Tribal Colleges and Universities Program (TCUP)

PROGRAM SOLICITATION
NSF 14-572

REPLACES DOCUMENT(S):
NSF 13-572

National Science Foundation

Directorate for Education & Human Resources
Division of Human Resource Development

Directorate for Geosciences

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

September 02, 2014

September 1, Annually Thereafter

Instructional Capacity Excellence in TCUP Institutions

September 16, 2014

September 16, Annually Thereafter

Targeted STEM Infusion Projects

December 09, 2014

December 9, Annually Thereafter

Small Grants for Research

March 16, 2015

March 16, Annually Thereafter

Partnerships for Geoscience Education

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

Proposals Accepted Anytime

Broadening Participation Research in STEM Education

Proposals Accepted Anytime

Preparing for TCUP Implementation

IMPORTANT INFORMATION AND REVISION NOTES

This solicitation has been revised to incorporate into the Other Information section a newly issued publication jointly developed by the National Science Foundation and the Institute of Education Sciences in the U.S. Department of Education entitled *Common Guidelines for Education Research and Development*. The Guidelines describe six types of research studies that can generate evidence about how to increase student learning. Research types include those that generate the most fundamental understandings related to education and learning; examinations of associations between variables; iterative design and testing of strategies or interventions; and assessments of the impact of a fully-developed intervention on an education outcome. For each research type, there is a description of the purpose and the expected empirical and/or theoretical justifications, types of project outcomes, and quality of evidence.

The Guidelines publication can be found on the NSF website with the number NSF 13-126. A set of FAQs regarding the Guidelines is available with the number NSF 13-127. Grant proposal writers and PIs are encouraged to familiarize themselves with both documents and use the information therein to help in the preparation of proposals to NSF.

A new funding track designed to encourage more opportunities for students to study the geosciences has been added. Partnerships for Geoscience Education (PAGE) seeks collaborative proposals from TCUP-eligible institutions and mainstream colleges and universities to add or enhance geoscience programs of study at the TCUP institution, while engaging university faculty's involvement with TCUP students and faculty to foster research opportunities and successful transitions to upper-division or graduate course work.

A new funding track has been added specifically for those TCUP-eligible institutions that have not received TCUP support beyond a planning grant. Preparing for TCUP Implementation (Pre-TI) will allow those institutions to conduct the necessary self-studies and design required to develop compelling proposals for TCUP support.

The track entitled Catalyzing Opportunities in Research and Education (CORE) has been renamed Small Grants for Research (SGR).

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Tribal Colleges and Universities Program (TCUP)

Synopsis of Program:

The Tribal Colleges and Universities Program (TCUP) provides awards to Tribal Colleges and Universities, Alaska Native-serving institutions, and Native Hawaiian-serving institutions to promote high quality science (including sociology, psychology, anthropology, economics, statistics, and other social and behavioral science as well as natural science and education disciplines), technology, engineering and mathematics (STEM) education, research, and outreach. Support is available to TCUP-eligible institutions (see the Additional Eligibility subsection of Section IV of this solicitation) for **Instructional Capacity Excellence in TCUP Institutions (ICE-TI)**, **Targeted STEM Infusion Projects (TSIP), Partnerships for Geoscience Education (PAGE), Broadening Participation Research in STEM Education (BPR), Small Grants for Research (SGR),** and **Preparing for TCUP Implementation (Pre-TI).** Through these mechanisms, along with collaborations with other National Science Foundation (NSF) units and its work with other organizations, TCUP aims to increase Native individuals' participation in STEM careers and the quality of STEM programs at TCUP-eligible institutions. TCUP strongly encourages the inclusion of activities that will benefit veterans.

Instructional Capacity Excellence in TCUP Institutions (ICE-TI) projects provide support to design, implement and assess comprehensive institutional improvements in the STEM instructional and research capacity in TCUP-eligible institutions of higher education. Successful projects are transformative in their approaches to increasing the numbers of STEM students and the quality of their preparation by strengthening STEM education and research. ICE-TI 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.

Targeted STEM Infusion Projects (TSIP) provide support toward achieving a short-term, well-defined goal that promises to improve the quality of undergraduate STEM education at an eligible institution. Targeted STEM Infusion Projects could, for example, enhance academic infrastructure by systematically adding traditional knowledge to the scope or content of a STEM course, updating curriculum, modernizing laboratory research equipment, or improving the computational network array for research and education.

Partnerships for Geoscience Education (PAGE) provides support for collaborations that will improve TCUP institutions' instructional capacity in geosciences; attract, retain, and support TCUP students in internships and research endeavors deemed to be necessary for a complete curriculum offering; and the engagement of partner universities to provide an academic grounding and a successful transition for students who wish to study or attain degrees in geosciences.

Broadening Participation Research in STEM Education (BPR) provides support for research projects that seek 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 and inform 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 TCUP-eligible institutions to conduct this type of research.

Small Grants for Research (SGR) projects provide support for faculty members in STEM areas at TCUP-eligible institutions to initiate or pursue research projects or programs appropriate for undergraduate student engagement. 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 as a means of recruiting and retaining highly qualified scientists, engineers, and educators at TCUP-eligible institutions.

Preparing for TCUP Implementation (Pre-TI) projects support development-level activities that can ground an institution's readiness for Implementation-level projects, such as an institutional assessment of its current STEM instructional capacity, or the conversations necessary to formulate a shared vision of what that capacity should be and how to achieve it. Provided specifically for those TCUP-eligible institutions of higher education that have never received a TCUP Implementation-level award, Pre-TI grants can support staff and faculty release time, travel, stakeholder gatherings, and associated administrative costs.

Cognizant Program Officer(s):

Please note that the following information is current at the time of publishing. See program website for any updates to the points of contact.

- Jody Chase, Program Director, telephone: (703) 292-8682, email: lchase@nsf.gov
- Jill L. Karsten, Program Director, telephone: (703) 292-7718, email: jkarsten@nsf.gov
- Denise Spain, Program Specialist, 815, telephone: 703-292-5189, email: dspain@nsf.gov

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

- 47.050 --- Geosciences
- 47.076 --- Education and Human Resources

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 15 to 36 - Up to 3 BPR awards, up to 10 TSIP awards, up to 10 Small Grants for Research, and up to 2 Pre-TI awards will be made pending the availability of funds. Up to 3 PAGE awards will be made as continuing grants pending the availability of funds. Up to ICE-TI awards will be made as standard or continuing grants pending the availability of funds.

Anticipated Funding Amount: $6,000,000 Approximately $4,000,000 for TCUP ICE-TI, TSIP, SGR, and BPR projects, pending availability of funds. Approximately $2,000,000 for PAGE projects, pending availability of funds.

Eligibility Information

Who May Submit Proposals:

Proposals may only be submitted by the following:

- **TCUP Proposals:** Tribal Colleges and Universities, Alaska Native-serving institutions and Native Hawaiian-serving institutions as defined in Section IV of this solicitation. Priority for TSIP awards will be given to TCUP-eligible institutions that have not previously received Implementation-level support. Any accredited college or university may submit a proposal as part of a PAGE collaborative.

Who May Serve as PI:

For the Instructional Capacity Excellence in TCUP Institutions and PArtnerships for Geosciences Education award tracks, the principal investigator (PI) is expected to be the chief academic officer of the institution, or another senior academic officer responsible for oversight and management of curriculum and instructional policies for the institution, although senior STEM faculty may be considered. All full time faculty members or academic officers at TCUP-eligible institutions are eligible to serve as PI on Broadening Participation Research in STEM Education. Typically, the PI for Targeted STEM Infusion Projects and Small Grants for Research proposals would be a member of the STEM faculty. Prospective PIs are encouraged to consult TCUP program staff.

Limit on Number of Proposals per Organization:

Eligible institutions may receive consecutive, but not concurrent, Instructional Capacity Excellence in TCUP Institutions awards. Eligible institutions may participate in only one Partnerships for Geoscience Education award, but its participation is not prevented by the institution's having other TCUP awards. There is no limit on the number of Targeted STEM Infusion Projects, Small Grants for Research, or Broadening Participation Research projects per TCUP-eligible institution. Institutions may receive only one Preparing for TCUP Implementation award.

Limit on Number of Proposals per PI or Co-PI:

There are no restrictions or limits.

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Not required
- **Preliminary Proposal Submission:** Not required
- **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

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

  September 02, 2014

  September 1, Annually Thereafter

  Instructional Capacity Excellence in TCUP Institutions

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Proposal Review Information Criteria

Merit Review Criteria: National Science Board approved criteria apply.

Award Administration Information

Award Conditions: Additional award conditions apply. Please see the full text of this solicitation for further information.

Reporting Requirements: Additional reporting requirements apply. Please see the full text of this solicitation for further information.

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I. INTRODUCTION

The National Science Foundation (NSF) supports research at the frontiers of knowledge, across all fields of science, technology, engineering, and mathematics and all levels of STEM education. NSF enables innovation and discovery in science, technology, engineering, and mathematics (STEM) by educating and preparing a diverse and able STEM workforce motivated 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 Tribal Colleges and Universities Program (TCUP) is managed by the Division of Human Resource Development (HRD), which is part of the Directorate for Education and Human Resources (EHR) of the National Science Foundation.

To meet the challenges presented by the nation's increasing needs in STEM, the Tribal Colleges and Universities Program is committed to enhancing the quality of undergraduate science, technology, engineering, and mathematics education and research at Tribal Colleges and Universities, Alaska Native-serving institutions, and Native Hawaiian-serving institutions. TCUP 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, TCUP has identified the following priorities: innovation in instruction and curriculum development; providing access to exciting STEM research experiences for undergraduate students; recruitment and retention; and the successful advancement of students through the critical transition points: between high school and college, 2- year and 4-year, undergraduate and graduate studies, and into the workforce. Proposals submitted to TCUP are encouraged to address one or more of these priorities. Moreover, TCUP is particularly interested in building knowledge in areas related to the following questions:

- How does cultural integration with the STEM curriculum affect student success?
- How does the engagement of discipline-specific undergraduate research affect student success?
- How does the increasing level of rigor affect student success?
- What are the critical support services and how do they affect student success?
- How does faculty development affect sustainability of institutional transformation?

Improving student performance in science and mathematics requires an adequate supply of well-qualified STEM teachers [1], [2], and community colleges play a vital role in the preparation of those teachers, particularly among underserved populations. TCUP strongly encourages PIs to address STEM teacher preparation at either the associates or baccalaureate level to help increase the number and quality of future science and mathematics teachers. A focus of TCUP 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.

[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. *Science, Technology, Engineering and Mathematics (STEM) Education: Background, Federal Policy and Legislative Action.* Congressional Research Service, Domestic Social Policy Division. Order Code RL33434.

II. PROGRAM DESCRIPTION

The Tribal Colleges and Universities Program (TCUP) promotes improvement and continued quality in undergraduate science (including sociology, psychology, anthropology, economics, statistics, and other social and behavioral science as well as natural science and education disciplines), technology, engineering and mathematics instructional and outreach programs at Tribal Colleges and Universities, Alaska Native-serving institutions and Native Hawaiian-serving institutions.

TCUP and the National Science Foundation allow proposers flexibility and creativity in the design of efforts to improve undergraduate STEM education. Proposed activities should be the result of a careful analysis of institutional needs, address institutional and NSF goals, and have the potential to result in significant and sustainable improvement of STEM programs. TCUP emphasizes the expansion of course and degree offerings, development of undergraduate research opportunities, faculty skills, and STEM-education technologies; and the integration of community goals and traditional knowledge with mainstream STEM education and research. Partnerships among institutions of higher education and collaborations with K-12 schools, tribal government units or other relevant groups are encouraged.

TCUP support is available through Instructional Capacity Excellence in TCUP Institutions awards, Targeted STEM Infusion Projects, Partnerships for Geoscience Education, Broadening Participation Research in STEM Education projects, Small Grants for Research awards, and Preparing for TCUP Implementation awards. Typical project goals and approaches (described in greater detail below) include course, degree, and curriculum development, reform and enhancement; faculty professional development; the integration of active learning tactics into the STEM curriculum; community outreach and engagement; student support; internships and other educational enrichment activities; student recruitment, retention and placement; infusion of technology to enhance STEM instruction; collaborations with other educational institutions, business, or other community partners; and activities that enhance the knowledge and skills of technical support personnel.

Instructional Capacity Excellence in TCUP Institutions (ICE-TI) strand provides support to design, implement and assess comprehensive institutional efforts at eligible colleges to strengthen STEM education and research. ICE-TIs 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. Projects that may result in new STEM degrees at the associate or baccalaureate levels are encouraged. 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, and educate students in STEM. The students should graduate prepared to pursue further study at the baccalaureate or graduate level, or to join the STEM workforce. Dissemination of successful models, effective methods, and innovative materials for educating STEM students are critical aspects of ICE-TIs.

The mission of TCUP from its inception has been to build capacity for improved STEM instruction or increased STEM instructional capacity, including curricular offerings, in TCUP Institutions. NSF recognizes that the TCUP investment has created a potential pool of knowledge that includes such areas as the effect of influences upon learning among indigenous populations or the effect of increasing STEM educational opportunities upon a community. In recognition of the significant development of STEM instructional capacity in the institutions that have received TCUP support, and of the multiplier effect that has occurred in institutions that have received multiple TCUP implementation awards, the program encourages new proposals that capitalize upon the investments of the past years to establish inquiries that can lead to discovery critical to and unique to TCUP communities. Such areas of investigation can include disciplinary research on factors that affect the reservation or similar community, such as water and air quality, climate variabilities, anthropological and paleontological artifacts, reintroduction and reestablishment of indigenous plants and animals, economics, and societal influences and impacts. It can also include long-term investigations into the role STEM education plays in unique populations. Work conducted as a TCUP Investigation must constitute original research. Successful proposals must articulate research questions that are relevant to the investigation, and must include methods and metrics by which the questions will be studied. Proposals must include a dissemination plan that includes publication in peer reviewed journals.

Targeted STEM Infusion Projects (TSIP) strand provides support toward achieving a short-term, well-defined goal that promises to improve the quality of undergraduate STEM education at eligible institutions. Targeted STEM Infusion Projects could develop innovative learning experiences in emerging fields of science and engineering such as energy science, climate science, and add traditional knowledge to the scope or content of STEM courses. Projects could develop creative uses of cyberinfrastructure for

anytime, anywhere learning in STEM and next generation STEM undergraduate 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.

Partnerships for Geoscience Education (PAGE): TCUP institutions of higher education provide educational innovation and access to the communities they serve, and carry significant potential to impact positively the economic health and growth of those communities and their residents. This impact has been demonstrated in several locations in the areas of environmental science, natural resources, engineering, and many technical and advanced technological fields. Ten percent of the Nation's lands are in the stewardship of American Indian tribes. Man-made and natural changes in the air, water, and earth make this a feasible time for encouraging and supporting the TCUP institutions' capacity to provide the geoscience education necessary to produce the workforce for these fields.

The Tribal Colleges and Universities Program and the Directorate for Geosciences seek proposals from the TCUP community that focus on the development and implementation of geoscience studies and degrees in TCUP-eligible institutions, and may include partnerships with universities to which TCUP students may transfer. An effective strategy for development of these models could involve collaboration among TCUP-eligible institutions in a region, and a university with strong regional ties to the TCUP institutions and that offers upper division or graduate coursework in geosciences, particularly earth, atmosphere, ocean, and earth systems science.

This strand has the following goals:

The development of TCUP institutions' capacity to provide geoscience programs of study. The development of partnerships with universities to facilitate and improve the transfer and success of TCUP students seeking degrees in geosciences.

The development of outreach and support strategies at partner universities to improve access and success of TCUP students seeking degrees in geosciences.

Proposals may be submitted: (a) by a single institution or (b) collaboratively by a consortium of institutions, including other TCUP institutions and a university. In the latter case, it is anticipated that one TCUP institution may be identified to take the lead on organizational activities, although each institution will independently manage its award.

Small Grants for Research (SGR) and **Broadening Participation Research in STEM Education (BPR)** tracks provide support for faculty members in STEM areas at TCUP-eligible institutions to initiate or pursue research endeavors in an NSF-supported STEM discipline or STEM educational research. These activities can be centered at the PI's home institution, but may also involve activities at another institution or research agency, such as an NSF-funded Center, a research-intensive institution, or 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.

Preparing for TCUP Implementation (Pre-TI) projects support development-level activities that can ground an institution's readiness for Implementation-level projects, such as an institutional assessment of its current STEM instructional capacity, or the conversations necessary to formulate a shared vision of what that capacity should be and how to achieve it. Provided specifically for those TCUP-eligible institutions of higher education that have never received a TCUP Implementation-level award, Pre-TI grants can support staff and faculty release time, travel, stakeholder gatherings, and associated administrative costs.

III. AWARD INFORMATION

Instructional Capacity Excellence in TCUP Institutions

- Number of awards: Up to 8
- Project Length: Up to five years
- Award Size: Up to $2.5 million
- Note: Funds should be budgeted for the PI and PD to attend a three-day grantee meeting and a TCUP Leaders' Forum each award year; as well as a single reverse site visit at NSF.

Targeted STEM Infusion Projects

- Number of awards: Up to 10
- Project Length: Up to three years
- Award Size: Up to $500,000
- Note: Funds should be budgeted for the PI to attend a three-day grantee meeting each award year.

PArtnerships for Geosciences Education

- Number of awards: Up to 3
- Project Length: Up to five years
- Award Size: Up to $5,000,000 per award; up to $825,000 per institution (up to $165,000 per institution per year, not to exceed $1,000,000 per project per year)
- Note: Funds should be budgeted for the PI to attend a three-day grantee meeting each award year.

Broadening Participation Research in STEM Education

- Number of awards: Up to 3
- Project Length: Up to three years
- Award Size: Up to $300,000
- Note: Funds should be budgeted for the PI to attend a three-day grantee meeting each award year.

Small Grants for Research

- Number of awards: Up to 10
- Project Length: Up to two years
- Award Size: Up to $200,000

Note: Funds should be budgeted for the PI to attend a three-day grantee meeting each award year.

Preparing for TCUP Implementation

- Number of awards: Up to 2
- Project Length: Up to two years
- Award Size: Up to $150,000

Annual and final reports for all funded projects must include progress articulated by proposed goal, objective, or activity. Annual and final reports for all funded projects should also include highlights that capture interesting accomplishments or features of the projects.

Annual and final reports for ICE-TI and TSIP projects must include quantitative and qualitative evidence of impact on:

- course, program, and degree offerings;
- enrollment and success rates for students directly impacted by TCUP (e.g., STEM majors or students enrolled in STEM coursework supported by TCUP) disaggregated by ethnicity;
- professional development, including degree attainment, of STEM or related TCUP faculty;
- engagement of K-12 students or teachers, if applicable; and
- acquisition of scientific equipment, or IT advances.

Upon request, the program will provide formatting guidance for project leaders on evaluation reports.

IV. ELIGIBILITY INFORMATION

Who May Submit Proposals:

Proposals may only be submitted by the following:

- **TCUP Proposals:** Tribal Colleges and Universities, Alaska Native-serving institutions and Native Hawaiian-serving institutions as defined in Section IV of this solicitation. Priority for TSIP awards will be given to TCUP-eligible institutions that have not previously received Implementation-level support. Any accredited college or university may submit a proposal as part of a PAGE collaborative.

Who May Serve as PI:

For the Instructional Capacity Excellence in TCUP Institutions and PArtnerships for Geosciences Education award tracks, the principal investigator (PI) is expected to be the chief academic officer of the institution, or another senior academic officer responsible for oversight and management of curriculum and instructional policies for the institution, although senior STEM faculty may be considered. All full time faculty members or academic officers at TCUP-eligible institutions are eligible to serve as PI on Broadening Participation Research in STEM Education. Typically, the PI for Targeted STEM Infusion Projects and Small Grants for Research proposals would be a member of the STEM faculty. Prospective PIs are encouraged to consult TCUP program staff.

Limit on Number of Proposals per Organization:

Eligible institutions may receive consecutive, but not concurrent, Instructional Capacity Excellence in TCUP Institutions awards. Eligible institutions may participate in only one Partnerships for Geoscience Education award, but its participation is not prevented by the institution's having other TCUP awards. There is no limit on the number of Targeted STEM Infusion Projects, Small Grants for Research, or Broadening Participation Research projects per TCUP-eligible institution. Institutions may receive only one Preparing for TCUP Implementation award.

Limit on Number of Proposals per PI or Co-PI:

There are no restrictions or limits.

Additional Eligibility Info:

Organizations eligible to submit TCUP proposals are Tribal Colleges and Universities, Alaska Native-serving institutions and Native Hawaiian-serving institutions. Multiple campuses of one university system are normally encouraged to consider collaborative submissions. Executive Order 13021 defines Tribal Colleges and Universities ("tribal colleges") as those institutions cited in section 532 of the Equity in Educational Land-Grant Status Act of 1994 (7 U.S.C. 301 note), and other institutions that qualify for funding under the Tribally Controlled Community College Assistance Act of 1978, (25 U.S.C. 1801 et seq.), as well as Navajo Community College as authorized in the Navajo Community College Assistance Act of 1978, Public Law 95-471, Title II (25 U.S.C. 640a note). The term "Alaska Native-serving institution" means an institution of higher education that is an eligible institution under section 1058(b) of the Higher Education Act; and that, at the time of submission, has an undergraduate enrollment that is at least 20 percent Alaska Native students. The term "Native Hawaiian-serving institution" means an institution of higher education that is an eligible institution under section 1058(b) of the Higher Education Act; and that, at the time of submission, has an undergraduate enrollment that is at least 10 percent Native Hawaiian students. Institutions of higher education in collaboration with TCUP-eligible institutions are eligible to propose under PAGE.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

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.

Important Proposal Preparation Information: FastLane will check for required sections of the full proposal, in accordance with *Grant Proposal Guide* (GPG) instructions described in Chapter II.C.2. The GPG requires submission of: Project Summary; Project Description; References Cited; Biographical Sketch(es); Budget; Budget Justification; Current and Pending Support; Facilities, Equipment & Other Resources; Data Management Plan; and Postdoctoral Mentoring Plan, if applicable. If a required section is missing, **FastLane will not accept the proposal.**

Please note that the proposal preparation instructions provided in this program solicitation may deviate from the GPG instructions. If the solicitation instructions do not require a GPG-required section to be included in the proposal, insert text or upload a document in that section of the proposal that states, "Not Applicable for this Program Solicitation." Doing so will enable FastLane to accept your proposal.

Please note that per guidance in the GPG, the Project Description must contain, as a separate section within the narrative, a discussion of the broader impacts of the proposed activities. Unless otherwise specified in this solicitation, you can decide where to include this section within the Project Description.

Instructional Capacity Excellence in TCUP Institutions Proposals Require the Following Information that Supplements the GPG

Proposals for Instructional Capacity Excellence in TCUP Institutions (ICE-TI) projects should provide a clear picture of the current status of the institution's STEM infrastructure and an institutional plan to enhance the STEM program by indicating the anticipated value added by the NSF-supported efforts.

ICE-TI projects are intended to implement significant and sustainable enhancements to the institution's STEM instructional capacity. They should involve all key governance and instructional stakeholders. Therefore, proposals to this TCUP strand should include a description of the project management structure. In addition to the Principal Investigator, (normally, the chief academic officer of the institution, or another senior academic officer responsible for oversight and management of curriculum and instructional policies for the institution), typical project organization consists of a Project Director, and a Steering Committee with lead faculty from the relevant disciplines or programs and administrators from partner institutions, if any.

ICE-TI proposals should also include a plan for establishing an external advisory committee, normally convened by the college or university president or another ranking institutional representative not designated as key personnel on the project. The PI cannot chair the advisory committee, nor can other members of the project leadership serve on the advisory committee. This committee will help guide the implementation and assessment of project activities. The size of the committee is left to the discretion of the proposers. However, there should be adequate representation from partner institutions, industry and the local community, as appropriate, and adequate expertise and experience with the topical and programmatic emphases of the project. Prospective candidates for the committee should be identified in the Project Description.

ICE-TI projects are intended to continue beyond the period of NSF funding. Successful proposals should provide evidence of the commitment of the proposing institution to the improvement of undergraduate STEM education including plans and resource alignment strategies to continue elements of the project after NSF funding ends.

A crucial element is an evaluation and assessment plan, embedded within the Project Description, so that project development and implementation can be monitored at all stages. One of the key objectives of TCUP is to improve the quality of undergraduate STEM education through the development, adaptation and implementation of effective educational techniques and practices to enhance STEM instruction. Accordingly, proposed evaluation and assessment plans should include indicators (as relevant given the specific proposed project) of progress that address the extent to which:

- educational techniques and practices shown to be effective elsewhere are adapted or modified for use at the awardee institution;
- a plan has been developed to identify specific intended outcomes, methods of assessing them, and design for measuring the impact of the project on those outcomes;
- faculty at the awardee institution have been prepared to use the modified educational techniques or practices;
- modified techniques or practices have been incorporated into the curriculum;
- innovative courses or program components are developed;
- the effectiveness of specific planned educational techniques, practices, courses or other implementation components is assessed;
- the equipment has been successfully incorporated into the curriculum (for those projects that acquire equipment); and
- project activities are demonstrated to affect student learning and student access to quality STEM education as defined by measurable quantitative student-based outcomes pre- and post-TCUP investment; e.g., number of STEM majors involved in active learning activities, research activities, or community service; number of STEM majors who have enrolled in and successfully completed newly developed or revised courses or programs; rates of successful completion of STEM gate-keeper courses; student retention in STEM disciplines; number of STEM graduates with grade point averages of 3.0 or

higher; number of STEM students matriculating into 4-year colleges or graduate programs; and number of graduates that enter the STEM workforce.

All successful ICE-TI proposals must articulate within the project description a dissemination plan that may include but is not limited to:

- use of cyberlearning or internet diffusion systems, public media networks, or other innovative digital and print publications to provide information about strategies, activities, and evaluation findings related to increasing participation and success in STEM education among target groups;
- translation of project outcomes into models that work to mitigate differences in TCUP-community STEM education or workforce participation and creation of materials that engage appropriate practitioner and public audiences; and
- presentations to organizations or other audiences that have access to particular practitioner communities (e.g., professional associations or teacher organizations) of strategies and materials based on project results and providing strategies for reaching their members or other audiences with the resources.

Appendices are not accepted.

Prospective proposers are encouraged to confer with NSF TCUP staff prior to proposal submission.

Broadening Participation Research in STEM Education Proposals Require the Following Information that Supplements the GPG

TCUP-eligible institutions may submit proposals for Broadening Participation Research (BPR) in STEM Education projects focused on educational advancement and educational attainment in STEM. Any topic(s) in STEM education and learning at the undergraduate level could be targeted for a TCUP BPR proposal.

Proposals for TCUP BPR projects should be based on a research design that derives from theory and incorporates appropriate and proven methodologies and strategies to: (1) identify the research questions; (2) implement the collection and analysis of data; and (3) interpret the resulting measures and findings generated by the study. The results might lead to enhanced understanding of issues such as (but not limited to):

- influences on the effectiveness of partnerships with and pipelines from K-12 education.
- educational factors, including curriculum development and content or pedagogy, that impact success in STEM learning and achievement;
- educational factors that facilitate (or inhibit) progression from undergraduate study to STEM careers;
- educational factors that facilitate (or inhibit) progression from undergraduate study to STEM graduate study at department and/or institutional levels;
- STEM learning and achievement outcomes from different approaches to integrating STEM content with place-based education, or with local or traditional knowledge; or
- influences on effective integration of formal instruction with research or applied experiences.

The research proposal must address the usefulness of the anticipated outcomes to science-based knowledge of, for example, transforming student learning, transforming recruitment and retention strategies and practices in STEM education at critical educational junctures, or development of the STEM workforce. Research project proposals are neither a substitute for, nor can they be exactly the same as, the evaluation plan for a TCUP Instructional Capacity Excellence, Targeted STEM Infusion Project, Small Grants for Research or Preparing for TCUP Implementation proposal. Evaluation and research proposals may overlap to some extent, but the latter should make a significantly greater contribution to scientific knowledge about STEM education, and have a greater focus on studying educational initiatives in ways that are both internally and externally (i.e., generalizable) valid. A plan for dissemination of research results (described further below) must also be included in the project description of BPR proposals.

TCUP BPR studies should reflect the challenges and opportunities for STEM education at TCUP- eligible institutions, and in Native communities. Outcomes of the proposed research should be developed with the intent to provide a framework to inform all education, including faculty and teachers, administrators, parents, the community, policymakers, and education researchers. It is anticipated that these efforts may also contribute to the future development of effective learning experiences, retention, and academic success in STEM of *all* students.

A dissemination plan must be included in the project description of a TCUP BPR proposal. Suggested dissemination of BPR project results may include but is not limited to:

- publication in educational research or scientific journals;
- use of cyberlearning or internet diffusion systems, public media, or other digital and print publications to publicize information about research results related to increasing participation and success in STEM education among target groups;
- translation of project outcomes into models that work to mitigate differences in academic preparedness and achievement;
- creation of materials for TCUP-community STEM education or workforce participation that engage appropriate practitioner and public audiences; and
- presentations to STEM-discipline conference or other audiences (e.g., professional associations or teacher organizations) of project results.

Small Grants for Research Proposals Require the Following Information that Supplements the GPG

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

Project Summary (one-page limit):

The SGR project summary should provide an overview, a succinct summary of the intellectual merit of the proposed project, and 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 an overview and separate paragraphs that are labeled and explicitly address both intellectual merit and broader impacts will not be accepted or will be returned without review.

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

The SGR project description should 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;
- detailed description of the proposed research activities including any preliminary data already available and a description of data that the PI plans to obtain;
- description of the relationship between the proposed activities and the PI's projected longer term research goals;

- discussion of how those activities will benefit the research capacity at the institution;
- discussion of how undergraduate students will be involved in this research;
- plan for dissemination of this research; and
- plan for evaluation of this project.

Budget:

- 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.
- 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 research plan jointly developed by the PI (and the research collaborator at the research center, university, or national laboratory where the PI conducts his or her research, if applicable);
- 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, if applicable; and
- a mentoring plan from the PI for the undergraduate students that are involved in the project.

Project Evaluation

All proposals to any strand of the TCUP program should provide objectives, benchmarks, and indicators of progress that will be used to judge the effectiveness of the project. The specific elements of the evaluation plan will vary depending on the type and details of project but, in general, evidence of STEM knowledge, skill and aptitude development; and both quantitative and qualitative (e.g., the process of change in organizational culture; student-participants' and other constituents' perceptions of the program) indicators of progress in STEM education should be included.

Each TCUP proposal submission is expected to include a plan for effective project evaluation. An individual must be explicitly designated in the proposal to lead the evaluation. The evaluation plan must correspond to the overall stated goals and objectives of the project. ***Instructional Capacity Excellence in TCUP Institutions:*** Formative and summative evaluations should include holistic assessments of student recruitment; curriculum development; and faculty development activities and achievements in addition to evaluation of the direct outcomes (e.g., student participation and achievement; progression of students to advanced degrees or to the workforce) of the educational intervention. Yearly reports should include evaluation indicators to date. Reporting of full evaluation activities must be included in the final project report.

For information about evaluation methodology, see:

User-Friendly Handbook for Mixed Method Evaluations (NSF 02-057);

the Online Evaluation Resource Library;

the models and checklists available online from the University of Western Michigan's Evaluation Center;

and contact the American Indian Higher Education Consortium (AIHEC) about the report *Indigenous Evaluation Framework: Telling Our Story in Our Place and Time* (LaFrance & Nichols, 2010).

Additional funding opportunities for broadening STEM education research topics in student learning, recruitment, retention, persistence to degree, and other STEM educational research for underrepresented minority populations are available throughout the NSF. Please refer to the NSF Website for additional information. See especially educational research funding opportunities from other HRD programs (e.g., LSAMP), and those in the NSF's Division of Undergraduate Education (DUE). Information on DUE programs can be found here.

B. Budgetary Information

Cost Sharing: Inclusion of voluntary committed cost sharing is prohibited.

Other Budgetary Limitations:

Funds should be budgeted for the principal investigator and project director of Instructional Capacity Excellence in TCUP Institutions projects to attend two grantee meetings each award year: a three-day meeting in the Washington, DC area and another two-day Leaders' Forum in the midwest or western United States. Instructional Capacity Excellence in TCUP Institutions projects should also budget funds for the project leadership to participate in a reverse site visit to NSF over the course of the total award period. Funds should be budgeted for the principal investigator of Small Grants for Research awards, and the principal investigator of Targeted STEM Infusion Projects and Broadening Participation Research projects to attend a three-day grantee meeting each award year in the Washington, DC area.

For SGR projects only: Cost of equipment cannot exceed 20% of the total budget.

C. Due Dates

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

  September 02, 2014

  September 1, Annually Thereafter

  Instructional Capacity Excellence in TCUP Institutions

  September 16, 2014

  September 16, Annually Thereafter

Targeted STEM Infusion Projects

December 09, 2014

December 9, Annually Thereafter

Small Grants for Research

March 16, 2015

March 16, Annually Thereafter

Partnerships for Geoscience Education

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

Proposals Accepted Anytime

Broadening Participation Research in STEM Education

Proposals Accepted Anytime

Preparing for TCUP Implementation

D. FastLane / Grants.gov Requirements

For Proposals Submitted Via FastLane:

To prepare and submit a proposal via FastLane, see detailed technical instructions 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.

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. Comprehensive information about using Grants.gov is available on the Grants.gov Applicant Resources webpage: http://www.grants.gov/web/grants/applicants.html. In addition, the NSF Grants.gov Application Guide (see link in Section V.A) provides instructions regarding the technical 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.

Proposers that submitted via FastLane are strongly encouraged to use FastLane to verify the status of their submission to NSF. For proposers that submitted via Grants.gov, until an application has been received and validated by NSF, the Authorized Organizational Representative may check the status of an application on Grants.gov. After proposers have received an e-mail notification from NSF, Research.gov should be used to check the status of an application.

VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

Proposals received by NSF are assigned to the appropriate NSF program for acknowledgement and, if they meet NSF requirements, for review. 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 either as *ad hoc* reviewers, panelists, or both, who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with 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. In addition, Program Officers may obtain comments from site visits before recommending final action on proposals. Senior NSF staff further review recommendations for awards. A flowchart that depicts the entire NSF proposal and award process (and associated timeline) is included in the GPG as Exhibit III-1.

A comprehensive description of the Foundation's merit review process is available on the NSF website at: http://nsf.gov/bfa/dias/policy/merit_review/.

Proposers should also be aware of core strategies that are essential to the fulfillment of NSF's mission, as articulated in *Investing in Science, Engineering, and Education for the Nation's Future: NSF Strategic Plan for 2014-2018*. These strategies are integrated in the program planning and implementation process, of which proposal review is one part. NSF's mission is particularly well-implemented through the integration of research and education and broadening participation in NSF programs, projects, and activities.

One of the strategic objectives in support of NSF's mission is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions must recruit, train, and prepare a diverse STEM workforce to advance the frontiers of science and participate in the U.S. technology-based economy. NSF's contribution to the national innovation ecosystem is to provide cutting-edge research under the guidance of the Nation's most creative scientists and engineers. NSF also supports development of a strong science, technology, engineering, and mathematics (STEM) workforce by

investing in building the knowledge that informs improvements in STEM teaching and learning.

NSF's mission calls for the broadening of opportunities and expanding participation of groups, institutions, and geographic regions that are underrepresented in STEM disciplines, which 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.

A. Merit Review Principles and Criteria

The National Science Foundation strives to invest in a robust and diverse portfolio of projects that creates new knowledge and enables breakthroughs in understanding across all areas of science and engineering research and education. To identify which projects to support, NSF relies on a merit review process that incorporates consideration of both the technical aspects of a proposed project and its potential to contribute more broadly to advancing NSF's mission "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes." NSF makes every effort to conduct a fair, competitive, transparent merit review process for the selection of projects.

1. Merit Review Principles

These principles are to be given due diligence by PIs and organizations when preparing proposals and managing projects, by reviewers when reading and evaluating proposals, and by NSF program staff when determining whether or not to recommend proposals for funding and while overseeing awards. Given that NSF is the primary federal agency charged with nurturing and supporting excellence in basic research and education, the following three principles apply:

- All NSF projects should be of the highest quality and have the potential to advance, if not transform, the frontiers of knowledge.
- NSF projects, in the aggregate, should contribute more broadly to achieving societal goals. These "Broader Impacts" may be accomplished through the research itself, through activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. The project activities may be based on previously established and/or innovative methods and approaches, but in either case must be well justified.
- Meaningful assessment and evaluation of NSF funded projects should be based on appropriate metrics, keeping in mind the likely correlation between the effect of broader impacts and the resources provided to implement projects. If the size of the activity is limited, evaluation of that activity in isolation is not likely to be meaningful. Thus, assessing the effectiveness of these activities may best be done at a higher, more aggregated, level than the individual project.

With respect to the third principle, even if assessment of Broader Impacts outcomes for particular projects is done at an aggregated level, PIs are expected to be accountable for carrying out the activities described in the funded project. Thus, individual projects should include clearly stated goals, specific descriptions of the activities that the PI intends to do, and a plan in place to document the outputs of those activities.

These three merit review principles provide the basis for the merit review criteria, as well as a context within which the users of the criteria can better understand their intent.

2. Merit Review Criteria

All NSF proposals are evaluated through use of the two National Science Board approved merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

The two merit review criteria are listed below. **Both** criteria are to be given **full consideration** during the review and decision-making processes; each criterion is necessary but neither, by itself, is sufficient. Therefore, proposers must fully address both criteria. (GPG Chapter II.C.2.d.i. contains additional information for use by proposers in development of the Project Description section of the proposal.) Reviewers are strongly encouraged to review the criteria, including GPG Chapter II.C.2.d.i., prior to the review of a proposal.

When evaluating NSF proposals, reviewers will be asked to consider what the proposers want to do, why they want to do it, how they plan to do it, how they will know if they succeed, and what benefits could accrue if the project is successful. These issues apply both to the technical aspects of the proposal and the way in which the project may make broader contributions. To that end, reviewers will be asked to evaluate all proposals against two criteria:

- **Intellectual Merit:** The Intellectual Merit criterion encompasses the potential to advance knowledge; and
- **Broader Impacts:** The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.

The following elements should be considered in the review for both criteria:

1. What is the potential for the proposed activity to
    a. Advance knowledge and understanding within its own field or across different fields (Intellectual Merit); and
    b. Benefit society or advance desired societal outcomes (Broader Impacts)?
2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
3. Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
4. How well qualified is the individual, team, or organization to conduct the proposed activities?
5. Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?

Broader impacts may be accomplished through the research itself, through the activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. NSF values the advancement of scientific knowledge and activities that contribute to achievement of societally relevant outcomes. Such outcomes include, but are not limited to: full participation of women, persons with disabilities, and underrepresented minorities in science, technology, engineering, and mathematics (STEM); improved STEM education and educator development at any level; increased public scientific literacy and public engagement with science and technology; improved well-being of individuals in society; development of a diverse, globally competitive STEM workforce; increased partnerships between academia, industry, and others; improved national security; increased economic competitiveness of the United States; and enhanced infrastructure for research and education.

Proposers are reminded that reviewers will also be asked to review the Data Management Plan and the Postdoctoral Researcher Mentoring Plan, as appropriate.

B. Review and Selection Process

Proposals submitted in response to this program solicitation will be reviewed by Ad hoc Review and/or Panel Review.

Reviewers will be asked to evaluate proposals using two National Science Board approved merit review criteria and, if applicable, additional program specific criteria. A summary rating and accompanying narrative will be completed and submitted by each reviewer. 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 strives to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. Large or particularly complex proposals or proposals from new awardees may require additional review and processing time. The time interval begins on the deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director acts upon the Program Officer's recommendation.

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. After an administrative review has occurred, Grants and Agreements Officers perform 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.

Once an award or declination decision has been made, Principal Investigators are provided feedback about their proposals. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers or any reviewer-identifying information, 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.

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 notice, 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 notice; (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 notice. 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: The Foundation and project leaders to whom it makes awards are obliged to conform to the various acts governing activities affecting the environment and cultural or historic properties. Project leaders should be aware of these acts and adhere to their requirements. Project leaders proposing work that may affect cultural or historic properties, or whose work involves tribal lands must cooperate with the agency in complying with the consultation requirements of section 106 of the National Historic Preservation Act. Project leaders are encouraged to contact TCUP for more information about cultural or historic impact considerations of their proposed field work. For additional information on cultural or historic preservation issues, see the Advisory Council on Historic Preservation's web site here.

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 prior to the end of the current budget period. (Some programs or awards require submission of more frequent project reports). Within 90 days following 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 all identified PIs and co-PIs on a given award. 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 Research.gov, for preparation and submission of

annual and final project reports. Such reports provide information on accomplishments, project participants (individual and organizational), publications, and other specific products and impacts of the project. Submission of the report via Research.gov constitutes certification by the PI that the contents of the report are accurate and complete. The project outcomes report also 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.

More comprehensive information on NSF Reporting Requirements 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.

TCUP awardees are required to submit a copy of the evaluation report they receive from their evaluators annually. Evaluation reports for all funded projects must include progress articulated by proposed goal, objective, or activity. Evaluation reports for all funded projects should also include highlights that capture interesting accomplishments or features of the projects.

In addition to the required information listed above, evaluation reports for ICE-TI and TSIP projects also must include quantitative and qualitative evidence of impact on:

- course, program, and degree offerings;
- enrollment and success rates for students directly impacted by TCUP (e.g., STEM majors or students enrolled in STEM coursework supported by TCUP) disaggregated by ethnicity;
- professional development, including degree attainment, of STEM or related TCUP faculty;
- engagement of K-12 students or teachers, if applicable; and
- acquisition of scientific equipment, or IT advances.

Upon request, the program will provide formatting guidance for project leaders on evaluation reports.

TCUP awardees are required to submit copies of any journal articles, etc., that result from work supported by TCUP.

VIII. AGENCY CONTACTS

Please note that the program contact information is current at the time of publishing. See program website for any updates to the points of contact.

General inquiries regarding this program should be made to:

- Jody Chase, Program Director, telephone: (703) 292-8682, email: lchase@nsf.gov
- Jill L. Karsten, Program Director, telephone: (703) 292-7718, email: jkarsten@nsf.gov
- Denise Spain, Program Specialist, 815, telephone: 703-292-5189, email: dspain@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, "NSF Update" is an information-delivery system 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 Grants Conferences. Subscribers are informed through e-mail or the user's Web browser each time new publications are issued that match their identified interests. "NSF Update" also is available on NSF's website at https://public.govdelivery.com/accounts/USNSF/subscriber/new?topic_id=USNSF_179.

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.

The National Science Foundation and the Institute of Education Sciences in the U.S. Department of Education developed Common Guidelines for Education Research and Development. The Guidelines describe six types of research studies that can generate evidence about how to increase student learning. Research types include those that generate the most fundamental understandings related to education and learning; examinations of associations between variables; iterative design and testing of strategies or interventions; and assessments of the impact of a fully-developed intervention on an education outcome. For each research type, there is a description of the purpose and the expected empirical and/or theoretical justifications, types of project outcomes, and quality of evidence.

The Guidelines publication can be found on the NSF website with the number NSF 13-126 (http://www.nsf.gov/pubs/2013/nsf13126/nsf13126.pdf). A set of FAQs regarding the Guidelines are available with the number NSF 13-127(http://www.nsf.gov/pubs/2013/nsf13127/nsf13127.pdf). Grant proposal writers and PIs are encouraged to familiarize themselves with both documents and use the information therein in the preparation of proposals to NSF.

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 55,000 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 Arctic 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

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