Historically Black Colleges and Universities Undergraduate Program (HBCU-UP)

PROGRAM SOLICITATION
NSF 11-519

REPLACES DOCUMENT(S):
NSF 10-518

National Science Foundation

Directorate for Education & Human Resources
Division of Human Resource Development

Letter of Intent Due Date(s) ***(required)*** (due by 5 p.m. proposer's local time)*:*

February 07, 2011

Implementation Projects, Achieving Competitive Excellence (ACE) Implementation Projects, Broadening Participation Research Projects, Targeted Infusion Projects, Research Initiation Awards

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

April 06, 2011

Implementation Projects, Achieving Competitive Excellence (ACE) Implementation Projects, Broadening Participation Research Projects, Targeted Infusion Projects, Planning Grants, Research Initiation Awards

IMPORTANT INFORMATION AND REVISION NOTES

The Education Research Projects track has been renamed the Broadening Participation Research in STEM Education (BPR) track. The HBCU-UP BPR track provides support to research projects that seek to enhance understanding of the participation of underrepresented groups in STEM education, inform education practices and interventions, and assess impact of efforts to increase successful retention, degree completion, and transition to graduate school or the workforce among underrepresented minority students.

Research Initiation Awards (RIAs) seek to further the research capability and effectiveness of faculty members at Historically Black Colleges and Universities, with a goal of improving undergraduate education and research at these institutions.

A new focus of HBCU-UP is the recruitment and retention of Veterans in STEM fields as a means to diversify and increase the STEM workforce. Implementation proposals that recruit a cohort of Veterans and suggest strategies to retain them, are strongly encouraged.

Proposals for the Innovation through Institutional Integration (I^3) track are not being accepted for the 2011 competition and information about this track has been deleted. Emphasis on integration across NSF-funded awards at the applicant's institution is incorporated in this and other solicitations in the Directorate for Education and Human Resources.

A revised version of the NSF Proposal & Award Policies & Procedures Guide (PAPPG), NSF 11-1, was issued on October 1, 2010 and is effective for proposals submitted, or due, on or after January 18, 2011. Please be advised that, depending on the specified due date, the guidelines contained in NSF 11-1 may apply to proposals submitted in response to this funding opportunity.

Cost Sharing: The PAPPG has been revised to implement the National Science Board's recommendations regarding cost sharing. Inclusion of voluntary committed cost sharing is prohibited. In order to assess the scope of the project, all organizational resources necessary for the project must be described in the Facilities, Equipment and Other Resources section of the proposal. The description should be narrative in nature and must not include any quantifiable financial information. Mandatory cost sharing will only be required when explicitly authorized by the NSF Director. See the PAPP Guide Part I: *Grant Proposal Guide (GPG)* Chapter II.C.2.g(xi) for further information about the implementation of these recommendations.

Data Management Plan: The PAPPG contains a clarification of NSF's long standing data policy. All proposals must describe plans for data management and sharing of the products of research, or assert the absence of the need for such plans. FastLane will not permit submission of a proposal that is missing a Data Management Plan. The Data Management Plan will be reviewed as part of the intellectual merit or broader impacts of the proposal, or both, as appropriate. Links to data management requirements and plans relevant to specific Directorates, Offices, Divisions, Programs, or other NSF units are available on the NSF website at: http://www.nsf.gov/bfa/dias/policy/dmp.jsp. See Chapter II.C.2.j of the GPG for further information about the implementation of this requirement.

Postdoctoral Researcher Mentoring Plan: As a reminder, each proposal that requests funding to support postdoctoral researchers must include, as a supplementary document, a description of the mentoring activities that will be provided for such individuals. Please be advised that if required, FastLane will not permit submission of a proposal that is missing a Postdoctoral Researcher Mentoring Plan. See Chapter II.C.2.j of the GPG for further information about the implementation of this requirement.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Historically Black Colleges and Universities - Undergraduate Program (HBCU-UP)

Synopsis of Program:

Historically Black Colleges and Universities (HBCUs) have awarded a large share of bachelor's degrees to African American students in science, technology, engineering and mathematics (STEM), and HBCUs are the baccalaureate origins of one-quarter to one-third of black science and engineering (S&E) doctorate recipients. To meet the Nation's accelerating demands for STEM talent, more rapid gains in achievement, success and degree production in STEM for underrepresented minority populations are needed. The Historically Black Colleges and Universities Undergraduate Program (HBCU-UP) provides awards to develop, implement, and study innovative models and approaches for making dramatic improvements in the preparation and success of underrepresented minority students so that they may participate in STEM graduate programs and the workforce. Support is available for Implementation Projects (including Achieving Competitive Excellence), Broadening Participation Research Projects, Targeted Infusion Projects, Planning Grants, Research Initiation Awards, and other funding opportunities.

Implementation Projects provide support to design, implement, study, and assess comprehensive institutional efforts to increase the numbers of students and the quality of their preparation by strengthening STEM education and research. Implementation projects create and/or adapt and assess innovative models and materials for teaching and learning in STEM, embody knowledge about how students learn most effectively in STEM teaching and learning activities, and bring STEM disciplinary advances into the undergraduate experience. Proposers are encouraged to analyze the strengths and potential of the institution in STEM. Based on this analysis, they should design innovative educational strategies appropriate in content and context to increase the capacity and effectiveness of the institution to attract, retain, educate, and train underrepresented minority students in STEM. The students should graduate prepared competitively to go on to graduate school or the workforce. Transferability and dissemination of successful models, effective methods, and innovative materials for educating undergraduate STEM students are critical aspects of implementation projects. Implementation project components may include, but are not limited to: developing and assessing innovative STEM curriculum and teaching and learning techniques; using cyberinfrastructure for anytime, anywhere, anyone learning; providing novel undergraduate student development activities and educational enrichment services; enhancing undergraduate student research experiences; providing activities that promote the development of a globally engaged workforce; creating new approaches to recruitment and retention of undergraduate STEM students; providing faculty professional development in effective STEM teaching; preparing K-12 STEM teachers; addressing the critical transitions from K-12 to undergraduate, 2-year to 4-year, and undergraduate to graduate; and implementing other activities that enhance the quality and competitiveness of undergraduate STEM programs. A new focus of HBCU-UP is the recruitment and retention of Veterans in STEM fields as a means to diversify and increase the STEM workforce. Proposals that recruit a cohort of Veterans and suggest strategies to retain them, are strongly encouraged.

Within this track, **Achieving Competitive Excellence (ACE) Implementation Projects** are intended for HBCUs with exemplary achievements and established institutionalized foundations from previous Implementation Project grants. ACE seeks ambitious, potentially transformative proposals that have the promise of significant advances in STEM undergraduate education at the institution. ACE projects should create more and varied pathways to success for STEM students by increasing intellectual resources. Possible approaches might include: establishing new collaborations and alliances with public and private research institutions, centers and national laboratories; providing access to tomorrow's science through computationally intensive tools and global networks; or increasing fiscal resources for frontier STEM education and research through innovative institutional integration, leveraging partnerships, and strong linkages with business and industry.

The **Broadening Participation Research** in STEM Education (BPR) track (formerly Education Research Projects) provides support to research projects that seek to create and study new models and innovations in STEM teaching and learning, enhance understanding of the participation of diverse groups in STEM education, and inform STEM education practices and interventions. BPR projects add new research-based strategies and models to broadening participation in STEM and increase the capacity of scholars in minority-serving institutions to conduct this type of research. Proposed research may investigate behavioral, cognitive, affective, learning and social differences as well as organizational, institutional or systemic processes that may impact participation in STEM education. BPR projects are likely to use methods from sociology, psychology, anthropology, economics, statistics, and other social and behavioral science and education disciplines. Successful proposals will be grounded in appropriate theory and incorporate recent innovations and advances in research methodologies, conceptual frameworks and/or data gathering and analytic techniques.

The goal of this track is to enhance our understanding of the underlying issues affecting the differential participation rates of students from underrepresented groups in STEM. The BPR track will catalyze acquisition of knowledge on what types of interventions have what types of impact on learning, persistence, and success in STEM for which groups under what conditions and in what contexts. The Broadening Participation Research in STEM Education track exists across programs in the Division of Human Resource Development (HRD) and may be found in the following solicitations: Louis Stokes Alliances for Minority Participation (LSAMP); Historically Black Colleges and Universities Undergraduate Program (HBCU-UP); Research in Disabilities Education (RDE); Research on Gender in Science and Engineering (GSE); and Tribal Colleges and Universities Program (TCUP). Priorities and restrictions on study populations and awardee institutions may apply depending on the HRD program to which the proposal is submitted.

Targeted Infusion Projects (TIP) provide support to achieve a short-term, well-defined goal to innovate or improve the quality of undergraduate STEM education at HBCUs. Targeted Infusion Projects could develop innovative learning experiences in emerging fields of science and engineering such as energy science, climate science, and other dynamic interdisciplinary and multidisciplinary fields. Projects could develop creative uses of cyberinfrastructure for anytime, anywhere, anyone learning in STEM and next generation STEM undergraduate programs. Projects could enhance academic infrastructure by updating curriculum, modernizing laboratory research equipment, or improving the computational network array for research and education. Such approaches could help to improve the preparedness of students for graduate school and the recruitment of qualified STEM faculty. Projects could enhance existing degree programs, establish new degree programs or concentrations, secure specialized accreditation or certification, or infuse STEM programs with disciplinary field advances and evolving workforce requirements. These approaches should be aimed at improving the competitiveness of graduating students and recruiting more students to the program. Projects could build explicit collaborations between STEM disciplines and teacher education programs. Typically, projects are focused on one activity within a single STEM department; however interdisciplinary and cross-disciplinary projects are encouraged.

Planning Grants provide support to undertake self-analysis of the institution's undergraduate STEM programs to identify components that need improvement or enhancement in order to provide a high quality undergraduate STEM education. Planning grants should also examine existing activities and strategies across the nation that could be implemented in a proposed project to improve the quality and competitiveness of undergraduate STEM

education at the institution. The proposed activities should include an institutional STEM self-analysis leading to an action plan. This should include activities and strategies to identify the strengths, weaknesses, opportunities, and threats that affect the capacity and effectiveness of the institution to attract, retain, educate, and train underrepresented minority students in STEM and graduate them prepared competitively to go on to graduate school or the workforce. Typical activities include: data collection and analysis, stakeholder consultation, development of potential activities and strategies, site visits to model programs, and data gathering for a proposal for an Implementation Project (including ACE).

Research Initiation Awards (RIA) provide support for faculty members in STEM areas at HBCUs to pursue research at an NSF-funded Center, at a research-intensive institution, or at a national laboratory. Awards are intended to help further the faculty member's research capability and effectiveness, to improve research and teaching at his or her home institution, and to involve undergraduate students in research experiences. These awards are particularly appropriate for junior faculty as a means of recruiting and retaining highly qualified scientists and engineers at HBCUs.

Other funding opportunities include: Conferences, Symposia, and Workshops; EArly-concept Grants for Exploratory Research (EAGER) and Grants for Rapid Response Research (RAPID) grants; and Grant Supplements for existing awards. PIs are invited to seek supplemental support from NSF for their participating students and faculty who are accepted as participants in one of four Department of Energy initiatives: Science Undergraduate Laboratory Internships (SULI), Faculty-Student Teams (FaST), Community College Institutes (CCI),and Pre-Service Teacher (PST) Internships. The initiatives are intended to support the research opportunities in DoE national laboratories during the summer.

Cognizant Program Officer(s):

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

- 47.076 --- Education and Human Resources

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 26 to 38 - In FY 2011, approximately 5 to 6 Implementation Projects, up to 2 ACE Implementation Projects, 3 to 5 Broadening Participation Research Projects, 10 to 15 Targeted Infusion Projects, 2 to 4 Planning Grants, and 4 to 6 Research Initiation Awards.

Anticipated Funding Amount: $12,000,000 - Approximately $12 million in FY 2011 for new HBCU-UP awards pending the availability of funds.

Eligibility Information

Organization Limit:

Proposals may only be submitted by the following:

- Historically Black Colleges and Universities (HBCUs) that are accredited and offer undergraduate educational programs in science, technology, engineering and mathematics (STEM).

PI Limit:

- The Principal Investigator and co-Principal Investigators for the Implementation Projects, ACE Implementation Projects, and Planning Grant proposals should be the key personnel that will be involved in the implementation of the project.
- The Principal Investigator for Broadening Participation Research Projects should be one of the individuals who will perform the research project. Other potential co-Principal Investigators include collaborators on the research project. At least one of the Principal Investigators must have formal training in education research or significant professional experience doing education research.
- The Principal Investigator for Targeted Infusion Projects should be the individual that will be involved in the implementation of the project activities.
- The Principal Investigator for a Research Initiation Award should be a faculty member in a STEM area at the HBCU.

Limit on Number of Proposals per Organization:

- An eligible institution can only have one active Implementation Project, ACE Implementation Project, or Planning Grant.
- There is no limit to the number of Broadening Participation Research Project proposals that can be submitted from an eligible institution.
- It is expected that no more than one Targeted Infusion Project per eligible institution in any year will be funded. This may be in addition to either an Implementation Project, an ACE Implementation Project proposal, or a Planning Grant proposal if applicable.
- It is expected that no more than two Research Initiation Awards per institution in any year will be funded.

Limit on Number of Proposals per PI:

None Specified

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.
- **Preliminary Proposal Submission:** Not Applicable

- **Full Proposals:**
  - Full Proposals submitted via FastLane: NSF Proposal and Award Policies and Procedures Guide, Part I: Grant Proposal Guide (GPG) Guidelines apply. The complete text of the GPG is available electronically on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg.
  - Full Proposals submitted via Grants.gov: NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov Guidelines apply (Note: The NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide)

B. Budgetary Information

- **Cost Sharing Requirements:** Inclusion of voluntary committed cost sharing is prohibited.
- **Indirect Cost (F&A) Limitations:** Not Applicable
- **Other Budgetary Limitations:** Other budgetary limitations apply. Please see the full text of this solicitation for further information.

C. Due Dates

- **Letter of Intent Due Date(s)** ***(required)*** (due by 5 p.m. proposer's local time)***:***

  February 07, 2011

  Implementation Projects, Achieving Competitive Excellence (ACE) Implementation Projects, Broadening Participation Research Projects, Targeted Infusion Projects, Research Initiation Awards

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

  April 06, 2011

  Implementation Projects, Achieving Competitive Excellence (ACE) Implementation Projects, Broadening Participation Research Projects, Targeted Infusion Projects, Planning Grants, Research Initiation Awards

Proposal Review Information Criteria

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

Award Administration Information

Award Conditions: 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.

TABLE OF CONTENTS

I. INTRODUCTION

The Historically Black Colleges and Universities Undergraduate Program (HBCU-UP) is a program in the Division of Human Resource Development (HRD), which is part of the Directorate for Education and Human Resources (EHR) of the National Science Foundation.

The National Science Foundation (NSF) supports research at the frontiers of knowledge, across all fields of science, technology, engineering, and mathematics (STEM) and all levels of STEM education. The NSF enables innovation and discovery in science, technology, engineering, and mathematics by educating and preparing a diverse and able STEM workforce who are motivated and prepared to participate at the frontiers of science. NSF is committed to reaching across society to ensure that the rich diversity of the nation's cultures is well represented in the STEM workforce and that individuals engaged in STEM fields are trained to participate fully in the global research enterprise.

The Directorate for Education and Human Resources

The mission of EHR is to achieve excellence in U.S. STEM education at all levels and in all settings (both formal and informal) in order to support the development of a diverse and well-prepared workforce of scientists, technicians, engineers, mathematicians and educators and a well-informed citizenry that has access to the ideas and tools of science and engineering. Specific EHR goals are:

1. Prepare the next generation of STEM professionals and attract and retain more Americans to STEM careers.
2. Develop a robust research community that can conduct rigorous research and evaluation that will support excellence in STEM education and that integrates research and education.
3. Increase the technological, scientific and quantitative literacy of all Americans so that they can exercise responsible citizenship and live productive lives in an increasingly technological society.
4. Broaden participation (individuals, geographic regions, types of institutions, STEM disciplines) and close achievement gaps in all STEM fields.

The Division of Human Resource Development

The Division of Human Resource Development (HRD) serves as a focal point for NSF's agency-wide commitment to enhancing the quality and excellence of STEM education and research through broadening participation by historically underrepresented groups - minorities, women, and persons with disabilities. Priority is placed on investments that promise innovation and transformative strategies and that focus on creating and testing models that ensure the full participation of and provide opportunities for the educators, researchers, and institutions dedicated to serving these populations. Programs within HRD have a strong focus on partnerships and collaborations in order to maximize the preparation of a well-trained scientific and instructional workforce for the new millennium.

The HRD Theory of Change

HRD's fundamental mission of broadening participation in STEM is embedded in the greater EHR and NSF goals. A basic premise of all HRD programs is that increasing the successful participation of individuals from underrepresented groups in STEM will result in quality research; the implementation and testing of evidence-based practices; critical review of program results to assess impact; data-driven continuous improvement; and broad dissemination of program findings for wide uptake of effective strategies. HRD, through these activities, ties directly to the development and expansion of a diverse, highly capable STEM workforce that can lead innovation and sustain U.S. competiveness in the science and engineering enterprise.

HRD has an overall goal to increase the successful participation of underrepresented minorities, women and girls, and persons with disabilities in STEM. Each HRD program, with specific goals and objectives related to the larger goal of broadening participation, carries out its work based on similar operating principles: (1) Establish priorities and develop solicitations that reflect the goals, priorities, and the state of the field; (2) Fund research to build the knowledge base in the field, especially in the area of broadening participation in STEM; (3) Fund the implementation of evidence-based educational practices or strategies, such as alliances, STEM capacity building, and transition to the workforce; (4) Monitor funded projects and require rigorous project evaluation to determine the impact of NSF projects and inform project development; (5) Use findings from monitoring and evaluation activities to improve or adjust program parameters; and (6) Require and support dissemination of findings from projects to assure broader impact of funded projects.

To meet the challenges presented by the nation's increasing needs in STEM, the Historically Black Colleges and Universities Undergraduate Program (HBCU-UP) is committed to enhancing the quality of undergraduate science, technology, engineering, and mathematics education and research at Historically Black Colleges and Universities (HBCUs). HBCU-UP seeks development of STEM education initiatives to support the preparation of a science and engineering workforce that is broadly inclusive and capable of performing in an international research and development environment in order for the U.S. to remain at the forefront of world science and technology.

In alignment with the goals of the Directorate for Education and Human Resources and the Division of Human Resource Development, HBCU-UP has identified the following priorities: innovation in instruction and curriculum development; providing access to exciting STEM research experiences for undergraduate students; focusing on recruitment and retention, especially retention after the freshman year; critical transitions from K-12 to undergraduate, 2 year to 4 year, and undergraduate to graduate experiences. Proposals submitted to HBCU-UP are encouraged to include one or more of these priorities. Improving student performance in science and mathematics in the U.S. requires an adequate supply of well-qualified STEM teachers [1], [2]. HBCU-UP encourages PIs to address STEM teacher preparation to help increase the number and quality of future science and mathematics teachers. Given that mathematics courses are the cornerstone courses for all STEM disciplines and that students' deficiencies in mathematics cause problems in all other STEM courses, research into implementation of strategies to improve mathematics teaching and learning are encouraged in HBCU-UP projects.

A recent evaluation of the HBCU-UP program by Urban Institute [3] pointed to the successes of the HBCU-UP program, and listed recommendations for the HBCU community. HBCU-UP's priorities are in alignment with findings

and recommendations of this document, as well as other recently published reports. "*Expanding Underrepresented Minority Participation: America's Science and Technology Talent at the Crossroads*" [4] explores the role of diversity in the STEM workforce and its value in keeping America innovative and competitive. "*Rising Above the Gathering Storm, Revisited: Rapidly Approaching Category 5*" [5], provides a snapshot of the work of the government and the private sector in the past five years, analyzing how the original recommendations have or have not been acted upon, what consequences this may have on future competitiveness, and priorities going forward.

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[1] The President's Council of Advisors on Science and Technology (2010). Executive Report to the President. *Prepare and Inspire: K-12 Education in Science, Technology, Engineering, and Math (STEM) for America's Future.* http://www.whitehouse.gov/ostp/pcast.

[2] Kuenzi, J. (2008). CRS Report for Congress.2*Science, Technology, Engineering and Mathematics (STEM) Education: Background, Federal Policy and Legislative Action.* Congressional Research Service, Domestic Social Policy Division. Order Code RL33434.

[3] Clewell, C., Cosentino de Choeh, C., Tsui, L. (2010). Urban Institute Report. *Summative Evaluation of the National Science Foundation Historically Black Colleges and Universities Undergraduate Program (HBCU-UP).* Prepared under contract HRD GS-23F-8198H D050597.

[4] Members of the Committee on Underrepresented Groups and the Expansion of the Science and Engineering Workforce Pipeline (2010). NAS Report. *Expanding Underrepresented Minority Participation: America's Science and Technology Talent at the Crossroads.* ISBN: 0-309-15969-5. http://www.nap.edu/catalog/12984.html

[5] Members of the 2005 "Rising Above the Gathering Storm Committee" (2010). NAS Report. *Rising Above the Gathering Storm, Revisited: Rapidly Approaching Category 5.* ISBN: 0-309-16098-7. http://www.nap.edu/catalog/12999.html

II. PROGRAM DESCRIPTION

Historically Black Colleges and Universities (HBCUs) have awarded a large share of bachelor's degrees to African American students in science, technology, engineering and mathematics (STEM) and HBCUs are the baccalaureate origins of one-quarter to one-third of black science and engineering (S&E) doctorate recipients. To meet the Nation's accelerating demands for STEM talent; more rapid gains in achievement and success and degree production in STEM for underrepresented minority populations are needed. The Historically Black Colleges and Universities Undergraduate Program (HBCU-UP) provides awards to develop, implement, and study innovative models and approaches to make dramatic improvements in the preparation and success of underrepresented minority students to participate in the S&E enterprise. Support is available for Implementation Projects (including Achieving Competitive Excellence), Broadening Participation Research Projects, Targeted Infusion Projects, Planning Grants, Research Initiation Awards, and other funding opportunities.

1. **A. IMPLEMENTATION PROJECTS:** Projects up to five-years on institution-wide, undergraduate STEM education and research capacity building and improvement.

   Implementation Projects provide support to design, implement, study and assess comprehensive institutional efforts to increase the numbers of students and the quality of their preparation by strengthening STEM education and research. Implementation projects create and/or adapt and assess innovative models and materials for teaching and learning in STEM, embody knowledge about how students learn most effectively in STEM teaching and learning activities, and bring STEM disciplinary advances into the undergraduate experience. Proposers are encouraged to analyze the strengths and potential of the institution in STEM. Based on this analysis they should design innovative educational strategies appropriate in content and context to increase the capacity and effectiveness of the institution to attract, retain, educate, and train underrepresented minority students in STEM. The students should graduate prepared competitively to go on to graduate school or the workforce. Transferability and dissemination of successful models, effective methods, and innovative materials for educating undergraduate STEM students are critical aspects of implementation projects.

   Implementation Projects undertake comprehensive institutional reform and transformational strategies to strengthen and enhance STEM teaching and learning and to improve student access and retention in STEM areas. The components of the implementation design should comprise research-based or evidence-based practices and strategies to produce significant improvements in undergraduate STEM education and research programs at the institution. Project components may include, but are not limited to: developing and assessing innovative STEM curriculum and teaching and learning techniques; using cyberinfrastructure for anytime, anywhere, anyone learning; providing novel undergraduate student development activities and educational enrichment services; enhancing undergraduate student research experiences; providing activities that promote the development of a globally engaged workforce; creating new approaches to recruitment and retention of undergraduate STEM students; providing faculty professional development in effective STEM teaching; preparing K-12 STEM teachers; addressing the critical transitions from K-12 to undergraduate, 2-year to 4-year, and undergraduate to graduate; and implementing other activities that enhance the quality and competitiveness of undergraduate STEM programs. A new focus of HBCU-UP is the recruitment and retention of Veterans in STEM fields as a means to diversify and increase the STEM workforce. Proposals that recruit a cohort of Veterans and suggest strategies to retain them, are strongly encouraged.

   NSF expects that the activities and strategies included in Implementation Project proposals will be consistent with and complementary to the institution's STEM needs, long-term goals, and mission. Therefore, NSF allows maximum flexibility in the design of Implementation Projects under HBCU-UP. However, the proposal must fully substantiate the rationale for choosing the desired approach. The project scope should depend on the size and number of STEM departments or programs at the institution and be defined by the complexity of the proposed activities in the project design. Ideally, the implementation project would impact all the STEM undergraduate programs, STEM students, and STEM faculty at the institution. The project plan should be clearly described, detailing measurable outcomes for STEM students (e.g. number and types of high quality research experiences, number going on to graduate school or the workforce) and faculty of the proposed HBCU-UP activities. The proposal should include compelling arguments for why these practices and strategies implemented in the specific institutional environment are expected to result in the anticipated outcomes. The proposal also should include activities for scholarly dissemination of project results and processes to inform the broader community about the effectiveness of specific implementation strategies.

   If an institution has previously received an Implementation Project grant, it is critical that the proposal for another Implementation project provide complete information on the outcomes and impact of the previous HBCU-UP project, including a description of what was learned from the previous activities, how these findings were disseminated to the broader community, and how successful activities are being sustained at the institution. Implementation proposals from past awardees must not simply propose to continue the activities of the previous Implementation Project grant. The new proposal should be based on a thorough evaluation of the previous HBCU-UP project and an assessment of the current state of the institution so that a new project can build on progress and achievements and identify new innovations to be realized to move the institution to the next level of STEM program competitiveness. The proposal should include a component that outlines a strategy for the creative integration of NSF-funded awards at the institution that are related to the proposed project's goals and scope.

1. **B. ACE IMPLEMENTATION PROJECTS:** Five-year, institution-wide, undergraduate STEM education and research growth and expansion projects.

   Institutions that have had previous Implementation Project grants should be able to exhibit an established foundation and to evidence institutionalized achievements toward the HBCU-UP goals and objectives. As a result, growth in competitiveness and excellence of these HBCU-UP institutions should be clearly evidenced in the readiness of faculty, staff, infrastructure, fiscal and operations management, and institutional leadership to move to the next level of excellence. The Achieving Competitive Excellence (ACE) or ACE Implementation Projects track is intended for HBCUs exhibiting these qualities as a result of previous Implementation Project grants. ACE HBCU-UP institutions are exemplars because of their consistent academic achievement in the STEM community. The goal of the ACE program is helping these institutions to excel and moving the HBCU-UP portfolio

forward. ACE projects are ambitious, potentially transformative proposals that have the promise of significant advances in STEM undergraduate education at the institution. ACE projects should create more and varied pathways to success for STEM students by increasing intellectual resources. Possible approaches might include: establishing new collaborations and alliances with public and private research institutions, centers, and national laboratories; providing access to tomorrow's science through computationally intensive tools and global networks; or increasing fiscal resources for frontier STEM education and research through innovative institutional integration, leveraging partnerships, and strong linkages with business and industry. Institutions submitting an ACE Implementation Project must include a component that outlines a strategy for the creative integration of NSF-funded awards at the institution that are related to the proposed project's goals and scope.

Institutions that have not already identified activities and strategies for Implementation Projects or ACE Implementation Projects are encouraged to consider applying for Planning Grants to conduct an institutional self-analysis of their STEM enterprises before submitting implementation proposals.

2. **BROADENING PARTICIPATION RESEARCH IN STEM EDUCATION PROJECTS** (formerly Education Research Projects): Projects of up to three years to conduct a research investigation.

   The Broadening Participation Research in STEM Education track exists across HRD

   programs and may be found in the following solicitations: Louis Stokes Alliances for Minority Participation (LSAMP); Historically Black Colleges and Universities Undergraduate Program (HBCU-UP); Research in Disabilities Education (RDE); Research on Gender in Science and Engineering (GSE); and Tribal Colleges and Universities Program (TCUP). Priorities and restrictions on study populations and awardee institutions may apply depending on the HRD program to which the proposal is submitted. The goal of this track across programs in the Division of Human Resource Development is to enhance our understanding of the underlying issues affecting the differential participation rates of students from underrepresented groups in STEM. The BPR track will catalyze acquisition of knowledge about what types of interventions have what types of impact on learning, persistence, and success in STEM for which groups under what conditions and in what contexts.

   HBCU-UP Broadening Participation Research (BPR) in STEM Education proposals should be designed to create and study new models and innovations in STEM teaching and learning; enhance the understanding of the participation of diverse groups in STEM education; add to the research knowledge; and inform STEM education practices and interventions. Broadening Participation Research proposals should describe evidence-based research studies that contribute to understanding the participation of and successful outcomes for underrepresented groups in STEM. Proposals should consider new research-based strategies and institutional structure models for broadening participation in STEM and increasing the capacity of scholars in minority-serving institutions to conduct this type of research.

   Proposed research may investigate behavioral, cognitive, affective, learning and social differences as well as organizational, institutional or systemic processes that may impact participation in STEM education using methods from sociology, psychology, anthropology, economics, statistics, and other social and behavioral science and education disciplines. Successful proposals will be grounded in appropriate theory and incorporate recent innovations and advances in research methodologies, conceptual frameworks and/or data gathering and analytic techniques. Proposals should reflect relevant advances in quantitative, qualitative, and mixed-methods research and evaluation methodologies and provide a compelling argument about how the methodologies proposed are appropriately matched with the strategic research questions of the project. Additionally, proposals should demonstrate how the methods chosen would result in rigorous, cumulative, reproducible, and usable findings to merit peer-review and publication.

   According to a recent National Research Council report [1] on scientific research in education, educational research projects should:

   - Pose significant questions that can be investigated empirically,
   - Link relevant research to theory,
   - Use methods that permit direct investigation of the questions posed,
   - Provide a coherent and explicit chain of reasoning,
   - Replicate and generalize across studies, and
   - Disclose research to encourage professional scrutiny and critique.

   Broadening Participation Research proposals must include PIs with demonstrable expertise in education research and/or social science research methods in addition to PIs with knowledge about STEM programs at HBCUs. Proposers are encouraged to establish collaborations to strengthen the research project and to describe in the proposal the nature of the collaboration and the anticipated benefits. Proposers should discuss how the work would contribute to productive public or scholarly debate. As appropriate, proposals should describe mechanisms to effectively and efficiently transfer findings into educational practice for use by other researchers and policymakers.

3. **TARGETED INFUSION PROJECTS:** Projects of two to three years targeted to meet a short-term, well-defined goal to improve the quality of and make innovations in undergraduate STEM education.

   Targeted Infusion Projects could develop innovative learning experiences in emerging fields of science and engineering such as energy science, climate science, and other dynamic interdisciplinary and multidisciplinary fields. Projects could develop creative uses of cyberinfrastructure for anytime, anywhere, anyone learning in STEM and next generation STEM undergraduate programs. Projects could enhance academic infrastructure by updating curriculum, modernizing laboratory research equipment, or improving the computational network array for research and education. Such approaches could help to improve the preparedness of students for graduate school and the recruitment of qualified STEM faculty. Projects could enhance existing degree programs, establish new degree programs or concentrations, secure specialized accreditation or certification, or infuse STEM programs with disciplinary field advances and evolving workforce requirements. These approaches should be aimed at improving the competitiveness of graduating students and recruiting more students to the program. Projects could build explicit collaborations between STEM disciplines and teacher education programs. Typically, projects are focused on one activity within a single STEM department; however interdisciplinary and cross-disciplinary projects are encouraged.

   Competitive proposals will describe clearly the innovation in undergraduate STEM education the project will realize. Appropriate short-term goals should be easily measurable and attainable within the project time frame, and appropriate metrics should be identified. The proposal also should include activities for dissemination of project results.

   Proposals that include normal operating activities such as salaries to teach existing classes and normal recruitment and outreach activities will not be funded. TIP proposals are not supplements to existing HBCU-UP projects. HBCUs need not have an Implementation Project in order to submit TIP proposals. HBCUs that currently have a five-year Implementation Project will need to explain how the Targeted Infusion Project differs from the Implementation Project activities, and how the disparate HBCU-UP funded projects will be leveraged, integrated, or synergized to produce greater outcomes that could not be achieved separately.

4. **PLANNING GRANTS:** Projects of up to twelve to eighteen months to undertake an institutional STEM program self-analysis in preparation for an HBCU-UP submittal.

The proposed activities should include an institutional STEM self-analysis and the development of an action plan with activities and strategies to identify the strengths, weaknesses, opportunities, and threats that affect the capacity and effectiveness of the institution to attract, retain, educate, and train underrepresented minority students in STEM and graduate them prepared competitively to go on to graduate school or the workforce. Planning grants should also examine existing activities and strategies across the nation that could be implemented in a proposed project to improve the quality and competitiveness of undergraduate STEM education at the institution. The activities should contribute to the institution's submission of an Implementation Project (including Achieving Competitive Excellence) proposal to the HBCU-UP program.

Activities may include, but are not limited to:

- STEM program assessment and evaluation,
- Consultation with stakeholders (for example students, faculty, administrators, as well as STEM industry and K-12 representatives) and/or exemplars,
- Data collection,
- Involvement of visiting faculty or consultants in the planning process,
- Review of STEM education research findings and effective implementation strategies, and adaptation to needs of the participating institution,
- Travel for site visits to exemplar institutions including existing HBCU-UP project sites or other institutions utilizing documented successful practices,
- Professional travel and professional development directly associated with improving the planning grant activities.

5. **RESEARCH INITIATION AWARDS:** Projects of up to two years to perform scientific research and develop a STEM research program at the institution.

   Research Initiation Awards provide support for a STEM faculty member at the HBCU to pursue research at an NSF-funded Center, at a research intensive institution, or at a national laboratory. The project description should contain all of the elements of a standard NSF research proposal. The project should help to further the faculty member's research capability and effectiveness, to improve research and teaching at his or her home institution, and to involve undergraduate students in research experiences. The awards are particularly appropriate for junior faculty as a means of recruiting and retaining highly qualified scientists and engineers at HBCUs.

6. **OTHER FUNDING OPPORTUNITIES**

   HBCU-UP also funds Conferences, Symposia, and Workshops; EArly-concept Grants for Exploratory Research (EAGER) and Grants for Rapid Response Research (RAPID); and Grant Supplements for existing awards. Such proposals may be submitted, as described in the Grant Proposal Guide (GPG), which is available at http://www.nsf.gov.

   Through a Cooperative Activity with the Department of Energy, supplements are available for Science Undergraduate Laboratory Internships (SULI), Faculty-Student Teams (FaST), Community College Institutes (CCI),and Pre-Service Teacher (PST) Internships.

   For Conferences, Symposia, and Workshops, see GPG, II.D.8.

   For Early-concept Grants for Exploratory Research (EAGER), see GPG II.D.2

   For Grants for Rapid Response Research (RAPID), see GPG, II.D.1.

   For a supplement through the Cooperative Activity with the Department of Energy, see the Dear Colleague Letter at http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5632&org=HRD&from=home

[1] National Research Council. (2002). Scientific research in education. Committee on Scientific Principles for Education Research. Shavelson, RJ; Towne, L, (Eds.). Center for Education, Division of Behavioral and Social Sciences and Education. Washington, DC: National Academy Press

III. AWARD INFORMATION

1. **A) Implementation Projects**

   - Number of awards: 5 to 6 in FY 2011
   - Project Length: Up to five years
   - Award Size: Up to $1.75 million for Implementation projects
   - Restrictions: Equipment costs may not exceed 30% of the total budget request
   - Grant Administration: Implementation Projects will be managed by NSF as continuing grants

1. **B) ACE Implementation Projects**

   - Number of awards: Up to 2 in FY 2011
   - Project Length: Up to five years
   - Award Size: Up to $3 million for ACE Implementation Projects
   - Restrictions: Equipment costs may not exceed 30% of the total budget request
   - Grant Administration: ACE Implementation Projects will be managed by NSF as continuing grants

2. **Broadening Participation Research Projects**

   - Number of awards: 3 to 5 in FY 2011
   - Project Length: Up to three years
   - Award Size: Up to $350,000
   - Restrictions: Equipment costs are not normally allowed under Broadening Participation Research Projects
   - Grant Administration: Broadening Participation Research Projects will be managed by NSF as continuing or standard grants

3. **Targeted Infusion Projects**

   - Number of awards: 10 to 15 in FY 2011
   - Project Length: From two to three years
   - Award size: Up to $100,000 per year
   - Grant Administration: Targeted Infusion Projects will be managed by NSF as continuing or standard grants

4. **Planning Grants** (for Implementation Projects and ACE Implementation Projects)

    - Number of awards: 2 to 4 in FY 2011
    - Project Length: From twelve to eighteen months
    - Award Size: Up to $70,000
    - Restrictions: Equipment costs are not normally allowed under planning grants
    - Grant Administration: Planning grants will be managed by NSF as standard grants

6. **Research Initiation Awards**

    - Number of awards: 4 to 6 in FY 2011
    - Project Length: Up to two years
    - Award Size: Up to $200,000
    - Restrictions: Equipment cost may not exceed 20% of the total budget
    - Grant Administration: Research Initiation Awards will be managed by NSF as standard grants

IV. ELIGIBILITY INFORMATION

Organization Limit:

Proposals may only be submitted by the following:

- Historically Black Colleges and Universities (HBCUs) that are accredited and offer undergraduate educational programs in science, technology, engineering and mathematics (STEM).

PI Limit:

- The Principal Investigator and co-Principal Investigators for the Implementation Projects, ACE Implementation Projects, and Planning Grant proposals should be the key personnel that will be involved in the implementation of the project.
- The Principal Investigator for Broadening Participation Research Projects should be one of the individuals who will perform the research project. Other potential co-Principal Investigators include collaborators on the research project. At least one of the Principal Investigators must have formal training in education research or significant professional experience doing education research.
- The Principal Investigator for Targeted Infusion Projects should be the individual that will be involved in the implementation of the project activities.
- The Principal Investigator for a Research Initiation Award should be a faculty member in a STEM area at the HBCU.

Limit on Number of Proposals per Organization:

- An eligible institution can only have one active Implementation Project, ACE Implementation Project, or Planning Grant.
- There is no limit to the number of Broadening Participation Research Project proposals that can be submitted from an eligible institution.
- It is expected that no more than one Targeted Infusion Project per eligible institution in any year will be funded. This may be in addition to either an Implementation Project, an ACE Implementation Project proposal, or a Planning Grant proposal if applicable.
- It is expected that no more than two Research Initiation Awards per institution in any year will be funded.

Limit on Number of Proposals per PI:

None Specified

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Letters of Intent*(required):*

Letters of intent are required for HBCU-UP (except Planning Grants).

All letters of intent must be submitted via FastLane. A separate letter of intent is requested for each type of HBCU-UP proposal (Implementation (to include ACE), Broadening Participation Research, Targeted Infusion, or Research Initiation Award) that will be submitted from an eligible institution.

Letters of intent must contain the following information:

- Project title
- PI name and Co-PI names, department, institution, phone, fax and email
- Point of contact if different than the PI (phone, fax, email)
- Submitting institution's name
- The type of proposal that will be submitted (Implementation (including ACE), Broadening Participation Research, Targeted Infusion, or Research Initiation Award)
- Project synopsis: Implementation Projects should propose research-based/evidenced-based strategies or practices that could enhance undergraduate STEM education and research at the institution. A brief description of the proposed activities should be provided with explanation why they should be successful in that institutional environment and setting. The expected effects, outcomes, and impact targets and timelines from the implementation project should be summarized. Broadening Participation Research Projects should describe the type of knowledge to be obtained and the intended purpose of its application. The research question(s) to be addressed, the population(s) to be examined, and the data to be gathered should be provided. A brief description of the research design, methods and procedures for the study should be given. Targeted Infusion Projects should provide a brief description of the proposed activities, expected outcomes, and timelines. Research Initiation Awards should provide a brief description of the proposed research.

Technical assistance will be offered by the HBCU-UP program office to proposers who submit a letter of intent by the due date, and to proposers who contact the HBCU-UP program office within two weeks of the LOI due date.

Letter of Intent Preparation Instructions:

When submitting a Letter of Intent through FastLane in response to this Program Solicitation please note the conditions outlined below:

- Sponsored Projects Office (SPO) Submission is required when submitting Letters of Intent
- A Minimum of 1 and Maximum of 4 Other Senior Project Personnel are allowed
- Proposal Type is required when submitting Letters of Intent
- Submission of multiple Letters of Intent is allowed

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

- Full proposals submitted via FastLane: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF Grant Proposal Guide (GPG). The complete text of the GPG is available electronically on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@nsf.gov. Proposers are reminded to identify this program solicitation number in the program solicitation block on the NSF Cover Sheet For Proposal to the National Science Foundation. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

- Full proposals submitted via Grants.gov: Proposals submitted in response to this program solicitation via Grants.gov should be prepared and submitted in accordance with the NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov. The complete text of the NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: (http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide). To obtain copies of the Application Guide and Application Forms Package, click on the Apply tab on the Grants.gov site, then click on the Apply Step 1: Download a Grant Application Package and Application Instructions link and enter the funding opportunity number, (the program solicitation number without the NSF prefix) and press the Download Package button. Paper copies of the Grants.gov Application Guide also may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@nsf.gov.

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

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

For HBCU-UP PROJECTS

- COVER SHEET-
  - For all HBCU-UP proposals under "NSF Unit Consideration" please select:
    - "HRD-Division of Human Resource Development" as the division
    - "Hist Black Colleges and Univ" as the program
  - ACE Implementation proposals:
    - Please begin the project title with "ACE Implementation Grant:"
  - Implementation proposals:
    - Please begin the project title with "Implementation Grant:"
  - Broadening Participation Research proposals:
    - Please begin the project title with "Broadening Participation Research Grant:"
  - Targeted Infusion Project proposals:
    - Please begin the project title with "Targeted Infusion Project Grant:"
  - Planning Grant proposals:
    - Please begin the project title with "Planning Grant:"
  - Research Initiation Award proposals:
    - Please begin the project title with "Research Initiation Award Grant:"

Review the regulations regarding Human Subjects (45 CFR 690.101-124 http://www.nsf.gov/bfa/dias/policy/human.jsp). This is particularly important for Broadening Participation Research Projects. Please note that Human Subjects regulations also govern activities that have to do with safeguarding individually identifiable information such as student and faculty surveys and data. Therefore many Implementation Projects, Planning Grants, and possibly Targeted Infusion Projects, may need to be reviewed by the Human Subjects Internal Review Board (IRB) for the institution. If the project will be IRB reviewed, please indicate on the cover sheet that the review is pending. If the proposal has already been IRB reviewed and found to be exempt, please indicate so on the cover sheet. If the IRB has already given approval of the activities include a letter from the IRB and indicate the expiration date of the IRB approval on the cover sheet.

- PROJECT SUMMARY - The first sentence of the Project Summary should specify the type of proposal (e.g., Implementation, ACE Implementation, Broadening Participation Research, Targeted Infusion, Planning, or Research Initiation Award) and the challenge or research addressed. The Project Summary is a self-contained one-page description of the activities that would be implemented if the proposal were funded. IMPORTANT NOTE: Proposals will be returned, without review, if they do not address both NSF merit selection review criteria explicitly in separate statements in the project summary for all proposals submitted under this solicitation: What is the intellectual merit of the proposed activity? and What are the broader impacts of the proposed activity?
- PROJECT DESCRIPTION - 15 page limit. Refer to the "Project Description" section below for more information on each type of HBCU-UP proposal: 1) Implementation Projects and ACE Implementation Projects, 2) Broadening Participation Research Projects, 3) Targeted Infusion Projects, 4) Planning Grants, and 5) Research Initiation Awards.
- REFERENCES CITED - Provide the references cited in the proposal.
- BIOGRAPHICAL SKETCHES - Outline the experiences of the PI and co-PIs (two-page limit each person). Include a two-page position description with minimum qualifications and percent time commitment for any project staff position that will be filled if the proposal is funded (for example a project coordinator or data manager).
- BUDGET -
  - Implementation Projects and ACE Implementation Projects should budget for the PI and the co-PI who has the most day-to-day contact with the project, to attend a three-day grantee meeting in the Washington, DC area each year of the project. Implementation Projects and ACE Implementation Projects should also budget for the institution's financial officer assigned to the HBCU-UP project to attend a one-day workshop on financial management of NSF grants in the Washington, DC area each year of the project.
  - Broadening Participation Research Projects should budget for the PI to attend a three-day grantee meeting in the Washington, DC area each year of the project.
  - Targeted Infusion Projects should budget for the PI to attend a three-day grantee meeting in the Washington, DC area each year of the project.
  - Research Initiation Awards Projects should budget for the PI to attend a three-day grantee meeting in the Washington, DC area each year of the project.
- CURRENT AND PENDING SUPPORT- Use the forms provided in FastLane or Grants.gov. Enter this proposal as pending

support.

- FACILITIES, EQUIPMENT& OTHER RESOURCES - Provide a description of available facilities and priorities for its use, if applicable. Please note that this section is a required part of the proposal. If not applicable, the proposer should enter "Not applicable" in the Facilities, Equipment, and Other Resources section of the proposal.

1. **Implementation Projects -** Implementation Projects should be about creating or adapting and implementing, studying, and assessing evidence-based practices that strengthen and enhance STEM teaching and learning and increase productivity and outcomes from STEM undergraduate programs. The relevant research or knowledge base that supports the effectiveness of the efforts selected should be included with compelling arguments as to why these strategies are expected to result in the anticipated outcomes at the institution.

   ACE Implementation: This highly competitive track is for accomplished HBCU-UP institutions that are exemplars because of their consistent academic achievement in the HBCU STEM community. The proposals for this track are ambitious, potentially transformative, and have the promise of significant advances in STEM undergraduate education at the HBCU. The goal of the ACE program is in helping these institutions to excel and moving the HBCU-UP portfolio forward.

   The project description should address the following elements:

   Background and Context

   - State the problem(s) to be addressed.
   - Articulate current knowledge of the problem(s) and some of the causes as understood from documented sources.
   - Provide information on the institution's current STEM education and research capability (baseline data). Examples of information and data include: a description of STEM degree programs, student enrollment, retention, graduation rates, graduate school going rates, gatekeeper course performance, STEM faculty demographics, and STEM infrastructure resources at the institution and collaborating organizations.
   - Describe prior efforts and results of those efforts. Provide information on STEM-related programs that have been implemented or are currently active. This should include previous HBCU-UP awards and awards from other NSF programs (for example the Louis Stokes Alliances for Minority Participation (LSAMP) or the Transforming Undergraduate Education in Science, Technology, Engineering and Mathematics (TUES) program), other Federal programs (for example the Minority Science and Engineering Improvement Program (MSEIP) or the Minority Access to Research Careers (MARC) program), State programs, and institution programs. Explain the outcomes from these efforts. Institutions that have received an HBCU-UP Planning Grant must describe the planning grant activities and the findings of those activities.
   - Identify the areas that have not been understood, determined, verified, tested, or resolved by previous efforts. Highlight some of the areas that need improvement and that will be addressed with the proposed project activities.

   Goals and Objectives

   - Clearly state the goals and objectives of the project.
   - Describe the information and knowledge that will be obtained from the project.
   - Describe the expected results and student outcomes.
   - Explain the expected significance of the project and the compatibility with the mission and environment of the institution.

   Detailed Project Plan

   - Describe the research-based or evidence-based practices selected for implementation and why and how they could improve undergraduate STEM education at the institution and under the present setting and conditions.
   - As necessary, describe the demographic, social, cultural, political, and economic environment in which the project is situated and how this environment may affect implementation, operations, and results. Describe adjustments that must be made to adapt the documented practices and strategies of this project to the environment.
   - Implementation Design: Present the conceptual model of the project and describe each of the components (i.e. each of the educational activities and interventions being implemented) and their links to the project goals and objectives.
   - Implementation/Intervention Study: Define the procedures and methods for analyzing and assessing each of the educational activities and interventions of the project in producing the desired effects.
   - Define the expected measurable outcomes and explain the relationships with the components of the implementation linked to project goals and objectives. Include indicators and benchmarks with timelines that will determine which implementation strategies are proving to be effective in the environment.

   Dissemination

   Describe plans to communicate the results and outcomes of the project to other professionals in STEM education and research, both during and after the project. Describe the information to be disseminated, the means of dissemination, and the procedures for determining the success of the dissemination effort.

   Project Management Plan

   Implementation of evidence-based practices and programs almost always requires organizational change. Define the organizational structure for the project and explain its institutional alignment for achieving the project goals and objectives. Define the roles and responsibilities of key personnel who will carry out project activities.

   If the research-based/evidenced-based practices project is not implemented with fidelity, it will not achieve the desired impact. Define the processes and systems that will be applied to operate the project, including budget management, data management and reporting. Define the types and levels of resources being applied to implement the project as planned. Define the operational performance measures of the project with targets and timelines. Describe the process for mid-course corrections. Define the plans for sustainability or institutionalization of any project components.

   The Principal Investigator should be an academic leader with the authority to lead a project that crosses several STEM schools, departments, or units. The co-Principal Investigators should be STEM academic leaders, scientists, and faculty members who carry-out the project workplan. Implementation Projects should have an Internal Steering Committee or Internal Advisory Committee to help manage the project implementation, resolve project issues, and ensure that the project is on track for meeting project goals. Implementation Projects also should have an External Advisory Committee that meets at least once a year.

   Define the commitment of institutional leadership to the implementation process. Provide evidence of the commitment to the proposed Implementation Project activities from the institutional administration, STEM leadership and faculty, and other partners and collaborators, as applicable. Substantive letters of commitment to the proposed project activities can be included as supplementary documents. General letters of support from

individuals not involved in the implementation of project activities should not be included.

Evaluation plan

- Provide a formative evaluation plan with strategies to monitor operations and activities of the project as they evolve and to inform and guide these efforts.
- Describe the criteria to be used in evaluating the quality and impact of the project and the process for collecting and analyzing information at the institution.
- Provide a summative evaluation plan with strategies to assess the effectiveness and impact of the project in achieving its goals and for identifying positive and negative findings when the project is completed.
- Include the capability statement and credentials of the external evaluator as supplemenmtary documents.

2. **Broadening Participation Research Projects -** The project description should include the following information:

Background and Context

- Describe the research question(s) to be investigated and explain the significance and importance of answering the proposed research question(s). Discuss the base of research/theory that motivates the question(s).
- Explain how the research will contribute to the knowledge base of STEM education research and how it has the potential to improve STEM education at HBCUs.

Proposed Research Activities

- Describe the research plan (design, data collection, data analysis, etc.) that will be undertaken in order to answer the research question(s).
- Provide a timeline for the research plan - include measurable objectives and outcomes and identify who will be responsible for completing each task.
- Study of a promising intervention and effectiveness studies are permitted.
- In general, implementation activities are not recommended under Broadening Participation Research Projects. In some cases, implementation activities may be appropriate but these activities must clearly be required in order to answer the proposed research question(s) and must be significantly different from implementation activities undertaken in other projects. If implementation activities are included, clearly explain why the activities are needed to answer the research question(s).

Dissemination

Describe plans to communicate the results and outcomes of the project to other professionals in STEM education and research, both during and after the project. Describe the information to be disseminated, the means of dissemination, and the procedures for determining the success of the dissemination effort.

Project Management and Evaluation

- Provide a management plan for the project that will ensure that the activities and the required reporting will be implemented on time and within budget.
    - At least one of the PIs on the project must have formal training in education research or significant professional experience doing education research.
- Evaluation and assessment: It is expected that each Broadening Participation Research proposal will include an evaluation plan that includes benchmarks, and quantitative and qualitative indicators of progress of the research project. The plan should address the assessment of project outcomes and contributions to the STEM knowledge base and/or educational practice.

3. **Targeted Infusion Projects -** The project description should include the following information:

Background and Context

- Describe the overall goal of the project. The goal must be clearly stated, measurable, and achievable within the proposed time line.
- Describe the benefits of achieving the goal to STEM education and research at the institution. For example, implementing the project will make graduates more competitive in the workforce or for graduate school, or better prepare them for success in the workforce or for graduate school, or cause more students to be enrolled in a STEM degree program, or cause more students to be retained in a STEM major, or meet a local workforce need.
- Baseline data should be included in order to provide the context for the impact of the Targeted Infusion Project. For example, include the courses and the student enrollment in those courses that will be impacted by the proposed project.

Proposed Activities

- Describe the activities that will be undertaken in order to achieve the goal. The activities must clearly be related to achieving the goal. Focused proposals are more competitive -avoid a proposal attempting to do a little bit of everything. Proposals that make funding requests for normal operating costs are discouraged.
- Since institutions have different policies and procedures, such as for new degree program approval, explain how the project timelines reflect all institutional requirements. If appropriate, include evidence (such as letters of support) that indicate that institutionally required procedures are being followed and preliminary approvals have been secured.
- Equipment and supplies:
    - Explain how recurring costs, such as lab supplies for a newly created laboratory course, will be supported after the project ends.
    - Quotes or estimates for major equipment purchases should be included in the supplementary documents section.
    - Explain how long-term maintenance of new equipment will be supported after the project ends.

Dissemination

Describe plans to communicate the results and outcomes of the project to other professionals in STEM education and research, both during and after the project. Describe the information to be disseminated, the means of dissemination, and the procedures for determining the success of the dissemination effort.

Project Management and Evaluation

- Provide a management plan for the project that will ensure that the activities and the required reporting will be implemented on time and within budget.
- Provide a timeline for the activities to be implemented - include measurable objectives and outcomes and the staff that are responsible for carrying out the activities.
- Evaluation and assessment: It is expected that each Targeted Infusion proposal will include a formative

and summative evaluation plan. The evaluation plan should refer to the objectives, goals and baseline data presented within the description of the proposed Targeted Infusion Project activities. The formative evaluation should include benchmarks and indicators of progress to assess the Targeted Infusion Project. The summative evaluation should assess whether the Targeted Infusion Project achieved the overall goals, as well as identify any unexpected results.

4. **Planning Grants -** The project description should include the following information:

   Background and Context

   - Provide information on the institution's current STEM education and research capability. Examples of information and data include: a description of STEM degree programs, student enrollment, retention rates, graduation rates, rates of students going to graduate school, gatekeeper course performance, STEM faculty demographics, and STEM infrastructure resources at the institution and collaborating organizations. This background information and data should help the reviewers understand the potential impact of a full HBCU-UP Implementation Project on the quality of the institution's STEM programs.
   - Describe how the goals and objectives of the proposed Planning Grant fit the institution's mission and reflect the institution's long-term STEM related goals and plans.
   - Provide evidence of the commitment to the proposed Planning Grant activities from the institutional administration, the STEM faculty and leadership, and partners and collaborators if applicable. Letters of commitment to the proposed project activities can be included as supplementary documents. Do not include general letters of support from individuals not involved in the implementation of project activities.

   Proposed Planning Activities

   - Describe the proposed planning process:
     - How will the institution's STEM programs be comprehensively evaluated and assessed in order to identify the areas that need strengthening and that will improve the quality of undergraduate STEM education?
       - Who will be involved in the STEM program evaluation and assessment process?
       - What data still needs to be collected and analyzed? Who will do this additional data collection and analysis?
       - Describe any previous work that has been done, such as surveys of students and faculty or previous accreditation activities, which will be used as part of the proposed Planning Grant assessment.
     - What process will be undertaken to investigate potential strategies that could address the determined areas of need? Discuss how these strategies would be adapted to and implemented at the institution.
     - How will a full implementation project be developed? How will priorities, goals and objectives be established for an implementation project?
   - In general, implementation activities are not intended for planning grants. In some cases, pilot activities may be appropriate for investigation if an innovative strategy is proposed which needs to be tested before full implementation.

   Project Management and Evaluation

   - Provide a management plan for the project that will ensure that the activities and the required reporting will be implemented on time and within budget.
   - The timeline should include the Planning Grant's major activities and milestones and identify who will be responsible for completing each activity.
   - Project staff organization (staffing requirements will depend on the design and scope of the Planning Grant):
     - The Principal Investigator (PI) should be an academic leader with the authority to lead a project that crosses several STEM schools, departments, or units.
     - The Project Manager should be the co-PI who will have the most day-to-day contact with the Planning Grant.
     - Planning Grants should have an Internal Steering Committee or Internal Advisory Committee to advise on the Planning Grant implementation, resolve any issues, and ensure that the Planning Grant is on track. The size and composition can vary - members could include institutional leadership, STEM faculty not already involved in the planning activities, institutional staff who provide student and faculty services that may be included in an Implementation Project, and representatives from related STEM projects. This committee should meet frequently throughout the project. The anticpated membership, tentative schedule of meetings, and expected responsibilities and duties of the committee should be included in the supplementary documents.
   - Evaluation and assessment: It is expected that each Planning Grant will include a evaluation plan. The evaluation plan should assess the planning process and whether the Planning Grant achieved the overall planning grant goals as well as identify any unexpected results.

5. **Research Initiation Awards**

   In addition to following the general format for research proposals as described in the GPG, Research Initiation Award (RIA) proposals submitted must also adhere to the following special instructions:

   It is the responsibility of the PI to find a research collaborator at an NSF funded research center, such as a Center for Research Excellence in Science and Technology, Engineering Research Center, Materials Research Science and Engineering Center, Physics Frontier Center, Science and Technology Center, Science of Learning Center; at a national laboratory; or with a research group at a research university. The PI should plan to conduct research during the summer months at the research collaborator's site and make arrangements for continuing the research during the academic year at his or her home institution. Support can be provided for release time during the academic year, summer salary for the PI, travel and housing at the research site for the PI and undergraduate students, and stipends for undergraduate student research experiences.

   Project Summary (one-page limit):

   Provide a succinct summary of the intellectual merit of the proposed project. This should include the potentially transformative nature of the proposed research. Describe the broader impacts of the proposed work, including benefits to society, dissemination of work, enhancements to scientific knowledge, as well as how the proposed activity will broaden participation of underrepresented groups. Project summaries that do not contain separate paragraphs that are labeled and explicitly address both intellectual merit and broader impacts will be returned without review.

   Project Description (15 page limit, including tables, figures, and other visual supplements):

   Provide a detailed statement of the proposed research to be undertaken. It should contain:

   - A brief description of the PI's overall research and education goals.
   - A detailed description of the proposed research activities including any preliminary data already available

and a description of data that the PI plans to obtain.
- The relationship of the proposed activities to the PI's projected longer term research goals.
- A discussion of how those activities will benefit the research capacity at the institution.
- A discussion of how undergraduate students will be involved in this research.
- A plan for dissemination of this research.
- A plan for evaluation of this project.

Budget:

- Proposed budgets must include funds for the PI to attend a three-day grantee meetings in the Washington, DC area each year of the project.
- Cost of equipment cannot exceed 20% of the total budget.

Special Information and Supplementary Documentation:

Include the following:

- A letter of commitment from the PI's Department Chair or Dean stating that the PI will have institutional support in terms of allowance for release time, travel for research purposes, and access to existing research facilities.
- A mentoring plan for the PI from the Department Chair or Dean.
- A letter of support from the PI's research collaborator at the research center, university, or national laboratory where the PI conducts his or her research.
- A research mentoring plan for the PI from the research collaborator at the research center, university,or national laboratory where the PI conducts his or her research.
- A mentoring plan from the PI for the undergraduate students that are involved in the project.

B. Budgetary Information

Cost Sharing: Inclusion of voluntary committed cost sharing is prohibited

Other Budgetary Limitations:

- Equipment Limitations:
  - Implementation Projects and ACE Implementation Projects - Equipment costs cannot exceed 30% of the total NSF budget requested.
  - Broadening Participation Research Projects - Minimal equipment costs are allowed if required to implement the research activities. Broadening Participation Research Projects are not intended to support implementation activities, therefore major equipment is not normally included in Broadening Participation Research Projects. However, equipment may be justified in some cases.
  - Planning Grants - Minimal equipment costs are allowed if required to implement the Planning Grant process.
  - Research Initiation Awards - Equipment cost cannot exceed 20% of the total budget.
- Required Meeting Travel:
  - Implementation Projects and ACE Implementation Projects should budget for the PI and the co-PI or a staff person responsible for the most day-to-day management of the project to attend a three-day grantee meeting in the Washington, DC area each year of the project. Implementation Projects and ACE Implementation Projects should also budget for the institution's financial officer assigned to the HBCU-UP project to attend a one-day workshop on financial management of NSF grants in the Washington, DC area each year of the project.
  - Broadening Participation Research Projects should budget for the PI(s) to attend a three-day grantee meeting in the Washington, DC area each year of the project.
  - Targeted Infusion Projects should budget for the PI to attend a three-day grantee meeting in the Washington, DC area each year of the project.
  - Research Initiation Awards should budget for the PI to attend a three-day grantee meeting in the Washington, DC area each year of the project.
- Financial support may be provided to student participants under HBCU-UP projects. However, financial support may only be provided to students that are U.S. citizens, nationals, or permanent residents of the US. Student support should be included on the "Stipends" line under the "Participant Support Costs" section of the budget. Stipends to undergraduate students should not replace other need based grants and scholarships already awarded to the students.

C. Due Dates

- **Letter of Intent Due Date(s)** ***(required)*** (due by 5 p.m. proposer's local time)***:***

  February 07, 2011

  Implementation Projects, Achieving Competitive Excellence (ACE) Implementation Projects, Broadening Participation Research Projects, Targeted Infusion Projects, Research Initiation Awards

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

  April 06, 2011

  Implementation Projects, Achieving Competitive Excellence (ACE) Implementation Projects, Broadening Participation Research Projects, Targeted Infusion Projects, Planning Grants, Research Initiation Awards

D. FastLane / Grants.gov Requirements

- **For Proposals Submitted Via FastLane:**

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

  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. Further instructions regarding this process are available on the FastLane Website at: https://www.fastlane.nsf.gov/fastlane.jsp.

- **For Proposals Submitted Via Grants.gov:**

  Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. The Grants.gov's Grant Community User Guide is a comprehensive reference document that provides technical information about Grants.gov. Proposers can download the User Guide as a Microsoft Word document or as a PDF document. The Grants.gov User Guide is available at: http://www.grants.gov/CustomerSupport. In addition, the NSF Grants.gov Application Guide provides additional technical guidance regarding preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: support@grants.gov. The Grants.gov Contact Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this solicitation.

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

VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

Proposals received by NSF are assigned to the appropriate NSF program where they will be reviewed if they meet NSF proposal preparation requirements. All proposals are carefully reviewed by a scientist, engineer, or educator serving as an NSF Program Officer, and usually by three to ten other persons outside NSF who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with the oversight of the review process. Proposers are invited to suggest names of persons they believe are especially well qualified to review the proposal and/or persons they would prefer not review the proposal. These suggestions may serve as one source in the reviewer selection process at the Program Officer's discretion. Submission of such names, however, is optional. Care is taken to ensure that reviewers have no conflicts of interest with the proposal.

A. NSF Merit Review Criteria

All NSF proposals are evaluated through use of the two National Science Board (NSB)-approved merit review criteria: intellectual merit and the broader impacts of the proposed effort. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

The two NSB-approved merit review criteria are listed below. 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 the reviewer is qualified to make judgements.

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, original, or potentially transformative 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?

Examples illustrating activities likely to demonstrate broader impacts are available electronically on the NSF website at: http://www.nsf.gov/pubs/gpg/broaderimpacts.pdf.

Mentoring activities provided to postdoctoral researchers supported on the project, as described in a one-page supplementary document, will be evaluated under the Broader Impacts criterion.

NSF staff also 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:

For HBCU-UP: In addition to the two NSF criteria for Intellectual Merit and Broader Impacts, special review criteria for HBCU-UP projects (except for Research Initiation Awards) are:

- Does the proposal describe a convincing rationale and appropriate methods for the project activities that are research-based/evidence-based?
- Are the project design and methods linked to measureable outcomes and are they appropriate to the scope, scale, and setting for the project?
- Is the project likely to produce high quality results that contribute to the undergraduate STEM education knowledge base?
- Is the project likely to have an impact on STEM education, student learning, and faculty practice?

- Is the budget along with other assigned resources matched well with the project work plan?
- Is the project management plan adequate and does it include clear roles and responsibilities of the personnel who will contribute to the project?
- Is there commitment of the leadership to the implementation process?
- Does the evaluation plan define indicators and benchmarks to inform the project team and others about the operations and effectiveness of the implementation?
- Does the project have a plan for effective and scholarly dissemination of results?

B. Review and Selection Process

Proposals submitted in response to this program solicitation will be reviewed 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.

After scientific, technical and programmatic review and consideration of appropriate factors, the NSF Program Officer recommends to the cognizant Division Director whether the proposal should be declined or recommended for award. NSF 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 deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director accepts the Program Officer's 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 Officer. In addition, the proposer will receive an explanation of the decision to award or decline funding.

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 administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See Section VI.B. for additional information on the review process.)

B. Award Conditions

An NSF award consists of: (1) the award 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 (GC-1); * or Research Terms and Conditions * and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreements also are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC) and the applicable Programmatic Terms and Conditions. NSF awards are electronically signed by an NSF Grants and Agreements Officer and transmitted electronically to the organization via e-mail.

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

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

Special Award Conditions:

Reverse Site Visits: Participation in a Reverse Site Visit (RSV) can be requested by NSF at any time during the grant period. The RSV is a presentation on the outcomes and progress of the grant activities at NSF in front of a peer review panel. Participation in the RSV is required by the appropriate grant management team and institutional administration.

Site Visits: NSF staff may visit the site of the grant project at anytime during the grant period. Reasonable accommodation of the site visit by NSF program staff is required by the grantee.

Cooperation with NSF evaluation projects and special projects: NSF, an NSF contractor, or a grantee on behalf of NSF, may from time to time conduct program evaluations or special projects of HBCU-UP projects. These may occur at anytime during the grant period and sometimes after the grant period has ended. Reasonable cooperation with these efforts is required by the grantee.

C. Reporting Requirements

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

Failure to provide the required annual or final project reports, or the project outcomes report will delay NSF review and processing of any future funding increments as well as any pending proposals for that PI. 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. Such reports provide information on activities and findings, project participants (individual and organizational) 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. Submission of the report via FastLane constitutes certification by the PI that the contents of the report are accurate and complete. The project outcomes report must be prepared and submitted using Research.gov. This report serves as a brief summary, prepared specifically for the public, of the nature and outcomes of the project. This report will be posted on the NSF website exactly as it is submitted by the PI.

Implementation Project and ACE Implementation Project awardees are required to submit data each year of the award and after the award is over. This is in addition to the annual project reports and the final project report submitted to the cognizant Program Officer via FastLane. The data is used by NSF to assess project progress as well as for HBCU-UP outcomes at the program level for Government Performance and Results Act (GPRA) reporting and other reporting requirements. The data will only be published outside of normal NSF reporting requirements as aggregate data unless permission from the institution is received to publish the data individually.

VIII. AGENCY CONTACTS

General inquiries regarding this program should be made to:

- Claudia Rankins, Program Director, 815N, telephone: (703) 292-8109, fax: (703) 292-9018, email: crankins@nsf.gov
- Caesar Jackson, Program Director, 815N, telephone: (703) 292-4669, fax: (703) 292-9018, email: crjackso@nsf.gov
- Toni Edquist, Program Specialist, telephone: (703)-292-4649, email: tedquist@nsf.gov

For questions related to the use of FastLane, contact:

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

For questions relating to Grants.gov contact:

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

IX. OTHER INFORMATION

The NSF Website provides the most comprehensive source of information on NSF Directorates (including contact information), programs and funding opportunities. Use of this Website by potential proposers is strongly encouraged. In addition, National Science Foundation Update is a free e-mail subscription service designed to keep potential proposers and other interested parties apprised of new NSF funding opportunities and publications, important changes in proposal and award policies and procedures, and upcoming NSF Regional Grants Conferences. Subscribers are informed through e-mail when new publications are issued that match their identified interests. Users can subscribe to this service by clicking the "Get NSF Updates by Email" link on the NSF web site.

Grants.gov provides an additional electronic capability to search for Federal government-wide grant opportunities. NSF funding opportunities may be accessed via this new mechanism. Further information on Grants.gov may be obtained at http://www.grants.gov.

ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) is an independent Federal agency created by the National Science Foundation Act of 1950, as amended (42 USC 1861-75). The Act states the purpose of the NSF is "to promote the progress of science; [and] to advance the national health, prosperity, and welfare by supporting research and education in all fields of science and engineering."

NSF funds research and education in most fields of science and engineering. It does this through grants and cooperative agreements to more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations and other research organizations throughout the US. The Foundation accounts for about one-fourth of Federal support to academic institutions for basic research.

NSF receives approximately 40,000 proposals each year for research, education and training projects, of which approximately 11,000 are funded. In addition, the Foundation receives several thousand applications for graduate and postdoctoral fellowships. The agency operates no laboratories itself but does support National Research Centers, user facilities, certain oceanographic vessels and Antarctic research stations. The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

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

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

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

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

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

- **Location:** 4201 Wilson Blvd. Arlington, VA 22230
- **For General Information** (NSF Information Center)**:** (703) 292-5111
- **TDD (for the hearing-impaired):** (703) 292-5090
- **To Order Publications or Forms:**

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

  or telephone: (703) 292-7827
- **To Locate NSF Employees:** (703) 292-5111

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

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

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

Suzanne H. Plimpton
Reports Clearance Officer
Division of Administrative Services
National Science Foundation
Arlington, VA 22230