Broadening Participation at the National Science Foundation: A Framework for Action

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EXECUTIVE SUMMARY

The National Science Foundation (NSF) supports the most meritorious ideas submitted as proposals from researchers and educators in all fields of science, technology, engineering, and mathematics (STEM). Creating opportunities and developing innovative strategies to broaden participation among diverse individuals, institutions, and geographic areas are critical to the NSF mission of identifying and funding work at the leading edge of discovery. The creative engagement of diverse ideas and perspectives is essential to enabling the transformative research that invigorates our nation's scientific and engineering enterprise. Broadening participation infuses science and engineering excellence into varied individual, institutional, and geographic networks and provides for the discovery and nurturing of talent wherever it may be found.

NSF defines broadening participation in terms of individuals from underrepresented groups as well as institutions and geographic areas that do not participate in NSF research programs at rates comparable to others. Broadening participation is part of the overall merit review process used at NSF. Some NSF programs, however, have a particular focus or emphasis on broadening participation, and these comprise NSF's Broadening Participation Portfolio.

To integrate broadening participation with NSF's core processes, such as merit review and award oversight, NSF is pursuing a set of seven action items recommended by a working group in consultation with NSF staff, senior management, and advisory committees. Together these action items form a framework for implementation. They include actions to broaden the pool of reviewers, train NSF staff and reviewers, ensure accountability for NSF staff and principal investigators, communicate guidance and promising practices, and maintain a portfolio of relevant programs.

Recommended Action Items to Broaden Participation

1. Maintain and update regularly the NSF portfolio of broadening participation programs to facilitate NSF-wide coordination of efforts to more actively engage all people, from all types of institutions, and all regions of the nation in the science and engineering enterprise.

2. Increase the diversity of scientists and other STEM experts who review NSF proposals by initiating the development of a searchable reviewer system with accurate demographic data, encouraging reviewers to provide demographic data, cultivating additional reviewer sources, and encouraging NSF staff to use a more diverse reviewer pool.

3. Provide training for staff on NSF priorities and mechanisms for broadening participation and workforce development, including topics such as outreach

approaches, reviewer selection, and mitigation of implicit bias in the review process.

4. Communicate clearly broadening participation and workforce development guidance and promising practices within NSF and throughout the STEM community. Establish a publicly accessible web page to facilitate broad dissemination and consultation.

5. Enhance the accountability and tracking of NSF-supported broadening participation efforts through several means, such as encouraging Principal Investigators (PIs) to report outcomes of broadening participation activities as part of the reporting process for grants and initiating the development of NSF-wide reference codes for all broadening participation funding activities.

6. Promote effectiveness and relevance of the NSF broadening participation portfolio via periodic evaluations, including external reviews ranging from the program level to larger cross-sections of the portfolio.

7. Develop an implementation schedule based on the above recommended action items. Include in the schedule a timetable with allocated resources and assignments to specific groups, along with periodic evaluations of each action item's completion and impact. Disseminate a draft for internal comment and subsequently for external comment.

INTRODUCTION

The National Science Foundation (NSF) supports the most meritorious ideas submitted as proposals from researchers and educators in all fields of science, technology, engineering, and mathematics (STEM).[1] Creating opportunities and developing innovative strategies to broaden participation among diverse individuals, institutions, and geographic areas are critical to the NSF mission of identifying and funding work at the leading edge of discovery. The creative engagement of diverse ideas and perspectives is essential to enabling the transformative research that invigorates our nation's scientific and engineering enterprise. Broadening participation infuses science and engineering excellence into varied individual, institutional, and geographic networks and provides for the discovery and nurturing of talent wherever it may be found.

As stated in its FY 2006-2011 Strategic Plan, *Investing in America's Future*, one of NSF's core values is to be "Broadly Inclusive: seeking and accommodating contributions from all sources while reaching out especially to groups that have been underrepresented; serving scientists, engineers, educators, students and the public across the nation; and exploring every opportunity for partnerships, both nationally and internationally." Broadening participation is one of NSF's Government Performance and Results Act (GPRA) performance areas: "Expand efforts to increase participation from underrepresented groups and diverse institutions throughout the United States in all NSF activities and programs." This emphasis is consistent with the American Competitiveness Initiative (ACI) and the America COMPETES Act, Federal responses to the widespread concern that the U.S. is in danger of losing its position of world leadership in science and technology. In a time of rapidly changing demographics, broadening participation is an important factor in NSF's merit review process and program and award portfolios.

The purpose of this Framework is to build on and strengthen the Foundation's ongoing efforts to increase participation in NSF programs from underrepresented groups and to broaden the pool of reviewers for NSF proposals. The framework presents action items for NSF to broaden the pool of reviewers, train staff and reviewers, insure accountability for staff and awardees, communicate guidance and promising practices, and maintain a portfolio of relevant programs.

The Framework begins by asking, what is broadening participation? It then goes on to describe NSF's broadening participation portfolio, suggest ways to diversify the reviewer pool, and proceed with staff and reviewer training, disseminating promising practices, and maintaining accountability. Following the summary and conclusion, appendices present supplementary and explanatory information, including a list of acronyms, a roster of working group members, a bibliography, and a series of tables categorizing NSF broadening participation programs.

[1] See the National Science Foundation Act of 1950, 42 U.S.C. §1861, and the Science and Engineering Equal Opportunities Act of 1980, 42 U.S.C. §1885, et seq.

WHAT DOES IT MEAN TO BROADEN PARTICIPATION?

Supporting transformative ideas from the most capable researchers and educators in STEM requires a thorough review process. NSF refers to this process as "merit review." The two NSF review criteria are listed below (underlining added).[2]

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 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? <u>How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)?</u> 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?

NSF staff 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

[2] "National Science Foundation Merit Review," NSF 99-172, 20 September 1999, available at http://www.nsf.gov/pubs/1999/nsf99172/nsf99172.htm.

> Broadening opportunities and enabling the participation of all citizens, women and men, underrepresented minorities, and persons with disabilities, are 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.

The two merit review criteria include considerations, including broadening participation (underlining added), that help define them.

Other keys to understanding what NSF means by broadening participation can be found in statutes, such as the National Science Foundation Act, the Science and Engineering Equal Opportunities Act, the Higher Education Act, and provisions pertaining to nondiscrimination.[3] Regulations and guidelines also govern NSF's broadening participation activities, such as the Federal standards on maintaining and presenting data on race and ethnicity.[4] It is clear from relevant policy and legal sources that individuals, institutions, and geographic regions comprise the focus for NSF's broadening participation efforts.

Data on individuals, institutions, and geographic regions are available from a variety of sources listed in Footnote 5. NSF program staff are encouraged to be aware of the most pressing under-representation concerns within their program areas and to use current data sources as well as relevant results from NSF-funded research in social and behavioral sciences to inform themselves and their research and education communities.[5]

Individuals

NSF provides research and education awards to individuals and institutions. NSF programs are available to increase the participation of individuals from underrepresented groups in all levels of the STEM educational system and workforce. Researchers and educators seeking NSF funding may propose nondiscriminatory, nonexclusive strategies to broaden the participation of individuals who belong to underrepresented groups, e.g., Alaska Natives, Native Americans, Blacks or African Americans, Hispanics, Native Hawaiians and other Pacific Islanders, and Persons with Disabilities. It should be noted that, among the many fields of STEM, identification of a particular group as underrepresented

[3] See these provisions at http://www.nsf.gov/od/oeo/eeolaws.jsp.
[4] See OMB guidelines at http://www.whitehouse.gov/omb/inforeg/statpolicy.html#dr.
[5] They include, but are not limited to: (1) the NSF Division of Science Resources Statistics reports http://www.nsf.gov/statistics/; (2) the U.S. Department of Education's Integrated Postsecondary Education Data System (IPEDS) http://nces.ed.gov/ipeds/; (3) the U.S. Department of Commerce's Bureau of the Census http://www.census.gov/main/www/cen2000.html and Bureau of Economic Analysis http://www.bea.gov/; (4) NSF's Budget Internet Information System http://dellweb.bfa.nsf.gov/starth.asp; (5) the U.S. Department of Education's Office of Civil Rights Lists of Minority Post-Secondary Institutions: http://www.ed.gov/about/offices/list/ocr/edlite-minorityinst.html and (6) science and engineering professional society reports and statistics.

may vary by discipline (e.g., women are underrepresented in some fields). PIs and NSF staff are encouraged to familiarize themselves with the available data (see Footnote 5) when developing and justifying strategies for broadening participation of individuals.

Institutions

Most NSF awards are made to institutions of higher education (IHEs). Some categories of IHEs do not participate in NSF research grant programs at rates comparable to others. Many of these are located in jurisdictions that fall under the Experimental Program to Stimulate Competitive Research program (EPSCoR), are primarily undergraduate institutions, offer an associate's degree, or enroll large numbers of students traditionally underrepresented in STEM. These IHEs have the potential to contribute to the STEM research enterprise, in addition to having the capacity to contribute significantly to the production of a diverse and well-qualified STEM workforce. An important category of IHEs is minority-serving institutions (MSIs). The U.S. Department of Education, National Center for Education Statistics, classifies MSIs on the basis of legislation (e.g., Historically Black Colleges and Universities as identified in Title III of the Higher Education Act of 1965) or the percentage of minority student enrollment.[6] Table 1 gives examples of the different types of IHEs underrepresented in NSF research programs.

Geographic Areas

There are geographic areas throughout the country that do not have appreciable participation of individuals, IHEs, and other organizations in NSF research and education programs. These include EPSCoR jurisdictions and other areas such as the low socio-economic zones identified by the Bureau of Economic Analysis. Helping to build capacity in these areas is an important step in broadening participation.

Organizations that Broaden Participation

NSF invites proposals from and issues awards to all types of organizations. While the majority of awards are issued to IHEs, other key partners in the broadening participation effort include K-12 school systems, businesses, non-profits, museums, professional societies, and other organizations whose primary mission is to address under-representation in STEM.

[6] The Higher Education Act defines the term "minority" as an American Indian, Alaskan Native, Black (not of Hispanic origin), Hispanic (including persons of Mexican, Puerto Rican, Cuban, and Central or South American origin), Pacific Islander, or other ethnic group underrepresented in science and engineering. http://www.ed.gov/about/offices/list/ocr/edlite-minorityinst-list.html. See also "Characteristics of Minority-Serving Institutions and Minority Undergraduates Enrolled in These Institutions," NCES-2008-156, November 2007, available at: http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2008156.

TABLE 1. Examples of IHEs Underrepresented in NSF Research Programs

TYPE	*DESCRIPTION*	*SOURCE*
Alaska Native Serving Institutions (ANSI)	IHEs that award associate or bachelor level degrees that have a 20 percent or greater enrollment of Alaska Native undergraduate students	20 U.S.C. 1059d(b)
Hispanic Serving Institutions (HSI)	IHEs that award associate or bachelor level degrees that have a 25 percent or greater full-time equivalent enrollment of Hispanic undergraduate students	20 U.S.C. 1101a
Historically Black Colleges and Universities (HBCU)	Any accredited historically black college or university that was established prior to 1964, whose principal mission was, and is, the education of Black Americans	20 U.S.C. 1061(2)
Institutions Serving People with Disabilities	IHEs dedicated to serving people with disabilities such as Gallaudet University, Landmark College, and National Technical Institute for the Deaf	20 U.S.C. 4301; CEOSE Mini-Symposium on Institutions Serving Persons with Disabilities in STEM, October 2007
Majority Minority Serving Institutions (MMSI)	IHEs that award associate or bachelor level degrees whose enrollment of the following minorities (1) American Indian, (2) Alaska Native, (3) Black, non Hispanic, (4) Hispanic, and (5) Pacific Islander or other ethnic group that is underrepresented in science and engineering exceeds 50 percent of total undergraduate enrollment	20 U.S.C. 1067-1067; for tracking purposes, NSF refers to these as “majority minority institutions” to distinguish them from ANSI, HSI, HBCU, NHSI, and TCU categories – all are part of the larger category of Minority Serving Institutions, or MSIs.
Native Hawaiian Serving Institutions (NHSI)	IHEs that award associate or bachelor level degrees that have a 10 percent or greater enrollment of Native Hawaiian undergraduate students	20 U.S.C. 1059d(b)
Tribal Colleges and Universities (TCU)	IHEs that are formally controlled, or have been formally sanctioned or chartered by the governing body of a federally recognized Native American tribe or tribes.	20 U.S.C. 1059c
Two-year Colleges	IHEs whose highest degree awarded is an associate degree	CEOSE Mini-Symposium, June 1, 2006.
Women's Colleges	IHEs whose primary mission is the education and advancement of women (degree-granting institutions participating in Title IV Federal financial aid programs)	U.S. Department of Education, National Center for Education Statistics, 2005 and 2005–06 Integrated Postsecondary Education Data System (IPEDS), Spring 2006 and Fall 2006.

CURRENT STATUS OF BROADENING PARTICIPATION

Action Item 1: *Maintain and update regularly the NSF portfolio of broadening participation programs to facilitate NSF-wide coordination of efforts to more actively engage all people, from all types of institutions, and all regions of the nation in the science and engineering enterprise.*

NSF and the recipients of NSF awards have taken a variety of approaches to broaden participation. Examples of activities include:

- Establish research and education collaborations with students and/or faculty who are members of underrepresented groups.
- Include students from underrepresented groups as participants in the proposed research and education activities.
- Establish research and education collaborations with students and faculty from non-Ph.D.-granting institutions and those serving underrepresented groups.
- Make campus visits and presentations at institutions that serve underrepresented groups.
- Establish research and education collaborations with faculty and students at community colleges, colleges for women, undergraduate institutions, and EPSCoR institutions.
- Mentor early-career scientists and engineers from underrepresented groups who are submitting NSF proposals.
- Participate in developing new approaches (e.g., use of information technology and connectivity) to engage underserved individuals, groups, and communities in science and engineering.
- Participate in conferences, workshops, and field activities where diversity is a priority (http://www.nsf.gov/pubs/gpg/broaderimpacts.pdf).

While broadening participation is included as part of the overall NSF review process, some program announcements and solicitations go beyond the standard criteria. Program investments range from capacity building, research centers, partnerships, and alliances to the use of co-funding or supplements to existing awards in the core research programs.

Broadening Participation Portfolio

An examination of the NSF broadening participation portfolio shows that those programs (1) with a solicitation, program description, or Dear Colleague Letter; (2) active in 2007-2008; and (3) designed to engage all people, from all types of institutions and geographic regions, can be categorized as follows: broadening participation focused programs; programs with emphasis on broadening participation; programs that have broadening participation potential; and other budgeted broadening participation efforts. This schema is used to organize the portfolio in Appendix V.

Programs in the focused[7] category have an explicit broadening participation program goal, and the majority of each award's budget goes to broadening participation activities (which could involve research on the topic). An additional review criterion specifically addressing broadening participation may or may not be included.

Programs with an emphasis on broadening participation have an additional review criterion on broadening participation. All awards within the portfolio have broadening participation components such as a project diversity plan as well as other components not necessarily related to broadening participation.

Programs in the potential category have an eligibility criterion or other design feature that indicates a high likelihood that the awards made under the program will contribute to broadening participation. The percent of each award budget allocated for broadening participation activities will vary.

Other budgeted broadening participation efforts are managed and funded in various ways by NSF directorates and offices. Some efforts augment core programs to address identified broadening participation challenges within disciplines. Others initiate experiments in education, interdisciplinary research areas, or partnerships and projects. While these are important ongoing activities, the Working Group chose to focus on programs with solicitations or Dear Colleague letters expressing a focused goal of, emphasis on, or potential for broadening participation beyond the NSB-approved merit review criteria used for all NSF programs.

The broadening participation portfolio framework and contents will need continual analysis and updating, using Committee of Visitors reviews, program evaluations, and other information to coordinate across the Foundation and clearly communicate opportunities to applicants.

Program Design Approaches

NSF staff are encouraged to think creatively and in consultation with the research and education community when developing new or building on existing approaches to broaden the participation of underrepresented individuals, institutions, and geographic areas. Any new programs should take into account and leverage outcomes of existing NSF investments including, if applicable, research in the science of broadening participation. In addition, differences among populations, disciplines, and levels of education should be taken into account. The following are examples of considerations in program design and management.

[7] Single solicitations with multiple components are listed separately in the portfolio when there are individual program elements for each component and the components are clearly different programs.

- Identify other federal agencies with complementary broadening participation and scientific goals and programs, and establish partnerships with those agencies to increase outreach activities and develop broadening participation goals and strategies.
- Work with non-profits, student associations and professional societies whose memberships are comprised of institutions or individuals underrepresented in STEM or whose primary focus is on broadening participation in science and engineering as potential partners to achieve broadening participation goals.
- Encourage prospective awardees to propose nondiscriminatory, nonexclusive strategies to broaden the participation of individuals who are underrepresented in STEM fields.
- Encourage or require meaningful partnerships among diverse academic institutions and mentoring arrangements among individual faculty from those institutions.
- Include provisions to track the progress of funded broadening participation activities.

Outreach Approaches

Many NSF employees in the Research and Education Directorates as well as offices such as the Office of Legislative and Public Affairs, the Office of Budget, Finance and Award Management (BFA), and the Division of Human Resource Management (HRM) undertake outreach to encourage individuals and institutions to participate in NSF programs. In addition, EPSCoR supports outreach visits by program staff to EPSCoR states. Individual program staff and managers organize outreach events on their own, and programs make awards to organizations or institutions to undertake outreach and mentoring on behalf of NSF. Improved identification and coordination of these efforts is needed to make the most effective and efficient use of agency resources.

The Science of Broadening Participation

The Social, Behavioral, and Economic Sciences Directorate supports research that addresses access, inclusion, and retention in STEM fields and the role that individuals and organizations play in providing incentives and rewards. Results from NSF-supported research in the science of broadening participation will shed light on promising practices and strategies that can be used as examples in future program announcements and solicitations.

DIVERSIFYING THE REVIEWER POOL

Action Item 2: *Increase the diversity of scientists and other STEM experts who review NSF proposals by initiating the development of a searchable reviewer system with accurate demographic data, encouraging reviewers to provide demographic data, cultivating additional reviewer sources, and encouraging NSF staff to use a more diverse reviewer pool.*

Using a diverse reviewer pool helps NSF program officers create a rich intellectual environment in which funding recommendations are made. Participation in the review process also provides valuable experiences for researchers and educators. It is essential that NSF develop or provide access to modern and flexible digital tools that make it easy to quickly identify different reviewer communities and expand efforts to recruit a larger and more diverse population to serve as reviewers.

The Reviewer and PI databases in the Proposal, PI and Reviewer System (PARS) are the currently available tools used by NSF program to assign reviewers to proposals. While PARS contains information on institutional affiliations and geographic locations of reviewers, it lacks demographic data for reviewers. NSF asks individuals to report demographic information when submitting proposals and reviews. Proposal authors tend to report their demographic data, but reviewers generally do not. According to the FY 2007 Merit Review Report (NSB 08-47, available at http://www.nsf.gov/nsb), data were supplied by only 28 percent of reviewers. In contrast, 91 percent of proposal authors provided this information. A further weakness of PARS is that it is not easily searchable.

The Division of Information Systems (DIS) estimates that at least 50 percent of individuals who have submitted NSF proposals in the last three years also have also served as proposal reviewers during the same time period. DIS has developed a conceptual design for new Reviewer Management Services. Step One is to start with the data NSF already has from proposal authors in order to enhance the data on reviewers. DIS plans to solicit input from program staff and potential reviewers about the conceptual design details and desired functionality.

Legal Context

The Privacy Act of 1974 was enacted to regulate the collection, maintenance, use, and dissemination of personal information by federal executive branch agencies. With certain limited exceptions, and to the extent feasible, the Privacy Act also requires agencies to collect information directly from the individual to whom the information pertains. Moreover, the Office of Management and Budget (OMB) has Standards for Classification of Federal Data for Race and Ethnicity. These standards emphasize that self-reporting or self-identification is the preferred method for collecting personal data because, among other reasons, the

method ensures that the data collected will be as accurate as possible. The new Reviewer Management System will use the approach of self-reporting, giving reviewers and proposal authors control over their own online information and making it easy for them to update the information. The approach is consistent with the Privacy Act and OMB's standards.

Encourage reviewers to provide demographic data

Since the Reviewer database currently holds demographic information for approximately one-quarter of the entries, strategies are needed to increase the percentage of new reviewers who provide this information. For example, NSF might develop a brief statement for reviewers about why this information is important. NSF also has experimented with sending Thank You letters; such letters can be quite important to new reviewers.

Cultivate additional reviewer sources

NSF's potential reviewer community is vast: researchers, educators, and other STEM experts affiliated with academic institutions, professional societies, non-profits and industry. In some disciplines, scientists and engineers from underrepresented groups are more likely to be in non-academic sectors (e.g., industry and non-profits). New strategies for identifying additional reviewers from underrepresented groups should be developed and piloted. Strategies might include outreach, the use of an online form for prospective reviewers, and partnerships with professional societies to access membership databases.

Encourage use of a more diverse reviewer pool

To guard against overuse of familiar and reliable reviewers, program officers and division directors should receive training on how to foster a diverse reviewer community, and be provided with adequate tools and incentives. It is particularly important to be sensitive to the overuse of reviewers from underrepresented groups in trying to achieve the goal of diverse panels.

TRAINING

Action Item 3: *Provide training for staff on NSF priorities and mechanisms for broadening participation and workforce development, including topics such as outreach approaches, reviewer selection, and mitigation of implicit bias in the review process.*

NSF is a knowledge-intensive organization in which learning is highly valued (http://www.nsf.gov/publications/pub_summ.jsp?ods_key=hcsp2008). In that context, training on broadening participation is welcome throughout NSF. Existing mechanisms will be used in the short term while phasing in specialized training for specific groups as needed. New efforts can be tested as pilot programs, in consultation with NSF's Equal Opportunity Office and its liaison group.

Senior Management Training

Training and professional development opportunities will be identified for NSF administrators, including Senior Executive Staff and Directorate Level Assistant Directors and Deputy Assistant Directors. These opportunities will focus on ways to diversify staff at NSF.

This is consistent with the NSF Strategic Plan and Human Capital Plan. It also addresses the proven practices outlined in the Government Accountability Office's January 2005 Diversity Management report, "Expert-Identified Leading Practices and Agency Examples" (GAO-05-90), and such practices warrant specification in the management performance plans. Diversity training is part of the Succession Planning identified in NSF's 2005 Management Directive 715 report. Diversifying staff will become an important part of the succession planning at NSF.

Division and Program Staff Training

Currently, a discussion of the merit review process, including the relevance of broadening participation, is part of the Program Management Seminar for new program staff. In addition, all NSF staff must undergo yearly training on topics such as conflict of interest and information technology security. NSF is creating seminar for all program staff on the Merit Review process to ensure understanding of the review criteria and to promote quality and transparency in the review process. Such a seminar should include broadening participation. In addition, program staff should be mentored in broadening participation and encouraged to share promising practices.

Orientation for Reviewers

Panelists are currently instructed before each panel meeting about conflict of interest, confidentiality, and the merit review criteria. The current panel orientation could include information on implicit bias and other issues relevant to broadening participation. Other possibilities include the use of webinars before panel meetings. Such webinars might be useful for new panelists, especially, with issues of diversity and implicit bias embedded in the larger discussion.

Currently, *ad hoc* reviewers are referred to a website describing the merit review criteria. Information on broadening participation should be added. NSF's examples of "Broader Impacts" activities should be made easily accessible (http://www.nsf.gov/pubs/gpg/broaderimpacts.pdf). The letter NSF sends to *ad hoc* reviewers should explain why reporting reviewer demographic information on gender, race/ethnicity and disability is important to NSF and the science and engineering community.

Learning Opportunities for PIs and the Community

Currently NSF conducts training and information sessions for potential PIs, sponsored research offices, and other interested audiences on FastLane, program specifics, and the merit review process through NSF Regional Grants Conferences and NSF Days. These and other mechanisms, such as workshops and Dear Colleague letters, can be used for disseminating broadening participation information. NSF will work in cooperation with institutions and professional societies that already pursue the goals of broadening participation. Any announcements regarding mentoring plans or other requirements in NSF programs should take into account and build on these existing efforts.

DISSEMINATION

Action Item 4: *Communicate clearly broadening participation and workforce development guidance and promising practices within NSF and throughout the STEM community. Establish a publicly accessible web page to facilitate broad dissemination and consultation.*

Effectively communicating broadening participation guidance and practice, within NSF and throughout the community, is of great importance. There are many ways to do this, as mentioned throughout this Framework report. Another recommendation is that NSF establish a Broadening Participation web page and link it to the Merit Review web page (http://www.nsf.gov/bfa/dias/policy/meritreview).

Web Page

The web page should provide NSF guidance on broadening participation as well as promising practices mined from the NSF award portfolio. A possible example is the NSF Division of Materials Research web page on broadening participation, available at http://www.nsf.gov/mps/dmr/diversity.jsp.

The general NSF web page could link to an online form where STEM experts, including members of underrepresented groups, may volunteer to serve as NSF reviewers. To facilitate the recruitment of diverse reviewers, the page should include resource links, such as scientific professional societies specifically for underrepresented groups, and broad professional societies that have sections focused on underrepresented groups, as well as historical and biographical information on scientists from these groups, (e.g., *The Faces of Science: African Americans in the Sciences*: https://webfiles.uci.edu/mcbrown/display/faces.html).

The web page should also link to available statistics on the participation of underrepresented groups in the STEM enterprise. The web page could also include video clips of role models, in the form of interviews, biographies, or highlights about work being done by scientists from underrepresented groups.

ACCOUNTABILITY

Action Item 5: *Enhance the accountability and tracking of NSF-supported broadening participation efforts by several means, such as encouraging PIs to report outcomes of broadening participation activities as part of the reporting process for grants and initiating the development of NSF-wide reference codes for all broadening participation funding activities.*

Action Item 6: *Promote effectiveness and relevance of the NSF broadening participation portfolio via periodic evaluations, including external reviews ranging from the program level to larger cross-sections of the portfolio.*

Integral to the success of the promising practices and new ideas contained in this document is the ability to track broadening participation activities across the Foundation. Additionally, existing mechanisms such as performance plans, divisional reports, and external evaluations should be used to insure appropriate accountability toward the overall goal of broadening participation.

Proposal Tracking

In order to accurately track broadening participation activities across NSF, different codes will be needed. Just as proposals from EPSCoR jurisdictions are coded, NSF should consider the use of the U.S. Department of Education's Integrated Postsecondary Education Data System (IPEDS) Unit Identification numbers on proposals (see Footnote 5, above) to inform NSF staff on institutional diversity.

The development of codes for proposals that include broadening participation should also be explored. On a program level, submissions to the solicitations and Dear Colleague opportunities identified in the Broadening Participation portfolio could be linked to the appropriate broadening participation code(s).

Roles for PIs

For annual and final reports, clarifying instructions to PIs may aid in soliciting descriptions of what was accomplished and what was learned with respect to broadening participation activities. Alternately, PIs could be encouraged to address in their reports each of the relevant sub-questions in the Intellectual Merit and Broader Impacts criteria. All awards including broadening participation activities should include information on these activities in the annual and final project reports.

Roles for NSF

NSF may need to revise the current project reporting system in order to accommodate the tracking of broadening participation activities. In addition,

program staff may need to adjust their current review analysis practices to incorporate the analysis of broadening participation activities set forth in proposals.

If required in program solicitations, evaluations at the project level should examine the broadening participation aspects of the funded awards. In addition, NSF outreach activities such as regional workshops, visits to MSIs, and visits to EPSCoR-sited institutions should be evaluated and assessed for impacts. Evaluation of broadening participation at the program level currently takes place through COVs. However, Divisions or Directorates/Offices may wish to conduct separate, more focused evaluations of broadening participation.

Other tools for ensuring accountability across NSF include individual performance plans, reporting requirements, data collection and retrieval, and directorate/office reviews.

In FY 2008, NSF program officers identified broadening participation activities in the award highlights they submitted in connection with NSF's performance reporting. These highlights represent a rich source of information that can be used in future evaluations and portfolio assessments.

IMPLEMENTATION

Action Item 7: *Develop an implementation schedule based on the above recommended action items. Include in the schedule a timetable with allocated resources and assignments to specific groups, along with periodic evaluations of each action item's completion and impact. Disseminate the draft plan for internal comment and subsequently for external comment.*

This framework document is the result of the Broadening Participation Working Group's initial report, the review by NSF management and staff, and subsequent review by NSF Advisory Committees. The core recommendations from the Working Group have remained relatively constant throughout the process. As of July 2008 NSF is moving forward with some of the recommended action items. NSF's FY 2008 milestones and measures for the Broadening Participation Performance Area include the following:

- Update the NSF portfolio of broadening participation programs to facilitate NSF-wide coordination of efforts to more actively engage all people, from all types of institutions throughout the United States, in the science and engineering enterprise.
- Initiate the development of a searchable database of NSF proposal reviewers that includes information on types of institutions, location of institutions, and other relevant demographic indicators, in order to increase the diversity of the reviewer pool for proposals. *This reviewer database is for internal use only.*
- Develop a standard orientation module for NSF panels that includes information on mitigation of implicit bias in the review process.
- Initiate the development of program reference codes to track broadening participation investments.

NSF will continue to pursue the four items listed above and address the remaining recommended action items. An implementation team for Broadening Participation will be established, reporting through the Government Performance and Results Act (GPRA) Working Group to Senior Management. This team will be responsible for identifying resources, milestones, and assessment criteria for the action items. Broadening participation will remain a combination of program, division, directorate/office, and Foundation-wide activities; only those services appropriate to NSF as a whole, such as the Reviewer Management Services, will be centrally managed. Other activities will be coordinated by the team to maximize the sharing of promising practices.

APPENDIX I: LIST OF ACRONYMS

Acronym	Definition
AAAS	American Association for the Advancement of Science
AC	Advisory Committee
ACI	American Competitiveness Initiative
AGEP	Alliances for Graduate Education and the Professoriate
ANSI	Alaska Native Serving Institution
AST	Division of Astronomical Sciences
ATE	Advanced Technological Education
ATM	Division of Atmospheric Sciences
AXXS	Achieving XXcellence in Science
BCS	Division of Behavioral &Cognitive Sciences
BD	Budget Division
BEST	Building Engineering & Science Talent
BFA	Office of Budget, Finance, and Award Management
BIO	Directorate for Biological Sciences
BP	Broadening Participation
BPC	Broadening Participation in Computing
C-PATH	CISE Pathways to Revitalized Undergraduate Computing Education
CAA	Career Advancement Awards
CAE/IAE	Center of Academic Excellence in Information Assurance Education
CB	Community Building Grants
CDEF	CISE Distinguished Education Fellow Grants
CEOSE	Committee on Equal Opportunities in Science & Engineering
CIRTL	Center for the Integration of Research, Teaching, and Learning
CHE	Division of Chemistry
CHERI	Cornell Higher Education Research Institute
CI-TEAM	Cyberinfrastructure Training, Education, Advancement, and Mentoring
CISE	Directorate for Computer & Information Science & Engineering
CMMI	Division of Civil, Mechanical and Manufacturing Innovation
CNS	Division of Computer & Network Systems
COMPETES	Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science

COV	Committee of Visitors
CREST	Centers for Research Excellence in Science and Technology
CRIF	Chemistry Research Instrumentation and Facilities
CSUMS	Computational Science Training for Undergraduates in the Mathematical Sciences
DR-K12	Discovery Research K-12
DAS	Division of Administrative Services
DCL	Dear Colleague Letter
DGE	Division of Graduate Education
DIS	Division of Information Systems
DMR	Division of Materials Research
DMS	Division of Mathematical Sciences
DO-IT	Disabilities, Opportunities, Internetworking, & Technology
DOE	Department of Energy
DUE	Division of Undergraduate Education
Dir.	Directorate
Div.	Division
EAE	Evaluation, Adoption, and Extension Grants
EEC	Division of Engineering Education & Centers
EF	Division of Emerging Frontiers
EHR	Directorate for Education and Human Resources
EMSW21	Enhancing the Mathematical Sciences Workforce in the 21st Century
ENG	Directorate for Engineering
EPSCoR	Experimental Program to Stimulate Competitive Research
ERC	Engineering Research Centers
ESIE	Division of Elementary, Secondary, & Informal Education
ETS	Educational Testing Service
FASED	Facilitation Awards for Scientists and Engineers with Disabilities
FFRDC	Federally Funded Research & Development Centers
FIBR	Frontiers in Integrative Biological Research
FY	Fiscal Year
GAO	Government Accountability Office
GE	General Electric
GEO	Directorate for Geosciences
GeoEd	Geoscience Education Program
GK-12	Graduate Teaching Fellows in K-12 Education
GPRA	Government Performance and Results Act

GRF	Graduate Research Fellowship
GRS	Graduate Research Supplements
GSE	Research on Gender in Science & Engineering
HBCU	Historically Black Colleges and Universities
HBCU-UP	Historically Black Colleges and Universities Undergraduate Program
HRD	Division of Human Resources Development
HRM	Division of Human Resource Management
HSI	Hispanic Serving Institution
IGERT	Integrative Graduate Education and Research Traineeships
IHE	Institute of Higher Education
IIP	Division of Industrial Innovation & Partnerships
IOS	Division of Integrative Organismal Systems
IPEDS	Integrated Postsecondary Education Data System
IPY	International Polar Year
IRM	Office of Information & Resource Management
ISE	Informal Science Education
ITEST	Information Technology Experiences for Students and Teachers
LSAMP	Louis Stokes Alliances for Minority Participation
MPS	Directorate for Mathematical & Physical Sciences
MIT	Massachusetts Institute of Technology
MMSI	Majority Minority Serving Institution
MRI	Major Research Instrumentation
MRSEC	Materials Research Science and Engineering Centers
MSI	Minority Serving Institution
NACME	National Action Council for Minorities in Engineering
NCAR	National Center for Atmospheric Research
NEESR	Network for Earthquake Engineering Simulation Research
NHSI	Native Hawaiian Serving Institution
NIH	National Institutes of Health
NOYCE	Robert Noyce Scholarship Program
NSB	National Science Board
NSE	Nanoscale Science and Engineering
NSEC	Nanoscale Science and Engineering Centers
NSF	National Science Foundation
NSFAYS	NSF Academies for Young Scientists
NWSA	National Women's Studies Association
OAD	Office of the Assistant Director

OCI	Office of Cyberinfrastructure
OD	Office of the Director
OEDG	Opportunities for Enhancement of Diversity in the Geosciences
OEOP	Office of Equal Opportunity Programs
OGC	Office of General Counsel
OIA	Office of Integrative Activities
OISE	Office of International Science & Engineering
OMA	Office of Multidisciplinary Activities
OMB	Office of Management & Budget
OPP	Office of Polar Programs
PAARE	Partnerships in Astronomy and Astrophysics Research and Education
PAESMEM	Presidential Awards for Excellence in Science, Mathematics and Engineering Mentoring
PARS	Proposal, PI, & Reviewer System
PFI	Partnerships for Innovation
PHY	Division of Physics
PI	Principal Investigator
PIMS	Program Information Management System
PO	Program Officer
PREM	Partnerships for Research and Education in Materials
RAHSS	Research Assistantships for High School Students
R&D	Research and Development
RDE	Research in Disabilities Education
REU	Research Experiences for Undergraduates
RIG	Research Initiation Grants
ROA	Research Opportunity Awards
RUI	Research in Undergraduate Institutions
S-STEM	Scholarships in Science, Technology, Engineering, & Mathematics
S&E	Science & Engineering
SBE	Directorate for Social, Behavioral, & Economic Sciences
SBIR	Small Business Innovation Research Program
SES	Division of Social and Economic Sciences
SFS	Scholarship for Service
SME	Science, Mathematics, & Engineering
SOARS	Significant Opportunities in Atmospheric Research and Science
STC	Science and Technology Centers
STEM	Science, Technology, Engineering, & Mathematics
STEP	STEM Talent Expansion Program

SRS	Science Resources Statistics Division
STTR	Small Business Technology Transfer Program
T	Transformation Grants
TCU	Tribal Colleges and Universities
TCUP	Tribal Colleges and Universities Program
UBM	Undergraduates in Biological and Mathematical Sciences
UCAR	University Corporation for Atmospheric Research
URM	Undergraduate Research and Mentoring
U.S.C.	United States Code
WG	Working Group

APPENDIX II: BROADENING PARTICIPATION WORKING GROUP CHARGE

The goal of broadening participation of underrepresented groups in the sciences and engineering has long been a priority at NSF, and is repeatedly referenced in major policy documents, including the Grant Proposal Guide, the Strategic Plan, and the NSF Budget Request. In the Grant Proposal Guide, an emphasis is placed on the importance of broadening participation as an element in the review of proposals, and references to broadening participation and increasing diversity can be found throughout NSF's new Strategic Plan. This concept is expressed first as a core value, where NSF describes itself as "*Broadly Inclusive:* seeking and accommodating contributions from all sources while reaching out especially to groups that have been underrepresented; serving scientists, engineers, educators, students and the public across the nation; and exploring every opportunity for partnerships, both nationally and internationally." The commitment to broadening participation is further manifested in the Strategic Plan via a variety of investment strategies related to the Stewardship Goal, including:

- Expanding efforts to broaden participation from underrepresented groups and diverse institutions across all geographical regions in all NSF activities, and
- Improving our processes to recruit and select highly qualified reviewers and panelists.

Guided by these aspects of the much broader Stewardship Goal, NSF established a more specific broadening participation goal, which is to expand efforts to increase participation from underrepresented groups and diverse institutions throughout the United States in all NSF activities and programs. The two performance measures related to this goal for FY 2007 are:

- Develop a plan to increase participation in NSF programs from underrepresented groups, which includes defining existing baseline data, and
- Develop a plan to broaden the pool of reviewers for NSF proposals.

Charge
In this context, the Broadening Participation Working Group is charged to develop a plan that addresses the following elements:

- Increasing the participation of underrepresented groups in NSF programs and activities, which includes defining existing baseline data;
- Increasing the representation of underrepresented minorities in the pool of reviewers for NSF proposals; and
- Implementation of the above, including recommendations on prioritizing action steps

APPENDIX III: BROADENING PARTICIPATION WORKING GROUP ROSTER

CO-CHAIRS

NAME	TITLE	DIRECTORATE
Celeste Rohlfing	Program Director	MPS/ CHE
Victor Santiago	Deputy Division Director	EHR/ HRD

MEMBERS

NAME	TITLE	DIRECTORATE
Janice Cuny	Program Director	CISE/ CNS
Kelli Craig-Henderson	Program Director	SBE/ BCS
Joan Frye	Staff Associate	OD/ OIA
Roosevelt Johnson	Program Director	EHR/ HRD
Mary Juhas	Program Director of Diversity and Outreach	ENG/ OAD
Jill Karsten	Program Director of Diversity and Education	GEO/ OAD
Andy Lovinger	Program Director	MPS/ DMR
Donna McEnrue	Senior Human Resource Specialist	IRM/ HRM
Amy Northcutt	Deputy General Counsel	OD/ OGC
Lucy Nowell	Program Director	OD/ OCI
Dianna Padilla	Program Director	BIO/ IOS
Julie Palais	Program Manager	OD/ OPP
Larry Rudolph	General Counsel	OD/ OGC
Joanne Tornow	Senior Staff Associate	OD/ OIA
Pat Tsuchitani	Senior Advisor	BFA/ BD and Chair, GPRA WG
Lisa Williams	Management Analyst	IRM/ HRM
Robb Winter	Program Manager	OD/ OISE

EXPERT RESOURCES

NAME	TITLE	DIRECTORATE
Stephanie Bianchi	Head Librarian	IRM/DAS
Beth Blue	Program Analyst	BFA/ BD
Joan Burrelli	Senior Analyst	SBE/ SRS
Charisse A. Carney-Nunes	Staff Associate	BFA/ OAD
Jody Chase	Program Director	EHR/ HRD
Jessie DeAro	Program Director	EHR/ HRD
Eric Gold	Assistant General	OD/ OGC

	Counsel	
Tracy Gorman	Staff Assistant	OD
Nakeina Douglas	Research Associate	EHR
Emily Fort	Program Analyst	BFA/ BD
Susan Hill	Director, Doctorate Data Project	SBE/ SRS
Jolene Jesse	Program Director	EHR/ HRD
Mark Leddy	Program Director	EHR/ HRD
Marilyn Suiter	Program Director	EHR/ HRD

EX-OFFICIO

NAME	TITLE	DIRECTORATE
Ron Branch	Director	OEOP
Consuelo Roberts	Affirmative Employment/ Disability Manager	OD/ OEOP
Doris Starks	Equal Opportunity Specialist/ Complaint Manager	OD/ OEOP

APPENDIX IV: RELEVANT READINGS

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APPENDIX V: BROADENING PARTICIPATION PORTFOLIO[8]

Broadening Participation Focused Programs

	Program name	NSF pub	Dir	Div	Eligibility restriction	Target group(s)	Project level evaluation required	Required Partnership with other NSF Program	Required Partnership with MSI	Required Partnership with Comm. College	Additional BP Review Criterion
1	Research Assistantships for High School Students (RAHSS) - BIO supplements	DCL 06-027	BIO	All	BIO awards	High School Students	N	N	N	N	N
2	Research Initiation Grants and Career Advancement Awards to Broaden Participation in the Biological Sciences (RIG CAA BP)	07-560	BIO	All	IHE & Non-profits	RIG - Beginning investigators; CAA - other than beg. investigators	N	N	N	N	Y
3	Undergraduate Research and Mentoring in the Biological Sciences (URM)	06-591	BIO	All	IHE	Undergrad	Y	N	N	N	Y
4	Minority Postdoctoral Research Fellowships (BIO and SBE)	06-586	BIO & SBE	BIO & SES	Individuals	Postdocs	N	N	N	N	Y
5	Broadening Participation in Computing (BPC)	07-548	CISE	All	None	Undergrad & Graduate, K-12 Teachers & Students, Faculty	Y	N	N	N	Y

[8]The program portfolio was assembled in July 2007 and updated in June 2008. The tables will be updated on a regular basis when they are published electronically.

	Program name	NSF pub	Dir	Div	Eligibility restriction	Target group(s)	Project level evaluation required	Required Partnership with other NSF Program	Required Partnership with MSI	Required Partnership with Comm. College	Additional BP Review Criterion
6	ADVANCE Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers	05-584	EHR	HRD	None	Faculty, Administrators	Y	N	N	N	N
7	Alliances for Graduate Education and the Professoriate (AGEP)	06-552	EHR	HRD	IHEs w/ STEM doctoral programs	Graduate	Y	N	N	N	N
8	Centers for Research Excellence in Science and Technology (CREST)	08-528	EHR	HRD	MSIs w/ STEM advanced degrees	Researchers	Y	N	N	N	N
9	Historically Black Colleges and Universities Undergraduate Program (HBCU-UP)	06-508	EHR	HRD	HBCUs	Undergrad	Y	N	N	N	N
10	Louis Stokes Alliances for Minority Participation (LSAMP)	08-545	EHR	HRD	None	Undergrad	Y	N	N	N	N
11	Presidential Awards for Excellence in Science, Mathematics and Engineering Mentoring (PAESMEM)	04-525	EHR	DUE	None	Teachers, Scientists, Institutions	Y	N	N	N	N

	Program name	NSF pub	Dir	Div	Eligibility restriction	Target group(s)	Project level evaluation required	Required Partnership with other NSF Program	Required Partnership with MSI	Required Partnership with Comm. College	Additional BP Review Criterion
12	Research in Disabilities Education (RDE)	(08-527)	EHR	HRD	IHEs & nonprofit orgs	Undergrads & Graduate, K-12 Teachers & Students, Faculty	Y	N	N	N	N
13	Research on Gender in Science and Engineering (GSE)	07-501	EHR	HRD	None	Researchers	Y	N	N	N	N
14	Scholarships in Science, Technology, Engineering and Mathematics (S-STEM)	07-524	EHR	DUE	None	Undergrads	Y	N	N	N	N
15	Tribal Colleges and Universities Program (TCUP)	(08-533)	EHR	HRD	TCUs, ANSIs, & NHSIs	Undergrads	Y	N	N	N	N
16	Grad Research Supplements (GRS) Dear Colleague Letter	DCL (08-030)	ENG	All	ENG grantees	New PhD Students	N	N	N	N	N
17	Research Assistantships for High School Students (RAHSS) - SBIR/STTR Phase II Supplements	DCL 06-003	ENG	IIP	SBIR/STTR Phase II grantees	High School Students	N	N	N	N	N
18	George E. Brown, Jr. Network for Earthquake Engineering Simulation Research (NEESR Payload Proposals only)	08-519	ENG	CMMI	IHE	Faculty, Undergrads	N	Y	Y	N	N

	Program name	NSF pub	Dir	Div	Eligibility restriction	Target group(s)	Project level evaluation required	Required Partnership with other NSF Program	Required Partnership with MSI	Required Partnership with Comm. College	Additional BP Review Criterion
19	SBIR/STTR & EHR Dear Colleague Letter: Minority-Serving Community College Research Teams	DCL 06-008	ENG/ EHR	IIP& HRD	SBIR/STTR Phase II grantees	Faculty & Undergrads	N	N	Y	Y	N
20	SBIR/STTR & EHR Dear Colleague Letter: Diversity Collaborations	DCL 06-004	ENG/ EHR	IIP & HRD	SBIR/STTR Phase II grantees	Faculty	N	Y	Y	N	N
21	Geoscience Education Program (GeoEd) - Track 2	05-609	GEO	OAD	None	Undergrads, Graduate	Y	Y	N	N	N
22	Opportunities for Enhancement of Diversity in the Geosciences (OEDG)	04-590	GEO	OAD	None	All	Y	N	N	N	Y
23	Partnerships for Research and Education in Materials (PREM)	05-615	MPS	DMR	HSIs, HBCUs, TCUs, MSIs	All	Y	Y	Y	N	Y
24	Partnerships in Astronomy and Astrophysics Research and Education (PAARE)	07-561	MPS	AST	HSIs, HBCUs, TCUs, MSIs	All	Y	N	Y	N	Y
25	Cyberinfrastructure Training, Education, Advancement, and Mentoring for Our 21st Century Workforce (CI-TEAM)	06-548	OD	OCI	None	Faculty, Postdocs, Graduate & Undergrads	Y	N	N	N	Y

	Program name	NSF pub	Dir	Div	Eligibility restriction	Target group(s)	Project level evaluation required	Required Partnership with other NSF Program	Required Partnership with MSI	Required Partnership with Comm. College	Additional BP Review Criterion
26	EPSCoR Research Infrastructure Improvement Grant Program	08-500	OD	OIA	EPSCoR jurisdictions	Faculty, Postdocs, Graduate & Undergrads	Y	N	N	N	Y
27	EPSCoR: Workshop Opportunities (EPSCoR)	06-613	OD	OIA	EPSCoR jurisdictions	Faculty, Postdocs, Graduate & Undergrads	N	N	N	N	N
28	Facilitation Awards for Scientists and Engineers with Disabilities (FASED)	02-115			NSF research grantees	Faculty	N	N	N	N	N
29	SBIR/STTR Supplemental Funding for Community College Research Teams	DCL 08-029	ENG, EHR	IIP, HRD, DUE	SBIR/STTR Phase II Grantees	Faculty & Undergrads	N	N	Y	Y	N
30	Broadening Participation Research Initiation Grants in Engineering (BRIGE)	07-589	ENG	All	IHEs & Non-profits	Junior Faculty	N	N	N	N	Y

Broadening Participation Emphasis Programs

	Program name	NSF pub	Dir	Div	Eligibility restriction	Target group	Project level evaluation required	Required Partnership with other NSF Program	Required Partnership with MSI	Required Partnership with Comm. College	Additional BP Review Criterion
1	Research Experiences for Undergraduates (REU) Sites	05-592	All		None	Undergrads	Y	N	N	N	Y
3	Partnerships for Innovation (PFI)	06-550	All		U.S. IHEs	IHEs, Private Sector, State & Local Govt.	N	N	N	N	Y
4	CISE Pathways to revitalized Undergraduate Computing Education (C-PATH)	08-516	CISE	All	None for CB & CDEF; IHE for EAE and T	IHEs, Faculty	Y	N	N	N	Y
5	Informal Science Education (ISE)	08-547	EHR	ESIE	None	Informal	Y	N	N	N	Y
6	Information Technology Experiences for Students and Teachers (ITEST)	08-526	EHR	ESIE	None	7-12 Students, Teachers	Y	N	N	N	Y
7	Integrative Graduate Education and Research Traineeship Program (IGERT)	08-540	EHR	DGE	U.S. institutions with Ph.D. programs in STEM	Graduate Students, Institutions	Y	N	N	N	Y

	Program name	NSF pub	Dir	Div	Eligibility restriction	Target group	Project level evaluation required	Required Partnership with other NSF Program	Required Partnership with MSI	Required Partnership with Comm. College	Additional BP Review Criterion
8	NSF Academies for Young Scientists (NSFAYS)	06-560	EHR	ESIE	Required partnership	K-8 Students, Teachers	Y	N	N	N	Y
9	Robert Noyce Scholarship Program (NOYCE)	08-532	EHR	DUE	None	Pre-service Teachers	Y	N	N	N	Y
10	Engineering Research Centers (ERC)	07-521	ENG	EEC	IHE	Faculty	Y	N	Y	N	Y
11	Chemical Bonding Centers - Phase 2	06-558	MPS	CHE	IHEs & nonprofits	All	N	N	N	N	Y
12	Chemistry Research Instrumentation and Facilities (CRIF)	08-539	MPS	CHE	U.S. & U.S. territory institutions	All	N	N	N	N	Y
13	Enhancing the Mathematical Sciences Workforce in the 21st Century (EMSW21)	05-595	MPS	DMS	None	Undergrads, grad, postdocs	N	N	N	N	Y
14	Materials Research Science and Engineering Centers (MRSEC)	07-563	MPS	DMR	None	All	N	N	N	N	Y

	Program name	NSF pub	Dir	Div	Eligibility restriction	Target group	Project level evaluation required	Required Partnership with other NSF Program	Required Partnership with MSI	Required Partnership with Comm. College	Additional BP Review Criterion
15	Physics Frontiers Centers	07-567	MPS	PHY	Academic Institutions	Postdocs, Grads, Undergrads, K-12 Teachers	N	N	N	N	Y
16	Science and Technology Centers (STC)	03-550	OD	OIA	None	Faculty, Postdocs, Graduate & Undergrads	N	N	N	N	Y
17	Nanoscale Science and Engineering (NSE) (Nanoscale Science and Engineering Centers (NSEC) only)	04-43	OD		None	All	N	N	N	N	Y
18	American Competitiveness in Chemistry – Fellowship (ACC-F)	08-541	MPS	CHE	IHE or Individuals	Beginning Scientists and Postdocs	N	N	N	N	Y

Broadening Participation Potential Programs

	Program name	NSF pub	Dir	Div	Eligibility restriction	Target group	Project level evaluation required	Required Partnership with other NSF Program	Required Partnership with MSI	Required Partnership with Comm. College	Additional BP Review Criterion
1	Research Coordination Networks in Biological Sciences	06-567	BIO	All	IHE	Faculty	Y	N	N	N	N
2	Advanced Technological Education (ATE)	07-530	EHR	DUE/ ESIE	Associate granting institutions	Undergrad	Y	N	N	Y	N
3	Communicating Research to Public Audiences	03-509	EHR	ESIE	Current NSF research grantees	Informal	Y	N	N	N	N
4	Discovery Research K-12 (DR-K12) (Research Scholarship subcomponent only)	08-502	EHR	ESIE	N	Researchers & Teachers	Y	N	N	N	N
5	DOE/NSF Dear Colleague Letter	07-133	EHR	all	EHR grantees	Faculty & Undergrads	N	N	N	N	N
6	Federal Cyber Service: Scholarship for Service/Cybercorps (SFS)	08-522	EHR	DUE	CAE/IAE or Information Assurance Program	Undergrad & Grad	Y	N	N	N	N
7	Graduate Research Fellowships (GRF)	06-592	EHR	DGE	U.S. Citizen	Grads	N	N	N	N	N

	Program name	NSF pub	Dir	Div	Eligibility restriction	Target group	Project level evaluation required	Required Partnership with other NSF Program	Required Partnership with MSI	Required Partnership with Comm. College	Additional BP Review Criterion
8	Graduate Teaching Fellows in K-12 Education (GK-12)	08-556	EHR	DGE	IHEs w/ advanced STEM degrees	Grads & K-12 students	Y	N	N	N	N
9	STEM Talent Expansion Program (STEP)	06-502	EHR	DUE	N	Undergrad	Y	N	N	N	N
10	Interdisciplinary Training for Undergraduates in Biological and Mathematical Sciences (UBM)	07-539	MPS, BIO, EHR	DMS, EF, DUE	none	Undergrad	Y	N	N	N	N
11	Computational Science Training for Undergraduates in the Mathematical Sciences (CSUMS)	06-559	MPS, EHR	DMS, DUE	none	Undergrad	N	N	N	N	N
12	Developing Global Scientists and Engineers (International Research Experiences for Students component only)	04-036	OD	OISE	none	Undergraduates & Graduates	Y	N	N	N	N
13	Major Research Instrumentation (MRI)	08-503	OD	OIA	none	Faculty	N	N	N	N	N

	Program name	NSF pub	Dir	Div	Eligibility restriction	Target group	Project level evaluation required	Required Partnership with other NSF Program	Required Partnership with MSI	Required Partnership with Comm. College	Additional BP Review Criterion
14	Research in Undergraduate Institutions (RUI)	00-144	OD		Undergrad-uate institutions	Faculty	N	N	N	N	N
15	Research Opportunity Awards (ROA)	00-144	OD		Undergrad-uate institutions	Faculty	N	N	N	N	N
16	International Polar Year, 2007 (IPY) (Education and Outreach component only)	07-536	OPP		none	Faculty, Postdocs, Grad & Undergrad	N	N	N	N	N
17	Math and Science Partnership (MSP)	08-525	EHR	DUE	IHE	Faculty, K-12 Teachers	Y	N	N	N	N
18	Center for the Environmental Implications of Nanotechnology (CEIN)	07-590	BIO, EHR, ENG, GEO, MPS, SBE	DUE	IHE & Nonprofits	Faculty, Students	Y, Education Component Only	Y	N	N	N

Other Budgeted Broadening Participation Efforts

	BP Effort	Dir	Div	Efforts Supported
1	Graduate Research Fellowships (GRF) - Women in Engineering and Computer Science	ENG & CISE	EEC & CNS	Funds are provided by ENG and CISE to support awards to women GRF applicants in CISE and ENG fields. Selection of these awardees is made after the DGE-supported fellows are identified. All additional women fellows must be ranked by the review panel as "Fundable."
2	Next Generation Workforce (SBE-Like AGEP)	SBE	SES	Funds are provided to support SBE-Alliances for Graduate Education and the Professoriate (AGEP) partnerships. Partnership activities include joint funding and management of AGEP proposals that focus on SBE fields. Goal of the effort is to support more AGEP awards in SBE fields.
3	Research Partnerships for Diversity	MPS	OMA	Funds are provided to support MPS-focused partnerships aimed at broadening participation that seed crosscutting research in areas of particular promise and support innovative experiments in education that could lead to new paradigms in graduate and undergraduate education in the mathematical and physical sciences, particularly in multidisciplinary settings.
4	Significant Opportunities in Atmospheric Research and Science (SOARS)	GEO	ATM	Funds for SOARS® supports efforts to broaden participation in the atmospheric and related sciences by engaging students from groups historically underrepresented in science and preparing them to succeed in the STEM disciplines in undergraduate and graduate school. SOARS® funding is a part of the University Corporation for Atmospheric Research (UCAR) Educational Program in conjunction with the National Center for Atmospheric Research (NCAR) FFRDC award.
5	Tribal College Pathways	ENG	OAD	Funds are provided to support innovative approaches to expand and develop the engineering programs at Tribal Colleges and Universities (TCUs) and increase the number of Native American engineers.