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Broadening Participation in Computing (BPC)

PROGRAM SOLICITATION
NSF 09-534

REPLACES DOCUMENT(S):
NSF 07-548

National Science Foundation

Directorate for Computer & Information Science & Engineering
Division of Computer and Network Systems
Division of Computing and Communication Foundations
Division of Information & Intelligent Systems

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

May 13, 2009

Second Wednesday in May, Annually Thereafter

May 12, 2010

Second Wednesday in May, Annually Thereafter

IMPORTANT INFORMATION AND REVISION NOTES

This solicitation replaces NSF 07-548 and includes the following major revisions

1. A new category of awards, Leveraging, Scaling, or Adapting (LSA) Projects, is added to emphasize the widespread adoption of effective practices for maximum impact.
2. Alliances may compete for two possible extension awards, the first for two years and the following one for up to five years.
3. The description of Alliance and Demonstration Projects has been modified to further encourage collaboration and cooperation among BPC projects and, especially in the case of K-12 efforts, with other existing, successful STEM programs.

Please be advised that the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) includes revised guidelines to implement the mentoring provisions of the America COMPETES Act (ACA) (Pub. L. No. 110-69, Aug. 9, 2007.) As specifed in the ACA, each proposal that requests funding to support postdoctoral researchers must include a description of the mentoring activities that will be provided for such individuals. Proposals that do not comply with this requirement will be returned without review (see the PAPP Guide Part I: *Grant Proposal Guide* Chapter II for further information about the implementation of this new requirement).

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Broadening Participation in Computing (BPC)

Synopsis of Program:

The Broadening Participation in Computing (BPC) program aims to significantly increase the number of U.S. citizens and permanent residents receiving post secondary degrees in the computing disciplines, with an emphasis on students from communities with longstanding underrepresentation in computing. Those underrepresented groups are women, persons with disabilities, African Americans, Hispanics, American Indians, Alaska Natives, Native Hawaiians, and Pacific Islanders. The BPC program seeks to engage the computing community to develop and implement innovative methods, frameworks, and strategies to improve recruitment and retention of these students through undergraduate and graduate degrees. Projects that target stages of the academic pipeline from middle school through the early faculty ranks are welcome. New with this solicitation is the emphasis on national impact: All BPC projects must have the potential for widespread impact. That is, they should either develop an effective practice that could be widely deployed or they should deploy existing effective practices so as to reach larger audiences.

The BPC program will support three categories of awards: Alliances, Demonstration Projects, and Leveraging, Scaling, or Adapting Projects.

Alliance and Alliance Extension Projects are broad coalitions of academic institutions of higher learning, secondary (and possibly middle) schools, government, industry, professional societies, and other not-for-profit organizations that design and carry out comprehensive programs addressing underrepresentation in the computing disciplines. They have a large regional or national scope. Typically, Alliances operate across multiple stages of the academic pipeline and address multiple targeted groups. Together, Alliance participants (1) develop and implement interventions that support students and early career faculty, (2) create sustainable changes in culture and practices at the institutional, departmental, and organizational levels, (3) serve as models and contribute to repositories for effective practices to broaden participation, and (4) leverage the work of existing BP efforts and other Alliances. Competitive projects will have significant impact both in the quality of opportunities afforded to participants and in the number of participants potentially served. Successful Alliances are eligible to compete for additional funding: an Alliance Extension increases the duration of the Alliance award as well as its scope, introducing additional targeted student groups, partners, and/or projects.

Demonstration Projects (DPs) are more focused than Alliance projects. Typical DPs pilot innovative programs that, once fully developed, could be incorporated into the activities of an Alliance or otherwise scaled for widespread impact. Projects might, for example, be proposed by a single institution or might focus on a single underrepresented community, a single point in the academic pipeline, or a single impediment to full participation in computing.

Leveraging, Scaling or Adapting (LSA) Projects are intended to extend the impact of our most effective practices through leveraging, scaling and/or adaptation. Typical LSA projects will use existing organizational structures and demonstrated best practices. They can leverage the work of BPC-funded Alliances or DPs, as well as efforts by other organizations. They might, for example, copy and adapt a successful regional Alliance infrastructure for a new region, combine and leverage the work of two or more Alliances, adapt an effective intervention for a different audience, or take an effective intervention and implement it across an Alliance or other organization with a broad reach.

All BPC projects have significant assessment and evaluation efforts with both formative and summative components.

Cognizant Program Officer(s):

- Janice Cuny, Program Director, 1175 N, telephone: (703) 292-8489, fax: (703) 292-9010, email: jcuny@nsf.gov

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

- 47.070 --- Computer and Information Science and Engineering

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 10 to 16

Anticipated Funding Amount: $14,000,000 annually subject to the availabilty of funds and the number and quality of submitted proposals for each competition.

Eligibility Information

Organization Limit:

None Specified

PI Limit:

None Specified

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 Proposal Preparation Instructions:** This solicitation contains information that deviates from the standard NSF Proposal and Award Policies and Procedures Guide, Part I: Grant Proposal Guide (GPG) proposal preparation guidelines. Please see the full text of this solicitation for further information.

B. Budgetary Information

- **Cost Sharing Requirements:** Cost Sharing is not required under this solicitation.
- **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):

  May 13, 2009

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

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I. INTRODUCTION

Even before the recent, drastic decline in students majoring in computing, the Bureau of Labor Statistics data showed that the U.S. was significantly under producing Information Technology (IT) graduates; that imbalance has only gotten worse. For the next decade, projections show that the overwhelming portion of new job growth will be in the IT sector. IT innovation is a major driver of our economy, and it is critical to our national security. If the U.S. is to remain globally competitive, we must increase the number of domestic students receiving undergraduate and graduate degrees in the computing disciplines. This increase must occur across all segments of our population, but it is particularly important among those groups that historically have participated only at very low rates: minorities, women, and persons with disabilities. The under participation of these groups causes a loss of opportunity for individuals, a loss of talent to the workforce, and a loss of diverse perspectives and creativity that are needed to shape the future of technology.

II. PROGRAM DESCRIPTION

The Broadening Participation in Computing program is intended to significantly increase the number of domestic students receiving post secondary degrees in the computing disciplines, with an emphasis on students from those groups that participate in computing at rates well below their proportionate representation. For the purposes of this solicitation, the underrepresented groups are women, persons with disabilities, African Americans, Hispanics, American Indians, Alaska Natives, Native Hawaiians, and Pacific Islanders.

Specifically, BPC aims to develop and implement innovative models, frameworks, and strategies for recruiting and retaining students through post secondary programs in the computing disciplines, with an emphasis on transformational efforts that lead to new organizational structures and practices. New to this solicitation is an additional emphasis on expanding our most effective practices to reach wider audiences through leveraging, scaling, and adaptation. Activities should have significant impact both in the quality of opportunities afforded to participants and in the number of participants potentially served. Because many students lose interest in computing at an early age, activities that address engagement and capacity building in K-12 are encouraged. In addition, because a lack of role models can be a barrier to participation, projects that encourage students from underrepresented groups to pursue academic careers in computing and provide them with early career professional development are welcomed. Finally, while the emphasis is on the implementation of programs, BPC projects may include complementary, focused research that has the potential for enhancing project activities and meeting its goals. PIs are encouraged to include social scientists in any research, evaluation, and assessment activities.

Strategies employed in BPC projects may include, but are not limited to:

- Outreach programs to create positive engagement of students at all levels in the computing disciplines;
- Programs that smooth academic transitions – from high school to college, from 2- to 4-year postsecondary programs, from undergraduate to graduate education, and from graduate school to the professoriate – including articulation agreements, reciprocity, and curriculum development;
- Student participation in enriched research and internship programs that are part of a comprehensive set of student mentoring and support activities;
- Systemic mentoring and mentor training programs;
- Social networks and peer support programs;
- Financial support for students to attend conferences and maximize the benefits they get from their attendance;
- Innovative methods for career counseling and career placement;
- Programs and incentives for faculty and student exchanges in support of collaborative research and education activities;
- Professional development for faculty as they enter the professoriate so that they can become successful role models for students from underrepresented groups;
- Research and assessment activities aimed at informing the projects and activities of the Alliance; and
- Small seed grants to facilitate the adaptation and adoption of effective practices.

These activities are merely illustrative of the broad range of activities that are possible under the program. The development of other innovative activities is encouraged.

Institutions with documented success in awarding computing-related degrees to minority students are strongly encouraged to participate. Partnerships with institutions that graduate large numbers of undergraduate students who are underrepresented in the computing discipline (e.g., Historically Black Colleges and Universities, Minority- and Hispanic-Serving Institutions, Tribal Colleges and Universities, and institutions with strong programs serving persons with disabilities) are also encouraged, as are linkages with other related NSF-supported programs including (but not limited to) the Louis Stokes Alliances for Minority Participation (LSAMP), the Historically Black Colleges and Universities Undergraduate Program (HBCU-UP), the Tribal Colleges and Universities Program (TCUP), the Alliances for Graduate Education and the Professoriate (AGEP), the GK-12 program, REU Sites, and the program for Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers (ADVANCE). Where appropriate, and particularly at the K-12 level, BPC projects should partner with community and national organizations that provide formal or informal education activities.

To be competitive, all BPC proposals must include evaluation and assessment components that can effectively document both successes and failures, typically using 10-20% of the budget. These evaluations should be overseen by an external, independent evaluator. Awardees must set (and meet) measurable goals and collect evidence to determine progress toward those goals. Awardees must also participate in a BPC program-level evaluation, supplying data that is disaggregated by ethnicity, gender, and discipline. PIs are encouraged to include social scientists in their evaluation and assessment efforts. Alliance proposals must also include a detailed management plan, a convincing plan for sustainability, and a comprehensive dissemination plan.

In support of these activities, the BPC program provides funding in a variety of cost categories, including:

- Provision for faculty release time and summer salary;
- Program coordination and clerical support (partial);
- Special workshop/seminar support costs;
- Participant costs;
- Peer mentoring stipends;
- Faculty/student travel between institutions (for recruitment, joint research, etc.); and,
- Evaluation and assessment costs.

BPC is not intended to be a fellowship program. Allowable student support is limited to individual skill development (e.g. participation in special seminars and colloquia or bridge/transition programs), involvement in research (e.g. stipends or salaries for academic year or summer research programs), related personal career counseling and mentoring, and other activities designed to enhance student experiences and student/faculty/mentor interaction. If financial support is requested, proposers must clearly explain the need being addressed, as well as student recruitment, selection, and accountability criteria. BPC is not intended to be a curriculum development program either, although some curriculum development, as part of a larger project, is permitted. Further, the program is not intended to fund faculty research on computing. Research on issues of broadening participation is allowable only if it is focused on enhancing the project's activities in meeting its goals. In reviewing K-12 activities, there will be a strong emphasis on projects that leverage successful, existing community and national organizations that provide formal or informal educational programs. BPC program funds are not intended to replace funding for existing programs. In each case, funding requested must be clearly justified as necessary to the successful completion of the project. Budgets and proposed projects should be appropriate for the stage of development and type of the project. Projects that build on ongoing work must clearly delineate the existing effort from the proposed effort.

NSF intends to support a portfolio of projects under the BPC program that serve as effective models for addressing issues of underrepresentation. Under this solicitation, the program has three components: Alliances, Demonstration Projects, and Leveraging, Scaling, or Adapting Projects.The last category underscores the new program emphasis on widely deploying effective practices for maximum impact. Projects involving broadening participation efforts in any of the computing fields normally supported by CISE are of interest.

Alliances

The BPC program seeks to build broad Alliances – joining academic institutions of higher learning with secondary (and possibly

middle) schools, industry, government, professional societies, and other not-for-profit organizations – to implement comprehensive programs that address underrepresentation in the computing disciplines at many stages of the pipeline. An Alliance should address broadening participation with a coordinated and comprehensive set of implementation projects. In most cases, Alliances will involve multiple academic institutions of higher learning along with K-12, community organizations, and industry partners. Alliances will (1) develop and implement interventions that support students and early career faculty, (2) create sustainable changes in culture and practices at the institutional, departmental, and organizational levels, (3) serve as models and contribute to repositories for effective practices in broadening participation, and (4) leverage the work of existing BP efforts and other Alliances. Alliances that leverage existing broadening participation efforts both across and within underrepresented communities are strongly encouraged.

Alliance awards will be for three years initially. Alliances are strongly encouraged to have at least one participating partner that is a degree-granting, academic institution of higher learning located in the U.S., its territories or possessions, or a consortium of such institutions. One participant must be designated as the lead for the project. Institutions and organizations can be added over the course of the project.

Alliance Extensions. Successful, funded BPC Alliances can submit Alliance Extension proposals to request additional funding to expand the impact of their work. These Extensions compete along with other Alliance proposals for funding. Extensions must increase not just the duration of the Alliance project but also its scope, introducing additional targeted student groups, partners, or projects. Emphasis will be on scaling i.e., expanding efforts to include new partners or assisting others outside of the Alliance in implementing Alliance activities within their own organizations. Proposed activities should be consistent with those described for Alliances above. An Alliance may compete for two Extensions:

> *First Extension.* This funding can overlap with the final year of the Alliance project and can extend it for up to 2 years. To be eligible for this Extension, an Alliance must have completed their required, second-year Site Visit with a positive recommendation for third-year funding by the time of the award.
>
> *Second Extension.* To be eligible for this funding, an Alliance must have already had a First Extension. The Second Extension can extend the award for up to an additional 5 years. To compete for this Extension, Alliances must demonstrate significance in terms of organizational structure and impact, as well as sustainability.

An Alliance can receive at most one First Extension and one Second Extension award, although all Alliances are eligible for additional funding through collaborations with DPs or LSAs as discussed below.

Demonstration Projects (DPs)

The Demonstration Project (DP) component seeks to develop innovative projects and strategies that could be effectively adopted by BPC Alliances or other organizations with broad reach. Typically Demonstration Projects will be pilots which, if proven successful, could be scaled for larger impact. It is anticipated that these projects will have a smaller scope and a more narrow focus than Alliance projects. For example, they might be proposed by a single institution or target a specific point in the academic pipeline, or address a single impediment to full participation in computing. It is possible for a DP to be focused entirely on K-12. In reviewing proposed K-12 activities, there will be a strong emphasis on projects that leverage successful, existing community and national organizations that provide formal or informal educational programs. Where appropriate, DPs can be proposed in the context of an existing Alliance. In this case, the proposal should document the collaboration on the part of the Alliance. It is permissible to allocate funding to support the collaboration of the Alliance.

Demonstration Projects can run for up to three years. Unlike the Alliance awards, they may involve a single institution or organization. Like Alliances, projects must have clearly defined objectives and strategies with respect to underrepresented groups served, and they must include strong evaluation and assessment components, including both formative and summative components, that document their successes and failures.

Leveraging, Scaling, or Adapting (LSA) Projects

With this solicitation, the BPC program is especially encouraging innovative approaches that leverage, scale or adapt existing effective practices in broadening participation for greater impact. LSA projects will not focus on developing new interventions but will instead replicate and modify programs that have already been demonstrated to be effective in order that they might reach a wider audience. The effective programs chosen for scaling need not have been developed within the BPC program. Potential projects might copy and adapt an existing Alliance infrastructure for another region or another target population, leverage the work of several Alliances through a new avenue of collaboration, or implement a successful intervention across an Alliance or other organization with broad reach. LSA proposals should include careful documentation of the effectiveness of the chosen interventions and evidence of applicability to the new venue or group. In addition, if an existing Alliance or other organization is involved, proposers are encouraged to work closely with them and provide evidence of a strong potential for collaboration. Alliances may receive additional funding to support these collaborations. It is expected that LSA awards will vary considerably in size; budgets should reasonably reflect the size and scope of the project.

III. AWARD INFORMATION

- Alliance and Alliance Extension Awards can range from $200,000 to $750,000 per year. We expect to make $8 million in awards annually, pending availability of funding and the quality of the proposals.
- Demonstration Projects may be funded at levels up to $200,000 per year for three years; the average award will be $500,000 total. We expect to make $2 million in awards annually, pending availability of funding and the quality of the proposals.
- Leveraging, Scaling, or Adapting Awards range from $100,000 to $750,000 per year for up to 3 years. It is expected that most projects will be funded at the lower end of this range. We expect to make $4 million in awards annually, pending availability of funding and the quality of the proposals.

IV. ELIGIBILITY INFORMATION

The categories of proposers eligible to submit proposals to the National Science Foundation are identified in the Grant Proposal Guide, Chapter I, Section E.

Organization Limit:

None Specified

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI:

None Specified

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Full Proposal Instructions: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the guidelines specified 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. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-PUBS (7827) or by e-mail from nsfpubs@nsf.gov.

NOTE: If your BPC proposal requests funding to support postdoctoral researchers, you must include a description of the mentoring activities that will be provided for such individuals. Examples of mentoring activities include, but are not limited to: career counseling; training in preparation of grant proposals, publications and presentations; guidance on ways to improve teaching and mentoring skills; guidance on how to effectively collaborate with researchers from diverse backgrounds and disciplinary areas; and training in responsible professional practices. The proposed mentoring activities will be evaluated as part of the merit review process under the Broader Impacts merit review criterion. Proposals that request postdoctoral support but do not include a Postdoctoral Mentoring Plan as described herein will be **returned without review** (see Chapter II of the GPG for further information about this requirement).

The following instructions supplement the GPG or NSF Grants.gov Application Guide guidelines.

Proposal Title. To assist NSF staff in sorting proposals for review, proposal titles should begin with an acronym that identifies the solicitation being addressed.

- "BPC-A:" for Alliances,
- "BPC-AE:" for Alliance Extensions,
- "BPC-DP:" for Demonstration Projects, and
- "BPC-LSA:" for Leveraging, Scaling, or Adaptating Projects.

Renewal. Alliance Extension proposals must have the "Renewal" box on the cover page checked. These are "traditional" renewals, and the proposed work must be described fully, covering all of the information needed for a new proposal.

Project Summary. The proposal summary must clearly address in separate statements (within the one-page summary): (1) the **Intellectual Merit** of the proposed activity; and (2) the **Broader Impacts** resulting from the proposed activity. Proposals that do not separately address both of these NSF Merit Review Criteria within the one-page Project Summary will be **returned without review**.

Project Description Page Limit. Standard page limits apply for Demonstration and LSA Project proposals. The body of the Project Description of an Alliance or Alliance Extension proposal must fit within the standard 15 page limit but an additional 1 to 5 pages can be included for Results from Prior NSF support.

Project Description Content. Project descriptions should clearly describe their objectives and strategies with respect to broadening particiation. They should demonstrate an understanding of the issues involved in underrepresentation and a commitment to addressing them. Project descriptions should include the following sections.

- **Project Goals and Outcomes.** Clearly describe the goals and anticipated outcomes of the proposed project. Demonstrate the participating organizations' knowledge of factors affecting the successful recruitment and retention of students from the underrepresented communities at the relevant stages of the academic pipeline. For Alliance Extensions, also describe the accomplishments of the existing Alliance and clearly distinguish the new work and its expected impact from the older, ongoing work. For Alliances requesting their second Extension, please address significance and sustainability as follows:
    - Extent of “alliance” (to what degree have partners formed a true alliance that is more than just a sum of its parts, that is, what does their close collaboration enable);
    - Scope (in terms of geographic region served, target population, range across pipeline, etc.);
    - Degree of impact (in terms of numbers affected as well intensity of the intervention);
    - Evidence of effectiveness (rigorous evaluation results);
    - Extent of external collaborations;
    - Contributions to larger BP community including dissemination of results and materials, contributions to the knowledge base, etc.;
    - Extent to which activities have been institutionalized by Alliance partners;
    - Financial support outside of NSF; and
    - Stability of infrastructure and/or organizational structure
- **Implementation Plan.** Describe in detail the activities to be undertaken to realize the project goals and anticipated outcomes:
    - Highlight the potential for successfully aligning with similar programs and efforts (NSF-supported or otherwise) within and across the targeted communities to ensure a comprehensive, integrated effort;
    - Describe the creative, strategic actions that promise significant improvements in underrepresented group participation and retention in computing disciplines;
    - Describe the research base on which the project builds and, if appropriate, describe the research that will further

contribute to the knowledge base associated with increasing the participation of underrepresented groups in computing; and
    - Describe plans to disseminate the results of the project, both positive and negative.
- **Partnership Plan.** Proposals that are submitted by partnerships must provide evidence of the following:
    - The participating organizations will work together to realize the project goals and that all key stakeholders (including faculty and administrators) participated in project planning and design;
    - The institutional and organizational commitment to the project goals;
    - The participating organizations have had experience in dealing with the non-academic components of undergraduate and graduate education that are necessary to insure the success of underrepresented minorities, persons with disabilities, and women in obtaining computing degrees; and
    - The commitment of the participating organizations to sustain the proposed institutional and organizational change.
- **Management Plan.** Alliances and Alliance Extension proposals are required to have a management plan that details the organizational structures, mechanisms for communication, and responsibilities of all PIs, CoPIs, and Senior Personnel.
- **Evaluation Plan.** Describe the evaluation plan that will guide the project progress and measure its impact, including a description of the instruments/metrics by which the project leaders will measure, document, and report on the project's progress. Please note that many of the project evaluations will involve human subjects and, therefore, will need Institutional Review Board (IRB) approval from the submitter's institution before funding can be awarded.

Supplementary Documents. All partnerships should be documented in the proposal and letters of commitment should be included as Supplementary Documents for any partners not explicitly represented by the PIs, CoPIs, and Senior Personnel.

Proposers are reminded to identify the program solicitation number (NSF 09-534) 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.

B. Budgetary Information

Cost Sharing: Cost sharing is not required under this solicitation.

C. Due Dates

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

    May 13, 2009

    Second Wednesday in May, Annually Thereafter

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D. FastLane Requirements

Proposers are required to prepare and submit all proposals for this program solicitation through use of the NSF FastLane system. Detailed instructions regarding the technical aspects of proposal preparation and submission via FastLane are available at: http://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.

VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

Proposals received by NSF are assigned to the appropriate NSF program where they will be reviewed if they meet NSF proposal preparation requirements. 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 who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with the 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.

A. NSF Merit Review Criteria

All NSF proposals are evaluated through use of the two National Science Board (NSB)-approved merit review criteria: intellectual merit and the broader impacts of the proposed effort. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

The two NSB-approved merit review criteria are listed below. The criteria include considerations that help define them. These

considerations are suggestions and not all will apply to any given proposal. While proposers must address both merit review criteria, reviewers will be asked to address only those considerations that are relevant to the proposal being considered and for which the reviewer is qualified to make judgements.

What is the intellectual merit of the proposed activity?
How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of the prior work.) To what extent does the proposed activity suggest and explore creative, original, or potentially transformative concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

What are the broader impacts of the proposed activity?
How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

Examples illustrating activities likely to demonstrate broader impacts are available electronically on the NSF website at: http://www.nsf.gov/pubs/gpg/broaderimpacts.pdf.

Mentoring activities provided to postdoctoral researchers supported on the project, as described in a one-page supplementary document, will be evaluated under the Broader Impacts criterion.

NSF staff also will give careful consideration to the following in making funding decisions:

Integration of Research and Education
One of the principal strategies in support of NSF's goals 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 diversity of learning perspectives.

Integrating Diversity into NSF Programs, Projects, and Activities
Broadening opportunities and enabling the participation of all citizens -- women and men, underrepresented minorities, and persons with disabilities -- 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.

Additional Review Criteria:

The following additional review criteria apply to all BPC proposals.

- The degree to which proposers have demonstrated awareness of the issues and remedies of underrepresentation.
- The degree to which the proposal describes a comprehensive evaluation plan.
- The degree to which the proposal includes an effective plan for dissemination.

The following criteria apply to Alliance, Alliance Extension and LSA proposals only.

- The degree to which the proposal demonstrates institutional and organizational commitment that the project will be sustainable beyond the NSF funding and part of a comprehensive effort to address underrepresentation.

The following criterion applies only to Alliance Extension - second extension proposals.

- The degree to which significance and sustainability have been addressed as described in the Program Description section above.

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 before the end of the current budget period. (Some programs or awards require more frequent project reports). Within 90 days after 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 that PI. 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 FastLane, for preparation and submission of annual and final project reports. Such reports provide information on activities and findings, project participants (individual and organizational) publications; and, other specific products and contributions. PIs will not be required to re-enter information previously provided, either with a proposal or in earlier updates using the electronic system. Submission of the report via FastLane constitutes certification by the PI that the contents of the report are accurate and complete. The project outcomes report 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.

Additional Reporting Requirements. BPC Alliance, Alliance Extensions, and Demonstration Project awardees will be expected to participate in a BPC program-level evaluation by which NSF can assess quantitative gains in relevant measures. Shortly after the awards have been made, project evaluators will be asked to assist in developing a program evaluation that will mutually benefit the agency and project participants. The participants will be expected to collect and analyze data (disaggregated by ethnicity, gender, and discipline) for this evaluation. Awardees are also required to participate in annual PI meetings and maintain a project website.

VIII. AGENCY CONTACTS

General inquiries regarding this program should be made to:

- Janice Cuny, Program Director, 1175 N, telephone: (703) 292-8489, fax: (703) 292-9010, email: jcuny@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.

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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 40,000 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 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: 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
Division of Administrative Services
National Science Foundation
Arlington, VA 22230

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