized by the NSF Director. See the PAPP Guide Part I: [Grant Proposal Guide \(GPG\) Chapter II.C.2.g\(xi\)](#) for further information about the implementation of these recommendations.

Data Management Plan: The PAPPG contains a clarification of NSF's long standing data policy. All proposals must describe plans for data management and sharing of the products of research, or assert the absence of the need for such plans. FastLane will not permit submission of a proposal that is missing a Data Management Plan. The Data Management Plan will be reviewed as part of the intellectual merit or broader impacts of the proposal, or both, as appropriate. Links to data management requirements and plans relevant to specific Directorates, Offices, Divisions, Programs, or other NSF units are available on the NSF website at: <http://www.nsf.gov/bfa/dias/policy/dmp.jsp>. See [Chapter II.C.2.j](#) of the GPG for further information about the implementation of this requirement.

Postdoctoral Researcher Mentoring Plan: As a reminder, each proposal that requests funding to support postdoctoral researchers must include, as a supplementary document, a description of the mentoring activities that will be provided for such individuals. Please be advised that if required, FastLane will not permit submission of a proposal that is missing a Postdoctoral Researcher Mentoring Plan. See [Chapter II.C.2.j](#) of the GPG for further information about the implementation of this requirement.

Revision Notes:

Major revisions from the previous program solicitation are:

- The nature of eligible partnering institutions has been clarified throughout the document. Eligible partnering institutions are described as "research institutions including academic institutions, private observatories and NSF/AST-funded facilities."
- PI eligibility has been changed to include part-time and adjunct faculty members explicitly.
- Institutional eligibility has been expanded to include MSIs offering degrees in physical sciences in general rather than limiting it to institutions offering degrees only in physics or astronomy.

- Section IV, Eligibility Information, has been revised to:
 - note that proposals, including collaborative proposals, from non-MSI institutions will not be accepted.
 - include updated Department of Education definitions of minority-serving institutions and a link to Department of Education information on institutional classifications.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Partnerships in Astronomy & Astrophysics Research and Education (PAARE)

Synopsis of Program:

The objective of PAARE is to enhance diversity in astronomy and astrophysics research and education by stimulating the development of formal, long-term, collaborative research and education partnerships among minority-serving institutions and partners at research institutions, including academic institutions, private observatories and NSF Division of Astronomical Sciences (AST) supported facilities.

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.

- Daniel Evans, 1045, telephone: (703) 292-8225, email: devans@nsf.gov

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

- 47.049 --- Mathematical and Physical Sciences

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 3 to 5 per year

Anticipated Funding Amount: \$2,000,000 The total anticipated funding amount in FY 2009 is up to \$2,000,000 subject to the availability of funds. Awards are expected to have a range of budgets depending upon the scope of the partnership.

Eligibility Information

Organization Limit:

Proposals may only be submitted by the following:

- A minority-serving college or university. See "Eligible Academic Institutions" in this program solicitation for a complete description.

PI Limit:

The Principal Investigator must hold a full-time, part-time or adjunct faculty appointment at a minority-serving college or university.

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI:

None Specified

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- Letters of Intent: Not Applicable
- Preliminary Proposal Submission: Not Applicable
- 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.
 - 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=grantsgovguide)

B. Budgetary Information

- Cost Sharing Requirements: Inclusion of voluntary committed cost sharing is prohibited.
- Indirect Cost (F&A) Limitations: Not Applicable
- Other Budgetary Limitations: Not Applicable

C. Due Dates

- Full Proposal Deadline(s) (due by 5 p.m. proposer's local time):
 - August 12, 2008
 - August 03, 2009
 - August 3, Annually Thereafter

Proposal Review Information Criteria

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

Award Administration Information

Award Conditions: Standard NSF award conditions apply.

Reporting Requirements: Standard NSF reporting requirements apply.

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I. INTRODUCTION

The National Science Foundation's mandate to ensure vitality of the Nation's scientific and engineering enterprise includes concerns for the quality of and access to astronomy and astrophysics education for all Americans. Within this context, it is recognized that minority-serving institutions and their research partners at academic institutions, private observatories and NSF Division of Astronomical Sciences (AST) supported facilities represent rich resources for improving minority access to careers in astronomy and astrophysics.

The Partnerships in Astronomy & Astrophysics Research and Education (PAARE) program described in this solicitation is designed to improve and strengthen the education infrastructure in astronomy and astrophysics, and to increase recruitment, retention and degree attainment by members of groups underrepresented in the field.

The PAARE program is intended to enhance the quantity and quality of astronomy and astrophysics research opportunities for students and faculty members at participating minority-serving colleges and universities. The program will produce models for developing long-term astronomy and astrophysics education and research relationships between minority-serving institutions and their research partners at academic institutions, private observatories, and NSF/AST-supported facilities.

II. PROGRAM DESCRIPTION

The objective of PAARE is to enhance diversity in astronomy and astrophysics research and education by stimulating the development of formal, long-term, collaborative research and education relationships between minority-serving institutions and partners at research institutions, including academic institutions, private observatories, and NSF/AST-supported facilities.

PAARE awards are expected to achieve significant increases in the number and quality of interactions between participants from research institutions, including academic institutions, private observatories, and NSF/AST-supported facilities, and students and faculty at minority-serving colleges and universities, and should result in increasing undergraduate and graduate astronomy and astrophysics degrees for underrepresented minorities.

The Division of Astronomical Sciences (AST) strives to foster educational and research partnerships that utilize talented students at minority-serving colleges and universities by establishing opportunities for them to develop their scientific skills. Such partnerships will also serve the needs of partnering institutions by collaborating with and teaching traditionally underrepresented students who bring a unique set of experiences and perspectives to the research. Additionally, new opportunities will be had by students at the partner institutions, as the research efforts on both sides of the partnership are expected to expand. PAARE partnerships can also help to transform the academic structure of minority-serving institutions by providing the resources to build a research community in schools that have a heavy emphasis on teaching.

As retention of traditionally underrepresented students is key to the success of this program, a solid mentoring scheme is vital. PAARE awards are expected to help build a foundation for students at an early point in their scientific training and to help these students make the next step in their careers. The partnerships are intended to provide education and mentoring as a form of professional development to help these students succeed long after their work on the PAARE research has concluded.

As a means to determine the effectiveness of mentoring, education and research, PAARE awardees are expected to consider carefully how the program can be assessed to determine if identified goals are being met. It is important that the partnership has a guiding vision as a whole, and to determine what success means at each level of the partnership.

III. AWARD INFORMATION

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 3 to 5 per year

Anticipated Funding Amount: \$2,000,000 The total anticipated funding amount in FY 2009 is up to \$2,000,000 subject to the availability of funds. Awards are expected to have a range of budgets depending upon the scope of the partnership.

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

IV. ELIGIBILITY INFORMATION

Organization Limit:

Proposals may only be submitted by the following:

- A minority-serving college or university. See "Eligible Academic Institutions" in this program solicitation for a complete description.

PI Limit:

The Principal Investigator must hold a full-time, part-time or adjunct faculty appointment at a minority-serving college or university.

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI:

None Specified

Additional Eligibility Info:

Eligible Activities:

Support will be provided for activities that facilitate development of formal, long-term astronomy and astrophysics research and education relationships among minority-serving colleges and projects or faculty members at research institutions, which include academic institutions, private observatories and NSF/AST-supported facilities as described below. Funded activities might include, but are not limited to, the development of collaborative and mutually beneficial astronomy-related research and education projects, support for graduate and undergraduate students and exchanges of faculty and students. Well-prepared high-school students may also participate.

Of special interest are activities based on research and education connections among the participants, and designed to increase recruitment, retention and degree attainment by members of groups underrepresented in astronomy and astrophysics research. Proposers are encouraged to contact NSF program staff identified in this solicitation to discuss the appropriateness of the planned activities.

Eligible Academic Institutions:

All PAARE proposals, including those submitted as part of a collaborative proposal, must be submitted by an eligible minority-serving institution (MSI), including Historically Black Colleges and Universities (HBCUs), Hispanic-serving institutions (HSIs), and Tribally Controlled Colleges (TCCs). Each PAARE proposal must be submitted in collaboration with one or more research institutions as defined below. Partners that are not an MSI may request funds only through a subaward from an eligible MSI.

Minority-serving colleges and universities eligible to participate in this activity must offer baccalaureate degrees in physics, astronomy or other physical science related areas, including a general science degree, and meet at least one of the following criteria listed below. Further information on institution classifications can be found at <http://www.ed.gov/about/offices/list/ocr/edlite-minorityinst.html>.

1. Be designated by the Department of Education as a Hispanic-serving Institution (HSI) under Title III of the Higher Education Act of 1965, as amended [See 20 USC 1059 (c); Public Law 102-325, Section 316, July 22, 1992].
2. Be designated by the Department of Education as a Historically Black College or University (HBCU) under Title III of the Higher Education Act of 1965, as amended (see 34 CFR 608.2).
3. Be cited as a Tribal College or University in Section 532 of the Equity in Education Land-Grant Status October of 1964; Tribally Controlled Community College Assistance Act of 1978, Public Law 95-471.
4. Be a college or university whose undergraduate enrollment consists of at least 50% of one or more ethnic minorities underrepresented in science and engineering in the U.S., and not a Research University (RU/VH, RU/H, or DRU) in the Carnegie classification. African Americans, Hispanic Americans, Native Americans, Native Alaskans and Hawaiian/Pacific islanders are ethnic minorities underrepresented in science and engineering in the U.S.

Partnering institutions or organizations may be any institution or organization eligible for NSF funding that supports a research program in astronomy and astrophysics, including academic institutions, private observatories and NSF/AST-supported facilities. Research groups and individual scientists at research institutions are also eligible partners, provided that their institution shows evidence of commitment to the proposed program as demonstrated in a letter from the institution describing its support of the partnership. Proposals may include subawards to the partnering institution, provided it has demonstrated a commitment to the activity at least for the duration of the PAARE grant.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Full Proposal Preparation Instructions: Proposers may opt to submit proposals in response to this Program Solicitation via 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.govpublications/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 nsfpubs@nsf.gov. Proposers are reminded to identify this program solicitation number in the program solicitation block on the NSF Cover Sheet For Proposal to the National Science Foundation. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.
- Full proposals submitted via Grants.gov: Proposals submitted in response to this program solicitation via Grants.gov should be prepared and submitted in accordance with the NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov. The complete text of the NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: (http://www.nsf.govpublications/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 nsfpubs@nsf.gov.

Supplemental proposal preparation instructions appear below.

The following items should be included and/or addressed in the "Project Description" section of the proposal (limit 15 pages):

- Describe the goals and the mission of the partnership.
- Describe *in detail* the planned research and education programs demonstrating how the partnership benefits all involved parties at the MSI(s) and the partnering institution(s). The proposal will be judged on the strength of the research as well as the strength of the proposed partnership.
- Describe the potential impact of the project on the science, education, and building of a diverse community of astronomers and astrophysicists, and how their results would be disseminated.
- Clearly define the mentoring scheme. This may include student and faculty mentorship.
- Describe the role of the partners at the research institution(s).
- Outline the management plan.
- Describe how the research and education plans will be internally evaluated including an assessment scheme.
- List of Participants: Provide a list of participating faculty or staff from all academic institutions involved in the partnership. List each participant by full name, and her/his institutional and departmental affiliation. Also, enter each name in "Add/Delete Non Co-PI Senior Personnel" FastLane Form. (Note: All faculty participants should have a GPG-compliant biographical sketch and a list of current and pending support included in the corresponding section of the proposal.)

In addition, the partnering institution(s) must each submit a statement indicating support of the proposed activities and the resources that will be provided to carry out the project. Supporting statement(s) must be uploaded in the "Supplemental Documents" section of the proposal.

The budget justification should explain clearly the connection between the requested funds and the proposed activities for the main budget and for any funding requested through subawards.

B. Budgetary Information

Cost Sharing: Inclusion of voluntary committed cost sharing is prohibited

C. Due Dates

- Full Proposal Deadline(s) (due by 5 p.m. proposer's local time):
 - August 12, 2008
 - August 03, 2009
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D. FastLane/Grants.gov Requirements

- For Proposals Submitted Via FastLane:

Detailed technical instructions regarding the technical aspects of preparation and submission via FastLane are 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. 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.

Submission of Electronically Signed Cover Sheets. The Authorized Organizational Representative (AOR) must electronically sign the proposal Cover Sheet to submit the required proposal certifications (see Chapter II, Section C of the Grant Proposal Guide for a listing of the certifications). The AOR must provide the required electronic certifications within five working days following the electronic submission of the proposal. Further instructions regarding this process are available on the FastLane Website at: <https://www.fastlane.nsf.gov/fastlane.jsp>.

- 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://www07.grants.gov/applicants/app_help_reso.jsp. In addition, the NSF Grants.gov Application Guide provides additional technical guidance regarding 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.

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 the GPG as [Exhibit III-1](#).

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

Proposers should also be aware of core strategies that are essential to the fulfillment of NSF's mission, as articulated in [Empowering the Nation Through Discovery and Innovation: NSF Strategic Plan for Fiscal Years \(FY\) 2011-2016](#). 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 core strategies 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 provide abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students, and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the variety of learning perspectives.

Another core strategy in support of NSF's mission is broadening 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. ([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.

Additional Solicitation Specific Review Criteria

The PAARE proposals will also be evaluated on the following:

- Are the goals and mission of the partnership clearly defined and achievable, and are they building an equal partnership between the MSI and research institution?
- Is there a clearly defined mentoring scheme for students? Does the PI understand the issues involved with recruiting, retaining and mentoring students from underrepresented groups?
- Is the role of the partnering institution (or institutions), project or individual investigator clearly stated - Does the proposal demonstrate a strong partnership?
- Is the planned research and education program sound and feasible?
- Is there a long-term vision for the project?
- Is the management plan sound? Does the organization chart contain appropriate participants?
- Is the plan for assessment of the impact, dissemination of the results and progress of the project reasonable?
- Has the partnering institution or institutions demonstrated a commitment to supporting the proposed activities and the resources that will be provided to carry out the project?

B. Review and Selection Process

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

Reviewers will be asked to formulate a recommendation to either support or decline each proposal. 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 is striving to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. The time interval begins on the deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director accepts the Program Officer's recommendation.

A summary rating and accompanying narrative will be completed and submitted by each reviewer. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers, 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.

In all cases, 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 and 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.

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

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

B. Award Conditions

An NSF award consists of: (1) the award letter, 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 letter; (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 letter. 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. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 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 *Award & Administration Guide* (AAG) Chapter II, available electronically on the NSF Website at http://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag.

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 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 http://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag.

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:

- Daniel Evans, 1045, telephone: (703) 292-8225, email: devans@nsf.gov

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 1-800-673-6188; e-mail: 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.

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, National Science Foundation Update is a free e-mail subscription service 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 Regional Grants Conferences. Subscribers are informed through e-mail when new publications are issued that match their identified interests. Users can subscribe to this service by clicking the "Get NSF Updates by Email" link on the [NSF web site](#).

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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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 (NSF Information Center): (703) 292-5111
- TDD (for the hearing-impaired): (703) 292-5090
- To Order Publications or Forms:
 - Send an e-mail to: nspubs@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
Division of Administrative Services
National Science Foundation
Arlington, VA 22230

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