Opportunities for Enhancing Diversity in the Geosciences (OEDG)

PROGRAM SOLICITATION
NSF 10-599

REPLACES DOCUMENT(S):
NSF 08-605

National Science Foundation

Directorate for Geosciences
Division of Atmospheric and Geospace Sciences
Division of Earth Sciences
Division of Ocean Sciences

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

October 01, 2010

Required for Track 1 and Track 2 Proposals

September 03, 2012

Required for Track 1 and Track 2 Proposals

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

November 10, 2010

Track 1 and Track 2 Proposals Only

October 05, 2011

Planning Grant Proposals Only (Letter of Intent Not Required)

October 10, 2012

Track 1 and Track 2 Proposals Only

IMPORTANT INFORMATION AND REVISION NOTES

The OEDG Program is normally competed on a biennial basis. This solicitation announces two opportunities to submit proposals for Track 1 and Track 2 projects (in FY 2011 and FY 2013), and one opportunity to submit proposals for OEDG Planning Grants (in FY 2012). As in past solicitations, a Letter of Intent is required for Track 1 and Track 2 projects.

The number of OEDG Planning Grant competitions has been reduced; only one Planning Grant competition will be held during the lifetime of this solicitation. Planning Grant proposals do not require submission of a Letter of Intent.

This version of the solicitation identifies the broad strategic priorities of the GEO Directorate's Education and Diversity programs and now requires OEDG proposals to clearly describe how proposed activities will support achievement of those goals and objectives.

Requirements and expectations for evaluation activities have been clarified.

The annual level of funding available to support of OEDG projects has been reduced from $4.6 million to $3.6 million per year, starting in FY 2011.

Please be advised that the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) includes guidelines implementing the mentoring provisions of the America COMPETES Act (ACA) (Pub. L. No. 110-69, Aug. 9, 2007.) As specified in the ACA, each proposal that requests funding to support postdoctoral researchers must include a description of the mentoring activities that will be provided for such individuals. Proposals that do not comply with this requirement will be returned without review (see the PAPP Guide Part I: *Grant Proposal Guide* Chapter II for further information about the implementation of this requirement).

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Opportunities for Enhancing Diversity in the Geosciences (OEDG)

Synopsis of Program:

The Directorate for Geosciences (GEO) supports research and education in the Earth, Ocean, Atmospheric, and Geospace Sciences. The *Opportunities for Enhancing Diversity in the Geosciences (OEDG) Program* is designed to address the fact that certain groups are underrepresented in the geosciences relative to their proportions in the general population. The primary goal of the OEDG Program is to increase participation in the geosciences by African Americans, Hispanic Americans, Native Americans (American Indians and Alaskan Natives), Native Pacific Islanders (Polynesians or Micronesians), and persons with disabilities. A secondary goal of the program is to increase the perceived relevance of the geosciences among broad and diverse segments of the population. The OEDG Program supports activities that will increase the number of members of underrepresented groups who:

- Are involved in formal pre-college geoscience education programs;
- Pursue and earn associate's, bachelor's, master's, and doctoral degrees in the geosciences;
- Enter geoscience careers; and
- Participate in informal geoscience education programs.

The OEDG Program offers three funding Tracks: *OEDG Planning Grants; Track 1: Proof-of-Concept Projects;* and *Track 2: Full-Scale Projects*.

OEDG Planning Grants - This Track supports planning workshops, conferences, symposia and related short-term activities that facilitate either: 1) development of **new** strategic plans to implement systemic, community-wide programs to broaden participation in the geosciences; or, 2) development of **new** partnerships or collaborations between multiple institutions seeking to establish sustainable projects that address the goals of the OEDG program.

Track 1: Proof-of-Concept Projects - This Track supports short-term activities. Track 1 projects include activities that will occur only one time, as well as those that are intended as the testing phase of an anticipated long-term *Full-Scale Project*.

Track 2: Full-Scale Projects - This Track supports longer-term activities that will identify and promote pathways to geoscience careers among members of underrepresented groups. It is expected that Track 2 proposals will establish programs that are sustainable without additional OEDG funding. Prior Track 1 OEDG funding is **not** a pre-requisite for submitting a Track 2 proposal.

Cognizant Program Officer(s):

- Jill L. Karsten, Program Director, GEO Education and Diversity, 705N, telephone: (703) 292-8500, fax: (703) 292-9042, email: jkarsten@nsf.gov
- John D. Moore, Albert Einstein Distinguished Educator Fellow, telephone: (703) 292-2157, email: jdmoore@nsf.gov

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

- 47.050 --- Geosciences

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 61 (Estimated total number of awards in the FY 2011-2014 period. This solicitation announces two separate competitions for Track 1 and Track 2 proposals. For the FY 2011 competition, ~25 Track 1 awards and ~3 Track 2 awards are anticipated, pending availability of funds. A similar number of Track 1 and Track 2 awards is anticipated for the FY 2013 competition. In FY 2012, ~5 Planning Grant awards are anticipated, pending availability of funds.)

Anticipated Funding Amount: $7,200,000 (The program expects to spend $3,600,000 per year in FY 2011 and FY 2012, for a total investment of $7.2 million, pending availability of funds. Similar levels of funding are anticipated for the second Track 1 and 2 competition in FY 2013.)

Eligibility Information

Organization Limit:

None Specified

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

Institutions are allowed to submit more than one Track 1 proposal.

Institutions may submit only one Track 2 proposal as either the Lead Institution of a Collaborative Proposal or the sole submitting organization. Institutions may participate as a non-Lead Institution for additional Collaborative Proposals submitted to Track 2.

Institutions may obtain funding for only one Planning Grant proposal over the lifetime of this solicitation and are not eligible to submit a Planning Grant proposal if they have received an OEDG Planning Grant through solicitation NSF 08-605.

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:** Cost Sharing is not required under this solicitation.
- **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)***:***

    October 01, 2010

        Required for Track 1 and Track 2 Proposals

    September 03, 2012

        Required for Track 1 and Track 2 Proposals

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

    November 10, 2010

        Track 1 and Track 2 Proposals Only

    October 05, 2011

        Planning Grant Proposals Only (Letter of Intent Not Required)

    October 10, 2012

        Track 1 and Track 2 Proposals Only

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 *Opportunities for Enhancing Diversity in the Geosciences (OEDG) Program* supports proof-of-concept, dissemination, and scale-up activities aimed at broadening participation of traditionally underrepresented or underserved communities in geoscience education and career pathways throughout the United States. The term 'geoscience' incorporates the Earth, Ocean, Atmospheric, and Geospace Sciences that are supported by NSF. The OEDG Program helps NSF achieve its congressional mandate to promote the "full development and use of the science and engineering talents of men and women, equally, of all ethnic, racial, and economic backgrounds" authorized in the *Science and Engineering Equal Opportunities Act of 1980.* Labor projections suggest that the demand for a talented geosciences workforce will continue to expand in the coming decade and that this workforce will require a complex set of skills. Today's geoscientists must be able to: integrate interdisciplinary STEM concepts; use sophisticated technologies and instrumentation; investigate highly inter-dependent Earth systems that sometimes operate at a global scales; address profound social and political issues related to energy, the environment and sustainability; and work in a highly collaborative, international community. A rich and diverse set of perspectives strengthens the ability of the geoscience research enterprise to tackle the complex nature of geoscience research and confront the problems facing our nation.

The OEDG Program also helps NSF address priorities articulated in the *GEO Vision Report* (2009) and the *Transitions and Tipping Points in Complex Environmental Systems* report (2009) regarding the need to foster public Earth and environmental science literacy, particularly among communities and people that have not traditionally had access to, or engaged in, high quality education related to these topics. Both reports note the urgency of developing an informed public that understands the scientific underpinnings of important geoscience-based topics that are increasingly relevant to policy decisions, national prosperity and security, and personal lives. These include issues such as global climate change, energy and fresh water resources, sustainability, and natural hazards. Successful development of a scientifically literate public requires consideration of the needs of diverse learner audiences and the most effective pedagogies for educating them through formal and informal settings.

Achieving these twin goals will require an increasingly diverse U.S. population to become more scientifically literate and engaged in geoscience education and career pathways. Yet, the most recently available statistical data (e.g., Huntoon and Lane, 2007; NSF data available at http://www.nsf.gov/statistics/degrees/) confirm the continued underrepresentation of certain groups in science and engineering in general, and in the geosciences in particular. African Americans, Hispanic Americans, Native Americans (American Indians and Alaskan Natives), Native Pacific Islanders (Polynesians or Micronesians), and persons with disabilities represent more than 30% of the general population, and are growing to be nearly the majority of pre-college students in the pipeline. Students from these communities earned ~17% of the total number of bachelor's degrees granted in any science, technology, engineering and mathematics (STEM) fields in 2006, but only 6% of these were in the geosciences. In the same year, only 5% of M.S. and 4% of Ph.D. graduates in the geosciences were members of underrepresented groups. In contrast, members of underrepresented groups earned 12% of the master's degrees and 6% of the doctorate degrees awarded in all STEM fields combined in 2006. Clearly, the geosciences are lagging behind other STEM disciplines in recruitment and retention of underrepresented and underserved minorities, requiring more focused and strategic efforts to address this problem.

In 2001, the NSF Directorate for Geosciences (GEO) established the OEDG Program with the goal of addressing these disparities and tackling some of the unique obstacles facing the geoscience education community. The OEDG Program has since held funding competitions on a biennial basis, investing nearly $25 million in programs selected through the NSF merit review process. A recently published *Journal of Geoscience Education* special issue focused on Broadening Participation in the Earth Sciences (Riggs and Alexander, Co-Editors, 2007) highlights results from several OEDG-supported projects and summarizes many of the lessons learned and best practices that have been defined through these and other Federal investments in the past decade. While some progress has been made in engaging more underrepresented minorities in geoscience education, research and careers, there is still much work to be done. Of particular priority are activities that build capacity in the geosciences at institutions serving minority populations - including two-year and community colleges - and disseminate more widely those practices which have been shown to be particularly effective. Projects that engage or improve access for persons with disabilities are also of high priority.

OEDG is part of a larger portfolio, managed within the GEO Office of the Assistant Director, that includes the *Geoscience Education (GeoEd), Global Learning and Observations to Benefit the Environment (GLOBE),* and *Geoscience Teacher Training (GEO-Teach)* programs. Additional programs offered through the GEO Divisions of Ocean Sciences (OCE), Earth Sciences (EAR), and Atmospheric and Geospace Sciences (AGS) support complementary educational activities, particularly for post-secondary students and early career scientists. Collectively, these programs are being used to implement a new *GEO Education and Diversity Strategic Framework (2010-2015)* that focuses on two main goals: to increase public understanding of Earth system science and its relevance; and, to foster recruitment, training and retention of a diverse and skilled geoscience workforce for the future. These broad goals are being achieved through NSF investments to:

- improve the quality of formal and informal geoscience education at all educational levels, with particular emphasis on K-12 and early undergraduate audiences;
- increase the number and competency of K-12 educators who teach geoscience-related courses to diverse student audiences;
- demonstrate the relevance of the geosciences by identifying and promoting traditional and non-traditional career opportunities in the field;
- increase the number of students enrolling in geoscience courses and degree programs at all educational levels;
- increase the number of students drawn from groups traditionally underrepresented in science, technology, engineering and mathematics (STEM) fields who participate in geoscience courses and degree programs;
- encourage and facilitate the engagement of geoscientists in efforts to strengthen STEM education, while leveraging NSF-funded geoscience research investments; and,
- communicate the importance of the geosciences to the public and increase public literacy regarding Earth system science.

II. PROGRAM DESCRIPTION

The primary goal of the Opportunities for Enhancing Diversity in the Geosciences (OEDG) Program is to increase participation in the Earth, Ocean, Atmospheric, and Geospace Sciences by African Americans, Hispanics/Latinos/Chicanos, Native Americans (American Indians and Alaskan Natives), Native Pacific Islanders (Polynesians or Micronesians), and persons with disabilities. An important but secondary goal is to strengthen understanding of geoscience and its relevance to modern society among broad and diverse segments of the population. The ultimate goal of the OEDG Program is to bring more members of underrepresented groups into geoscience disciplines. While there is still significant underrepresentation of women geoscientists at the highest professional levels within academia, the community has made reasonable progress in achieving parity for women earlier in the pipeline for most

sub-disciplines within the geosciences. Thus, although the OEDG Program will accept proposals that focus on retaining women in the geosciences, priority will be given to projects that address participation of underrepresented minorities.

Specifically, the OEDG Program supports activities that increase the number of members of underrepresented groups who:

- Are involved in formal pre-college geoscience education programs;
- Pursue and earn associate's, bachelor's, master's, and doctoral degrees in the geosciences;
- Enter geoscience careers; and
- Participate in informal geoscience education programs.

Proposals to the OEDG Program must clearly articulate goals, objectives, and activities that are aligned with the strategic priorities of the *GEO Vision Report* (2009), available at http://nsf.gov/geo/acgeo/geovision/start.jsp, and the *GEO Education and Diversity Strategic Framework (2010-2015),* available at http://nsf.gov/geo/adgeo/education.jsp. Successful proposals will be firmly grounded in best practices identified through current research about the participation of underrepresented groups in STEM fields in general, and the geosciences in particular. Prospective Principal Investigators (PIs) are strongly encouraged to review the abstracts of projects previously funded through the OEDG Program, available on the NSF web site, as well as build on lessons learned and best practices that are summarized in the publications and reports cited in the Additional Information section below.

Proposals that include activities to establish or enhance geoscience education and research capabilities in Historically Black Colleges and Universities (HBCUs), Hispanic-Serving Institutions (HSIs), Tribal Colleges and Universities (TCUs), two-year and community colleges, institutions serving persons with disabilities, as well as other types of Minority-Serving Institutions (MSIs), are encouraged. It is expected that any collaborations with these institutions will be true partnerships that serve the missions and goals of all participating institutions and are respectful of institutional needs.

The OEDG Program offers three funding Tracks, *OEDG Planning Grants; Track 1: Proof-of-Concept Projects;* and *Track 2: Full-Scale Projects*.

OEDG Planning Grants: This Track supports planning workshops, conferences, symposia and related short-term activities that facilitate either: 1) development of new strategic plans to implement systemic, community-wide programs to broaden participation in the geosciences; or, 2) development of new partnerships or collaborations between multiple institutions seeking to establish sustainable projects that address the goals of the OEDG Program. OEDG Planning Grants offer up to 12 months of funding, not to exceed $40,000.

Track 1: Proof-of-Concept Projects: This Track supports short-term activities, including those that will occur only once, or are intended to be the testing phase of an anticipated long-term *Full-Scale Project*. Track 1 projects may test innovative mechanisms for increasing the participation of members of underrepresented groups in the geosciences. Alternatively, Track 1 projects may test the effectiveness of strategies that have been successful in a different geographic region, with a different target audience, at a different educational level, in a different academic discipline, or in a different venue (e.g., at a museum rather than in an after-school program). Track 1 awards support projects with durations of up to three years. The maximum award under Track 1 is $200,000 (3-year total), with appropriate justification. The average award size under Track 1 is anticipated to be $125,000 - $150,000. Track 1 awards are eligible for renewal.

Track 2: Full-Scale Projects: This Track supports longer-term activities that will identify and promote pathways to geoscience careers among members of underrepresented groups through activities that can eventually be institutionalized or sustained via mechanisms other than NSF funding. Track 2 projects should either develop or make use of existing networks to improve access and retention in the geosciences by members of underrepresented groups. OEDG networks may be composed of institutions and agencies such as (but not limited to) K-12 schools and/or districts, two-year colleges, four-year colleges and universities, graduate-degree granting institutions, informal education facilities or groups, businesses and industries, and government agencies. The composition of any individual network will be determined by the characteristics of the target audience that will be served by the network. The Project Management Team (Principal Investigators plus Other Senior Personnel) assembled for Track 2 projects should include professionals with expertise in geoscience, education, *and* issues related to diversity in STEM disciplines. In all proposals, one institution must be identified as the Lead Institution. The Lead Institution will have primary responsibility for all aspects of the project.

Networks should be prepared to facilitate access to geosciences education, research and career pathways among members of underrepresented groups and help OEDG projects to:

- Mentor members of underrepresented groups and communicate ways in which specific individuals can prepare themselves to enroll in college-level degree programs in the geosciences and subsequently pursue graduate degrees and careers in the geosciences or related fields;
- Expose students, families, and communities to the geosciences in culturally sensitive, locally relevant, age-appropriate, and pedagogically sound ways;
- Ensure that members of underrepresented groups receive information about career opportunities in the geosciences and related fields; and
- Provide the support necessary to ensure the success of members of underrepresented groups in the geosciences.

NSF currently supports several effective networks that have effectively contributed to the success of underrepresented minority students in STEM disciplines. Collectively, these programs define the Alliances for Broadening Participation in STEM (ABP) cluster, which enables seamless transitions from the STEM baccalaureate to attainment of the doctorate and entry to the STEM professoriate. Support at the baccalaureate level is through the Louis Stokes Alliances for Minority Participation (LSAMP) program, which emphasizes development of broad based regional and national alliances of two- and four-year degree-granting higher education institutions, school districts, state and local governments, and the private sector. Eligible LSAMP undergraduate students may receive continued support for up to two additional years of STEM graduate study through the Bridge to the Doctorate (BD) Activity. The Bridge to the Doctorate provides significant financial support for matriculating candidates in STEM doctoral programs at eligible alliance sites. The LSAMP program also supports education research projects focused on STEM baccalaureate degree attainment. Alliances for Graduate Education and the Professoriate (AGEP) further the graduate education of underrepresented students through the doctorate level, preparing them for fulfilling opportunities and productive careers as STEM faculty and research professionals. AGEP also supports the transformation of institutional culture to attract and retain STEM doctoral students into the professorate.

Many successful LSAMP and AGEP alliances do not currently include geoscience-related activities in their portfolio or engage faculty and advanced students from geoscience-focused departments. Track 2 OEDG proposals that describe activities which coordinate with and introduce or enhance the geosciences components of existing LSAMP and AGEP networks are strongly encouraged, but not required. **Track 2 proposals from institutions that participate in LSAMP or AGEP alliances, but do not include those alliances as collaborators on the OEDG project, are REQUIRED to describe how the OEDG project activities will align with, or complement, activities of the existing LSAMP or AGEP alliances.** In all cases, the partnership with such networks must be highly collaborative and evidence of this partnership should be documented through Letters of Commitment.

Track 2 proposals will only be considered for funding when the proposal clearly demonstrates that the proposed approach will be effective in increasing the participation of underrepresented groups in the geosciences. Proposers may use the results of prior projects (including those funded by NSF) to demonstrate their capability, but it is not necessary that Track 1 funding have been obtained prior to submission of a Track 2 proposal. Track 2 awards support projects for up to five years. The maximum award under Track 2 is $2 million, but the average award size is expected to be on the order of $1 million. The five-year maximum duration of Track 2 awards is intended to allow networks sufficient time to either find other support for their project or make the project self-sustaining.

Renewal Track 2 Proposals: Proposals from projects that have received prior OEDG Track 2 support are eligible to apply for one-time renewal funding for up to three years of support but ONLY if evaluation data clearly demonstrate that the program has been successful in increasing the number of underrepresented students earning advanced degrees and pursuing careers in the geosciences and the proposed work plan is focused on activities leading to institutionalization of the program or long-term sustainability. Awardees who received renewal Track 2 funding in the past are not eligible to apply for a second renewal award.

Additional Information:

Before submitting to the OEDG Program, proposers should review the abstracts of previously funded projects, which can be viewed online by searching the NSF award database, available at http://www.nsf.gov/awardsearch/tab.do?dispatch=2. To view abstracts for current and historical OEDG awards, specify the Element Code of 1697 in the appropriate box listed under "Program Information".

Proposers may also find one or more of the following documents to be of interest:

1. Report of the Geosciences Diversity Workshop, August 2000: National Science Foundation (available at: http://www.nsf.gov/geo/diversity/).
2. Strategy to Increase Diversity in the Geosciences: National Science Foundation Publication NSF 01-53 (available at: http://www.nsf.gov/geo/diversity/)
3. Geoscience Education and Diversity: Vision for the Future and Strategies for Success, Report of the Second Geoscience Education Working Group, 2005 (available at: http://nsf.gov/geo/adgeo/geoedu/GEWGII_Report_sept_2005.pdf)
4. Special Issue: Broadening Participation in the Earth Sciences, *Journal of Geoscience Education*, Vol. 55, No. 6 (2007) (index and abstracts available at http://www.nagt.org/nagt/jge/abstracts/dec07.htm)
5. A National Action Plan for Addressing the Critical Needs of the U.S. Science, Technology, Engineering, and Mathematics Education System, Report from the National Science Board, 2007 (available at: http://www.nsf.gov/nsb/documents/2007/stem_action.pdf
6. 2007-2008 Biennial Report to Congress: National Science Foundation, Committee on Equal Opportunities in Science and Engineering (available at: http://www.nsf.gov/od/oia/activities/ceose/reports/2008CEOSE_BiennialReport.pdf)
7. The Science & Engineering Workforce Realizing America's Potential, Report from the National Science Board, 2003 (available at: http://www.nsf.gov/nsb/documents/2003/nsb0369/start.htm)
8. Thirty Years of Changing Lives: The AAAS Project on Science, Technology and Disability, American Association for the Advancement of Science (available at: http://ehrweb.aaas.org/entrypoint/30years.htm)
9. Invention and Impact: Building Excellence in Undergraduate Science, Technology, Engineering and Mathematics (STEM) Education, sponsored by the National Science Foundation Division of Undergraduate Education in collaboration with the Education and Human Resources Programs of AAAS. (available at: http://www.aaas.org/publications/books_reports/CCLI/)
10. Standing Our Ground: A Guidebook for STEM Educators in the Post-Michigan Era, by Shirley M. Malcom, Daryl E. Chubin, and Jolene K. Jesse; published by American Association for the Advancement of Science and National Action Council for Minorities in Engineering; October 2004. (available at: http://www.aaas.org/standingourground/).
11. In Pursuit of a Diverse Science, Technology, Engineering, and Mathematics Workforce; Recommended Research Priorities to Enhance Participation by Underrepresented Minorities: American Association for the Advancement of Science, 2001 (available at: http://ehrweb.aaas.org/mge/Reports/Report1/AGEP/)
12. Resources available through the Building Engineering and Science Talent (BEST) program (available at: http://www.bestworkforce.org/)
13. Blueprint for Change: Report from the National Conference on the Revolution in Earth and Space Science Education: TERC (available at: http://ww.earthscienceedrevolution.org/)
14. Land of Plenty: Diversity as America's Competitive Edge in Science, Engineering and Technology: Report of the Congressional Commission on the Advancement of Women and Minorities in Science, Engineering and Technology Development (available at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=cawmset0409)
15. National Science Foundation, Division of Science Resources Statistics. 2010 *Science and Engineering Degrees, by Race/Ethnicity of Recipients: 1997-2006.* Detailed Statistical Tables NSF 10-300. Arlington, VA. (available at: http://www.nsf.gov/statistics/nsf10300/)
16. GEO Vision Report, 2009 (available at: http://nsf.gov/geo/acgeo/geovision/start.jsp)
17. Transitions and Tipping POints in Complex Environmental Systems, 2009 (available at: http://www.nsf.gov/geo/ere/ereweb/ac-ere/nsf6895_ere_report_090809.pdf)

III. AWARD INFORMATION

Anticipated funding for the OEDG Program is expected to be $3.6 million per year between FY 2011 and FY 2014.

A total of 61 awards is anticipated over the lifetime of this solicitation, with 28 Track 1 and Track 2 awards being made each time during the FY 2011 and FY 2013 competitions and 5 Planning Grant awards being made during the FY 2012 competition. Of the 28 Track 1 and Track 2 awards made each competition, 25 are anticipated under Track 1 and 3 are anticipated under Track 2.

Track 1 awards are for a maximum duration of 3 years. The maximum allowable funding request under Track 1 is $200,000 (3-year total award), but the average award size is expected to be on the order of $125,000 - $150,000. In most cases, Track 1 funding will be provided through a standard award.

Track 2 awards are for a maximum duration of 5 years (3 years if a Renewal Track 2 project). The maximum allowable funding request under Track 2 is $2 million (total award), but the average award size is expected to be on the order of $1 million. In most cases, Track 2 funding will be provided through continuing grant increments.

OEDG Planning Grant awards are for a maximum duration of 12 months. The maximum allowable funding request under the OEDG Planning Grant Track is $40,000.

Estimated program budget, number of awards and average award size/duration are subject to the availability of funds.

IV. ELIGIBILITY INFORMATION

Organization Limit:

None Specified

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

Institutions are allowed to submit more than one Track 1 proposal.

Institutions may submit only one Track 2 proposal as either the Lead Institution of a Collaborative Proposal or the sole submitting organization. Institutions may participate as a non-Lead Institution for additional Collaborative Proposals submitted to Track 2.

Institutions may obtain funding for only one Planning Grant proposal over the lifetime of this solicitation and are not eligible to submit a Planning Grant proposal if they have received an OEDG Planning Grant through solicitation NSF 08-605.

Limit on Number of Proposals per PI:

None Specified

Additional Eligibility Info:

The categories of proposers identified in the NSF Grant Proposal Guide are eligible to submit proposals under this program announcement/solicitation.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Letters of Intent *(required)*:

Letters of Intent are required for both Track 1 and Track 2 proposals, but are not required for OEDG Planning Grants. Letters of Intent are used to help NSF program officers plan for the review process only; they are non-binding and are not used to eliminate proposals from contention. Letters of Intent must be submitted through FastLane, available at https://www.fastlane.nsf.gov/.

Letters of Intent are very brief (2-3 paragraphs only) and are required to include the following information.

- Name and affiliation of Principal Investigator
- Funding Track (Track 1, New Track 2, Renewal Track 2); for proposals seeking Renewal Track 2 funding, indicate the award number and Principal Investigator of the previous OEDG award
- Name(s) and affiliation(s) of Co-Principal Investigators
- Name(s) and affiliation(s) of Other Senior Personnel
- Name(s) of other participating organizations - for example: school districts, research consortia, or museums, etc.
- Brief description of the proposed project goals and objectives
- Characteristics of the target audience(s), including demographics and academic level

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 0 and Maximum of 4 Other Senior Project Personnel are allowed
- A Minimum of 0 and Maximum of 4 Other Participating Organizations are allowed
- 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.

PROPOSAL PREPARATION INSTRUCTIONS - ALL OEDG TRACKS

Guidance in this solicitation augments or supercedes formatting requirements described in the basic NSF Grant Proposal Guide (GPG), available at: http://nsf.gov/publications/pub_summ.jsp?ods_key=gpg. It is essential that Principal Investigators (PIs) comply with all formatting instructions in the GPG unless otherwise specified or modified here. Failure to comply with the formatting requirements described in the GPG and this solicitation may result in the proposal being returned without review. Please note that proposal preparation instructions for OEDG Planning Grants are described in a separate section. Additional instructions for preparation of the budget information for OEDG proposals are given in a later section of this solicitation.

TRACK 1 AND TRACK 2 PROJECTS

The following instructions apply to Track 1 and Track 2 proposals only.

Cover Sheet

The Cover Sheet should be filled out according to instructions given in the GPG, with the following additional considerations:

1. **Title:** The proposal title should clearly indicate whether the proposal is a Track 1 or Track 2 proposal. Collaborative Projects must have titles that begin with the phrase "Collaborative Project:". PIs are encouraged to choose titles that include informative key words that indicate, for example, the target audience and the approach of the proposed project.

2. **Renewal Track 2 Projects:** If the proposal seeks Renewal Track 2 funding, be sure to check the appropriate box and indicate the previous award number.

3. **IRB Status:** In many cases, the evaluation activities being proposed for OEDG projects constitute Human Subjects Research. PIs should review the regulations regarding Human Subjects (See 45 CFR 690.101-124 available at: http://www.nsf.gov/bfa/dias/policy/human.jsp). 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 OEDG projects may need to be reviewed by a Human Subjects Institutional Review Board (IRB). If your project is under IRB review at the time of submission, or will be reviewed by your IRB after a funding recommendation is received from NSF, check the box on the cover sheet and indicate that the review is pending. If the proposal has already been reviewed by your IRB and found to be exempt, please cite the applicable subsection for the exemption on the cover sheet. If the IRB has already been given approval, include a letter from the IRB in the Supporting Documents and indicate the expiration date of the IRB approval on the cover sheet.

Project Summary

The Project Summary MUST not exceed 1 page in length and MUST include separate statements addressing the National Science Board (NSB) approved review criteria of *Intellectual Merit* and *Broader Impacts*, **or the proposal will be returned without review**. PIs are **strongly** encouraged to use the terms *Intellectual Merit* and *Broader Impacts* as section headings when writing the summary, in order to avoid ambiguity. The summary should concisely describe:

- The problem(s) being addressed by the proposal;
- The objectives and expected outcomes, including any tangible products;
- How the objectives will be accomplished;
- Characteristics of audience(s) targeted by the project;
- Notable collaborations; and
- Themes addressed in a significant way (such as teacher preparation, faculty development, capacity-building, community outreach, use of technology, research experiences, mentoring, etc.).

Project Description, including Results from Prior NSF Support

Failure to comply with the 15 page limit, font size and type, and line spacing requirements identified in the GPG will cause the proposal to be returned without review. It is the responsibility of the submitting institution to verify that the FastLane version of the proposal complies with all formatting requirements.

The Project Description should clearly address the two NSF merit review criteria of *Intellectual Merit* and *Broader Impacts.* Common concerns related to these criteria that arise during the review process for OEDG proposals are summarized below; it is not necessary to answer these questions directly in the Project Description, but consideration of these issues in describing project activities is strongly advised. **In addition to addressing the two NSF review criteria, the Project Description section should provide information that addresses the Additional Review Criteria noted on page 22 of this solicitation.**

Examples of Reviewers' Questions Related to Intellectual Merit: Does the project help establish new models for engaging members of underrepresented groups in the geosciences and helping them pursue degrees and careers in these fields? Does the project have the potential to increase understanding of the geosciences by members of underrepresented groups? Are the goals and objectives, and the plans and procedures for achieving them worthwhile, well developed, and realistic? What is the scientific value of the geoscience activity being proposed and how well is it integrated with the education activities? Is the rationale for including particular activities or undertaking particular development tasks clearly articulated and supported by appropriate references? Does the project design reflect consideration of the background, preparation, and experience of the target audience? Is the project informed by research on teaching and learning, the efforts of others, and literature relevant to diversity? Are plans for evaluation of the project appropriate and adequate for the project's size and scope and will the evaluation appropriately inform project development? Is the project led by and supported by capable and qualified personnel who have recent and relevant experience in education, research, or the workplace? Have the roles of collaborating partners been delineated clearly and is there a management plan described for how these collaborations will be coordinated? Are collaborations between multiple institutions "true" partnerships that will be mutually beneficial and are partner commitments clearly documented through Letters of Commitment? Is the project supported by adequate facilities, resources, and institutional commitment?

Examples of Reviewers' Questions Related to Broader Impacts: Are the proposed activities catalytic or transformative for the proposing institutions with regard to the participation of members of underrepresented groups in geoscience programs? Are the proposed activities consistent with the proposing institutions' long-term goals? To what extent will the results of the project contribute information that will help the geoscience community at large identify successful (and unsuccessful) practices related to increasing diversity in the geosciences? Will the project evaluation inform others through communication of results? Are the results of the project likely to be exportable to other institutions? What is the potential for the project to develop connections with industry? Will the project result in a significant increase in diversity in the geosciences? Does the project involve MSIs, HBCUs, HSIs, TCUs, institutions that serve persons with disabilities and/or community colleges? Will the project provide increased access to the

geosciences by persons with disabilities? Will the project result in significant involvement of communities and/or families? Will the project significantly improve the quality and quantity of pre-college geoscience instruction in schools with large numbers of students from underrepresented groups? Will the project involve significant numbers of underrepresented minorities in informal geoscience programs?

More specifically, the Project Description in proposals submitted to both Track 1 and 2 should contain the following information:

1. **Results from Prior NSF Support:** If the prospective PI or Co-PI(s) have received support from NSF pertaining to diversity-enhancing or geoscience-education efforts in the past five years, briefly describe the earlier project(s) and the outcomes of those projects. Provide sufficient detail to permit a reviewer to reach an informed conclusion regarding the value of the results achieved. Include the NSF award number, amount and period of support, title of the project, a summary of the results of the completed work, and a list of publications and formal presentations that acknowledged the NSF award (do not submit copies with the proposal).

2. **Goals and Objectives:** Describe the goals clearly and concisely. All proposals should identify which goals and objectives in the GEO Education and Diversity Strategic Framework (2010-2015) their project relates to and discuss how project activities will help to achieve them. A list of these goals and objectives is provided in the Appendix of this solicitation; a full copy of the strategic framework is available at: http://nsf.gov/geo/adgeo/education.jsp. Discussion about how the project relates to additional local or national needs and recent trends should also be included, as appropriate.

3. **Detailed Project Plan:** This should be the longest portion of the Project Description section. Describe the project's features, clearly delineating the need or problem that will be addressed, the research base on which the project builds, what will be done during the project, how the expected outcomes will be achieved, the timetable for executing the project, and the facilities and resources available for realizing the project's objectives. Where appropriate, include evidence of past successes that support the methods proposed. Such evidence may come from the current literature or from other projects conducted by the proposers. For projects that involve multiple investigators or institutions, proposers should clearly delineate the responsibilities of each participant or participating organization and describe a plan for project management. Note that reviewers of NSF proposals are not required to access URLs, and they may not have access to the internet during the review process. Therefore, all essential materials should be submitted in written format within the 15-page Project Description section. The literature cited in the bibliography should reflect an understanding of the state of knowledge related to diversity in science, engineering, mathematics, and technology (STEM) generally, and in the geosciences particularly. Appropriate literature about research on teaching and learning should be cited. Any literature cited should be clearly and specifically related to the proposed project, and it should be clear to reviewers how referenced information played a role in the design of the project.

   Special Requirements for Track 2 proposals:

   Track 2 proposals must include in this section a discussion of the results of evaluation of prior, related project(s) that can be used to demonstrate that the proposed project has a high probability of success. It is not necessary that this prior effort have been funded by an OEDG Track 1 award. The goals of prior project(s) and the method(s) used to measure success at achieving goals must be clearly identified and explained. Both quantitative and qualitative data may be included and discussed. Up to 5 pages of supporting evaluation data tables or figures may be included in the *Special Information, Supplementary & Postdoc Mentoring Documentation* section of the proposal but the significant conclusions supported by those data must be described within the 15-page Project Description section. Track 2 proposals that lack documentation of the effectiveness of prior efforts will be returned without review.

   Track 2 proposals being submitted by institutions that participate in LSAMP and/or AGEP alliances are required to discuss in the Project Description how the proposed activities will leverage, align with, or be synergistic with the activities offered through those alliances. If the project will not be using the LSAMP and/or AGEP resources for the proposed OEDG project, proposers are required to discuss how the proposed activities will leverage, align with, or complement the activities offered through those alliances, as well as the rationale behind the decision to not partner with these programs.

   Track 2 proposals are also required to include in the *Special Information, Supplementary & Postdoc Mentoring Documentation* section a letter from a high level Administrator (e.g., Department Chair, Dean, Vice President or Provost) describing how the proposed project activities are aligned with institutional diversity goals and plans. This letter should also indicate the level of institutional support for sustaining activities developed through Track 2 funding if evaluation data show them to be effective at broadening participation in STEM disciplines in general, and the geosciences in particular.

4. **Experience and Capability of the Principal Investigator(s):** Briefly describe the experience and capability of the PI(s) and other significant personnel involved in the project. Include a brief description of the rationale for including specific personnel and institutions. State the role of each and cite the expertise that each will contribute to the project.

5. **Evaluation Plan:** Activities that provide formative and summative evaluation of project activities are essential for demonstrating the success and impact of the project in advancing OEDG Program goals, but the level of evaluation varies by Track.

   All OEDG proposals, whether Track 1 or Track 2, must clearly articulate the project goals and intended outcomes, and discuss how the activities link to the goals of the GEO Education and Diversity Strategic Framework (2010-2015) outlined in the Appendix. The proposal must describe an evaluation plan that identifies how performance toward achieving these goals will be documented. All projects are expected to document the demographics of participants in the project, whether they are project personnel or members of the target audience, and monitor impacts of the project activities on participants. For projects that focus on K-12 level audiences, realistic efforts should be undertaken to document impact on both teachers and students. PIs are also encouraged to include plans to monitor and report on their own reflections as part of this effort to document impact.

   The OEDG Program as a whole is being evaluated through a contract to the American Institutes for Research (AIR), who will work with all OEDG awardees to collect common data and identify best practices for meaningful evaluation. The contractor is also tasked with helping to provide technical evaluation support for Track 1 projects. As such, Track 1 proposers need not submit a detailed evaluation plan in their proposals, but must be prepared to work with the contractor to collect and report information as necessary.

   Track 2 proposers are also expected to work with the contractor to support program-wide evaluation efforts, but they are required to include in their proposal an independent evaluation plan for their specific project. The detailed evaluation plan should be discussed in the Project Description section and describe the criteria that will be used to evaluate the project and show how the evaluation metrics link to specific project goals for achieving diversity in the geosciences. The process for collecting and analyzing information should be described. A 1-page timeline for evaluation activities should be included in the *Special Information, Supplementary & Postdoc Mentoring Documentation* section. In most cases, the use of an external evaluator is strongly preferred. The qualifications of the individual(s) who will perform the evaluation tasks should be described in the *Special Information, Supplementary & Postdoc Mentoring Documentation* section (up to 2 pages allowed). Evaluator(s) should be identified prior to proposal submission and used in preparation of the proposal to ensure that the proposed evaluation plan is appropriate for achieving project goals. The objectivity and credibility of the evaluation team should be made evident to reviewers. The following references and resources may be helpful in designing an evaluation plan:

The 2002 User-Friendly Handbook for Project Evaluation (NSF 02-057) (available at: http://www.nsf.gov/cgi-bin/getpub?nsf02057)

Assessing Learning in Informal Science Contexts, National Academies (available at: http://www7.nationalacademies.org/bose/Brody_Commissioned_Paper.pdf)

Evaluation of Learning in Informal Learning Environments, National Academies (available at: http://www7.nationalacademies.org/bose/ Institute_for_Learning_Innovation_Commissioned_Paper.pdf)

6. **Dissemination of Results:** Describe plans to communicate the results of the project to others in the geosciences, STEM, and education and diversity communities, both during and after the project, and to disseminate any tangible products that may be produced. Identify the audiences that will be reached through dissemination efforts, and the means of dissemination (e.g., faculty development workshops, journal articles, conference presentations, the Digital Library for Earth System Education (DLESE), presentations to industry, press releases, etc.). It is anticipated that the data collected for the evaluation component of Track 2 projects will form the basis of scholarly publications.

7. **Sustainability:** Track 1 proposals should briefly describe plans or strategies for scaling up or sustaining successful pilot projects. Track 2 proposals are **REQUIRED** to include a discussion regarding plans for long-term sustainability or institutionalization of project activities that have been shown to be effective through NSF funding. Collaborations with industry and other potential sponsors are encouraged.

8. **Management Plan:** Track 2 proposals should clearly identify the roles and responsibilities of collaborating investigators and institutions and outline a plan for communication and coordination of project activities.

Special Information, Supplementary & Postdoc Mentoring Documentation

For both Track 1 and Track 2 proposals (optional): The following information is allowed in this section of the proposal.

- A 1-page timeline for evaluation activities;
- Up to 2 pages of information on the qualifications of the individual who will perform the evaluation (Track 1 & 2 proposals).

For Track 2 proposals only (required): The following information is required in this section.

A letter of support from a high level Administrator (e.g., Department Chair, Dean, Vice President or Provost) describing how the proposed project activities are aligned with institutional diversity goals and plans and an indication of the level of institutional support available for sustaining successful activities developed through Track 2 funding.

For Track 2 proposals only (optional): Up to 5 pages of evaluation data showing the effectiveness of approaches that will be used in the proposed project is allowed in this section, but the significant conclusions supported by those data should be described in the 15-page Project Description section. Track 2 proposals that lack documentation of the effectiveness of prior efforts will be returned without review.

OEDG PLANNING GRANTS

With the exception of the Project Description section of the proposal, proposers should follow proposal preparation guidelines that are provided in the GPG. In addition to the two NSF review criteria, OEDG Planning Grant proposals will be evaluated for evidence that there is a clear path between planning activities and future activities or projects that address OEDG Program goals related to broadening participation in the geosciences.

Project Description (not to exceed 5 pages)

The Project Description section for OEDG Planning Grant proposals must not exceed 5 pages in length and should include the following information:

1. **Background and Context:** For OEDG Planning Grants that support community-wide strategic planning activities, information should be provided on the institution(s) that will organize this effort. A summary of past accomplishments in the area of broadening participation and a rationale for why it is appropriate that they take a leadership role in organizing the community, and the resources they offer for implementation of any strategic plans which result, should be provided. Proposers should clearly indicate how the proposed effort will advance implementation of systemic reforms and build on prior community efforts to broaden participation in the geosciences.

   For OEDG Planning Grants that support creation of new partnerships or collaborations, information should be provided on the institutions that will partner or collaborate. Provide a rationale for why their individual efforts related to broadening participation will benefit through the collaboration. Describe how the proposed Planning Grant goals and objectives fit the institutions' missions and reflect the institutions' long-term STEM related goals and plans. Provide evidence of the commitment to the proposed Planning Grant activities of the institutional administration, partners and collaborators, if applicable, and the STEM faculty and leadership. 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.

2. **Proposed Planning Activities:** Describe the proposed planning process and provide details on the key steps along the way. Information should be provided regarding expected outcomes, the timeline for implementation, how participants will be recruited and selected (for conferences), and the responsibilities of key project personnel during the planning period. In general, implementation activities are not allowed under Planning Grants.

B. Budgetary Information

Cost Sharing: Cost sharing is not required under this solicitation.

Other Budgetary Limitations: A maximum allowable funding value has been identified for each Track, with details provided later in the solicitation. Budget requests should not exceed the maximum funding allowable for the appropriate Track, or the proposal will be returned without review.

Budget Preparation Instructions:

The following instructions apply to Track 1, Track 2, and OEDG Planning Grant proposals. The amounts indicated on the budget forms should include only the amounts requested from NSF. If other sources of funding (or in-kind contributions) are being used to support project activities, please note these resources in the justification. As per the GPG, the budget justification text is limited to **a maximum of 3 pages**. NSF funds may not be used to support expenditures that would have been undertaken in the absence of an award, such as the cost of activities that are considered part of a faculty member's normal duties.

Collaborative Proposals

Collaborative Proposals may be submitted either as a single proposal or as simultaneously submitted proposals from different organizations. In the latter case, the collaborating organizations must exactly follow the instructions for electronic submission

specified in GPG. The project titles of the collaborative proposals must be identical and must begin with the words "Collaborative Project," and the *combined* budgets of the related proposals should conform to the award size limits specified in this solicitation.

For a proposal involving multiple organizations, the budget justification should clearly delineate the amount each organization will receive from the grant. If collaborating institutions are being supported through subawards, the budget justification should have a separate section that provides information on the costs for each subaward, with costs broken out by major budget category (i.e., salaries, equipment, travel, participant support costs, other direct costs, indirect costs).

Participant Support Costs

Proposers should carefully review the requirements for the Participant Support Costs category. (See GPG Chapter II.C.2g(v)). This budget category refers to costs of transportation, per diem, stipends and other related costs for participants or trainees (but not employees) in connection with NSF-sponsored conferences, meetings, symposia, training activities and workshops. For some educational projects conducted at local school districts, however, the participants being trained are employees. In such cases, the costs must be classified as participant support if payment is made through a stipend or training allowance method. The school district must have an accounting mechanism in place (i.e., sub-account code) to differentiate between regular salary and stipend payments.

Generally, indirect costs (F&A) are not allowed on participant support costs. The number of participants to be supported must be entered in the parentheses on the proposal budget. Reallocation of Participant Support Costs to another budget category after an award has been made requires NSF approval, so proposers should be careful to make sure that the funds requested in this category are appropriate. Note that indirect costs may not be charged on participant support costs.

Common Uses of Participant Support Costs in OEDG Projects:

Workshops - The proposal may include participant support costs for subsistence (lodging and meals) during workshops. In addition, funds may be requested for stipends for participants. Requests for such stipends must be specific and fully justified. No tuition or other fees may be charged to workshop participants. The host institution is expected to provide the facilities and instrumentation necessary to conduct the workshop, therefore NSF will not ordinarily support permanent instrumentation or new facilities. The host institution is also expected to cover expenses incurred by their own faculty participants.

Other Participant Support Costs - Participant support costs necessary for the success of the project should be included in the budget. The total cost per participant varies with the type of participant and the type of activity. For example, to ensure participation by teachers, it may be necessary to pay for substitute teachers while the targeted teachers participate in the project. Similarly, to ensure participation in summer research programs by students who are members of underrepresented groups, it may be necessary to provide stipends that are competitive with wages received by students who obtain full-time summer employment.

Travel

A meeting for OEDG Principal Investigators is held every other year. Proposers for both Track 1 and Track 2 projects MUST include travel funds in the first year budget to support attendance of at least one PI or his/her representative at the PI meeting, to be held in Washington, DC during the summer or early fall of 2011. Track 2 projects have the option of including additional travel funds to attend another PI meeting in year 3, but it is not required. OEDG Planning Grant proposals should not include funding to attend the PI meeting. At these meetings, PIs discuss the basic components of their projects and work with a professional evaluator to implement and improve their evaluation strategies and identify key strengths and weaknesses in their projects. The PI meeting should be viewed as an opportunity for PIs to obtain assistance with the evaluation component of their project and to share information about their experiences with other OEDG PIs. The results of these meetings are anticipated to lead to identification of a set of "best practices" related to increasing diversity in the geosciences that can be shared with the geoscience and STEM communities at large.

Equipment

If major equipment or other significant instrumentation is required for the Track 1 or Track 2 project, the need for the instrumentation should be clearly justified as part of the Budget Justification. Reviewers must be able to recognize the function of any requested instrumentation. Many manufacturers routinely offer educational or institutional discounts. When preparing the budget, contact manufacturers or distributors to obtain discounted prices. If research instrumentation or equipment is requested in a proposal to the OEDG Program, the proposal should include plans for maintenance and technical support of the instrumentation after the end of the award period.

C. Due Dates

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

  October 01, 2010

  Required for Track 1 and Track 2 Proposals

  September 03, 2012

  Required for Track 1 and Track 2 Proposals

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

  November 10, 2010

  Track 1 and Track 2 Proposals Only

  October 05, 2011

  Planning Grant Proposals Only (Letter of Intent Not Required)

  October 10, 2012

  Track 1 and Track 2 Proposals Only

Additional opportunities to submit OEDG Planning Grants and Track 1/Track 2 proposals are described in the solicitation.

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:

In addition to the standard NSF review criteria, the following Additional Review criteria will be used to evaluate the merit of Track 1 and Track 2 proposals:

Does the project have the potential to significantly increase the diversity of geoscience students, or increase understanding

of the relevance of the geosciences among broad, diverse segments of the population?

Is there evidence from past activities that the project team is capable of successfully carrying out the project and achieving the stated goals?

Does the proposal clearly define how the project aligns with and addresses the goals, objectives, and priorities of the *GEO Education and Diversity Strategic Framework (2010-2015)* and *GEO Vision* Report?

Does the project align with existing diversity plans and goals at the proposing institution(s) and does it effectively utilize available resources (e.g., LSAMP, AGEP) that are already focused on broadening participation in STEM disciplines?

Is there evidence of institutional commitment to achieving and realizing the goals of the proposal, and sustaining successful projects?

For Track 2 proposals, does the project team have prior experience planning and managing successful programs directed toward increasing diversity in the geosciences?

For Track 2 proposals, is there evidence that the project will become self-sustaining or be sustained by funding from sources other than NSF at the end of the funding period?

B. Review and Selection Process

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

Track 1 and Track 2 OEDG proposals will be reviewed by a combination of ad-hoc and panel review. At least three written reviews will be obtained for each proposal. OEDG Planning Grant proposals will be reviewed internally by NSF program staff.

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:

Principal Investigators of OEDG Track 1 and Track 2 projects will be required to participate in at least one OEDG PI meetings, which will be held in Washington, DC every other year, beginning in 2011. OEDG Planning Grant recipients are not required to participate in the PI meeting. Awardees will collect data as necessary to evaluate the success of each particular project and the OEDG program as a whole.

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.

NSF has contracted with the American Institutes for Research (AIR) to provide technical evaluation support for the Track 1 projects and to conduct program-wide evaluation of the OEDG program. As part of that evaluation effort, AIR will provide all new OEDG Track 1 and Track 2 awardees with a Supplemental Information Form that is to be completed and submitted along with NSF-required annual project reports. The Supplemental Information Form collects common evaluation data that allows comparisons between the individual OEDG projects. Data collected for each project will be determined by the nature of the project but will likely include: numbers of individuals served, types of experiences provided, results of evaluations, and results of longitudinal tracking.

VIII. AGENCY CONTACTS

General inquiries regarding this program should be made to:

- Jill L. Karsten, Program Director, GEO Education and Diversity, 705N, telephone: (703) 292-8500, fax: (703) 292-9042, email: jkarsten@nsf.gov
- John D. Moore, Albert Einstein Distinguished Educator Fellow, telephone: (703) 292-2157, email: jdmoore@nsf.gov

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 1-800-673-6188; e-mail: fastlane@nsf.gov.
- Brian E. Dawson, Information Technology Specialist, 705 N, telephone: (703) 292-4727, fax: (703) 292-9042, email: bdawson@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

X. APPENDIX

The *GEO Education and Diversity Strategic Framework* (2010-2015) articulates the following goals and objectives. The full plan is available at http://nsf.gov/geo/adgeo/education.jsp.

GOAL 1: ADVANCING PUBLIC LITERACY IN EARTH SYSTEM SCIENCE

A scientifically literate public that understands the interconnected and inter-dependent non-living and living systems of Earth, uses that knowledge for informed decision-making, and advances its understanding of Earth Systems through life-long learning in formal and informal educational settings.

Objectives

1.1: NSF supports a vibrant and innovative community that improves Earth System Science education in the nation through development of evidence-based programs and resources.

1.2: Educators understand and use the big ideas and principles of Earth System Science literacy in formal and informal learning venues.

1.3: Students, educators, and the public collect and use Earth System Science data in inquiry and evidence-based activities.

1.4: Life-long learners have access to informal science education opportunities that utilize and/or leverage GEO research investments and their outcomes.

1.5: GEO-supported scientists are engaged in, and have the resources to enable, effective Earth System Science education and outreach efforts based on their research.

1.6: Formal education systems, including standards, assessments, curricula, and pedagogy, are optimized to increase student access to Earth System Science concepts.

1.7: The public understands the relevance of the geosciences and values their importance.

GOAL 2: PREPARING THE GEOSCIENCE WORKFORCE OF THE FUTURE

A future geoscience workforce, reflecting the nation's diversity, that is skilled in science, technology, and other relevant disciplines necessary to advance GEO-funded research and overcome critical scientific and societal challenges in the geosciences.

Objectives

2.1: A healthy pipeline of creative and qualified students, reflecting the Nation's diversity, is available to pursue advanced degrees and careers in the geosciences and related fields.

2.2: Undergraduate and graduate level geoscience programs are vibrant and provide students from all backgrounds with the critical skills and interdisciplinary knowledge necessary to meet future geoscience workforce needs.

2.3: The pool of students with post-secondary degrees in GEO-relevant fields is more diverse and there are appropriate resources to connect students to a variety of career pathways.

2.4: GEO-funded scientists support programs and activities for students, educators, and policymakers that encourage participation in geoscience research and use of geoscience data.

2.5: Capacity is built at community colleges and minority-serving institutions to engage students from diverse backgrounds and enable them to pursue degrees and careers in the geosciences.

2.6: Mentoring, networking, and related resources are in place to support retention of students and early career professionals at critical transition points in their education and career pathways.