

Research Experiences for Teachers (RET) in Engineering and Computer Science

Supplements and Sites

PROGRAM SOLICITATION

NSF 11-509

REPLACES DOCUMENT(S):

NSF 07-557



National Science Foundation

Directorate for Engineering
Engineering Education and Centers

Directorate for Computer & Information Science & Engineering

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

February 28, 2011

October 03, 2011

First Monday in October, Annually Thereafter

IMPORTANT INFORMATION AND REVISION NOTES

Revision Notes:

The Directorate for Computer and Information Science and Engineering (CISE) is partnering with the Directorate for Engineering (ENG) in support of the RET in Engineering and Computer Science Sites Program.

It is encouraged, but not required, that at least two teachers or community college faculty be recruited for the program from the same K-12 school/community college in order to help ensure that outcomes of the program are more effectively disseminated to the participating institutions.

Total budget amount for an RET Site may not exceed \$500,000 for up to three years, for approximately \$165,000 per year. Total cost of an RET supplement is limited to \$10,000 per teacher per year. For both the RET Site and RET supplement the budget includes a teacher and/or community college faculty stipend and up to \$2,000 for the cost of materials, equipment, software and other supplies for developing classroom instructions and experiments.

Funds awarded to teacher/community college faculty participants in the RET in Engineering and Computer Science program for stipends, fees, lodging, travel and other miscellaneous expenses must be listed as Participant Support Costs (lines F1-F4 in FastLane and Field E in Grants.gov) in the NSF proposal budget. Additional funds up to 25% of the total Participant Support Costs listed in the proposed budget may be requested for activities in other cost categories (e.g., salaries, wages and fringe benefits, travel, materials and supplies, and applicable indirect costs) that contribute to the effectiveness of the RET program; any such costs must be listed under the appropriate NSF budget categories and must be explained in the Budget Justification. Organizations should propose in accordance with their current disclosed accounting practices.

Proposal budgets may include up to \$4,000 per year in direct costs to support an ethics component. See Supplementary Documentation section for further guidance.

The RET Site budget must include a request for funds to cover the cost of attendance of the Principal Investigator at each year's annual awardee meeting in the Washington, DC area.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Research Experiences for Teachers (RET) in Engineering and Computer Science
Supplements and Sites

Synopsis of Program:

The Directorate for Engineering (ENG) and the Directorate for Computer and Information Science and Engineering (CISE), Research Experiences for Teachers (RET) in Engineering and Computer Science program supports the active involvement of K-12 science, technology, engineering, computer and information science, and mathematics (STEM) teachers and community college faculty in engineering and computer science research in order to bring knowledge of engineering, computer science, and technological innovation into their classrooms. The goal is to

help build long-term collaborative partnerships between K-12 STEM teachers, community college faculty, and the NSF university research community by involving the teachers and community college faculty in engineering and computer science research and helping them translate their research experiences and new knowledge into classroom activities. Partnerships with inner city schools or other high needs schools are especially encouraged, as is participation by underrepresented minorities, women, and persons with disabilities. This announcement features two mechanisms for support of in-service and pre-service K-12 STEM teachers and community college faculty: RET supplements to ongoing ENG or CISE awards and new RET Site awards. RET supplements may be included in proposals for new or renewed NSF Directorate for Engineering (ENG) or CISE grants or as supplements to ongoing NSF ENG or CISE funded projects. RET in Engineering and Computer Science Sites are based on independent proposals from engineering or computer and information science departments, schools or colleges to initiate and conduct research participation projects for a number of K-12 STEM teachers and/or community college faculty.

Cognizant Program Officer(s):

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

- Mary Poats, Program Manager, Directorate for Engineering (ENG), Division of Engineering Education and Centers (EEC), 585 N, telephone: (703) 292-5357, fax: (703) 292-9051, email: mpoats@nsf.gov
- Harriet G. Taylor, Program Director, Directorate for Computer and Information Science and Engineering (CISE), Division of Computer and Network Systems (CNS), 1175N, telephone: (703) 292-8950, email: htaylor@nsf.gov

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

- 47.041 --- Engineering
- 47.070 --- Computer and Information Science and Engineering

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 8

Anticipated Funding Amount: \$5,500,000 The total anticipated funding in FY 2011 for both Sites and Supplements is approximately \$5,500,000, subject to the availability of funds. The maximum total request for a Site is \$500,000 for a duration of up to three years. Supplements are limited to a maximum of \$10,000 per teacher for a duration of one year subject to the availability of funds.

Eligibility Information

Who May Submit Proposals:

Proposals may only be submitted by the following:

- Universities and Colleges - Universities and two- and four-year colleges (including community colleges) accredited in, and having a campus located in, the US acting on behalf of their faculty members. Such organizations also are referred to as academic institutions.
- Small businesses with an active SBIR or STTR grant are eligible to apply for an RET supplement.

Who May Serve as PI:

The principal investigator of a RET in Engineering and Computer Science Site proposal must have a faculty appointment, within a College/Department of Engineering or Engineering Technology or a College/Department of Computer and Information Science broadly defined (e.g., including HCI, Software Engineering, Networking Science, Informatics) within the submitting U.S. academic institution.

Limit on Number of Proposals per Organization: 3

Three site proposals may be submitted per competition by a U.S. academic institution, College/Department of Engineering, Engineering Technology, or Computer and Information Science as the lead institution.

Limit on Number of Proposals per PI or Co-PI: 1

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- Letters of Intent: Not Applicable
- Preliminary Proposal Submission: Not Applicable
- Full Proposals:
 - Full Proposals submitted via FastLane: NSF Proposal and Award Policies and Procedures Guide, Part I: Grant Proposal Guide (GPG) Guidelines apply. The complete text of the GPG is available electronically on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg.
 - Full Proposals submitted via Grants.gov: NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov Guidelines apply (Note: The NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide)

B. Budgetary Information

- Cost Sharing Requirements: Inclusion of voluntary committed cost sharing is prohibited.
- Indirect Cost (F&A) Limitations: Not Applicable
- Other Budgetary Limitations: 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):
 - February 28, 2011
 - October 03, 2011
 - First Monday in October, Annually Thereafter

Proposal Review Information Criteria

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

Award Administration Information

Award Conditions: Standard NSF award conditions apply.

Reporting Requirements: Standard NSF reporting requirements apply.

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I. INTRODUCTION

Encouraging active participation of K-12 teachers and community college faculty in NSF supported projects is an excellent way to reach broadly into the teacher talent pool of the U.S. so that they can teach engineering and computer science concepts to their students to encourage and stimulate them to pursue engineering and computer science careers. The Research Experiences for Teachers (RET) in Engineering activity was initiated in the NSF Directorate for Engineering in FY 2001 to involve middle and high school teachers and community college faculty in engineering research in order to bring knowledge of engineering and technological innovation to the classroom. This is achieved by building partnerships between teachers and community college faculty and researchers working together on engineering and computer science research projects through site awards and supplements to on-going research and education projects funded by the Directorate for Engineering (ENG) and the Directorate for Computer Information Science and Engineering (CISE). Through these partnerships, the RET in Engineering and Computer Science Program aims to:

- build long-term collaborative relationships between both in-service and pre-service K-12 science, technology, engineering, computer science, and mathematics (STEM) teachers, community college faculty, and the engineering and computer science research community;
- support the active participation of these teachers and future teachers and community college faculty in research and

- education projects funded by NSF ENG and CISE;
- facilitate professional development of K-12 STEM teachers and community college faculty through strengthened partnerships between institutions of higher education and local school districts; and
- encourage engineering and computer science researchers to build mutually rewarding partnerships with STEM teachers and community college faculty.

II. PROGRAM DESCRIPTION

The Research Experiences for Teachers (RET) in Engineering and Computer Science program encourages the active participation of both in-service and pre-service (education majors who are still pursuing their degrees) K-12 science, technology, engineering, computer science and mathematics (STEM) teachers and community college faculty in ongoing NSF supported engineering and computer science research through supplements and sites. Encouraging active participation of teachers and community college faculty in NSF projects is an excellent way to reach broadly into the teacher talent pool of the U.S. so that they can teach engineering and computer science concepts to their students to encourage and stimulate them to pursue engineering and computer science careers.

ENG and CISE strongly encourage all of their grantees, including grantees from the Small Business Innovation Research (SBIR) and the Small Business Technology Research (STTR) programs, to make special efforts to identify talented teachers and community college faculty for participation in this RET opportunity.

ENG and CISE strongly encourage the use of REU supplements to enable K-12 STEM teachers and community college faculty to participate in Research Experiences for Undergraduates (REU) programs.

The RET in Engineering and Computer Science program will allow PIs to involve participating teachers and community college faculty in international research experiences in their proposals. PIs may contact NSF's Office of International Science and Engineering (OISE) staff, with expertise in the country or region of interest, for information about institutions and counterpart agencies. (Contacts for cognizant program managers(s) are available from the OISE Home Page, <http://www.nsf.gov/index.jsp?div=OISE>.)

The RET in Engineering and Computer Science program invites RET Site applicants to apply for up to \$4,000 per year of additional funding (direct costs) for carefully designed, clearly articulated activities focusing on ethics in science and engineering. Applying for the ethics-component funding is optional. An applicant who chooses to request it must include in the proposal a detailed description and cost breakdown for the ethics activities. Specific instructions are provided below, under "Supplementary Documentation" in Section V.A. ("Proposal Preparation Instructions"). Proposals that include the supplementary focused ethics component are often referred to a program officer in NSF's Ethics and Values in Science, Engineering, and Technology (EVS) program, who reviews the ethics component for possible funding by that program and offers suggestions to improve the ethics activities. Information about relevant interests in the EVS program is available via the Science, Technology and Society (STS) home page and solicitation, http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5324&org=SES. In addition, the NSF-supported Online Ethics Center for Engineering and Science (<http://www.onlineethics.org/>) provides many useful resources for developing a pedagogically sound ethics component. Questions regarding the ethics component should be directed to the SBE Ethics program officer at (703) 292-8543.

RET in Engineering and Computer Science Supplement. A request for funding of a RET in Engineering and Computer Science supplement should be made under an existing NSF ENG or CISE award or within a proposal for a new or renewed NSF ENG or CISE award. The description of the RET activity must clearly articulate in some detail the form and nature of the prospective K-12 STEM teacher and/or community college faculty member's involvement in the Principal Investigator's ongoing or proposed research. See V.A.(5), "Project Description," below for detailed information. For example, the teacher or community college faculty member may participate in the design of new experiments, modeling and analysis of experimental data, algorithm and software development, and other activities that will result in intellectual contributions to the project. It is expected that the RET in Engineering and Computer Science supplement experience will also lead to the transfer of new knowledge to classroom activities. Therefore, the RET supplement description must also indicate what type of sustained follow-up will be provided during the academic year to help in translating the teacher's research experience and new understanding of engineering and computer science concepts into classroom practice.

RET in Engineering and Computer Science Site. A RET in Engineering and Computer Science Site project is an independent proposal, submitted at an annual deadline date, to provide groups of in-service and pre-service K-12 STEM teachers and/or community college faculty with discovery and technology-based learning experiences in engineering and computer science laboratories and facilities, which will then be incorporated into their classroom activities during the school year. A RET in Engineering and Computer Science Site project may be conducted during the summer, academic year, or both, and must have a well-defined focus, with clearly articulated projects and activities for teachers and/or community college faculty. A RET Site proposal must be submitted by a College, School, or Department of Engineering, Engineering Technology, or Computer and Information Science and must involve teachers and/or community college faculty in an engineering or computer science research project for a duration of at least six weeks. In those cases where limited availability of specialized facilities, such as clean rooms, electron microscopes, etc., make it possible to offer an extraordinary experience in a shorter timeframe, a research component of a shorter duration may be proposed with appropriate justification. An orientation session must be included at the beginning of the program for the teachers and/or community college faculty to acquaint them with laboratory methods, safety procedures, analytical methods, etc. as appropriate to the proposal. Because the RET experience also will lead to the transfer of new knowledge to classroom activities, the proposal must provide a plan for sustained follow-up by the RET in Engineering and Computer Science Site project team with the teachers and/or community college faculty to ensure that the research experience is translated into classroom practice during the academic year. The proposal must also provide a detailed plan for evaluation of the proposed project and the classroom impact. The Site proposal may also include a request for support of a workshop designed to reach teachers and/or community college faculty not involved in a RET in Engineering and Computer Science Site project to inform them of the outcomes and materials developed as a result of the site project.

III. AWARD INFORMATION

The total anticipated funding in FY 2011 for both Sites and Supplements is approximately \$5,500,000, subject to the availability of funds. The maximum total request for a Site is \$500,000 for a duration of up to three years. Supplements are limited to a maximum of \$10,000 per teacher for a duration of one year subject to the availability of funds.

IV. ELIGIBILITY INFORMATION

Who May Submit Proposals:

Proposals may only be submitted by the following:

- Universities and Colleges - Universities and two- and four-year colleges (including community colleges) accredited in, and having a campus located in, the US acting on behalf of their faculty members. Such organizations also are referred to as academic institutions.
- Small businesses with an active SBIR or STTR grant are eligible to apply for an RET supplement.

Who May Serve as PI:

The principal investigator of a RET in Engineering and Computer Science Site proposal must have a faculty appointment, within a College/Department of Engineering or Engineering Technology or a College/Department of Computer and Information Science broadly defined (e.g., including HCI, Software Engineering, Networking Science, Informatics) within the submitting U.S. academic institution.

Limit on Number of Proposals per Organization: 3

Three site proposals may be submitted per competition by a U.S. academic institution, College/Department of Engineering, Engineering Technology, or Computer and Information Science as the lead institution.

Limit on Number of Proposals per PI or Co-PI: 1

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

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

- Full proposals submitted via FastLane: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF Grant Proposal Guide (GPG). The complete text of the GPG is available electronically on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@nsf.gov. Proposers are reminded to identify this program solicitation number in the program solicitation block on the NSF Cover Sheet For Proposal to the National Science Foundation. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.
- Full proposals submitted via Grants.gov: Proposals submitted in response to this program solicitation via Grants.gov should be prepared and submitted in accordance with the NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov. The complete text of the NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: (http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide). To obtain copies of the Application Guide and Application Forms Package, click on the Apply tab on the Grants.gov site, then click on the Apply Step 1: Download a Grant Application Package and Application Instructions link and enter the funding opportunity number, (the program solicitation number without the NSF prefix) and press the Download Package button. Paper copies of the Grants.gov Application Guide also may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@nsf.gov.

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

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

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

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

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

Proposal for RET in Engineering and Computer Science Site

(1) Cover Sheet. Select the number for the RET in Engineering and Computer Science program solicitation from the pull-down list. (Grants.gov users: The program solicitation number will be pre-populated by Grants.gov on the NSF Grant Application Cover Page.) The NSF organizational unit to which proposals should be directed is EEC - Research Experiences for Teachers (RET) in Engineering and Computer Science. In the title of the project, include the label "RET in Engineering and Computer Science Site."

(2) Information about Principal Investigators. A single individual should be designated clearly as principal investigator. This

individual will be responsible for overseeing all aspects of the RET Site award. However, the institution may designate one additional person as co-principal investigator, should developing and operating the RET Site involve such shared responsibility. Other anticipated research supervisors or mentors are listed as senior personnel.

(3) Project Summary (one-page limit). The Project Summary consists of an overview, a statement on the intellectual merit of the proposed activity, and a statement on the broader impacts of the proposed activity.

Provide a description of the activities that would result if the project is funded, including comments on its objectives, teachers and/or community college faculty to be accepted, intended impact on participating teachers and/or community college faculty and their students, and academic year follow-up. The project summary should include the following information: name of the host institution/organization, school districts and other institutions involved; the major field and subfields that describe the proposal area; a project title that will permit a prospective participant to identify the focus of the site (the title will be used in web-based lists of RET in Engineering and Computer Science sites); number of teachers and/or community college faculty involved; number of summer weeks on site and academic year activity; name, telephone number, and email address of the point-of-contact for teacher and/or community college faculty recruitment; and a web address for site information (if known).

(4) Table of Contents. The Table of Contents is system-generated and cannot be edited.

(5) Project Description. The project description contains the following items "a" through "h" and is not to exceed 15 pages in length. **Please note that per guidance in the GPG, the Project Description must contain, as a separate section within the narrative, a discussion of the broader impacts of the proposed activities. You can decide where to include this section within the Project Description.**

a. Overview. Provide a brief description of the objectives of the proposed RET in Engineering and Computer Science Site, targeted teacher and/or community college faculty participants, intellectual focus, broader impact of the proposed activity, organizational structure, timetable, and institutional commitment to the RET activity.

b. Nature of Teacher and/or Community College Faculty Activities. A RET in Engineering and Computer Science Site program may be conducted during the summer, academic year, or both, and must have a well-defined focus, with clearly articulated research projects and activities for teachers and/or community college faculty. The teachers and/or community college faculty must be involved in an engineering or computer science research project for a duration of at least six weeks. In those cases where limited availability of specialized facilities, such as clean rooms, electron microscopes, etc., make it possible to offer an extraordinary experience in a shorter timeframe, a research component of a shorter duration may be proposed with appropriate justification. An orientation session must be included at the beginning of the program for the teachers and/or community college faculty to acquaint them with laboratory methods, safety procedures, analytical methods, etc. as appropriate to the proposal. Proposals must address the approach to research training being undertaken, and must provide detailed descriptions of examples of research projects that the teachers and/or community college faculty will pursue. These research projects must be relevant to the subjects taught by the participating teachers and/or community college faculty during the academic year. Proposals must present plans that will ensure the development of RET in Engineering and Computer Science participant-faculty interaction and communication. Development of collegial relationships and interactions is an important part of the project opportunity therefore the teachers and/or community college faculty should work closely in teams with university faculty and students.

c. The Research Environment. This subsection should describe the experience and record of involvement with K-12/community college education and research of the principal investigator, the faculty who may serve as research mentors, and the institution. This should include information on the record of faculty/mentors in publishing work and providing professional development opportunities for K-12 STEM teachers and/or community college faculty. The facilities, equipment, and other resources available to support the proposed research experiences should be described in relation to those activities.

The NSF form on Facilities, Equipment, and Other Resources should be marked "See the Project Description" and the information should be included in this subsection instead.

d. Participant Recruitment and Selection. The overall quality of the participant recruitment and selection processes and criteria will be an important element in proposal evaluation. The recruitment plan should be described with as much specificity as possible, including the types and/or names of institutions where participants will be recruited and the efforts to be made to attract members of underrepresented groups (women, minorities, and persons with disabilities) It is encouraged, but not required, that at least two STEM teachers and/or community college faculty be recruited for the program from the same K-12 school/community college in order to help ensure that outcomes of the program are more effectively disseminated to the participating institutions. RET Site participants must be currently teaching a STEM subject at their institution in order to participate in this program. It is also strongly encouraged that participants be allowed to participate in the RET in Engineering and Computer Science Site program for two consecutive years.

e. Follow-up Plan. A major goal of the RET in Engineering and Computer Science Site program is to help encourage and develop long-term relationships between the teacher and/or community college faculty participants, the RET Site project faculty team and the participating school districts particularly during the academic year. The RET experience also will lead to the transfer of new knowledge to classroom activities, therefore, the proposal must provide a plan for sustained follow-up by the RET in Engineering and Computer Science Site project team with the teachers and/or community college faculty to ensure that the research experience is translated into classroom practice during the academic year. A plan involving ongoing interaction that supports classroom implementation of lesson plans, curricula, or skills developed in the RET in Engineering and Computer Science project must be included in the proposal. In addition, plans to hold a workshop to disseminate RET program experiences to a broader group of teachers and/or community college faculty not involved in the RET site program may be included in the proposal.

If a request is being made for renewal support of a previously funded RET in Engineering Site, documentation must be provided on follow-up activities conducted during the prior RET in Engineering project.

f. Project Evaluation and Reporting. This subsection should provide a plan for evaluation of the proposed project. The objective of the evaluation process is to measure qualitatively and quantitatively the success of the project in achieving its goals, particularly the degree to which the participants have learned and their perspectives on science, engineering, or computer science have been expanded, as well as the impact on K-12 and community college students and their curriculum. The evaluation plan is an important part of the RET in Engineering and Computer Science Site proposal, but proposers have much latitude in designing a plan that best suits their particular project. Although not required, RET Site project directors may wish to engage educational research specialists from their or another institution in planning and implementing the project evaluation. Evaluation may

involve periodic measures throughout the project to ensure that it is progressing satisfactorily according to the project plan, and may involve pre-project and post-project measures aimed at determining the degree of teacher and student learning that has been achieved as a result of the project. Additionally, it is highly desirable to have a structured means of tracking participants with the aim of gauging the degree to which the RET in Engineering and Computer Science Site experience has been a lasting influence as they follow their career paths.

Annual progress reports are required through the NSF FastLane project reports system. The progress report calls for information on project participants, on the research training provided and other educational activities, on publications and products, and most importantly on contributions to education and human resource development. Data for the progress report should feed into the project evaluation plan which in turn should enable informed statements about contributions and success in meeting project goals.

g. Results from Prior Support (if applicable). If no prior support has been received through an RET Site award, the maximum of 15 pages may be employed for items "a" through "f" above. If the applicant institution has received prior support through an RET Site award in the disciplinary area(s) of the proposal, the proposal must include a section (limited in length to five pages) entitled Results from Prior NSF Support within the 15-page narrative description of the project. This section must describe the earlier RET project(s) and outcomes(s) in sufficient detail to permit reviewers to reach an informed conclusion regarding the value of the results achieved. This will likely include results from the project evaluation, summary information on recruiting efforts and number of applicants, demographic make-up of participants and their home institutions, and career choices of participants; and a list of publications or reports (if to be submitted for publication) resulting from the NSF award.

h. Dissemination. To fulfill NSF dissemination requirements, as well as ensure long-term, free teacher access of the K-12 engineering and computer science curricula you create, RET Site awardees are strongly encouraged to publish the lessons or hands-on activities developed through this award in the *TeachEngineering* digital library (<http://teachengineering.org/>). With NSF funding provided by the National STEM Education Distributed Learning (NSDL) program, a multi-university team of engineering researchers embarked on creating the *TeachEngineering* digital library in January 2003. Engineering educators from the University of Colorado at Boulder, Duke University, Worcester Polytechnic Institute and Colorado School of Mines, with advice from dozens of K-12 teachers, pooled their K-12 engineering curricula developed through four NSF GK-12 grants into a unified collection freely accessible through the web. The *TeachEngineering* digital library was launched in January 2005 as a searchable, educational standards-based repository of high-quality, classroom-tested lessons and activities for use by teachers and engineering faculty to teach engineering in K-12 settings. *TeachEngineering's* multi-state alignment capability enables it to serve teachers from any state searching for K-12 engineering curricula that align to their state's standards. It also creates dissemination opportunities for authors with engineering curricula who desire to meet educational standards from any state.

This NSDL collection of 900+ classroom-tested K-12 engineering lessons and activities (including contributions from RETs and other NSF grantees) presents a common "look & feel" for users, and is fully searchable by many criteria, including science, math and technology standards. Using the *TeachEngineering* templates to document your curricula from the start simplifies the publication process. See templates, examples, review rubrics and other author submission information at http://teachengineering.org/submit_curricula.php.

(6) References Cited. A listing of references to pertinent literature is required.

(7) Current and Pending Support. This form should be provided for all persons listed as senior personnel (up to a total of 12 people).

(8) Biographical Sketches. The basic guidelines for biographical material apply; however, senior personnel are encouraged to include activities or accomplishments relevant to a successful RET Site. Senior personnel are the principal investigator; the co-principal investigator if one has been designated; and other faculty/professionals who are anticipated to serve as research mentors. The number of biographical sketches is limited to 12.

(9) Project Budget. The proposal should include a detailed project budget and budget justification, as described in the GPG or the NSF Grants.gov Application Guide. The budget justification (not to exceed three pages) should explain and justify major cost items and any unusual situations/inclusions and address the cost-effectiveness of the project. Project costs may include such items as faculty salaries and participant stipends, housing meals, travel, tuition, or laboratory use. A site may not charge the participant an application fee. Proposers are urged to consult a RET program manager concerning any questions about the project budget.

The total amount which may be requested for a RET Site may not exceed \$500,000, with a program duration of up to three years. The program may be carried out during summer months, academic year, or both. The total cost per teacher is limited to \$10,000 per year, which includes funds for the teacher/community college faculty stipend and up to \$2,000 for the cost of materials, equipment, software, and other supplies for developing classroom instructions and experiments. The budget should include a request for funds to cover the cost of attendance of the Principal Investigator at each year's annual awardee meeting in the Washington, DC area. It is expected that teacher and community college faculty stipends will be adjusted according to their length of residency and that stipends for in-service teachers will generally be higher than those for pre-service teachers (education majors who are still pursuing their degrees). It is expected that participating teachers/community college faculty be paid at least every two weeks during the summer.

Additional funds up to 25% of the total Participant Support Costs listed in the proposed budget may be requested for activities in other cost categories (e.g., salaries, wages and fringe benefits, travel, materials and supplies, and applicable indirect costs) that contribute to the effectiveness of the RET program; any such costs must be listed under the appropriate NSF budget categories and must be explained in the Budget Justification. Organizations should propose in accordance with their current disclosed accounting practices.

If funds are requested to conduct a workshop please add them into the yearly proposal budget and fully itemize and describe the funds requested in the budget justification.

(10) Supplementary Documentation. In addition to those listed in the GPG, the following two items may be provided.

Optional Ethics Component (limit, three pages). RET in Engineering and Computer Science applicants may apply for up to \$4,000 per year of additional funding (direct costs) for carefully designed, clearly articulated activities focusing on ethics in science and engineering. If this optional funding is requested, the activities should be described fully in the Supplementary Documentation section of the proposal, not in the Project Description. The description of the supplementary ethics component should include the following: 1) ethics issues or topics that relate to the scientific/engineering content of the project and/or to issues of professional conduct of research; 2) participating faculty and other individuals with appropriate credentials in ethics, including outside ethicists as necessary; 3) activities that show how participants and RET mentors will be engaged in ethics discussions designed to present ethics concepts and skills for resolution of ethical issues, using approaches such as seminars, student presentations and reports,

role-playing, case studies, and outside speaker presentations; 4) products such as reports, presentations, and Web-based materials; 5) a formative evaluation plan to be used to improve the component; and 6) results from any prior support for an ethics component.

Proposal budgets may include up to \$4,000 per year in direct costs to support ethics activities in a RET Site project. These funds are not included in the guideline of \$10,000 per teacher or community college faculty. Because a separate budget sheet for the ethics activities is not possible in FastLane or Grants.gov, the funds should be added in the appropriate categories in the yearly proposal budget. In the Budget Justification, the special ethics activities must be itemized separately and clearly, and the total (up to \$4,000) for the activities must be indicated. Questions regarding the ethics component should be directed to the SBE Ethics program officer at 703-292-8543.

Letters of Commitment. Signed letters of commitment documenting collaborative arrangements of significance to the proposal must be scanned and placed in this section. Letters of support and commitment from participating school districts are required. Letters may be relevant where the awardee and performing organizations are different, where faculty or facilities of more than one institution are to be employed, or where international activities are arranged. Letters of endorsement are not permitted.

Request for RET Supplement

RET Supplements are supported by the various disciplinary research programs within the Directorates for Engineering and for CISE. A RET supplement request may be included in a proposal for a new or renewed ENG or CISE grant or cooperative agreement submitted later as a supplement to an ongoing award. Guidance for use of either mechanism is given below. In either case, the description of the RET activity should clearly articulate in some detail the form and nature of the prospective teacher and/or community college faculty's involvement in the principal investigator's ongoing or proposed research. For example, the teacher and/or community college faculty member may participate in the design of new experiments, modeling and analysis of experimental data, algorithm and software development, and other activities that will result in intellectual contributions to the project. It is expected that the RET supplement experience will also lead to the transfer of new knowledge to classroom activities. Therefore, the RET supplement description should also indicate what type of sustained follow-up will be provided to help in translating the teacher/community college faculty research experience into classroom practice. The request should also discuss the experience of the principal investigator (or other possible research mentors) in involving K-12 teachers and/or community college faculty in research, including any previous RET supplement support and the outcomes from that support; and the process and criteria for selection of the teachers and/or community college faculty. A brief biographical sketch of the teacher and/or community college faculty should also be included, if available.

The duration of the RET supplement will be one year and the project may be carried out during summer months, academic year, or both. The total cost of the supplement is limited to \$10,000 per teacher. The budget includes a teacher's stipend and up to \$2,000 for the cost of materials, equipment, software and other supplies for developing classroom instructions and experiments. Additional funds up to 25% of the total Participant Support Costs listed in the proposed budget may be requested for activities in other cost categories (e.g., salaries, wages and fringe benefits, travel, materials and supplies, and applicable indirect costs) that contribute to the effectiveness of the RET program; any such costs must be listed under the appropriate NSF budget categories and must be explained in the Budget Justification. Organizations should propose in accordance with their current disclosed accounting practices.

Normally, funds may be available for one to two teachers, but exceptions will be considered. Participation of teachers and/or community college faculty who are members of underrepresented groups (women, underrepresented minorities, and persons with disabilities) is strongly encouraged. Center or large research efforts may request support for a number of teachers commensurate with the size and nature of the project. For guidance concerning RET supplement requests, please consult with the cognizant ENG or CISE program director of the particular research program of the proposal or award.

An award decision will be based on internal review by the cognizant ENG or CISE program director and availability of funds in a particular program.

Results from any RET Supplement activity must be included in the annual project report of the award. The NSF FastLane Project Reports System requires inclusion of information on participants and on publications and products, as well as discussion of activities and contributions in education and human resource development.

A request for a RET Supplement to an existing award must be submitted via the NSF FastLane System. After login to FastLane, choose Award and Reporting Functions, then Supplemental Funding Request. Next choose the award to be supplemented. In the form entitled Summary of Proposed Work, state that this is a request for an RET supplement. In the form entitled Justification for Supplement, include the information requested above, limited to three pages. If a RET participant has been pre-selected, then a brief biographical sketch should be placed in supplementary documentation. Prepare a budget, including justification of the funds requested for teacher and/or community college faculty support and their proposed use. All teacher and/or community college faculty costs are entered under line F as participant support costs. Additional funds up to 25% of the total Participant Support Costs listed on line F may be requested for activities in other cost categories (e.g., salaries, wages and fringe benefits, travel, materials and supplies, and applicable indirect costs) that contribute to the effectiveness of the RET program; any such costs must be listed under the appropriate NSF budget categories and must be explained in the Budget Justification. Organizations should propose in accordance with their current disclosed accounting practices. The term of a RET supplement may not exceed that of the underlying research project. The request is then forwarded to the institution's Authorized Organizational Representative for submission to NSF.

A request for a RET Supplement submitted as part of a proposal for a new or renewed grant or cooperative agreement is embedded in the proposal as follows. The description of the RET activity, as specified above and limited to three pages, is entered in FastLane or Grants.gov in the section for supplementary documentation. The budget for the RET supplement is included in the yearly project budget. All teacher and/or community college faculty costs are entered under line F as participant support costs. Additional funds up to 25% of the total Participant Support Costs listed in the proposed budget may be requested for activities in other cost categories (e.g., salaries, wages and fringe benefits, travel, materials and supplies, and applicable indirect costs) that contribute to the effectiveness of the RET program; any such costs must be listed under the appropriate NSF budget categories and must be explained in the Budget Justification. Organizations should propose in accordance with their current disclosed accounting practices. The budget justification for the proposal must contain a separate explanation of the RET supplement request, with the proposed teacher and/or community college faculty costs itemized and justified and a total given for all proposed costs.

B. Budgetary Information

Cost Sharing: Inclusion of voluntary committed cost sharing is prohibited

Other Budgetary Limitations:

Total budget amount for an RET Site may not exceed \$500,000 for up to three years, for approximately \$165,000 per year. Total

cost of an RET supplement is limited to \$10,000 per teacher per year. For both the RET Site and RET supplement the budget includes a teacher and/or community college faculty stipend and up to \$2,000 for the cost of materials, equipment, software and other supplies for developing classroom instructions and experiments.

Funds awarded to teacher/community college faculty participants in the RET in Engineering and Computer Science program for stipends, fees, lodging, travel and other miscellaneous expenses must be listed as Participant Support Costs (lines F1-F4 in FastLane and Field E in Grants.gov) in the NSF proposal budget. Additional funds up to 25% of the total Participant Support Costs listed in the proposed budget may be requested for activities in other cost categories (e.g., salaries, wages and fringe benefits, travel, materials and supplies, and applicable indirect costs) that contribute to the effectiveness of the RET program; any such costs must be listed under the appropriate NSF budget categories and must be explained in the Budget Justification. Organizations should propose in accordance with their current disclosed accounting practices.

Proposal budgets may include up to \$4,000 per year in direct costs to support an ethics component. See Supplementary Documentation section for further guidance.

The RET Site budget must include a request for funds to cover the cost of attendance of the Principal Investigator at each year's annual awardee meeting in the Washington, DC area.

C. Due Dates

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

February 28, 2011

October 03, 2011

First Monday in October, Annually Thereafter

D. FastLane/Grants.gov Requirements

For Proposals Submitted Via FastLane:

To prepare and submit a proposal via FastLane, see detailed technical instructions available at: <https://www.fastlane.nsf.gov/a1/newstan.htm>. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail fastlane@nsf.gov. The FastLane Help Desk answers general technical questions related to the use of the FastLane system. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this funding opportunity.

For Proposals Submitted Via Grants.gov:

Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. Comprehensive information about using Grants.gov is available on the Grants.gov Applicant Resources webpage: <http://www.grants.gov/web/grants/applicants.html>. In addition, the NSF Grants.gov Application Guide (see link in Section V.A) provides instructions regarding the technical preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: support@grants.gov. The Grants.gov Contact Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this solicitation.

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

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

VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

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

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

Proposers should also be aware of core strategies that are essential to the fulfillment of NSF's mission, as articulated in [Empowering the Nation Through Discovery and Innovation: NSF Strategic Plan for Fiscal Years \(FY\) 2011-2016](#). These strategies are integrated in the program planning and implementation process, of which proposal review is one part. NSF's mission is particularly well-implemented through the integration of research and education and broadening participation in NSF programs, projects, and activities.

One of the core strategies in support of NSF's mission is to foster integration of research and education through the programs, projects and activities it supports at academic and research institutions. These institutions provide abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students, and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the variety of learning perspectives.

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

A. Merit Review Principles and Criteria

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

1. Merit Review Principles

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

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

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

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

2. Merit Review Criteria

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

The two merit review criteria are listed below. Both criteria are to be given full consideration during the review and decision-making processes; each criterion is necessary but neither, by itself, is sufficient. Therefore, proposers must fully address both criteria. ([GPG Chapter II.C.2.d.i.](#) contains additional information for use by proposers in development of the Project Description section of the proposal.) Reviewers are strongly encouraged to review the criteria, including [GPG Chapter II.C.2.d.i.](#), prior to the review of a proposal.

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

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

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

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

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

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

Additional Solicitation Specific Review Criteria

- Must provide in-service and/or pre-service K-12 STEM teachers and/or community college faculty with discovery and technology based learning experiences in engineering or computer science labs/research facilities, which can be incorporated into classroom activities.
- It is recommended but not required that at least two teachers and/or community college faculty be recruited for the program from the same K-12 school/community college in order to ensure that outcomes of the program are more effectively disseminated to the participating institutions. Participants must be currently teaching a STEM subject at their institution in order to participate in the program.
- Research program must involve participants in an ongoing engineering or computer science research project for a duration of at least six weeks. Shorter duration may be proposed with justification.
- Program must have a well-defined focus, with clearly articulated research projects and activities. Research projects must have significant engineering or computer science relevance.
- Program must include a sustained follow-up plan between the faculty and the participants to ensure that the research experience is translated to classroom practice and the program provides maximum benefit to all participants.
- Program must include a detailed plan for evaluation of the project and classroom impact.

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 evaluate proposals using two National Science Board approved merit review criteria and, if applicable, additional program specific criteria. A summary rating and accompanying narrative will be completed and submitted by each reviewer. The Program Officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation.

After scientific, technical and programmatic review and consideration of appropriate factors, the NSF Program Officer recommends to the cognizant Division Director whether the proposal should be declined or recommended for award. NSF strives to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. Large or particularly complex proposals or proposals from new awardees may require additional review and processing time. The time interval begins on the deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director acts upon the Program Officer's recommendation.

After programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements for review of business, financial, and policy implications. After an administrative review has occurred, Grants and Agreements Officers perform the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at their own risk.

Once an award or declination decision has been made, Principal Investigators are provided feedback about their proposals. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers or any reviewer-identifying information, are sent to the Principal Investigator/Project Director by the Program Officer. In addition, the proposer will receive an explanation of the decision to award or decline funding.

VII. AWARD ADMINISTRATION INFORMATION

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

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

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

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the Principal Investigator must submit an annual project report to the cognizant Program Officer at least 90 days prior to the end of the current budget period. (Some programs or awards require submission of more frequent project reports). Within 90 days following expiration of a grant, the PI also is required to submit a final project report, and a project outcomes report for the general public.

Failure to provide the required annual or final project reports, or the project outcomes report, will delay NSF review and processing of any future funding increments as well as any pending proposals for all identified PIs and co-PIs on a given award. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF's electronic project-reporting system, available through Research.gov, for preparation and submission of annual and final project reports. Such reports provide information on accomplishments, project participants (individual and organizational), publications, and other specific products and impacts of the project. Submission of the report via Research.gov constitutes certification by the PI that the contents of the report are accurate and complete. The project outcomes report also must be prepared and submitted using Research.gov. This report serves as a brief summary, prepared specifically for the public, of the nature and outcomes of the project. This report will be posted on the NSF website exactly as it is submitted by the PI.

More comprehensive information on NSF Reporting Requirements and other important information on the administration of NSF awards is contained in the *NSF Award & Administration Guide* (AAG) Chapter II, available electronically on the NSF Website at http://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag.

VIII. AGENCY CONTACTS

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

General inquiries regarding this program should be made to:

- Mary Poats, Program Manager, Directorate for Engineering (ENG), Division of Engineering Education and Centers (EEC), 585 N, telephone: (703) 292-5357, fax: (703) 292-9051, email: mpoats@nsf.gov
- Harriet G. Taylor, Program Director, Directorate for Computer and Information Science and Engineering (CISE), Division of Computer and Network Systems (CNS), 1175N, telephone: (703) 292-8950, email: htaylor@nsf.gov

For questions related to the use of FastLane, contact:

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

For questions relating to Grants.gov contact:

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

IX. OTHER INFORMATION

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

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

Facilitation Awards for Scientists and Engineers with Disabilities provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See Grant Proposal Guide Chapter II, Section D.2 for instructions regarding preparation of these types of proposals.

The National Science Foundation has Telephonic Device for the Deaf (TDD) and Federal Information Relay Service (FIRS) capabilities that enable individuals with hearing impairments to communicate with the Foundation about NSF programs, employment or general information. TDD may be accessed at (703) 292-5090 and (800) 281-8749, FIRS at (800) 877-8339.

The National Science Foundation Information Center may be reached at (703) 292-5111.

The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for research and education in the sciences, mathematics, and engineering.

To get the latest information about program deadlines, to download copies of NSF publications, and to access abstracts of awards, visit the NSF Website at <http://www.nsf.gov>

- Location: 4201 Wilson Blvd. Arlington, VA 22230
- For General Information (NSF Information Center): (703) 292-5111
- TDD (for the hearing-impaired): (703) 292-5090
- To Order Publications or Forms:
Send an e-mail to: nspubs@nsf.gov
or telephone: (703) 292-7827
- To Locate NSF Employees: (703) 292-5111

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

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

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

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

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Last Updated:
11/07/06
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