

# Research Experiences for Undergraduates (REU)

## Supplements and Sites

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### Program Solicitation

NSF 03-577

*Replaces Document NSF 02-136*



#### National Science Foundation

Directorate for Education and Human Resources

Directorate for Biological Sciences

Directorate for Computer and Information Science and Engineering

Directorate for Engineering

Directorate for Geosciences

Directorate for Social, Behavioral, and Economic Sciences

Directorate for Mathematical and Physical Sciences

Office of Integrative Activities

Office of Polar Programs

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

Deadline for REU Supplement requests: Varies with the research program.

Deadline for REU Sites proposals: September 15 of each year.

Deadline for REU Sites proposals to the Antarctic Program: First Wednesday in June of each year, coincident with other Antarctic Program deadlines.

## SUMMARY OF PROGRAM REQUIREMENTS

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### General Information

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#### Program Title:

Research Experiences for Undergraduates (REU)  
Supplements and Sites

#### Synopsis of Program:

The Research Experiences for Undergraduates (REU) program supports active research participation by undergraduate students in any of the areas of research funded by the National Science Foundation. REU projects involve students in meaningful ways in ongoing research programs or in research projects specially designed for the purpose. This solicitation features two mechanisms for support of student research: REU Supplements and REU Sites. REU Supplements may be included in proposals for new or renewal NSF grants or cooperative agreements or as supplements to ongoing NSF-funded projects. REU Sites are based on independent proposals to initiate and

conduct undergraduate research participation projects for a number of students. REU Sites projects may be based in a single discipline or academic department or be based on interdisciplinary or multi-department research opportunities with a strong intellectual focus. Proposals with an international dimension are welcomed. A partnership with the Department of Defense supports REU Sites in DoD-relevant research areas. Undergraduate student participants in either Supplements or Sites must be citizens or permanent residents of the United States or its possessions.

#### **Cognizant Program Officer(s):**

- REU Points-of-Contact, <http://www.nsf.gov/home/crssprgm/reu/contacts.htm>

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

- 47.074 --- Biological Sciences
- 47.070 --- Computer and Information Science and Engineering
- 47.076 --- Education and Human Resources
- 47.041 --- Engineering
- 47.050 --- Geosciences
- 47.049 --- Mathematical and Physical Sciences
- 47.078 --- Office of Polar Programs
- 47.075 --- Social, Behavioral and Economic Sciences

#### **Eligibility Information**

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

#### **Award Information**

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- **Anticipated Type of Award:** All award mechanisms are applicable to REU
- **Estimated Number of Awards:** Varies across Supplements and Sites
- **Anticipated Funding Amount:** Varies across Supplements and Sites

#### **Proposal Preparation and Submission Instructions**

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##### **A. Proposal Preparation Instructions**

- **Full Proposal Preparation Instructions:** This solicitation contains information that deviates from 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, is allowed for REU Supplement and Site awards in lieu of indirect costs.
- **Other Budgetary Limitations:** Not Applicable.

##### **C. Due Dates**

- Deadline for REU Supplement requests: Varies with the research program.
- Deadline for REU Sites proposals: September 15 of each year.
- Deadline for REU Sites proposals to the Antarctic Program: First Wednesday in June of each year, coincident with other Antarctic Program deadlines.

## Proposal Review Information

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- **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

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

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## I. INTRODUCTION

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The National Science Foundation announces continuation of the Research Experiences for Undergraduates (REU) program, a Foundation-wide program for support of active research participation by undergraduate students. The REU program seeks to expand student participation in all kinds of research -- whether disciplinary, interdisciplinary, or educational in focus -- encompassing efforts by individual investigators, groups, centers, national facilities and others. This solicitation features two mechanisms for support of student research: REU Supplements and REU Sites. The REU program is a major contributor to the NSF goal of developing a diverse, internationally competitive, and globally-engaged scientific and engineering workforce. It draws on the integration of research and

education to attract a diversified pool of talented students into careers in science and engineering and to help ensure that they receive the best education possible.

## II. PROGRAM DESCRIPTION

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The REU program, through both Supplements and Sites, aims to provide appropriate and valuable educational experiences for undergraduate students through research participation. REU projects involve students in meaningful ways in ongoing research programs or in research projects specially designed for the purpose. REU projects feature high quality interaction of students with faculty and/or other research mentors and access to appropriate facilities and professional development opportunities. Active research experience is considered one of the most effective ways to attract talented undergraduates to and retain them in careers in science and engineering, including careers in teaching.

REU opportunities are an excellent way to reach broadly into the student talent pool of our nation. NSF is particularly interested in increasing the participation in research of women, underrepresented minorities, and persons with disabilities. REU projects are strongly encouraged to involve students who are members of these groups. Underrepresented minorities are African-Americans, Hispanics, Native Americans, and Native Pacific Islanders.

Supplement and Site projects may be carried out during the summer months, during the academic year, or both. REU Sites may be proposed for durations of one to five years, with a three-year duration being typical in most NSF directorates. The term of REU Supplements may not exceed that of the underlying research project.

### REU Supplements

REU Supplements are supported by the various disciplinary and educational research programs throughout the Foundation, including programs such as Small Business Innovation Research. The request for an REU Supplement may be made within a proposal for a new or renewal NSF grant or cooperative agreement or as a supplement to an existing NSF award. A Supplement typically provides research experience for one or two undergraduate students. However, Centers or large research efforts may request support for a number of students commensurate with the size and nature of the project. For guidance concerning REU Supplements, please consult with the NSF Program Director of the particular research program for the proposal or award.

### REU Sites

REU Sites are based on independent proposals, submitted at an annual deadline date, to initiate and conduct undergraduate research participation projects for a number of students. Funds for the establishment of REU Sites may be requested from any of NSF's disciplinary research directorates and the Office of Polar Programs. Proposers are encouraged to talk with the NSF REU point-of-contact in their disciplinary area. See <http://www.nsf.gov/home/crssprgm/reu/contacts.htm> for contact information.

REU Sites projects must have a well-defined common focus that enables a cohort experience for students. Projects may be based in a single discipline or academic department or be based on interdisciplinary or multi-department research opportunities with a strong intellectual focus. Each proposal should reflect the unique combination of the proposing institution's interests and capabilities and those of any partnering organizations. Cooperative arrangements among institutions, organizations, and research settings will be considered so that a project might increase the quality or availability of undergraduate research experiences. REU Sites are encouraged to involve students in research who might not otherwise have the opportunity, particularly those from institutions where research programs are limited. Thus, a significant fraction of the student participants should come from outside the host institution.

### Special Opportunities

#### *Partnership with the Department of Defense*

The NSF has entered into a partnership with the Department of Defense (DoD) to expand undergraduate research opportunities in DoD-relevant research areas through the REU Sites program. The DoD activity is called *Awards to Stimulate and Support Undergraduate Research Experiences* (ASSURE). Any proposal submitted to NSF for the REU Sites program that is recommended for funding

through the NSF merit review process will be considered by DoD representatives for possible support through DoD funds. A proposer to the NSF REU Sites program need do nothing additional to be considered for ASSURE. DoD support for REU Sites targets DoD-relevant research in any of the NSF directorates or divisions that handle REU Site proposals. As with NSF, the DoD encourages proposals that reach underrepresented minorities and women, as well as students from institutions where access to research opportunities is limited. In FY2004, DoD has a special interest in proposals from predominantly undergraduate four-year institutions.

### *International Projects*

The REU program welcomes projects with an international dimension. The design of such projects is based on the opportunity at hand, but typically involves partnering of an experienced REU project in the U.S. with international collaborators in a selected organization or institution. Successful projects arise from shared commitment to research and education in a focused area. Possible projects should be discussed with a Program Director in the NSF Office of International Science and Engineering (INT), as well as with the disciplinary Program Director for REU. INT will also entertain requests to supplement an REU award in order to add an international dimension, including the participation of K-12 teachers of science, mathematics, and engineering. The INT Web site <http://www.nsf.gov/sbe/int/> provides information concerning international opportunities and programs. A report entitled "Looking Beyond the Borders: A Project Director's Handbook of Best Practices for International Research Experiences for Undergraduates" is posted at <http://www.nsf.org/REU/index.html>.

### *Research Experiences for Teachers*

NSF encourages inclusion in the REU program of K-12 teachers of science, mathematics and engineering. The Directorates for Biological Sciences, Computer and Information Sciences and Engineering, Engineering, and Mathematical and Physical Sciences have formal activities supporting Research Experiences for Teachers (RET), while other Directorates respond to requests on a case-by-case basis. Teachers may also be included in an international REU project. Information about RET activities is available on Directorate Web sites.

### *Ethics-in-Science Component*

Proposals for REU Sites are invited to include an optional ethics-in-science component. Information about current activities is available through a link on the home page of the NSF Societal Dimensions of Engineering, Science, and Technology program at <http://www.nsf.gov/sbe/ses/sdest/start.htm>. In addition, the Web site <http://www.onlineethics.org/> of the NSF-supported Science and Engineering Ethics Center contains many useful resources for developing a pedagogically sound ethics component.

## **III. ELIGIBILITY INFORMATION**

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

## **IV. AWARD INFORMATION**

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An REU activity may be funded as a component of a new or renewal grant or cooperative agreement, as a supplement to an existing award, or as a standard or continuing grant (for Sites). The number of awards made for Supplements and Sites varies across the Foundation, as does the amount of funds invested each year.

A grantee may pay stipends as scholarships or wages as it determines appropriate. In either case, funding received by individuals may be taxable income under the Internal Revenue Code of 1986 and may also be subject to state or local taxes. Please consult the Internal Revenue Service for additional information.

## V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

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### A. Proposal Preparation Instructions

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#### 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](mailto:pubs@nsf.gov).

#### Proposal for REU Site

The following instructions supplement those found in the GPG.

- (1) **Cover Sheet.** Select the number for the REU program solicitation from the pull-down list. From the ensuing screen, select the Division or Directorate to which the proposal is directed. In the title of the project, include the label "REU Site."
- (2) **Information about Principal Investigators.** This form is automatically generated by FastLane. A single individual should be designated as Principal Investigator. This individual will be responsible for overseeing all aspects of the REU Site award. However, the institution may designate one additional person as co-principal investigator, should developing and operating the REU 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, students to be accepted, and intended impact. The project summary should include the following information: name of the host institution/organization and of any other institutions/organizations 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 REU sites); number of students involved; number of summer weeks on site and any academic year activity; name, telephone number and email address of the point-of-contact for student recruitment; and a Web address for Site information (if known). *Note: Principal Investigators (PIs) must address both NSF merit review criteria in separate statements within the one-page Project Summary. NSF will return without review proposals that do not separately address both merit review criteria within the Project Summary.*
- (4) **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 REU Site, targeted student participants, intellectual focus, organizational structure, timetable, and institutional commitment to the REU activity.
  - (b) *Nature of Student Activities.* Proposals should address the approach to undergraduate research training being taken, and should provide detailed descriptions of examples of research projects that students will pursue. NSF believes undergraduate research experiences have their greatest impact in situations that lead the participants from a relatively dependent status to as independent a status as their competence warrants. Proposals must present plans that will ensure the development of student-faculty interaction and student-student 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 the involvement with undergraduate 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 involving undergraduate authors and in providing professional development opportunities for student researchers. Also appropriate is discussion of the diversity of the mentor pool and of any training and/or monitoring of mentors. The facilities, equipment, and other resources available to support the proposed undergraduate 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 subsection.
  - (d) *Student Recruitment and Selection.* The overall quality of the student 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 students will be recruited and the efforts to be made to attract members of underrepresented groups (women, minorities, and persons with disabilities).

In addition to increasing the participation of underrepresented groups, another goal of the program is to involve students in research who might not otherwise have the opportunity, particularly those from institutions where research programs are limited. Thus, a significant fraction of the student participants should come from outside the host institution. The number of students per project should be appropriate to the institutional setting and to the manner in which research is conducted in the discipline. Proposals involving fewer than six students total are discouraged. Undergraduate student participants supported with NSF funds in either Supplements or Sites must be citizens or permanent residents of the United States or its possessions.

(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 in terms of the degree to which students have learned and their perspectives on science or engineering have been expanded. The evaluation plan is an important part of the REU 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, *The 2002 User-Friendly Handbook for Project Evaluation* (NSF 02-057), <http://www.nsf.gov/cgi-bin/getpub?nsf02057>, for guidance on what makes for a good evaluation plan. Although not required, REU 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 student learning that has been achieved as a result of the project. Additionally, it is highly desirable to have a structured means of tracking participating students beyond graduation with the aim of gauging the degree to which the REU Site experience has been a lasting influence as they follow their career paths.

Annual project reports are required through the Fastlane Project Reports System. NSF has prepared guidelines specific to REU Sites concerning use of the Project Reports System; see *REU Site Awards: Guidelines for Use of NSF FastLane Project Reports System* (NSF 01-124), <http://www.nsf.gov/cgi-bin/getpub?nsf01124>. The project report calls for information on project participants (with specific screens for REU 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 project 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 REU 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 REU 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 REU project(s) and outcome(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.

(5) **References Cited**. A listing of references to pertinent literature is optional.

(6) **Current and Pending Support**. This form should be provided for all persons listed as Senior Personnel (up to a total of 12 people).

(7) **Biographical Sketches**. The basic GPG guidelines for biographical material apply; however, senior personnel are encouraged to include publications with undergraduate co-authors (with the student labelled by an asterisk) and other activities or accomplishments relevant to a successful REU 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.

(8) **Project Budget**. The proposal should include a detailed project budget and budget justification, as described in the GPG. Project costs are predominantly for student support and may include such items as participant stipends, housing, meals, travel, tuition, or laboratory use. A Site may not charge the student an application fee. The level of other allowable costs, such as faculty salaries, varies among NSF units. Proposers are urged to consult the appropriate disciplinary REU program officer concerning any questions about the project budget. The budget justification (not to exceed 3 pages) should explain and justify major cost items and any unusual

situations/inclusions, such as field work or international collaborations, and address the cost-effectiveness of the project.

An administrative allowance (limited to 25% of the participant stipend support only) is allowed for REU awards in lieu of indirect costs (enter on line I of the proposal budget). As a guide to budget development, student stipends for summer projects are expected to be at least \$300 per week per student, in addition to other participant costs of room and board, fees, and travel, with academic-year stipends comparable on a pro rata basis. All student costs should be entered on line F of the proposal budget under participant support costs. Total project costs are expected to be typically about \$600 to \$650 per student per week. **This is a guideline figure, neither a floor nor a ceiling.**

(9) **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 or engineering activities in an REU Sites 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 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 students and REU 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 REU Sites project; these funds are not included in the guideline of about \$600 to \$650 per student per week. 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 Perhoni, Program Director for Ethics and Values Studies at [jperhoni@nsf.gov](mailto:jperhoni@nsf.gov) or 703-292-7279.

**Letters of Commitment.** Signed letters documenting collaborative arrangements of significance to the proposal should be scanned and placed in this section. 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. Other letters -- for example, letters of endorsement -- are not permitted.

### ***Request for REU Supplement***

Requests for REU Supplements should be prepared in accordance with the GPG; see Chapter 5, Section B.4, <http://www.nsf.gov/pubs/2003/nsf03041/5.htm#VB4>. The following instructions supplement those found in the GPG.

REU Supplements are supported by the various disciplinary and educational research programs throughout the Foundation. For program-specific information concerning REU Supplement requests, please consult the NSF Program Director of the particular research program of the proposal or award.

In many research programs, an REU Supplement request can be included in a proposal for a new or renewal NSF grant or cooperative agreement; or such a request can be submitted later as a supplement to an ongoing award. Guidance for use of either mechanism is given in the last two paragraphs of this section on "Request for REU Supplement." In either case, the description of the REU activity should discuss the following: 1) the form and nature of each prospective student's involvement in the research project; 2) the experience of the Principal Investigator (or other possible research mentors) in involving undergraduates in research, including any previous REU Supplement support and the outcomes from that support; and 3) the process and criteria for selection of the student(s). If the student has been pre-selected, as may be the case in supplementation of an ongoing award, then the grounds for selection and a brief biographical sketch of the student should be included.

Normally funds may be available for up to two students, but exceptions will be considered for training additional qualified students who are members of underrepresented groups (women, minorities, and persons with disabilities). Centers or large research efforts may request support for a number of students commensurate with the size and nature of the project.

As a guide to budget development, student stipends for summer projects are expected to be comparable to those of REU Site



participants, typically at least \$300 per week per student, in addition to other participant support costs of room and board, fees, and travel, with academic-year stipends comparable on a pro rata basis. Total costs for a summer are expected to be typically about \$600 to \$650 per student per week. **This is a guideline figure, neither a floor nor a ceiling.**

Results from any REU Supplement activity must be included in the annual project report for the award. The NSF FastLane Project Reports System calls for information on participants (with specific screens for REU participants) and on publications and products, as well as discussion of activities and contributions in education and human resource development.

**A request for an REU Supplement to an existing NSF award** is submitted in accordance with the guidelines found in the GPG. After logging in 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 REU Supplement. In the form entitled "Justification for Supplement," include the information described above in the second paragraph under the subheading "Request for REU Supplement"; limit your response to 3 pages. If an REU student has been pre-selected, then a brief biographical sketch may be placed in Supplementary Documents. Prepare a budget, including a justification of the funds requested for student support and their proposed use. All student costs are entered on line F of the proposal budget as participant support costs. An administrative allowance (limited to 25% of the participant stipend support only) is allowed for REU awards in lieu of indirect costs (enter on line I of the proposal budget). The term of an REU Supplement may not exceed that of the underlying research project. The request is then forwarded to the organization's Authorized Organizational Representative for submission to NSF.

**A request for an REU 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 REU activity -- namely, the information described above in the second paragraph under the subheading "Request for REU Supplement -- is entered in FastLane in the section for Supplementary Documentation. Limit this description to 3 pages. The budget for the REU Supplement is included in the yearly project budget. All student costs are entered on line F of the proposal budget as participant support costs. An administrative allowance (limited to 25% of the participant stipend support only) is allowed for the REU 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 REU Supplement request, with the proposed student costs itemized and justified and a total given for the items plus administrative allowance. If the intention is to engage students as technicians, then an REU Supplement is not the appropriate support mechanism. Instead, support would be entered on line B4 (Undergraduate Students) of the proposal budget.

Proposers are reminded to identify the program announcement/solicitation number (03-577) 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**

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### **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, is allowed for REU Supplement and Site awards in lieu of indirect costs.

## **C. Due Dates**

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Deadline for REU Supplement requests: Varies with the research program.

Deadline for REU Sites proposals: September 15 of each year.

Deadline for REU Sites proposals to the Antarctic Program: First Wednesday in June of each year, coincident with other Antarctic Program deadlines.

## **D. FastLane Requirements**

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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](mailto: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**

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### **A. NSF Proposal Review Process**

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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.

### **Additional Review Criteria:**

Reviewers will be asked to interpret the two basic NSF review criteria in the context of REU. In addition, they will be asked to place emphasis on the following considerations:

1. The appropriateness and value of the educational experience for the student participants, particularly the appropriateness of the research project(s) for undergraduate involvement and the nature of student participation in these activities.
2. The quality of the research environment, including the record of the mentor(s) with undergraduate research participation, the facilities, and the professional development opportunities.
3. Appropriateness of the student recruitment and selection plan, including plans for involving students from underrepresented groups and from institutions with limited research opportunities.
4. Quality of plans for student preparation and follow-through designed to promote continuation of student interest and involvement in research.
5. For REU Sites, effectiveness of the plans for managing the project and evaluating the outcomes, appropriateness and cost-effectiveness of the budget, and commitment of partners if relevant.

## **B. Review Protocol and Associated Customer Service Standard**

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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.

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## **VII. AWARD ADMINISTRATION INFORMATION**

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### **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.)

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### **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](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](mailto: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>.

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### **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.

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## **VIII. CONTACTS FOR ADDITIONAL INFORMATION**

General inquiries regarding this program should be made to:

- REU Points-of-Contact, <http://www.nsf.gov/home/crssprgm/reu/contacts.htm>

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 800-673-6188, email: [fastlane@nsf.gov](mailto:fastlane@nsf.gov)

## **IX. OTHER PROGRAMS OF INTEREST**

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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**

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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.

NSF welcomes proposals from all qualified scientists, engineers and educators. The Foundation strongly encourages women, minorities and persons with disabilities to compete fully in its programs. In accordance with Federal statutes, regulations and NSF policies, no person on grounds of race, color, age, sex, national origin or disability shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving financial assistance from NSF, although some programs may have special requirements that limit eligibility.

*Facilitation Awards for Scientists and Engineers with Disabilities* (FASSED) 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>

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- **For General Information** (NSF Information Center): (703) 292-5111
  
- **TDD (for the hearing-impaired):** (703) 292-5090 or (800) 281-8749
  
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or telephone: (703) 292-7827
  
- **To Locate NSF Employees:** (703) 292-5111

#### **PRIVACY ACT AND PUBLIC BURDEN STATEMENTS**

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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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