# RESEARCH EXPERIENCES FOR TEACHERS (RET)

## Supplements and Sites

**Program Solicitation**
**NSF 03-554**
***Replaces Document NSF 02-078***

**National Science Foundation**
Directorate for Engineering
Division of Engineering Education and Centers

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

June 10, 2003
Deadline for RET Sites. Thereafter, second Tuesday in October of each year beginning Oct. 14, 2003. Due date for RET Supplements varies with the ENG research program. Please contact the cognizant Program Director of your proposal or award for guidance.

## SUMMARY OF PROGRAM REQUIREMENTS

### General Information

**Program Title:**

RESEARCH EXPERIENCES FOR TEACHERS (RET)
Supplements and Sites

**Synopsis of Program:**

The Research Experiences for Teachers (RET) program supports the active involvement of K-12 teachers and community college faculty in engineering research in order to bring knowledge of engineering and technological innovation into their classrooms. This announcement features two mechanisms for support of in-service and pre-service K-12 teachers and/or community college faculty research: RET Supplements and RET Sites. RET Supplements may be included in proposals for new or renewal NSF Directorate for Engineering (ENG) grants or as supplements to ongoing NSF/ENG funded projects. RET Sites are based on independent proposals to initiate and conduct research participation projects for a number of K-12 teachers and/or community college faculty.

**Cognizant Program Officer(s):**

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

- 47.041 --- Engineering

## Eligibility Information

- **Organization Limit:** None Specified.
- **PI Eligibility Limit:** None Specified.
- **Limit on Number of Proposals:** None Specified.

## Award Information

- **Anticipated Type of Award:** Standard or Continuing Grant
- **Estimated Number of Awards:** 5 to 10
- **Anticipated Funding Amount:** $450,000 maximum total for a duration of up to 3 years for RET Site Awards. RET Supplements are limited to a maximum of $10,000 per teacher for a duration of 1 year. Subject to availability of funds

## Proposal Preparation and Submission Instructions

### A. Proposal Preparation Instructions

- **Full Proposal Preparation Instructions:** This solicitation contains information that supplements the standard 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.
- **Indirect Cost (F&A) Limitations:** An administrative allowance, limited to 25% of the participant stipend support only on Line F.1., "Participant Support Costs, Stipends," is allowed for RET Supplement and Site awards in lieu of indirect costs.
- **Other Budgetary Limitations:** Other budgetary limitations apply. Please see the full text of this solicitation for further information.

### C. Due Dates

- **Full Proposal Deadline Date(s)** (due by 5 p.m proposer's local time):
  June 10, 2003
  Deadline for RET Sites. Thereafter, second Tuesday in October of each year beginning Oct. 14, 2003. Due date for RET Supplements varies with the ENG research program. Please contact the cognizant Program Director of your proposal or award for guidance.

## Proposal Review Information

- **Merit Review Criteria:** National Science Board approved criteria apply.

## Award Administration Information

- **Award Conditions:** Standard NSF award conditions apply.
- **Reporting Requirements:** Standard NSF reporting requirements apply.

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## I. INTRODUCTION

The Research Experiences for Teachers (RET) activity was initiated in the NSF Directorate for Engineering in FY 2001 to involve middle and high school teachers in engineering research in order to bring knowledge of engineering and technological innovation to the

pre-college classroom. This is achieved by building partnerships between teachers and engineering researchers in engineering research laboratories through site awards and supplements to on-going research and education projects funded by ENG. Through these partnerships, the RET program aims to build long-term collaborative relationships between both in-service and pre-service K-12 teachers; community college faculty, and the engineering research community; support the active participation of these teachers and future teachers in research and education projects funded by NSF/ENG; facilitate professional development of K-12 teachers and community college faculty through strengthened partnerships between institutions of higher education and local school districts; and encourage researchers to build mutually rewarding partnerships with teachers.

## II. PROGRAM DESCRIPTION

The RET program, through both Supplements and Sites, encourages the active participation of both in-service and pre-service (education majors who are still pursuing their degrees) K-12 teachers and community college faculty in ongoing NSF/ENG projects. Encouraging active participation of teachers in NSF projects is an excellent way to reach broadly into the teacher talent pool of the U.S. and to encourage more K-12 students to pursue engineering studies by increasing their understanding of engineering, as conveyed by their teachers.

ENG strongly encourages all of its 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 for participation in this RET opportunity.

ENG strongly encourages the use of RET supplements and sites to enable K-12 teachers of science, mathematics, and engineering and community college faculty to participate in Research Experiences for Undergraduates (REU) programs.

**RET Supplement.** A request for funding of an RET supplement should be made under an existing NSF/ENG award or within a proposal for a new or renewal NSF/ENG award. The description of the RET activity should clearly articulate in some detail the form and nature of the prospective K-12 teacher 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/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 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's research experience into classroom practice.

**RET Site.** An RET Site project is based on an independent proposal, submitted at an annual deadline date, to provide groups of in-service and pre-service K-12 teachers and community college faculty with discovery-based learning experiences in Engineering laboratories and facilities, which will then be incorporated into their classroom activities during the school year. An RET 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 community college faculty. An RET Site project must involve teachers and community college faculty in an ongoing NSF supported research project for a duration of at least four weeks. In those cases where limited availability of specialized facilities, such as clean rooms, electron microscope, etc., make it possible to offer an extraordinary experience in a shorter timeframe, a research component of as short as two weeks may be proposed with appropriate justification. An orientation session must be included at the beginning of the program for the teachers/community college faculty to acquaint them with laboratory methods, safety procedures, analytical methods, etc. as appropriate to the proposal. Because the RET experience will also lead to the transfer of new knowledge to classroom activities, the proposal must indicate the type of sustained follow-up that will be provided to translate the teacher/community college faculty research experience into classroom practice. The proposal must also provide a plan for evaluation of the proposed project and the classroom impact.

## III. ELIGIBILITY INFORMATION

The categories of proposers identified in the Grant Proposal Guide are eligible to submit proposals under this program announcement/solicitation.

## IV. AWARD INFORMATION

The estimated RET Sites program budget for each fiscal year is $2.5 million. The total number of site awards anticipated per year is between 5-10. The anticipated funding amount is $450,000 maximum total for a duration of up to 3 years for RET Site Awards. RET Supplements are limited to a maximum of $10,000 per teacher for a duration of 1 year. Subject to availability of funds.

## V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

### A. Proposal Preparation Instructions

**Full Proposal Instructions:**

Proposals submitted in response to this program announcement/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/cgi-bin/getpub?gpg. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from pubs@nsf.gov.

**Proposal for RET Site**

1. **Cover Sheet.** So that your proposal is properly identified, select the number for the RET program announcement from the pull-down list. From the ensuing screen, select the ENG Directorate and EEC Division to which the proposal is directed. In the title of the project, include the label "RET Site."

2. **Information about Principal Investigators.** This form is automatically generated by FastLane. 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 are listed as Senior Personnel.

3. **Project Summary** (1-page limit). Provide a description of the activities that would result if the project is funded, including comments on its objectives, teachers/community college faculty to be accepted, and intended impact. 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 student to identify the focus of the site (the title will be used in web-based lists of RET sites); number of teachers/community college faculty involved; number of summer weeks on site and any academic year activity; name, telephone number and email address of he point-of-contact for teacher/community college faculty recruitment; and a Web address for Site information (if known).

4. **Table of Contents.** The Table of Contents is generated by FastLane and cannot be edited.

5. **Project Description.** The project description contains the following items "a" through "f" and is not to exceed 15 pages in length.

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

    b. Nature of Teacher/Community College Faculty Activities. Proposals should address the approach to research training being undertaken, and should provide detailed descriptions of examples of research projects that the teachers/community college faculty will pursue. Proposals must present plans that will

ensure the development of RET participant-faculty interaction and communication. Development of collegial relationships and interactions is an important part of the project opportunity.

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 teachers/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 is not required; rather, such information should be included in this section.

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)

e. 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 or engineering have been expanded, as well as the impact on K-12 students and their curricular. The evaluation plan is an important part of the RET Site proposal, but proposers have much latitude in designing a plan that best suits their particular project. Proposers may wish to consult the NSF on-line document, "User-friendly Handbook for Project Evaluation" (NSF 02-57), http://www.nsf.gov/pubsys/ods/getpub.cfm?nsf02057, for guidance on what makes for a good evaluation plan. 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 participant 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 Site experience has been a lasting influence as they follow their career paths.

   Annual progress reports are required through the 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.

f. 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 "e" 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 5 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.

6. **References Cited.** A listing of references to pertinent literature is optional.

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 GPG 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. The budget justification (not to exceed 3 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 the RET Coordinator concerning any questions about the project budget.

10. The duration of an RET Site grant may be for up to three years, and the program may be carried out during summer months, academic year, or both. The total cost per teacher is limited to $10,000, which includes funds for the teacher's stipend and up to $1,000 for the cost of materials, equipment, software, and other supplies for developing classroom instructions and experiments. The total amount which may be requested for an RET Site is $150,000 per year; total request for a three-year program not to exceed $450,000. An administrative allowance (limited to 25% of the teacher's stipend only) is allowed in lieu of indirect costs. It is expected that teacher/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).

11. **Supplementary Documentation.** The following two additional items may be provided.

    **Optional Ethics Component** (limit, 3 pages). Project directors may apply for support of ethics in science and engineering activities in an RET Site project. The proposal for an ethics component, entered as Supplementary Documentation, should describe 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.

    Project directors may apply for up to $4,000 each year in support of ethics activities in an RET Site project; these funds are not included in the guideline of $10,000 per teacher/community college faculty. Up to 25% of the direct costs requested for this component may be budgeted as an administrative allowance, but the yearly total requested for ethics activities may not exceed $4,000. A separate budget sheet is not possible in FastLane. Thus, the ethics budget is added into the yearly proposal budget; but **must be itemized in the budget justification, with a total shown for the items plus administrative allowance.** Questions regarding the ethics component should be directed to John Perhonis, Program Director for Ethics and Values Studies at jperhoni@nsf.gov or 703-292-7279.

**Letters of Commitment.** signed letters of commitment documenting collaborative arrangements of significance to the proposal should be scanned and placed in this section. In particular letters of support and commitment from participating school districts are encouraged. 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.

Proposers are reminded to identify the program announcement/solicitation number (Not assigned) in the program announcement/solicitation block on the proposal Cover Sheet. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

**RET Supplement Proposal Instructions:**

Proposals for RET Supplements should be prepared and submitted in accordance with the general guidelines contained in the NSF *Grant Proposal Guide (GPG). S*ee URL: http://www.nsf.gov/pubs/2003/nsf032/032_5.htm#VB4. The complete text of the GPG is available electronically on the NSF Website at: http://www.nsf.gov/cgi-bin/getpub?gpg. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from pubs@nsf.gov.

**Request for RET Supplement**

RET Supplements are supported by the various disciplinary research programs within the Directorate for Engineering. An RET Supplement request may be included in a proposal for a new or renewal ENG 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/community college faculty's involvement in the Principal Investigator's ongoing or proposed research. For example, the teacher/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's 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 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/faculty. A brief biographical sketch of the teacher/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 $1,000 for the cost of materials, equipment, software and other supplies for developing classroom instructions and experiments. An administrative allowance (limited to 25% of the teacher's stipend only and included in the $10,000 total) is allowed in lieu of indirect costs.

Normally, funds may be available for one to two teachers, but exceptions will be considered. Participation of teachers and 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 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 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 an 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 3 pages. If an RET participant has been pre-selected, then a brief biographical sketch should be placed in Supplementary Documentation. Prepare a budget, including justication of the funds requested for teacher/community college faculty support and their proposed use. All teacher/community college faculty costs are entered under line F as participant support costs. An administrative allowance (limited to 25% of the participant stipend support only) is allowed for RET awards in lieu of indirect costs (enter at line I of the proposal budget). The term of an 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 an RET Supplement submitted as part of a proposal for a new or renewal grant or cooperative agreement** is embedded in the proposal as follows. The description of the RET activity, as specified above and limited to 3 pages, is entered in FastLane in the section for Supplementary Documentation. The budget for the RET Supplement is included in the yearly project budget. All teacher/community college faculty costs are entered under line F as participant support costs. An administrative allowance (limited to 25% of the participant stipend support only) is allowed for the RET portion in lieu of indirect costs (added into line I of the proposal budget). The budget justification for the proposal must contain a separate explanation of the RET Supplement request, with the proposed teacher/community college faculty costs itemized and justified and a total given for the items plus administrative allowance.

Proposers are reminded to identify the program announcement/solicitation number (03-554) in the program announcement/solicitation block on the proposal Cover Sheet. 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 in proposals submitted under this Program Solicitation.

**Indirect Cost (F&A) Limitations:**

An administrative allowance, limited to 25% of the participant stipend support only on Line F.1., "Participant Support Costs, Stipends," is allowed for RET Supplement and Site awards in lieu of indirect costs.

**Other Budgetary Limitations:**

Total budget amount for an RET Site may not exceed $450,000 for up to 3 years, for approximately $150,000 per year. Total cost of an RET supplement is limited to $10,000 per teacher. For both the RET Site and RET supplement the budget includes a teacher's stipend and up to $1,000 for the cost of materials, equipment, software and other supplies for developing classroom instructions and experiments. An administrative allowance (limited to 25% of the teacher's stipend only and included in the $10,000 total) is allowed in lieu of indirect costs.

## C. Due Dates

Proposals must be submitted by the following date(s):

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

June 10, 2003
Deadline for RET Sites. Thereafter, second Tuesday in October of each year beginning Oct. 14, 2003. Due date for RET Supplements varies with the ENG research program. Please contact the cognizant Program Director of your proposal or award for guidance.

## D. FastLane Requirements

Proposers are required to prepare and submit all proposals for this announcement/solicitation through the FastLane system. Detailed instructions for 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 announcement/solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this announcement/solicitation.

*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. Proposers are no longer required to provide a paper copy of the signed Proposal Cover Sheet to NSF. Further instructions regarding this process are available on the FastLane Website at: http://www.fastlane.nsf.gov

# VI. PROPOSAL REVIEW INFORMATION

## A. NSF Proposal Review Process

Reviews of proposals submitted to NSF are solicited from peers with expertise in the substantive area of the proposed research or education project. These reviewers are selected by Program Officers charged with the oversight of the review process. NSF invites the proposer to suggest, at the time of submission, the names of appropriate or inappropriate reviewers. Care is taken to ensure that reviewers have no conflicts with the proposer. Special efforts are made to recruit reviewers from non-academic institutions, minority-serving institutions, or adjacent disciplines to that principally addressed in the proposal.

The National Science Board approved revised criteria for evaluating proposals at its meeting on March 28, 1997 (NSB 97-72). All NSF proposals are evaluated through use of the two merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

On July 8, 2002, the NSF Director issued Important Notice 127, Implementation of new Grant Proposal Guide Requirements Related to the Broader Impacts Criterion. This Important Notice reinforces the importance of addressing both criteria in the preparation and review of all proposals submitted to NSF. NSF continues to strengthen its internal processes to ensure that both of the merit review criteria are addressed when making funding decisions.

In an effort to increase compliance with these requirements, the January 2002 issuance of the GPG incorporated revised proposal preparation guidelines relating to the development of the Project Summary and Project Description. Chapter II of the GPG specifies that Principal Investigators (PIs) must address both merit review criteria in separate statements within the one-page Project Summary. This chapter also reiterates that broader impacts resulting from the proposed project must be addressed in the Project Description and described as an integral part of the narrative.

Effective October 1, 2002, NSF will return without review proposals that do not separately address both merit review criteria within the Project Summary. It is believed that these changes to NSF proposal preparation and processing guidelines will more clearly articulate the importance of broader impacts to NSF-funded projects.

The two National Science Board approved merit review criteria are listed below (see the Grant Proposal Guide Chapter III.A for further information). 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 he/she is qualified to make judgments.

**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 and original 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?

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

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

***Integrating Diversity into NSF Programs, Projects, and Activities***
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 Protocol and Associated Customer Service Standard

All proposals are carefully reviewed by at least three other persons outside NSF who are experts in the particular field represented by the proposal. Proposals submitted in response to this announcement/solicitation will be reviewed by Ad Hoc 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.

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 Director. In addition, the proposer will receive an explanation of the decision to award or decline funding.

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 date of receipt. The interval ends when the Division Director accepts the Program Officer's recommendation.

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 Division 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.A. 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 (NSF-GC-1); * or Federal Demonstration Partnership (FDP) Terms and Conditions * and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreement awards also are administered in accordance with NSF Cooperative Agreement Terms and Conditions (CA-1). Electronic mail notification is the preferred way to transmit NSF awards to organizations that have electronic mail capabilities and have requested such notification from the Division of Grants and Agreements.

*These documents may be accessed electronically on NSF's Website at http://www.nsf.gov/home/grants/grants_gac.htm. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from pubs@nsf.gov.

More comprehensive information on NSF Award Conditions is contained in the NSF *Grant Policy Manual* (GPM) Chapter II, available electronically on the NSF Website at http://www.nsf.gov/cgi-bin/getpub?gpm. The GPM is also for sale through the Superintendent of Documents, Government Printing Office (GPO), Washington, DC 20402. The telephone number at GPO for subscription information is (202) 512-1800. The GPM may be ordered through the GPO Website at http://www.gpo.gov.

### C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the PI must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period.

Within 90 days after the expiration of an award, the PI also is required to submit a final project report. Failure to provide final technical reports delays NSF review and processing of pending proposals for the PI and all Co-PIs. 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. This system permits electronic submission and updating of project reports, including information on project participants (individual and organizational), activities and findings, 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.

## VIII. CONTACTS FOR ADDITIONAL INFORMATION

General inquiries regarding this program should be made to:

- Mary F. Poats, ENG/RET Coordinator, Directorate for Engineering, Division of Engineering Education & Centers, 585 N, telephone: (703) 292-8380, fax: (703) 292-9051, email: mpoats@nsf.gov
- Radhakishan Baheti, Program Director, Directorate for Engineering, Division of Electrical & Communications Systems, 675 S, telephone: (703) 292-8339, fax: (703) 292-9147, email: rbaheti@nsf.gov
- Richard J. Fragaszy, Program Director, Directorate for Engineering, Division of Civil & Mechanical Systems, 545 S, telephone: (703) 292-8360, email: rfragasz@nsf.gov
- Cynthia J. Ekstein, Program Director, Directorate for Engineering, Division of Bioengineering & Environmental Systems, 565 S, telephone: (703) 292-7941, fax: (703) 292-9098, email: cekstein@nsf.gov
- Thomas W. Chapman, Division Director (Acting), Directorate for Engineering, Division of Chemical & Transport Systems, 525 N, telephone: (703) 292-8370, fax: (703) 292-9054, email: tchapman@nsf.gov
- Warren R. DeVries, Division Director, Directorate for Engineering, Division of Design, Manufacture, & Industrial Innovation, 550 S, telephone: (703) 292-8330, fax: (703) 292-9056, email: wdevries@nsf.gov

For questions related to the use of FastLane, contact:

- Esther M. Bolding, Administrative Manager, Directorate for Engineering, Division of Engineering Education & Centers, 585 N, telephone: (703) 292-8380, fax: (703) 292-9051, email: ebolding@nsf.gov

## IX. OTHER PROGRAMS OF INTEREST

The NSF *Guide to Programs* is a compilation of funding for research and education in science, mathematics, and engineering. The NSF *Guide to Programs* is available electronically at http://www.nsf.gov/cgi-bin/getpub?gp. General descriptions of NSF programs, research areas, and eligibility information for proposal submission are provided in each chapter.

Many NSF programs offer announcements or solicitations concerning specific proposal requirements. To obtain additional information about these requirements, contact the appropriate NSF program offices. Any changes in NSF's fiscal year programs occurring after press time for the *Guide to Programs* will be announced in the NSF E-Bulletin, which is updated daily on the NSF Website at http://www.nsf.gov/home/ebulletin, and in individual program announcements/solicitations. Subscribers can also sign up for NSF's Custom News Service (http://www.nsf.gov/home/cns/start.htm) to be notified of new funding opportunities that become available.

## ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) funds research and education in most fields of science and engineering. Awardees are wholly responsible for conducting their project activities and preparing the results for publication. Thus, the Foundation does not assume responsibility for such findings or their interpretation.

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*Facilitation Awards for Scientists and Engineers with Disabilities* (FASED) provide funding for special assistance or equipment to enable persons with disabilities (investigators and other staff, including student research assistants) to work on NSF-supported projects. See the GPG Chapter II, Section D.2 for instructions regarding preparation of these types of proposals.

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 or (800) 281-8749
- **To Order Publications or Forms:**

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  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; 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 applicant 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 needing information as part of the review process or in order to coordinate programs; 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," 63 Federal Register 267 (January 5, 1998), and NSF-51, "Reviewer/Proposal File and Associated Records," 63 Federal Register 268 (January 5, 1998). 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 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 this burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to: Suzanne Plimpton, Reports Clearance Officer, Division of Administrative Services, National Science Foundation, Arlington, VA 22230.

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