Faculty Early Career Development (CAREER) Program

Includes the description of the NSF component of the Presidential Early Career Awards for Scientists and Engineers (PECASE)

PROGRAM SOLICITATION
NSF 08-557

REPLACES DOCUMENT(S):
NSF 05-579

National Science Foundation

Directorate for Biological Sciences

Directorate for Computer & Information Science & Engineering

Directorate for Education & Human Resources

Directorate for Engineering

Directorate for Geosciences

Directorate for Mathematical & Physical Sciences

Directorate for Social, Behavioral & Economic Sciences

Office of Polar Programs

Office of Cyberinfrastructure

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

July 22, 2008

BIO, CISE, EHR

July 23, 2008

ENG

July 24, 2008

GEO, MPS, SBE, OPP

July 21, 2009

BIO, CISE, EHR

July 22, 2009

ENG

July 23, 2009

GEO, MPS, SBE, OPP

July 20, 2010

BIO, CISE, EHR,OCI

July 21, 2010

ENG

July 22, 2010

GEO, MPS, SBE, OPP

IMPORTANT INFORMATION AND REVISION NOTES

The solicitation clarifies the requirements for innovative research, education and plans for the integration of research and education.

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 specified 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:

Faculty Early Career Development (CAREER) Program
Includes the description of the NSF component of the Presidential Early Career Awards for Scientists and Engineers (PECASE)

Synopsis of Program:

CAREER: The Faculty Early Career Development (CAREER) Program is a Foundation-wide activity that offers the National Science Foundation's most prestigious awards in support of junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research within the context of the mission of their organizations. Such activities should build a firm foundation for a lifetime of leadership in integrating education and research. NSF encourages submission of CAREER proposals from junior faculty members at all CAREER-eligible organizations and especially encourages women, members of underrepresented minority groups, and persons with disabilities to apply.

PECASE: Each year NSF selects nominees for the Presidential Early Career Awards for Scientists and Engineers (PECASE) from among the most meritorious new CAREER awardees. Selection for this award is based on two important criteria: 1) innovative research at the frontiers of science and technology that is relevant to the mission of the sponsoring organization or agency, and 2) community service demonstrated through scientific leadership, education or community outreach. These awards foster innovative developments in science and technology, increase awareness of careers in science and engineering, give recognition to the scientific missions of the participating agencies, enhance connections between fundamental research and national goals, and highlight the importance of science and technology for the Nation's future. Individuals cannot apply for PECASE. These awards are initiated by the participating federal agencies. At NSF, up to twenty nominees for this award are selected each year from among the PECASE-eligible CAREER awardees who are most likely to become the leaders of academic research and education in the twenty-first century. The White House Office of Science and Technology Policy makes the final selection and announcement of the awardees.

Cognizant Program Officer(s):

- Division CAREER contacts listed on the CAREER web page at: http://www.nsf.gov/crssprgm/career/contacts.jsp

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

- 47.041 --- Engineering
- 47.049 --- Mathematical and Physical Sciences
- 47.050 --- Geosciences
- 47.070 --- Computer and Information Science and Engineering
- 47.074 --- Biological Sciences
- 47.075 --- Social Behavioral and Economic Sciences
- 47.076 --- Education and Human Resources
- 47.078 --- Office of Polar Programs
- 47.079 --- Office of International Science and Engineering
- 47.080 --- Office of Cyberinfrastructure
- 47.081 --- Office of Experimental Program to Stimulate Competitive Research

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 425 per year

Anticipated Funding Amount: $80,000,000 per year for new awards. This amount is approximate and subject to availability of funds. Funding for CAREER awards is contained within program allocations.

Eligibility Information

Organization Limit:

Proposals may only be submitted by the following:

Academic institutions in the U.S., its territories or possessions, and the Commonwealth of Puerto Rico that award degrees in fields supported by NSF.

- Non-profit, non-degree-granting organizations such as museums, observatories or research labs may also be eligible to submit proposals, if the eligibility requirements of the PI's position are satisfied.

PI Limit:

Special eligibility criteria apply.

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI:

Each Principal Investigator may only submit one CAREER proposal per annual competition. In addition, a Principal Investigator may not participate in more than three CAREER competitions. Proposals that are not reviewed (i.e., are withdrawn or are returned without review) do not count toward the three-competition limit.

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

C. Due Dates

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

July 22, 2008

BIO, CISE, EHR

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BIO, CISE, EHR,OCI

July 21, 2010

ENG

July 22, 2010

GEO, MPS, SBE, OPP

Proposal Review Information Criteria

Merit Review Criteria: National Science Board approved criteria apply.

Award Administration Information

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

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

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I. INTRODUCTION

This program is a Foundation-wide activity that offers the National Science Foundation's most prestigious awards for faculty members beginning their independent careers. The intent of the program is to provide stable support at a sufficient level and duration to enable awardees to develop careers as outstanding researchers and educators who effectively integrate teaching, learning and discovery. NSF encourages submission of CAREER proposals from eligible junior faculty at all CAREER-eligible organizations especially women, members of underrepresented minority groups, and persons with disabilities.

II. PROGRAM DESCRIPTION

A. **CAREER Program**

This premier program emphasizes the importance the Foundation places on the early development of academic careers dedicated to stimulating the discovery process in which the excitement of research is enhanced by inspired teaching and enthusiastic learning. Effective integration of research and education generates a synergy in which the process of discovery stimulates learning, and assures that the findings and methods of research and education are quickly and effectively communicated in a broader context and to a larger audience.

The CAREER program embodies NSF's commitment to encourage faculty and academic institutions to value and support the integration of research and education. Successful PIs will propose creative, integrative and effective research and education plans, developed within the context of the mission, goals and resources of their organizations, and which will build a firm foundation for a lifetime of contributions to research, education and their integration.

All proposals must have an integrated research and education plan at their core. NSF recognizes that there is no single approach to an integrated research and education plan. Rather, these plans should reflect both the proposer's own disciplinary and educational interests and goals, as well as the needs of his or her organization. Because there may be different expectations within different disciplinary fields and/or different organizations, a wide range of research and education activities may be appropriate for the CAREER program. Proposers are encouraged to communicate with the CAREER contact or cognizant Program Officer in the division closest to their area of research to discuss the expectations and approaches that are most appropriate for that area (see http://www.nsf.gov/crssprgm/career/contacts.jsp for a list of CAREER contacts by division).

NSF encourages, but does not require, CAREER PIs to include international dimensions where appropriate (e.g., collaboration with foreign research partners and international research experiences for students). The proposal must clearly state how the research will be enhanced by international collaborations and/or how the educational activities will benefit participants.

The proposed education and research activities may include collaborations with partners from other sectors (for example, partnerships with industry, national laboratories, or schools and school districts). A proposal may also include subawards for necessary research and educational activities (for example, hiring an external evaluator, or securing time at a shared research facility). In all cases, partners or collaborators may not be listed as co-principal investigators on the cover page or as senior personnel in the budget. Proposals submitted with co-principal investigators will be returned without review.

Proposals submitted to the National Science Foundation are evaluated through the use of two merit review criteria, which all proposals must address explicitly. One relates to intellectual merit and the other relates to broader impacts of the activities. The following URL contains examples illustrating activities that are likely to demonstrate the broader impacts: http://www.nsf.gov/pubs/gpg/broaderimpacts.pdf. CAREER proposers may find these examples useful as they develop their proposals.

B. **Presidential Early Career Award for Scientists and Engineers (PECASE)**

The Presidential Early Career Award for Scientists and Engineers (PECASE) is the highest honor bestowed by the United States Government on outstanding scientists and engineers beginning their independent research careers. Selection for this award is based on two important criteria: 1) innovative research at the frontiers of science and technology that is relevant to the mission of the sponsoring organization or agency, and 2) community service demonstrated through scientific leadership, education or community outreach. These awards foster innovative developments in science and technology, increase awareness of careers in science and engineering, give recognition to the scientific missions of the participating agencies, enhance connections between fundamental research and national goals, and highlight the importance of science and technology for the Nation's future. Individuals cannot apply for a PECASE. These awards are initiated by the participating federal agencies. At NSF, up to twenty nominees for this award are selected each year from among the PECASE-eligible CAREER awardees who are most likely to become the leaders of academic research and education leaders in the twenty-first century. The White House Office of Science and Technology Policy makes the final selection and announcement of the awardees.

III. AWARD INFORMATION

- **Estimated Number of Awards:** 425 per year
- **Anticipated Funding Amount:** $80,000,000 per year for new awards. This amount is approximate and subject to availability of funds. Funding for CAREER awards is contained within program allocations. **CAREER:** The minimum CAREER award, including indirect costs, will total $400,000 for the 5-year duration with the following exception: proposers to the Biological Sciences Directorate (BIO) must submit budget requests for a minimum of $500,000 for the 5-year duration. **PECASE:** The PECASE award is an honorary award for all NSF recipients and does not provide additional funds.
- Supplemental Funding: CAREER awards are eligible for supplemental funding as described in the NSF Award & Administration Guide (AAG), Chapter I.E.4.

IV. ELIGIBILITY INFORMATION

Organization Limit:

Proposals may only be submitted by the following:

Academic institutions in the U.S., its territories or possessions, and the Commonwealth of Puerto Rico that award degrees in fields supported by NSF.

- Non-profit, non-degree-granting organizations such as museums, observatories or research labs may also be eligible to submit proposals, if the eligibility requirements of the PI's position are satisfied.

PI Limit:

Special eligibility criteria apply.

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI:

Each Principal Investigator may only submit one CAREER proposal per annual competition. In addition, a Principal Investigator may not participate in more than three CAREER competitions. Proposals that are not reviewed (i.e., are withdrawn or are returned without review) do not count toward the three-competition limit.

Additional Eligibility Info:

A. **CAREER Program**

Proposers must meet all of the following eligibility requirements:

By the Directorate's deadline for submission of CAREER proposals:

- Hold a doctoral degree;
- Be untenured; and
- Have not previously received an NSF PECASE or CAREER award (prior or concurrent Federal support for other types of awards or for non-duplicative research does not preclude eligibility);

AND

By October 1st following the deadline for submission of CAREER proposals:

- Be employed in a tenure-track position (or tenure-track-equivalent position) as an assistant professor (or equivalent title) at an institution located in the U.S., its territories, or possessions, or the Commonwealth of Puerto Rico, that awards degrees in a field supported by NSF;

OR

- Be employed in a tenure-track position (or tenure-track-equivalent position) as an assistant professor (or equivalent title) at an organization located in the U.S., its territories or possessions, or the Commonwealth of Puerto Rico, that is a non-profit, non-degree-granting organization such as a museum, observatory, or research lab.

For a position to be considered a tenure-track-equivalent position, it must meet all of the following requirements: (1) the employing department or organization does not offer tenure; (2) the employee is engaged in research in an area of science or engineering supported by NSF; (3) the appointment is a continuing appointment; (4) the appointment has substantial educational responsibilities; and (5) the proposed project relates to the employee's career goals and job responsibilities as well as to the goals of the department/organization.

Associate Professors, with or without tenure, are not eligible for the CAREER program.

NO EXEMPTIONS FROM THESE ELIGIBILITY CRITERIA WILL BE GRANTED.

B. **PECASE**

In addition to meeting the eligibility requirements of the CAREER program listed above, PECASE nominees must be U.S. citizens, U.S. nationals, or permanent residents who hold such status on or before their Directorate's July deadline for submission of CAREER proposals. An individual may only receive one PECASE award. Therefore, persons who have received PECASE awards through other agencies are not eligible to be nominated by NSF for another PECASE award.

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.

Proposal Content

This program solicitation contains supplemental instructions to the standard GPG proposal preparation guidelines. All standard sections of the proposal are required (i.e., the cover sheet, project summary, table of contents, project description, references cited, biographical sketch, budget, budget justification, current and pending support, facilities/equipment/other resources, and supplementary documentation). The following instructions supplement the guidelines in the GPG for the specified sections.

The Cover Sheet:

- **Program Solicitation Number.** Select the CAREER program solicitation number shown at the beginning of this solicitation from the drop-down menu.
- **Unit of Consideration.** Select at least one specific disciplinary program from the drop-down list in FastLane as the unit of consideration. For assistance in determining which program to choose, refer to the NSF Guide to Programs, which provides descriptions of NSF's research-supporting programs.
- **Project Title.** The project title must begin with "CAREER:" and follow with an informative title.
- **Co-PIs.** No co-PIs are permitted.
- **PI eligibility information.** As part of the cover sheet entry, proposers **must** complete and submit the CAREER and PECASE certifications, thereby self-certifying their eligibility for the CAREER Program and their eligibility to be considered for the PECASE award, if desired. Note: information regarding PECASE eligibility will not be released to reviewers.

Project Summary:

Summarize the research and education objectives, and plans for the integration of **education and research activities.** The Project Summary must clearly address in separate statements how the proposal meets both the Intellectual Merit and Broader Impact review criteria.

Project Description:

The Project Description section should contain a well-argued and specific proposal for activities that will, over a 5-year period, build a firm foundation for a lifetime of contributions to research and education in the context of the PI's organization. The Project Description may not exceed 15 pages.

The Project Description should be developed in consultation with the department head or equivalent organizational official and should include:

- a description of the proposed research project, including preliminary supporting data where appropriate, specific objectives, methods and procedures to be used, and expected significance of the results;
- a description of the proposed educational activities, including plans to evaluate their impact on students and other participants;
- a description of how the research and educational activities are integrated with one another; and
- results of prior NSF support, if applicable.

Successful applicants will propose creative, effective and integrated research and education plans as well as plans for assessing these components. While excellence in both education and research is expected, activity of an intensity that leads to an unreasonable workload is not. The research and educational activities do not need to be addressed separately, if the relationship between the two is such that the presentation of the integrated project is better served by interspersing the two throughout the Project Description.

Proposed research activities may be in any area of science, mathematics, engineering and education normally supported by NSF. To help determine the appropriateness of the project for NSF and identify the disciplinary program to which it should be submitted, proposers are urged to refer to the NSF Guide to Programs. Program information can also be found on Directorate web pages, which can be accessed from the NSF home page (http://www.nsf.gov). Proposers are also encouraged to contact the appropriate NSF Program Director. For guidance on submitting information about field work proposed in the Arctic or Antarctic, proposers should contact the program officer in the Office of Polar Programs who is associated with the program most closely aligned with the research being proposed. If an international component is included, proposers are encouraged to contact the relevant program officer in the Office of International Science and Engineering (OISE).

Proposed education activities may be in a broad range of areas and may be directed to any level: K-12 students, undergraduates, graduate students, and/or the general public, but should be related to the proposed research. Some examples are: designing innovative courses or curricula; supporting teacher preparation and enhancement; conducting outreach and mentoring activities to enhance scientific literacy or involve students from groups that have been traditionally underrepresented in science; researching students' learning and conceptual development in the discipline; incorporating research activities into undergraduate courses; linking education activities to industrial, international, or cross-disciplinary work; and implementing innovative methods for evaluation and assessment. Education activities may also include designing new or adapting and implementing effective educational materials and practices. Such activities should be consistent with research and best practices in curriculum, pedagogy, and evaluation. Proposers may build on NSF or other educational projects. Publications such as the following from the National Academy of Sciences/National Research Council (http://www.nap.edu/) may be helpful in developing the educational activities.

National Research Council. (2000). *How People Learn: Brain, Mind, Experience, and School*. Committee on Developments in the Science of Learning. Bransford, J.D., Brown, A.L., Cocking, R.R., Editors. with additional material from the Committee on Learning Research and Educational Practice. Donovan, M.S., Bransford, J.D., and Pellegrino, J.W., Editors.

National Research Council. (2001). *Adding it up: Helping children learn mathematics*. Mathematics Learning Study Committee. Kilpatrick, J., Swafford, J., and Findell, B., Editors.

National Research Council. (2001). *Knowing what students know: The science and design of educational assessment*. Committee on the Foundations of Assessment. Pellegrino, J., Chudowsky, N., and Glaser, R., Editors

National Research Council. (2002). *Scientific research in education*. Committee on Scientific Principles for Education Research. Shavelson, R.J., and Towne, L., Editors.

National Research Council. (2007). *Taking Science to School: Learning and Teaching Science In Grades K-8*. Duschl, R. A,.. Schweingruber, H. A, and Shouse, A. W., Editors.

A CAREER proposal must indicate the goals and objectives of the education and integration of education plans, as well as the criteria for assessing that these goals are met. Principal investigators are strongly encouraged to describe how the impact of the educational activities will be assessed or evaluated. A helpful document for information on evaluating educational activities is the NSF publication *The 2002 User-Friendly Handbook for Project Evaluation* (NSF 02-057).

If an international component is included, the proposal must describe specifically how the collaboration with a foreign partner

enhances the research, benefits students and/or contributes to the integration of education and research.

References Cited:

Provide references in support of both research and education aspects of the CAREER proposal.

Biographical Sketch of Principal Investigator:

The Biographical Sketch should be prepared following the instructions in the GPG and should include **both** research and education activities and accomplishments. The list of publications should include no more than ten publications, including up to five publications most closely related to the proposed research and educational activities and up to five other significant publications, whether or not they are related to the proposed project. The Biographical Sketch may not exceed two pages in length.

Special Information and Supplementary Documentation:

Scan the signed original(s) of the following document(s) and upload the scans as a PDF file into the Supplementary Documents section of the proposal. Do not send paper copies to NSF. All documents must be submitted with the proposal in Fastlane by the deadline.

1. **Departmental Letter.** In recognition of the teacher-scholar role of beginning faculty members, NSF encourages organizations to value and reward the integration of research and education. This integration of research and education requires close collaboration between the CAREER principal investigator and his/her organization throughout the award. To demonstrate the department's support of the integrated research and education plan of the CAREER awardee, the proposal must include one (and only one) letter from the PI's department head (or equivalent organizational official). If a proposer is in two departments, the letter should be signed by the Department Head in which tenure will be granted. In those cases where tenure is a joint decision, the letter should be signed by both Department Heads. The letter, which will be included as part of the consideration of the overall merits of the proposal, should demonstrate an understanding of, and a commitment to, the effective integration of research and education as a primary objective of the CAREER award. A letter that fails to acknowledge institutional commitment to the professional development and mentoring of the PI in both research and education may disadvantage an otherwise outstanding proposal.

   The Departmental Letter should be approximately one page in length, and include the department head's name and title, below the signature. The letter should contain the following elements:

   - An indication that the PI's proposed CAREER research and education activities are supported by and integrated into the educational and research goals of the department and the organization, and that the department is committed to the support and professional development of the PI;
   - A description of a) the relationship between the CAREER project, the PI's career goals and job responsibilities, and the goals of his/her department/organization, and b) the ways in which the department head (or equivalent) will ensure the appropriate mentoring of the PI, in the context of the PI's career development and his/her efforts to integrate research and education throughout the period of the award and beyond; and
   - Verification that the PI is eligible for the CAREER program.

2. **Letters of Collaboration.** If applicable, the proposal should include short letters of commitment from collaborators. The letter(s) must be limited to describing the nature of the collaboration. The letter(s) should not include a recommendation of the person, but should be limited to the types of support that is offered. ***Letters of recommendation are not permitted, and will be removed from the proposal prior to review.***

   Pre-Submission Checklist

   CAREER proposals must be in compliance with the special requirements outlined in this solicitation. A proposal that is not submitted to the CAREER solicitation (i.e., the CAREER solicitation number does not appear on the cover sheet) will not be reviewed as a CAREER proposal, but will be reviewed according to the guidelines associated with the program announcement or solicitation to which the proposal was submitted or, at the request of the principal investigator, will be withdrawn and not reviewed. Proposals that are non-compliant for the following reasons will be returned without review:

   - Co-Principal Investigators listed on the cover page
   - CAREER eligibility certification missing
   - Departmental Letter missing (be careful to put this in the Supplementary Documents section, ***not*** the Single Copy Documents section)
   - Submitted after the relevant deadline has passed

   Proposers should make sure that they request at least the appropriate minimum amount and that the proposal is for five years. There is no maximum award amount, but proposers should talk with the appropriate Program Director about the average award size in a program.

   CAREER proposals will be checked for compliance with formatting instructions in the Grant Proposal Guide. Program Directors will not approve or accept proposal file updates after the deadline, unless there is a technical problem due to PDF conversion. The following is a list of items for which proposals often are non-compliant:

   - Font and margin requirements are not met
   - Project summary exceeds one page
   - Project summary does not address both merit review criteria (intellectual merit and broader impacts) in separate statements
   - Project description exceeds 15 pages
   - Project description does not include a separate section describing results from prior NSF support (if appropriate)
   - Project description does not describe, as an integral part of the narrative, the broader impacts resulting from the proposed activities
   - Biographical sketch of the PI is not prepared in the appropriate NSF format and/or exceeds two pages
   - Current and Pending Support form for PI is missing

Proposers are reminded to identify the program solicitation number (NSF 08-557) 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.

Other Budgetary Limitations:

The minimum CAREER award size is $400,000 for a five-year period for all directorates except BIO. For proposals submitted to the BIO directorate, the minimum award size is $500,000 over five years. Before preparing a CAREER proposal, PIs are strongly

encouraged to contact their disciplinary program director or the appropriate division's CAREER contact to discuss appropriate budget requests for their proposed CAREER activities, and typical funding levels for their discipline. Many programs and Directorates fund CAREER proposals at the minimum award size. Proposers should also review the list of recent CAREER awards made in their discipline. A list of CAREER Contacts can be found on the CAREER web page at http://www.nsf.gov/home/crssprgm/career/contacts.htm.

No salary support for other Senior Personnel (i.e., Budget Category A) is permitted, in either the primary budget or in any subawards. All other allowable costs, as described in the Grant Proposal Guide, are permitted. Allowable costs include funds for postdoctoral fellows, graduate students, undergraduate students, summer salary, education or outreach activities and funds for an evaluator. In some cases, it may be appropriate to include academic year salary support for the PI on a CAREER budget (for example, PIs who have heavy teaching responsibilities or who must conduct field work during the academic year). Proposers should talk to the cognizant Program Director about his/her individual case.

Budget Preparation Instructions:

A Budget Justification (limit three pages) must be included as part of the CAREER proposal.

C. Due Dates

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

July 22, 2008

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Any CAREER proposal received after the Directorate/Office deadline will be returned without review. Please note that NSF program officers are not authorized to grant extensions to the deadline for the CAREER program. For proposals that are submitted for consideration by more than one unit with different deadline dates, the deadline date associated with the primary unit of consideration will be enforced (i.e., the program listed first on the FastLane cover sheet)

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.

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.

Special Award Conditions:

The CAREER award must be relinquished if the principal investigator:

- transfers at any time prior to or during the duration of the award to a position that is not tenured, tenure-track, tenure-track equivalent; and/or
- transfers to an organization that is not CAREER-eligible.

In the event that any of the above occur, the CAREER award may not be transferred to a substitute PI. Before transferring a CAREER award to a new organization, NSF will request documentation from the Principal Investigator's new organization and department head in support of the research, education and integration of education and research goals of the award, as well as the mentoring of the principal investigator.

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.

The annual and final reports should summarize progress in **both** research and education, and indicate how well these activities are being integrated and assessed. **In addition, all annual reports must include a note from the Principal Investigator's department head or equivalent, indicating the department's continued commitment to mentoring the PI and supporting his/her education, research and integration of research and education.** This note must be signed by the PI's department head or equivalent and uploaded into the annual report as a PDF file. Instructions for preparing project reports and uploading the departmental note into the project report can be found on the CAREER web page at http://www.nsf.gov/home/crssprgm/career/report.htm. For general information about preparing and submitting annual and final reports, refer to the Grant Proposal Guide.

VIII. AGENCY CONTACTS

General inquiries regarding this program should be made to:

- Division CAREER contacts listed on the CAREER web page at: http://www.nsf.gov/crssprgm/career/contacts.jsp

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 1-800-673-6188; e-mail: fastlane@nsf.gov.

Division CAREER contacts are listed on the CAREER web page at: http://www.nsf.gov/crssprgm/career/contacts.jsp

IX. OTHER INFORMATION

The NSF Website provides the most comprehensive source of information on NSF Directorates (including contact information), programs and funding opportunities. Use of this Website by potential proposers is strongly encouraged. In addition, National Science Foundation Update is a free e-mail subscription service designed to keep potential proposers and other interested parties apprised of new NSF funding opportunities and publications, important changes in proposal and award policies and procedures, and upcoming NSF Regional Grants Conferences. Subscribers are informed through e-mail when new publications are issued that match their identified interests. Users can subscribe to this service by clicking the "Get NSF Updates by Email" link on the NSF web site.

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

ABOUT THE NATIONAL SCIENCE FOUNDATION

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:

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