Centers of Research Excellence in Science and Technology (CREST)

CREST Research Infrastructure Improvement (RII) and HBCU Research Infrastructure for Science and Engineering (HBCU-RISE)

National Science Foundation
Directorate for Education and Human Resources
    Division of Human Resource Development

Letter of Intent Due Date(s) *(required):*

August 31, 2003
    HBCU-RISE

November 14, 2003
    CREST

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

October 10, 2003
    HBCU-RISE

January 21, 2004
    CREST

REVISIONS AND UPDATES

The Historically Black Colleges and Universities - Research Infrastructure for Science and Engineering (HBCU-RISE) activity formerly know as the HBCU Doctoral Capacity Building activity has been incorporated into the CREST program solicitation.

General Information

Program Title:

Centers of Research Excellence in Science and Technology (CREST)
and HBCU Research Infrastructure for Science and Engineering (HBCU-RISE)

Synopsis of Program:

The Centers of Research Excellence in Science and Technology (CREST) program makes resources available to significantly enhance the research capabilities of minority-serving institutions through the establishment of centers that effectively integrate education and research. CREST promotes the development of new knowledge, enhancements of the research productivity of individual faculty, and an expanded diverse student presence in STEM disciplines.

HBCU Research Infrastructure for Science & Engineering (HBCU-RISE) supports the development of research capability at Historically Black Colleges and Universities that offer doctoral degrees in science, technology, engineering and mathematics (STEM) disciplines. Activities include, but are not limited to faculty and technical support, faculty professional development, acquisition and/or upgrading of research equipment, collaborative research efforts with partner universities and National laboratories.

Cognizant Program Officer(s):

- Victor A. Santiago, Program Director, Directorate for Education & Human Resources, Division of Human Resource Development, 815 N, telephone: (703) 292-4673, fax: (703) 292-9018, email: vsantiag@nsf.gov

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

- 47.076 --- Education and Human Resources

Eligibility Information

- **Organization Limit:**

  CREST proposals are invited from minority serving institutions of higher education in the United States that have enrollments of 50% or more members of minority groups that are underepresented among those holding advanced degrees in science, technology, engineering, and mathematics, e.g., Alaskan Natives, American Indian, African American, Native Pacific Islanders, or Hispanic American. Eligibility is limited to institutions that offer graduate programs in NSF-supported fields of science, technology, engineering, and mathematics. Preference will be given to institutions with demonstrated strenghs in NSF-supported fields, as evidenced by a developing capacity to offer doctoral degrees in one or more STEM disciplines. Institutions must also demonstrate a willingness and capacity to serve as a resource center in one or more research thrust areas, as well as a demonstrated commitment and track record in enrolling and graduating minority scientists and engineers, and strong collaborations in the proposed field of research.

  HBCU-RISE proposals are invited from Historically Black Colleges and Universities that offer doctoral degrees in science, technology, engineering and mathematics disciplines.

- **PI Eligibility Limit:**

  Principal Investigators for CREST and HBCU-RISE awards must be United States (U.S.) citizens or nationals, or permanent

resident aliens of the U.S. and must be employed by CREST or HBCU-RISE eligible institutions.

- **Limit on Number of Proposals:** None Specified.

Award Information

- **Anticipated Type of Award:** Standard or Continuing Grant or Cooperative Agreement
- **Estimated Number of Awards:** 3 to 4 - CREST (new awards and renewals) and 5 HBCU-RISE
- **Anticipated Funding Amount:** $5,000,000 for CREST renewals and new awards; and $5,000,000 for HBCU-RISE awards

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 not required.
- **Indirect Cost (F&A) Limitations:** Not Applicable.
- **Other Budgetary Limitations:** Other budgetary limitations apply. Please see the full text of this solicitation for further information.

C. Due Dates

- **Letters of Intent** *(required)***:**
  - August 31, 2003
    - HBCU-RISE
  - November 14, 2003
    - CREST
- **Full Proposal Deadline Date(s)** (due by 5 p.m. proposer's local time):
  - October 10, 2003
    - HBCU-RISE
  - January 21, 2004
    - CREST

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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Summary of Program Requirements

I. INTRODUCTION

The Division of Human Resource Development (HRD) has primary responsibility within NSF for broadening participation by all individuals in science and engineering. HRD programs reflect NSF's commitment to developing the resources of the scientific and technological community as a whole and ensuring an adequately trained research and development workforce. To meet the challenges presented by the Nation's accelerating needs in science and technology, CREST and HBCU-RISE support efforts to strengthen the STEM research and education capabilities of minority-serving institutions. In doing so, HRD programs contribute to attainment of an outcome goal of the NSF Strategic Plan FY 2001-2006: A diverse, internationally competitive and globally engaged workforce of scientists, engineers, and well-prepared citizens.

The HRD programs of the ethnic diversity continuum (Tribal Colleges and Universities Program, Historically Black Colleges and Universities Undergraduate Program, Louis Stokes Alliances for Minority Participation, Alliances for Graduate Education and the Professoriate, the Centers of Research Excellence in Science and Technology) provide coordinated and integrated approaches to developing and leveraging individual talents and institutional infrastructure in order to increase substantially the number of underrepresented ethnic minorities well prepared for participation and leadership in the STEM workforce. Managed synergistically, these programs enable seamless transitions from undergraduate study at the associate and baccalaureate levels to the attainment of doctoral degrees. These programs also strengthen the research vigor and competitiveness of graduate students and faculty at participating institutions.

II. PROGRAM DESCRIPTION

I. The Centers of Research Excellence in Science and Technology (CREST) program makes resources available to significantly

enhance the research capabilities of minority-serving institutions through the establishment of centers that effectively integrate education and research. CREST promotes the development of new knowledge, enhancements of research productivity of individual faculty, and an expanded diverse student presence in STEM disciplines. The CREST program has two primary components: CREST Research Infrastructure Improvement (RII) and CREST Supplements.

1. **The CREST Research Infrastructure Improvement (RII)** component provides multi-year support for eligible minority-serving institutions that demonstrate a strong research and education base, a compelling vision for research infrastructure improvement, as well as a comprehensive plan with the necessary elements to achieve and sustain national competitiveness in a sharply focused area of science or engineering research. CREST Research Infrastructure Improvement awards are 60-month Cooperative Agreements of up to a total of $5.0 million to support science and technology infrastructure improvements identified by the institution as being critical to its future research and development competitiveness. Principal investigators of CREST Research Infrastructure Improvement projects must be employed by CREST eligible institutions.

2. **CREST Supplements** support the establishment or strengthening of partnerships and collaborations between CREST Centers and nationally recognized research centers in areas of mutual research interest and high priority for the CREST institution.

CREST Infrastructure Improvement (RII) projects consist of a CREST Center and at least 3, but no more than 5 Research Subprojects. Special Subproject proposal requirements are explained in the Proposal Preparation and Submission Instructions section of this solicitation.

CREST Centers must serve as a resource center for increasing the research competitiveness of scientists and engineers affiliated with the **Center**. Faculty at other institutions who participate in CREST Center-supported research and contribute to the achievement of CREST project objectives are eligible for funding through the CREST Center with which they are affiliated.

Each CREST Center shall convene, at least annually, an External Advisory Group. The advisors must include representatives from those served by the Center (e.g., academic institutions, industry, state and local agencies, national laboratories, etc.) and display the diversity of the U.S. citizenry in its membership. Those with a financial, institutional, or collaborative connection to the Center may not serve as members of the External Advisory Group. The function of the External Advisory Group is to provide guidance and advice to the Center as well as to ensure that the Center's activities are consistent with its vision, goals, and objectives.

Additional Information

CREST RII and CREST Supplements are designed to facilitate self-improvement. Responsibility for project development and execution rests with the proposing institution and the CREST project director. Support may be requested for activities that have a direct positive influence on the competitiveness of participating scientists and engineers and the quality of the institution's research and training. Supportable activities may include, but are not limited to, exploratory research projects; acquisition of materials, supplies, research equipment and instrumentation; hiring nationally competitive scientists and/or engineers; visiting scientists and engineers as short- or long-term consultants; faculty attendance at professional meetings and seminars; faculty sabbaticals and exchange programs; undergraduate and graduate student research activities; development of outreach and other enhancement programs with neighboring institutions; and strengthening technical support personnel.

CREST RII and CREST Supplements may be organized around the development of individual scientists or engineers, one or more science or engineering department(s) or equivalent units or interdisciplinary and multidisciplinary research areas. It is expected, however, that the CREST target group(s) will possess the potential to achieve national research competitiveness over the five-year implementation period. In identifying the members of this target group, NSF expects that the proposing institution strongly encourages participation by minorities, women and persons with disabilities. Whether the proposed activity is considered competitive will be determined by merit review of the appropriateness and relevance of the improvement strategies to CREST program goals.

Project activities supported by NSF may also include cooperative efforts between the applicant institution and industry, Federal laboratories or other research and development institutions and organizations both within the local region and nationally. An institution's CREST request may include support for academic, state, for-profit, and non-profit organizations. It may also include individuals employed by such organizations both inside and outside the CREST institution. Cooperative programs among eligible institutions as well as cooperative programs between eligible institutions and other entities are eligible for CREST support. CREST-supported projects must contribute to and support the achievement of CREST objectives outlined in the synopsis for this solicitation. CREST funding must add substantial, measurable value to the existing science and technology research capability in areas of high institutional priority and demonstrate strong potential to generate sustained non-CREST funding from federal, state, or private sector sources. In addition, all

activities carried out under a CREST award are subject to the restrictions concerning eligible science and engineering disciplines and activities detailed in the Grant Proposal Guide.

II. HBCU Research Infrastructure for Science & Engineering (HBCU-RISE) supports the development of research capability at Historically Black Colleges and Universities that offer doctoral degrees in science, technology, engineering, and mathematics (STEM) disciplines. Supported projects must have a unifying research focus in one of the research areas supported by NSF, a direct connection to the long-term plans of the STEM department, the institutional mission, and plans for expanding the institutional research capability, and increasing the production of doctoral students. HBCU-RISE funding may, for example, be used to support competitive levels of start-up funding for outstanding new faculty hires with research interests related to the project research focus and acquisition of key equipment and instruments including high performance computing and networking capabilities. HBCU-RISE support should not replace other available federal, state, or institutional resources and should add significant value to the existing institutional strategic plan.

Additional Information

Support may be requested for activities that positively impact the quality of research training and the research preparedness of graduate students in STEM disciplines. Multiple investigator projects are encouraged. Collaborative efforts between universities, industry, other research universities or centers, and federal laboratories are encouraged. Projects should be designed to enable awardee institutions to enhance the integration of education and research.

Each HBCU-RISE supported project shall convene, at least annually, an External Advisory Group. The function of the External Advisory Group is to provide guidance and advice to the HBCU-RISE project and to ensure that project activities are consistent with its vision, goals, and objectives. Potential members of the HBCU RISE External Advisory Group should be identified in the proposal.

III. ELIGIBILITY INFORMATION

- Only one CREST RII proposal may be submitted per eligible institution (see the Eligibility Information section of the Summary of Program Requirements for the definition of "eligible institution"). An institution may have only one active CREST RII award.
- Priority will be given to those STEM fields where minorities are significantly underrepresented.
- Institutions that have had two prior CREST awards may not participate in the CREST RII program again until two years after the expiration date of the last award. At that time, new research teams from former awardee institutions may submit proposals in disciplinary areas that are completely different from those of the previous award(s).
- Only one HBCU-RISE proposal may be submitted per eligible institution (see the Eligibility Information section of the Summary of Program Requirements for the definition of "eligible institution"). An institution may have only one active HBCU-RISE (formerly HBCU Doctoral Capacity Building) award.

IV. AWARD INFORMATION

CREST Award Information. CREST award instruments vary among the CREST program components:

- Three to four **CREST RII** awards (new centers and renewals) are anticipated in the current review cycle. CREST RII awards are for 60 months at up to $1,000,000 annually (a maximum of $5,000,000). RII awards are made as Cooperative Agreements. Progress and plans of each CREST RII site will be reviewed by NSF annually, prior to receiving continued NSF support. A CREST RII site nearing completion of its initial five years of funding may submit a competing renewal proposal for an additional five years of support, which will undergo merit review. The RII site's achievements and future plans will be evaluated comprehensively. The review will determine if the RII site is meeting its goals and objectives as originally proposed as well as the goals and objectives of the CREST Program. RII sites successful in passing this review will be renewed for another five years, commencing at the beginning of the sixth year, and will continue to be reviewed by NSF at least every 18 months. RII sites that do not pass this review may be terminated or may have their level of funding reduced. Individual CREST Centers may not receive more than 10 years of CREST support.

- Up to five **CREST Supplement** awards will be made for a maximum amount of $100,000 per supplement, in amounts that vary with need and are subject to the availability of funds. A Supplemental award will be an amendment to the existing Cooperative Agreement.

HBCU-RISE Award Information

- Up to five HBCU-RISE awards will be made during this award cycle. Awards will not exceed $1,000,000 during a three-year period. HBCU-RISE awards will be managed through standard grants. An institution may only have one active HBCU-RISE (formerly HBCU Doctoral Capacity Building) award.

The estimated CREST and HBCU-RISE budgets, number of awards and average award size and duration are subject to the availability of funds.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Letters of Intent *(required):*

Letters of Intent are required for CREST and HBCU-RISE proposals. The CREST letter should contain sufficient details of each Subproject Proposal to permit identification of appropriate technical reviewers for that Subproject. The HBCU-RISE letter of intent should also provide sufficient detail about the proposed research to permit identification of appropriate technical reviewers. Letters of Intent should be emailed to vsantiag@nsf.gov. or mailed to Dr. Victor A. Santiago, Program Director, CREST, Division of Human Resource Development, National Science Foundation Room 815, 4201 Wilson Blvd., Arlington VA 22230.

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.

I. CREST (RII) Proposal Requirements

CREST RII proposals must include a **Center** proposal as well as 3, but no more than 5 **Subproject** proposals.

Center Proposals should be prepared and submitted in accordance with the general guidelines provided in the current Grant Proposal Guide, as modified by the guidance listed below. Proposals that do not comply with the instructions given below will be considered ineligible and will not be reviewed.

Cover Sheet and Institutional Certifications for Center Proposals: Center Proposal titles should begin with the word CREST. The CREST Program Solicitation number must be entered in the appropriate box on the Cover Sheet. Select CENTERS OF RSCH EXCELL IN S&T as the appropriate NSF program and Division of Human Resource Development (HRD) as the NSF division to be entered on the proposal Cover Sheet.

The CREST Center proposal must contain a Center Project Summary, which provides an overview of the Center Project and describes the synergy anticipated by the choice of subprojects. The **Project Summary** for the Center (i.e., overall) proposal should clearly state project objectives and strategies, rationale, vision, distinguishing features, multidisciplinary or disciplinary focus, proposed research and educational activities, integrative components (e.g., synergy between subprojects), and a diversity plan. Include the title of the Center, the name of the Center Project Director (PI), and lead institution at the top of the page.

Proposals must have a unifying research focus in one of the research areas supported by NSF, provide convincing background and rationale for the proposed projects in terms of institutional mission, priorities, resources and opportunities, address the CREST program objectives described in this solicitation, and meet national standards of excellence, including persuasive evidence of the ability to produce demonstrable achievements within the period covered by the award and the potential to obtain subsequent non-CREST support from federal, state, and/or private sector sources.

Center proposals must include discussion of the applicant's entire plan for improving the status of science and engineering research and training and for increasing participation in science and engineering by a diverse student population. The **Project Description** should present a clear explanation of the proposed improvement plan from a scientific, administrative, and fiscal point of view.

The project description must develop a research focus that is sufficiently comprehensive to justify a Center form of organization and flexible enough to permit modifications as appropriate over the course of the project should an award be made. It should describe the Center's goals and proposed research activities in sufficient detail to allow assessment of the ways in which they work together to address: the Center's theme; the necessity for the Center mode of operation; and the CREST program objective of achieving national research competitiveness in the proposed areas of research focus during the period of the award. The Center Project Description should indicate the impact the Center's research will have on the nation's scientific and technological base. **Center Project Descriptions are limited to 10 single-spaced pages with a font size of 10 to 12 points.**

In preparing Center and Subproject Proposals, careful attention should be given to the evaluation criteria listed in the section of this solicitation describing the NSF proposal review process. In discussing the science and engineering activities, sufficient content should be provided in the Center Proposal to allow an assessment of the relevance and appropriateness of each proposed subproject to the overall Center project goals and the synergy created by the choice of subproject research areas. Detailed technical descriptions, however, should be reserved for the Subproject Proposals.

The purpose of the **References Cited** section of the Center Proposal is to demonstrate that project planning has included review of relevant documents describing the current institutional situation as well as pertinent available literature and that such information has been used effectively in developing the proposed research infrastructure improvement plan for the Center.

A Center Proposal may have one PI and up to four Co-PIs. Additional senior personnel can be included in the Center **Budget** (use of NSF Form 1030HRD is required) and in the Project and Subproject Descriptions. All Senior Personnel must provide biographical sketches and list current and pending support.

Letters of commitment are required from the applicant institution and its partners, signed by an official authorized to commit support to the CREST project during its life span. Letters committing industrial and/or other partners to involvement and financial or other support are required. These documents should be included in the **Special Information and Supplementary Documentation** section. In addition, this section contains the membership list of the External Advisory Group (EAG), a brief statement of each proposed EAG member's qualifications and written confirmation of their commitment to serve. Hard copies must not be mailed to NSF.

Subproject proposals are inserted successively, as separate files, in the Special Information and Supplementary Documentation section following the Center proposal supplementary documents. Each CREST RII project must maintain at least three but no more than five research subprojects. Each subproject must submit a complete Subproject proposal as outlined below. Each proposal must contain a one-page Subproject Relevancy Statement summarizing the subproject, describing the relevancy and importance of the subproject to the overall improvement plan, including synergy with the other subproject proposals, and showing how it supports the overall goals and objectives of the Center Proposal.

Subproject proposals should be prepared and submitted in accordance with the general guidelines provided in the current Grant Proposal Guide, as modified by the guidance listed below. Each Subproject proposal must be complete and will be independently evaluated following the standard NSF merit review process and criteria. The Subproject Proposals are inserted, successively, in the Special Information and Supplementary Documentation section of the Center proposal.

Subproject Proposal Outline

- CREST Subproject Proposal Title Page
- CREST Center Project Summary (this is a copy of the Project Summary of the full Center proposal as described

above)
- Subproject relevancy statement (one page)
- Subproject Description (8 pages; up to 4 additional pages may be used to discuss relevant prior results).

- Subproject References
- Subproject Budget and Budget Justification
- CREST Subproject Facilities, Equipment and Other Resources

Repeat these above sections for subprojects II, III, etc.

Consult the NSF FastLane homepage and the institutional sponsored projects officer for directions on providing access by appropriate Center senior personnel to the Center Proposal being developed in FastLane.

CREST Supplement Proposal Requirements

Proposals for CREST Supplements follow the standard guidelines of the current Grant Proposal Guide and are subject to a limit of eight pages of Project Description and up to four additional pages for Results from Prior NSF Support.

II. HBCU-RISE Proposal Requirements

HBCU-RISE proposals should be prepared in accordance with the general provisions of the standard Grant Proposal Guide (GPG) proposal preparation guidelines. Proposals should include an evaluation and assessment plan so that project development and implementation can be monitored at all stages.

Proposers are reminded to identify the program announcement/solicitation number (03-579) in the program announcement/solicitation block on the proposal Cover Sheet. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

B. Budgetary Information

Cost Sharing:

Cost sharing is not required in proposals submitted under this Program Solicitation.

Other Budgetary Limitations:

Use of NSF Budget Form 1030HRD (9/94) is required for CREST RII proposals. Budgets for each year of requested support, a cumulative budget and budget justifications are required for each research subproject and subcontract as well as for the Center as a whole.

NOTE: Equipment costs in CREST RII projects may not exceed 30% of the total budget request.

C. Due Dates

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

Letters of Intent *(required):*

August 31, 2003
HBCU-RISE

November 14, 2003

CREST

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

October 10, 2003
HBCU-RISE

January 21, 2004
CREST

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:

The review of CREST RII proposals (consisting of both Center and Subproject components) will be carried out in three stages:

- Disciplinary *ad hoc* review of subproject proposals by nationally recognized research scientists and engineers;

- Review of the Center proposal by an interdisciplinary panel of recognized academic and scientific experts, in light of the *ad hoc* reviews and their own reading of the Subproject Proposals;

- Possible site visits to selected applicant institutions by experts knowledgeable about development programs, including NSF program officers.

The Center proposal will be reviewed for:

- Appropriateness of the center-mode of organization and the extent to which the research, educational, and knowledge transfer activities are strategically integrated such that the whole is greater than the sum of the parts and the partners are integrated into the overall enterprise.

- Adequacy of the Management Plan - The Center Proposal will be evaluated for the institution's plan to manage the

CREST project including plans to seek input and collaboration with internal and external individuals and groups supportive of project objectives and plans to monitor and evaluate achievement of project goals. Do the CREST Project Director and the Center leadership team convincingly demonstrate the vision, experience, and capacity to manage a complex, multi-faceted, and innovative research, education, and knowledge transfer enterprise? What is the likely effectiveness of the proposed management plan including the mechanisms for: selection of the Center research theme and subprojects; resource allocation; evaluation of project and especially subproject progress; and project maintenance on award expiration? Is there documentation of institutional and other commitments to the proposed Center? Is the requested budget appropriate?

   ○ Commitment and Dedication of the Institution to CREST Program and Project Goals - Institutional commitment to strengthening research and research training capabilities will be a critical factor in proposal evaluation. This may be demonstrated by evidence of long-term institution-based initiatives to enhance science or engineering programs and by plans for continued growth and maintenance of the Center beyond the term of the NSF award.

   ○ Scientific and Engineering Improvement Plan and its Potential for Success - The overall CREST RII Proposal (consisting of both Center and Subproject components) will be evaluated for its potential to make significant improvements in, and the likelihood of contributing to, the national scientific and engineering knowledge base.

Potential for Enhancing Underrepresented Groups' Participation in Science and Engineering - The CREST RII Proposal will be evaluated for:

1. Its potential to broaden opportunities for, and enable participation by, all citizens in the science and engineering enterprise;

2. The relevance and appropriateness of the strategies employed to enhance the movement of individuals from underrepresented groups into science and engineering careers and evidence of substantial involvement of faculty and students from such groups. High university-wide minority enrollment is not sufficient in and of itself to justify a CREST award. Priority will be given to applications which focus on those NSF supported disciplinary areas where significant under-representation exists.

3. Adequacy and Potential of Existing Scientific and Engineering Base - CREST RII Proposals will be evaluated for their potential to strengthen existing meritorious research activities. Meritorious research projects, for the CREST RII competition, will be those that have led to publications in refereed journals and increased student participation in science and engineering and where there is an existing or developing capability to offer doctoral degrees in a relevant discipline. The CREST RII Proposal should describe the relation of the planned activities to other grant-supported operations and must demonstrate: (a) that the existing institutional research base is sufficiently strong to permit substantial advances in quality with the CREST funds, and (b) that a CREST award will result in a substantial long-term enhancement of that base level.

4. The Extent of Outreach and Impact of the Proposed RII awardee site - The CREST RII Proposal will be evaluated for promise in making a contribution to the overall strengthening of the nation's science and engineering productivity and for enhancing participation in science and engineering over the long term by a diverse student population.

5. Uniqueness of the Project - The CREST RII Proposal will be evaluated for the unique institutional capabilities, which make it especially qualified to become a productive Center of Research Excellence.

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 Review followed by 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:

Special award conditions anticipated:

Cooperative Agreements have an extensive section of Special Conditions relating to the period of performance, statement of work and awardee responsibilities, NSF responsibilities, joint NSF-awardee responsibilities, funding and funding schedule, reporting requirements, lead personnel, and other conditions. Awardees should review and be familiar with those conditions.

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.

Special reporting requirements anticipated:

  CREST RII awardees will be required to submit annual reports on progress and plans for the following year, which will be used as a basis for performance review and determining the level of continued funding. To support this review and the management of a Center, awardees will be required to develop a set of management and performance indicators for submission annually to NSF via an NSF evaluation technical assistance contractor. Part of this reporting will take the form of a database, which will be owned by the institution and eventually made available to an evaluation contractor. This database will capture specific information to demonstrate progress towards achieving the goals of the project. These indicators are both quantitative and descriptive and may include, for example, the characteristics of center personnel and students; sources of financial support and in-kind support; expenditures by operational component; characteristics of industrial and/or other sector participation; research activities; education activities; knowledge transfer activities; patents, licenses; publications; degrees granted to students involved in RII awardee activities; descriptions of significant advances and other outcomes of the CREST effort. Such reporting requirements will be included in the cooperative agreement, which is binding between the academic institution and the NSF.

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:

- Victor A. Santiago, Program Director, Directorate for Education & Human Resources, Division of Human Resource Development, 815 N, telephone: (703) 292-4673, fax: (703) 292-9018, email: vsantiag@nsf.gov

For questions related to the use of FastLane, contact:

- Gloria Strothers, Lead Program Assistant, Directorate for Education & Human Resources, Division of Human Resource Development, 815 N, telephone: (703) 292-4718, fax: (703) 292-9018, email: gstrothe@nsf.gov

IX. OTHER PROGRAMS OF INTEREST

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

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

Related Programs

- Historically Black Colleges and Universities Undergraduate Program (HBCU-UP) (NSF-02-162)
- Louis Stokes Alliances for Minority Participation Program (LSAMP) (NSF-03-520)
- Alliances for Graduate Education and the Professoriate (NSF-01-138)

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

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

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

- **Location:**   4201 Wilson Blvd. Arlington, VA 22230

- **For General Information**   (703) 292-5111
  (NSF Information Center)**:**

- **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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