

Industry/University Cooperative Research Centers Program (I/UCRC)

Program Solicitation

NSF 01-116

Replaces Document NSF 97-164



National Science Foundation

Directorate for Engineering

Division of Engineering Education and Centers

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Industry/University Cooperative Research Centers Program (I/UCRC)

Synopsis of Program:

The Industry/University Cooperative Research Centers (I/UCRCs) program develops long-term partnerships among industry, academe, and government. The centers are catalyzed by a small investment from the National Science Foundation (NSF) and are primarily supported by industry center members, with NSF taking a supporting role in their development and evolution. Each center is established to conduct research that is of interest to both the industry and the center. An I/UCRC contributes to the Nation's research infrastructure base and enhances the intellectual capacity of the engineering and science workforce through the integration of research and education.

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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

- **Organization Limit:** U.S. Academic Institutions with research and graduate programs may be eligible. Please see Section III. Eligibility Information for details on organizational eligibility information including:
 - research and graduate program requirements;
 - letter of intent; planning grant; and full center proposal requirements;
 - cost participation, memberships, and cost sharing requirements.
- **PI Eligibility Limit:**

Each PI must be a tenure-track or tenured faculty member at an institution eligible to apply for an I/UCRC award. The Center Director must be from the lead institution.
- **Limit on Number of Proposals:** Each institution is limited to a maximum of two single institution I/UCRC awards. Institutions which currently have two single institution awards are not eligible to apply for another single institution award. There is no limit on the number of proposals that may be submitted when collaborating with another institution. It is permissible for an institution to have two single institution Center awards and also apply to be part of a multi-institutional center.

Award Information

- **Anticipated Type of Award:** Standard or Continuing Grant
- **Estimated Number of Awards:** Not Specified.
- **Anticipated Funding Amount:** \$0 Planning grant and center award funding is described in detail in Section IV. Award Information.

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Submission of Letters of Intent is required. Please see the full text of this solicitation for further information.
- **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 Specialized. Please see the full text of this solicitation for further information.
- **Indirect Cost (F&A) Limitations:** Not Applicable.
- **Other Budgetary Limitations:** Not Applicable.

C. Due Dates

Proposal Review Information

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

Award Administration Information

- **Award Conditions:** Additional award conditions apply. Please see the full text of this solicitation for further information.
- **Reporting Requirements:** Additional reporting requirements apply. Please see the full text of this solicitation for further information.

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I. INTRODUCTION

The Industry/University Cooperative Research Centers (I/UCRC) Program was initiated in 1973 to develop long term partnerships among industry, academe and government. The National Science Foundation invests in these partnerships to

promote research programs of mutual interest, contribute to the Nation's research infrastructure base and enhance the intellectual capacity of the engineering workforce through the integration of research and education.

The Centers are catalyzed by a small investment from NSF and they are primarily supported by Center members, with NSF taking a supporting role in their development and evolution. The I/UCRC Program initially offers five-year awards to Centers. This five-year period allows for the development of a strong partnership between the academic researchers and their industrial and government members. After five years, Centers that continue to meet the I/UCRC Program requirements may apply for a second five-year award. These awards allow Centers to continue to grow and diversify their non-NSF membership. After ten years, the Centers are expected to be fully supported by industrial, other Federal agency, and state and local government partners. A center can re-compete for a new cycle after ten years only if the proposed center involves significant new intellectual substance.

II. PROGRAM DESCRIPTION

Requirements of an I/UCRC

A Center in the I/UCRC Program must:

- Develop a partnership among academe, industry and other organizations participating in the Center;
- Consult with Center members to set a defined research agenda focused on shared research interests, needs, and opportunities;
- Share the intellectual property developed by the Center equally among Center members in accordance with the Bayh Dole Act;
- Have Center members that monitor and advise on the progress of the research, which speeds two-way transfer of knowledge between universities and industry;
- Have a strong industry/university interaction program of university, industry, and other partners that are the primary financial resource for the Center;
- Have a formal structure and policies for Center members outlined in an I/UCRC membership agreement (using the [Sample Membership Agreement](#) as a guide);
- Rely on graduate student involvement in high quality research projects, thus developing students who are knowledgeable in industrially relevant research;
- Have an interdisciplinary team of faculty and students that is diverse in gender, race, and ethnicity;
- Have a Center Director, based at the lead university, who is responsible for all Center activities;
- Have a research team capable of developing and operating a Center; and
- Have formal evaluation of the partnership conducted by an independent evaluator.

An I/UCRC has the following infrastructure:

- Membership agreement:
 - Members are generally comprised of industrial firms, organizations, and non-NSF Federal agencies.
 - A center must obtain \$300,000 annually in cash membership fees
 - There must be a minimum of six Center members with a membership fee of \$25,000 or higher per year.
 - Other membership level categories with lower fees may be designated to encourage small company participation in the Center;
 - The agreement outlines Center policies and is signed by all Center members.
- Center policies address:
 - property rights
 - publication delays,

- membership fees and rights.
- Center management and organization includes:
 - A Center Director who:
 - is responsible for all aspects of Center operation,
 - has primary responsibility for administering the award in accordance with NSF's Grant Special and General Conditions and the I/UCRC Program, and
 - An Industrial Advisory Board (IAB) that reviews ongoing and completed activities and recommends new projects;
 - A University Policy Committee that facilitates the operation of the Center within the university or universities to help assure recognition for participation in the Center in tenure and promotion decisions, and to assure that the research is appropriate for graduate education.
 - Collaboration among multiple investigators;
 - Graduate student involvement; and
 - Diversity.

Other requirements of an I/UCRC include reporting and evaluation.

- Centers are required to submit reports as specified in Section VII. Award Administration Information, Subsection C. Reporting Requirements.
- There must be an independent evaluator who cannot be from the department within the institution receiving funding for the I/UCRC award. The Center evaluator is responsible for:
 - Preparing an annual review of Center activities with respect to industrial collaboration during the previous year (which is appended to the Center's annual report to NSF);
 - Conducting a survey (using an instrument that will be provided by NSF to all Centers) of all Center participants to probe the participant satisfaction with Center activities;
 - Compiling a set of quantitative indicators determined by NSF to analyze the management and operation of the Center;
 - Participating in the IAB and any other relevant meetings;
 - Performing exit interviews to determine why members chose to withdraw from the Center; and
 - Feeding information on the quality of the industry/university partnership to NSF and back to the Center for continuous improvement.

Establishment of a Center

A Center can be composed of one or more institutions with one Industrial Advisory Board (IAB) reviewing all the researchers' activities. Multi institution centers are encouraged because they provide a broader research base that more readily addresses industry's research needs. Proposals for multi-institution centers must be submitted using the collaborative proposal model in FastLane.

The phases for I/UCRC Program funding are described below. All phases are required for all prospective centers.

(1) Letter of Intent

A letter of intent describing the proposed Center must be submitted to NSF for internal review. The letter of intent must be approved by an I/UCRC Program Director before a proposal for a planning grant award will be accepted. Approval decisions will be made periodically, but no later than three months after receipt of a letter of intent. The proposed Centers that fit within the industry/university collaborative scope, are considered potentially viable, are economically important to the research area, and do not significantly duplicate the research focus of other Centers funded in the program will be encouraged to submit a proposal for a planning grant.

(2) Planning Grant Proposal

A planning grant supplies funds to study the feasibility of developing the industry/university interaction necessary to establish and support a Center. As part of this study, it is a requirement that a meeting that brings together potential members to explore opportunities and establish a research plan that fits their needs be held. Planning grant proposals will be reviewed competitively by a panel.

(3) Center Proposal

Submission of a proposal requires that all institutions comply with all the financial requirements listed in the Eligibility Information section of this document. The NSF support is generally "seed funds" used to augment support for administration of the Center.

The initial I/UCRC award to a Center has a potential duration of five years, assuming sufficiently meritorious achievement and success at maintaining leverage of NSF support.

The initial I/UCRC award may be extended for an additional period of up to five years following a successful renewal review guided by peer evaluation and a favorable recommendation by the NSF Program Director.

(4) Collaborations with Additional Institutions

Support is available for additional institutions to join an existing or proposed center in the I/UCRC Program. See Award Information for details.

(5) Competition to Start New I/UCRC Funding Cycle

Because the goal of a Center is to become self-sufficient after the full ten-year funding cycle, the I/UCRC Program will not continue to fund operating Centers after ten years. This allows the limited I/UCRC Program funds to be used to establish new Centers. However, if an operating Center that is in its tenth year of I/UCRC support adds significantly new intellectual substance to its research program and continues to meet the criteria of the I/UCRC Program, it may submit a full proposal for a new I/UCRC award with the same operating parameters as an initial award. No letter of intent or planning grant proposal is required in this process. These proposals will undergo merit review. Awards will be based on the relative merit of the proposals and on a balance of support for both new Centers and those requesting the initiation of a new funding cycle.

III. ELIGIBILITY INFORMATION

Universities and colleges with research and graduate programs are eligible as lead and collaborating institutions for I/UCRC Program support. Since a comprehensive range of disciplines and skills is necessary to address research issues of interest to industry, it may be necessary to form a consortium of universities to achieve a critical mass of interdisciplinary research capabilities for the formation of a center. In that case, one of the universities acts as the administrative lead for the center and each partner is expected to attract industrial support to the Center.

A Letter of Intent must be approved by the NSF Program Director before the institution may submit a planning grant proposal. Institutions must have been awarded a planning grant before they are eligible to submit a full center proposal.

To be eligible for the I/UCRC Program, the Center must obtain firm commitments of \$300,000 annually for five years in cash membership fees. Support must include a minimum of six Center members with a membership fee of \$25,000 or higher per year. Center members should be from industry, organizations, or other Federal agencies. If a center is multi-institutional, each institution must obtain cost participation of \$150,000 annually in cash membership fees for 5 years generated by a minimum of 3 center members with a membership fee of \$25,000 or higher per year.

Each grantee is required to certify that it will provide 25% cost sharing of the annual membership fees generated by that institution for research in the center.

IV. AWARD INFORMATION

Planning Grant - 12 month standard award.

\$10,000 per institution for a planning grant award for 12 months.

Center Awards - continuing or standard grant.

About \$400,000 per year is available for new awards pending the availability of funds. The annual I/UCRC program budget is approximately \$5.2 million.

Centers may be based at a single institution, or may be multi-institutional. The initial I/UCRC award to a Center has a potential duration of five years, assuming sufficiently meritorious achievement and success at maintaining leverage of NSF support.

The I/UCRC program funds awards at two levels:

For multi-institution centers, institutions obtaining an annual cost participation between \$150,000 and \$300,000 can receive up to \$50,000 annually.

(Note The center must obtain a total of \$300,000 in cost participation to receive an award)

Institutions obtaining \$300,000 or more annually in cost participation can receive up to \$70,000 annually.

NSF support is intended to augment the support the Center receives from industry and other sponsors. Proposals for Center awards are evaluated using external peer review.

Support, in accordance with multi-institution center requirements of the previous paragraph, is available for additional institutions to join centers in the I/UCRC Program. In order to join, the collaborative institution must meet the requirements listed in Section III. Eligibility Information. For these multi-institution centers, additional funds are available to the lead institution to offset the added administrative burden. Lead institutions generally receive up to \$10,000 per year for each university added to the center.

Renewals

Continuing I/UCRC Program support is subject to the Center fully meeting the I/UCRC operational requirements with a high level of quality and industrial involvement being met each year. The initial I/UCRC award may be extended for an additional period of up to five years following a successful renewal review guided by merit review and a favorable recommendation by the NSF Program Director. NSF I/UCRC Program support for the second five-year award will be up to one half of the amount of the initial award. Additional support for evaluation will be funded

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Letters of Intent (required):

A letter of intent describing a proposed Industry/University Cooperative Research Center (I/UCRC) must be submitted to the I/UCRC Program for internal review and approval by an I/UCRC Program Director before a proposal for a planning grant will be accepted. Those proposed Centers that fit within the industry/university collaborative scope, are considered potentially viable, and do not significantly duplicate the research foci of other Centers currently funded in the program will be encouraged to submit a proposal for a planning grant.

(1) Guide to Submission of a Letter of Intent for an Industry/University Cooperative Research Center

Format- Letter of Intent

Letters of intent are to be submitted via Fastlane which is accessible from the NSF web site at <http://www.nsf.gov>. The Project Description should include:

A brief description of the research focus of the potential Center (limited to 1 page maximum);
A list of the participating universities or colleges and faculty members (limited to 3 pages maximum).

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.

(2) Guide to Submission of a Planning Grant Proposal for an Industry/University Cooperative Research Center

Introduction- Planning Grant

Planning grant proposals are accepted only if the letter of intent describing a proposed I/UCRC has been approved by an I/UCRC Program Director. Planning grants are used to plan the joint industry/university research agenda and to determine the feasibility and viability of developing a Center. Proposals are merit reviewed in accordance with NSF policy.

Format- Planning Grant

Proposals for Planning Grants must be submitted electronically via Fastlane, accessible from the NSF web site at <http://www.nsf.gov>.

Project Summary

- Include a general analysis of the industry on which the proposed Center plans to focus; how that industry affects the Nation's economic health; and its research interests and needs, especially in those areas of research that could be considered appropriate for a university;
- Give a brief description of the research focus of the potential Center; and
- Include a brief description of the capabilities of the university or universities involved to address the industrial research interests and needs noted above, including faculty and infrastructure.

Project Description

Model of the Envisioned Center

A full description of the envisioned Center is required, including:

- the Center's proposed structure/organization, policies, and operational procedures in accordance with the I/UCRC Program operational requirements and guidelines;
- a one or two page description for each envisioned research project that includes a discussion of its industrial relevance and appropriateness for the Center;
- the management and staffing plan; including a plan to address diversity;
- the cost and sources of funding for the proposed Center that addresses the requirements detailed in the Eligibility Information section of this document.
- identification of potential evaluators (only one will be selected) who will comply with I/UCRC evaluation protocol.

Detail how the objectives of the planning grant will be achieved. Include:

- an outline for a meeting with industrial representatives that is designed to determine the research agenda and its viability;
- a description of the roles the proposed Center Director and other researchers will have in performing this planning study; and
- a discussion of managerial experience of the proposed Center Director.

Budget

Support is generally for travel, an industry planning meeting, publications and faculty time. Note any other sources of funds to be used in this study.

Industry Endorsements

Letters from at least six potential Center members must accompany the proposal. These letters should note that the Center's concept and proposed research agenda have the potential for receiving support from industry and that the firm or organization would consider joining if the Center were formed. Enter these in the Supplementary Documents section of Fastlane.

(3) Guide to Submission of a Center Proposal for an Industry/University Cooperative Research Center

Introduction - Center Proposal

Support from NSF for Industry/University Cooperative Research Centers is awarded as seed funds to develop a partnership between industry and academe, with NSF taking the role of a facilitator. A significant proportion of a Center's support is expected to come from industrial, state, and other funds. As a Center progresses, it is likely to have increased opportunities for funding from additional firms, other Federal agencies, Federal laboratories, and state and local governments, thus increasing the leverage of NSF funds.

To be eligible to submit a proposal, a Center is required to have been awarded a planning grant. In addition, the Center is to comply with the financial requirements as listed in the Eligibility Information section of this document. This helps provide for the minimum funding needed to support a vital research agenda and to ensure that the Center can support graduate students and research projects. The minimum number of members required produces a critical mass and encourages a more generic research program. In general, Center members are industrial firms, although some may be other organizations such as Federal agencies.

Proposal Format- Center Proposals

The proposal should reflect the unique combination of the proposing institution's research interests, capabilities, and potential for working with industry. These features should be discussed in sufficient detail to facilitate review in accordance with the I/UCRC Program requirements. The following narrative outline is recommended to replace the project description outline given in the Grant Proposal Guide. This narrative should be no longer than 30 pages.

a. Introduction

In no more than three pages, describe the technical focus of and need for the Center. Describe the technical area, the industry, the research required and the expertise and resources that will be used to address this need.

b. Center Structure and Operations

Proposers must discuss the following issues in their proposals:

- Evidence of institutional involvement and participation;
- Available facilities and infrastructure;
- A director responsible for all activities of the Center, with evidence of the director's management capability beyond research experience;
- Intellectual property policies in accordance with the Bayh-Dole Act that permit non-exclusive, royalty-free licenses for industrial Center members and the possibility of exclusive, royalty-bearing licenses;
- Publication delay policies;
- The membership fee structure of the Center, as well as the role of members in the Center and the specific benefits of membership categories;
(Use the [Sample Membership Agreement](#) as a guide)
- A plan to address diversity;
- The proposed evaluator and plans on how the center will meet I/UCRC evaluation criteria;
and
- Membership and composition of the university policy committee.

c. Research Plan

For each research project proposed for the Center, describe (in no more than three pages per project):

- The names and capabilities of faculty involved;
- The goals, industrial relevance and time scale of the project;
- The involvement of students and Industrial Advisory Board (IAB) personnel in planning and executing the project, if applicable;
- The available research facilities; and
- The project budget.

d. Financial Management of the Center

The proposal should include :

- a separate budget detailing all costs, including funds to support the independent evaluator, for the initial year;
- details on the annual support to the Center from the participating institutions concerning cost sharing.;
- a proposed budget for NSF funds for each of the first five years of Center operation and a five-year summary budget.

In addition to the information requested in the project description, include the following items in the appropriate section of FastLane.

- A list of the individuals who are key to the Center, and other participating individuals, noting diversity. The list should identify institutional and departmental affiliation or discipline, and should include biographical information on the Center Director and all key faculty members or other individuals from participating institutions who will be directly involved in the development, operation, and evaluation of the Center. The list of publications for these individuals should be limited to the five most relevant to the proposed research.
- Current and Pending Support for key individuals with academic affiliations who are requesting salary support from NSF.

The following information should be added to the Supplemental Docs section of Fastlane:

- A copy of the proposed membership agreement document.
- A list of participating Center members and their letters of financial commitment or intent.
- If applicable, a list of collaborations with additional institutions that details their level of involvement, membership fees generated, Center members, and fee structure.

Target Dates for Proposal Submission

There are no specific target dates for Center proposals but a Center Proposal must be received within 18 months of award of a planning grant. Allow about six months between receipt of the formal proposal and the final decision.

Proposers are reminded to identify the program announcement/solicitation number (01-116) 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:

In the event that an I/UCRC grant is awarded following on a successful planning grant award, each grantee will be required to cost share in the I/UCRC, by an amount equal to 25% of the annual membership fees it generates. For a Center receiving the minimum annual fees of \$300,000 the cost share would be \$75,000 annually. The actual cost share will be determined annually to reflect any changes in current membership fees. Certification of the acceptance of this provision by the grantees must be included in the planning grant proposal.

The proposed cost sharing must be shown on Line M on the proposal budget. Documentation of the availability of cost sharing must be included in the proposal. Only items which would be allowable under the applicable cost principles, if charged to the project, may be included as the awardee's contribution to cost sharing. Contributions may be made from any non-Federal source, including non-Federal grants or contracts, and may be cash or in-kind (see OMB Circular A-110, Section 23). It should be noted that contributions counted as cost-sharing toward projects of another Federal agency may not be counted towards meeting the specific cost-sharing requirements of the NSF award. All cost-sharing amounts are subject to audit. Failure to provide the level of cost-sharing reflected in the approved award budget may result in termination of the NSF award, disallowance of award costs and/or refund of award funds to NSF.

C. Due Dates

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

None Specified.

Target Dates

- **Letter of Intent:** July 31, 2001. Thereafter, June 30 and December 31 Annually
- **Planning Grants:** March 31 and September 30 Annually
- **Full Center Proposal:** 18 months following award of the Planning Grant

For Letters of Intent, allow up to three months for notification of the approval decision. For planning grants and full center proposals, allow up to six months between receipt of the formal proposal and the final decision.

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.

Additional Review Criteria:

Evaluation

Letters of Intent will be evaluated by NSF staff based on the economic importance of the research area, the quality and quantity of the proposed research and the researchers. The NSF evaluation will be furnished to the author of the Letter of Intent. Notification of approval of the Letter of Intent is required before submission of a planning grant proposal.

Planning grant proposals will be competitively reviewed by mail and/or panel review. The proposals will be subject to the NSF merit review criteria and the additional criteria given below:

- The envisioned Center is consistent with the defining characteristics and operational requirements of an I/UCRC.
- There is enough potential university support, faculty and facilities involved to build a viable Center.
- The planning study will effectively focus on the research interests of an industry that is in a position to support the Center, so that it could meet the requirements to submit a Center proposal.
- The planning study will effectively utilize I/UCRC operational requirements for structuring and operating the envisioned Center.
- The Center has the potential to develop a strong contingent of firms and sufficient industrial and other financial commitments to be successful and meet the I/UCRC funding criteria.
- The Center proposes to develop a research program that does not duplicate that of an existing I/UCRC.
- The proposal requires cross-disciplinary and cross-departmental participation where appropriate to the research envisioned.

Center proposals will be subject to NSF merit review criteria. In addition, the technical and managerial quality of the proposed Center, the qualifications of the proposers, the level of industrial involvement and the likelihood of achieving the goals of the I/UCRC program will be considered. Accordingly, the NSF reviewers will consider the extent to which there is evidence that the Center will meet the "*Requirements of an I/UCRC*" as described in Section II. Program Description.

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>.

Special Award Conditions:

Near the end of each 12-month period, the Program Director/and or the Division Director of the Engineering Education and Centers Division will review the Center on a number of renewal criteria including the following: 1) the extent to which the industry/university interaction is developing; 2) the extent to which the support base is developing; 3) the extent to which a robust research program is developing. If the review is satisfactory, the Program Director will recommend support for the next period of this continuing award.

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.

Centers are required to annually submit the following:

Centers are required to submit an annual report 90 days prior to the anniversary of their NSF award. These reports are used as a basis for assessing annual performance and determining continued funding. The annual report is to include:

- Major accomplishments for the Center's most recently completed fiscal year (i.e. scientific and technological developments, significant technology transferred to members and its impact);
- Research goals for the current year;
- A short description of the processes used to interact and communicate with Center members (i.e. the project selection process used by the Center, reports generated, etc.)
- Quantitative information from the most recently completed fiscal year such as number and diversity of

students, faculty, and industrial members involved in the Center, degrees granted to students involved in Center activities, amounts and sources of income to the Center, and lists of patents, licenses and publications created.

- General Center Identification
 - Year of initial funding
 - Center director name and contact information
 - Collaborations with other universities (if applicable) and names of Co-Director(s).
- Operating Budget and Total Funding
 - Total funding
 - NSF/IUCRC funding received
 - Other NSF funding received
 - Industry Membership fees. Include a certification of the receipt of annual cash membership fees signed by the Center Director and an official from the Sponsored Research Office.
 - Additional support broken down by Industry, State, University, Other Federal, Non-Federal, and other support.
- Capital and in-kind support
 - Equipment
 - Facilities
 - Personnel
 - Software
 - Other Support
- Industry Membership Descriptors for the current award
 - Membership identification
 - Current members
 - Members at the start of the award.
 - New members added
 - Identify members who left the center.
 - Annual membership fees
 - Primary
 - Secondary
 - Tertiary
 - Human Resources
 - Researchers (# of faculty scientists/engineers, # of non-faculty scientists/engineers)
 - Students (# of graduate, # undergraduate)
 - Administration, # of full and part time professional and clerical staff.
 - Diversity information on the above with plans to increase diversity, if necessary
- Center Director Descriptors
 - Position/Rank of the Director
 - Status of tenure
 - Identify the name and position of the person to whom the Center Director reports to
 - Estimate of the percent of time the director devotes to center administration, other administration, research, teaching, other.
- Center Outcomes
 - Students receiving degrees and type of degree earned.
 - Students hired by industry by type of degree.
 - Publications
 - # with center research
 - # with IAB members
 - # of presentations
- Intellectual Property Events
 - Invention disclosures
 - Patent applications
 - Software copyrights
 - Patents Granted/Derived
 - Licensing agreements
 - Royalties Realized
- Updates to the IUCRC database of performance indicators are required 90 days prior to the anniversary of the NSF

award. These indicators are both quantitative and descriptive. Most of the indicators can be extracted from the Annual Report. The Center is given a user name and password for access to update the NSF internet accessible database.

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:

- Alexander Schwarzkopf, I/UCRC Program Leader, Directorate for Engineering, Division of Engineering Education & Centers, 585 N, telephone: (703) 292-8383, fax: (703) 292-9051, email: aschwarz@nsf.gov
- Donald R. Price, Program Director, Directorate for Engineering, Division of Engineering Education & Centers, 585 N, telephone: (703) 292-5360, fax: (703) 292-9051, email: dprice@nsf.gov
- Tapan K. Mukherjee, Program Director, Directorate for Engineering, Division of Engineering Education & Centers, 585 N, telephone: (703) 292-8381, fax: (703) 292-9051, email: tmukherj@nsf.gov
- Glenn H. Larsen, Program Director, Directorate for Engineering, 505 N, telephone: (703) 292-4607, fax: (703) 292-9013, email: glarsen@nsf.gov

For further information, visit the I/UCRC Program web site at <http://www.eng.nsf.gov/eec/i-ucrc.htm>

For questions related to the use of FastLane, contact:

Contact fastlane -- not found in staff directory. Please update.

- Esther M. Bolding, 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) (<http://www.nsf.gov/home/cns/start.htm>) to be notified of new funding opportunities that become available.

I/UCRC Supplemental Programs

Centers in the I/UCRC Program are eligible for \$5,000 per year per institution per center to support a woman, under-represented minority or disabled undergraduate research assistant to perform Center research. Additionally, the I/UCRC Program will supply up to \$25,000 per year per center for one or two years to support Center research performed by a faculty member from an undergraduate or predominantly undergraduate institution. This proposal must be approved by the Center's IAB, and the research may be performed either at the Center or the faculty member's home institution.

Research Experience for Teachers (RET)

Centers are eligible to submit proposals to the Research Experience for Teachers (RET) supplement opportunity (NSF- 00-118). This supplement enables the Center to build long term collaborative relationships and support the active participation of K-12 mathematics and science teachers (particularly middle school and secondary school teachers) in research of the Center. This project has a duration of one year. The maximum request may be up to \$25,000 per institution per award and may be carried out during the summer or academic year or both.

Other

Centers in the I/UCRC Program also may submit proposals to other NSF programs such as Research Experiences for Undergraduates (REU); Grant Opportunities for Academic Liaison with Industry (GOALI); Combined Research-Curriculum Development; etc. Further information on these programs may be found on the NSF web site at <http://www.nsf.gov>. Proposals for these programs should follow the guidelines given in the Grant Proposal Guide and the appropriate program announcement. Centers in the I/UCRC Program also may apply for funds from other Federal agencies, and NSF can act as an intermediary in processing these funds.

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.

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>

- **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:**

Send an e-mail to: pubs@nsf.gov

or telephone: (703) 292-7827

- **To Locate NSF Employees:** (703) 292-5111

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; 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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