

Centers for Ocean Sciences Education Excellence (COSEE)

PROGRAM SOLICITATION NSF 10-527

REPLACES DOCUMENT(S):
NSF 08-509



National Science Foundation
Directorate for Geosciences
Division of Ocean Sciences

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

April 15, 2010

Proposals for COSEE Centers

IMPORTANT INFORMATION AND REVISION NOTES

This solicitation is a revision of [NSF 08-509](#). This solicitation requests proposals for COSEE Centers.

Please be advised that the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) includes revised guidelines to implement 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 new requirement).

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Centers for Ocean Sciences Education Excellence (COSEE)

Synopsis of Program:

The Division of Ocean Sciences seeks to establish new and/or renewed COSEE Centers in a network of coordinated centers that facilitate collaborations and communications between ocean science researchers and educators. These Centers foster the integration of ocean research into high-quality educational materials, enable ocean researchers to gain a better understanding of educational organizations and pedagogy, provide educators with an enhanced capacity to understand and deliver high-quality educational programs in the ocean sciences, and provide material to the public that promotes a deeper understanding of the ocean and its influence on each person's quality of life and our national prosperity.

Cognizant Program Officer(s):

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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: 7 awards in total: seven COSEE Centers for up to five years at a maximum of \$530,000/year for the first year, increasing by up to \$20,000/year up to \$610,000/year, with a budget review after 3 years.

Anticipated Funding Amount: \$3,710,000 is the approximate total for the first year of all awards, pending availability of funds and quality of proposals.

Eligibility Information

Organization Limit:

- Eligible organizations include academic institutions of higher learning, located and accredited in the U.S., that award degrees in geoscience or environmental science, and U.S. oceanographic research institutions, professional societies, non-profit or not-for-profit consortia, informal science centers, museums, aquaria, and state and local education agencies. Collaboration among three or more different types of organizations listed above is required.

Each COSEE Center must represent a minimum of three partners including at least one organization from each of the following sectors: [1] ocean science research institutions; [2] formal education institutions; and [3] informal education institutions.

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI:

None Specified

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Not Applicable
- **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:** Not Applicable

C. Due Dates

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

April 15, 2010

Proposals for COSEE Centers

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: Standard NSF award conditions apply.

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

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I. INTRODUCTION

The global community faces increasingly complex and interlinked challenges associated with the oceans, including issues such as climate change, loss of biodiversity, ocean acidification, and the ocean's impacts on human health. Solutions to these complex challenges require both advancement in the underlying scientific issues and a better understanding of these scientific issues by students, educators, and the general public. The need for scientists to work with educators to enhance the public understanding of science has long been recognized as an important priority in reports such as *Science for All Americans* (AAAS, 1990), *NSF in a Changing World* (NSF, 1995), and *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future* (National Academy of Sciences, 2007).

Improved educational opportunities in ocean sciences and an enhanced public understanding of the oceans are particularly needed (Pew Ocean Commission, 2003; *U.S. Commission on Ocean Policy, 2004*; NOAA Research Council, 2008), and it is widely recognized that the scientific community, the informal science education community, and the formal educational activities provided by schools and universities all play important roles in filling this critical need (Advisory Committee for Geosciences, 2009; Advisory Committee for Environmental Research and Education, 2009; NSF Taskforce on Cyberlearning, 2008). It is also clear that the increasing reach, capabilities, and innovation associated with cyberinfrastructure development provide unprecedented opportunities for education and outreach to build stronger scientific communities and a more knowledgeable and engaged public (NSF, 2006; NSF Taskforce on Cyberlearning, 2008).

In order to explore the benefits of a nationally-coordinated effort that would create a strong collaborative environment between the ocean science research community and the education community, NSF's Division of Ocean Sciences (OCE) and the Division of Undergraduate Education (DUE) co-sponsored a workshop in May 2000. Workshop participants identified a wealth of opportunities for national coordination of ocean science education efforts and numerous strategies by which these opportunities could be realized (the workshop report is available at <http://www.cosee.net>). The workshop consensus was that NSF should establish Centers for Ocean Sciences Education Excellence (COSEE) as a nationally-coordinated program linking ocean science researchers with the formal and informal education communities. Subsequently, a panel of ocean research and ocean education experts met to advise OCE on priorities for the implementation of COSEE (the report from that meeting also is available at <http://www.cosee.net>). Proponents are strongly urged to review these reports to develop a better understanding of the background concepts for COSEE.

The first COSEE program solicitation ([NSF 01-173](#)) was issued in 2001 and requested proposals for both Centers and a Central Coordinating Office. Initial awards were made in the Fall of 2002 for seven Centers and one Central Coordinating Office. A subsequent program solicitation ([NSF 05-503](#)) was issued in 2004 and requested proposals for additional COSEE Centers; three new Centers were funded as a result of this solicitation. A third program solicitation ([NSF 07-527](#)) was issued in 2006, and six COSEE Centers were funded as a result of this solicitation. NSF has also funded a Central Coordinating Office, a National Network Evaluator, and 5 collaborators with COSEE Centers from the most recent Program Solicitation ([NSF 08-509](#)).

This competition is for COSEE Centers, either to establish new Centers or to request renewed funding for Centers whose funding has expired or is soon to expire. Information on the currently-funded COSEE Centers and the Central Coordinating Office is available at <http://www.cosee.net>. Proponents are encouraged to become familiar with current COSEE activities and planning documents by reviewing information on the COSEE webpage.

Proposals for Centers may request up to five years of funding at \$530,000/year for the first year, increasing by up to \$20,000/yr in subsequent years to maximum of \$610,000/yr. Funding of Centers is expected to begin in August to November of 2010.

II. PROGRAM DESCRIPTION

The National Science Foundation funds the development of centers where the proposed work requires a high degree of organization, networking, and problem-solving capability. A center forms an environment in which collaborations and partnerships flourish, particularly those that include people and organizations with disparate goals.

COSEE is a distributed network of centers; each Center conducts its own activities and also participates in various "Network Level" activities that involve other Centers in collaborative efforts. Each Center is expected to be a multi-faceted collaborative activity with the primary goal of improving the integration of ocean sciences research and education. As new concepts and knowledge from the ocean sciences research community are developed, COSEE Centers play an important role in creating the collaborations among the research, education, and public outreach communities that disseminate knowledge, create broader public awareness of the role of scientific discovery in society, and enhance educational opportunities and content.

NSF places a strong emphasis on the role of the ocean sciences research community in COSEE activities. COSEE Centers have already developed a broad range of activities that improve ocean sciences education and curricular materials, promote a diverse group of students and professionals in ocean sciences, and enhance the public understanding of ocean sciences. It is anticipated that this broad range of activities will continue, but a strengthened involvement of the ocean sciences research community in these activities is expected for proposals funded through this solicitation. NSF expects each Center to provide support for the ocean science research community in developing high-quality and effective activities that fulfill the Broader Impacts expectations for research proposals (general information and examples of activities that support the Broader Impacts of research proposals can be found at <http://www.nsf.gov/pubs/gpg/broaderimpacts.pdf>). Proposals submitted to this solicitation should address, in a substantive manner, how the proposed activities will contribute to this important goal.

COSEE Centers are expected to be innovative and catalytic. Although some programmatic activities occur within COSEE Centers, the main thrust of a COSEE Center must be based on the development of innovative approaches that can be used to improve the quality, availability, and impact of ocean science education efforts in formal and/or informal environments. Effective activities that provide background, pedagogical insights, community connections, and experiences for the research community to develop excellent Broader Impacts efforts are encouraged. Support for activities that are considered programmatic will be considered only to the extent that they provide a platform for connecting ocean researchers to formal and informal educators.

- a. **Structure of a COSEE Center:** *Each Center must represent a minimum of three partners, including at least one organization from each of the following sectors: 1) ocean science research institutions; 2) informal education institutions; and 3) formal educational institutions.* One institution may not represent more than one sector. Ocean science research institutions are defined as institutions with a mission of conducting basic oceanographic research and/or graduate education in biological, physical, chemical and geological oceanography and closely-related disciplines. Eligible research institutions must not focus predominantly on fisheries or aquarium/exhibit-related science. Informal science education institutions are defined as museums, aquaria, or science centers with a primary mission of public outreach and education. Formal education organizations must be accredited by their appropriate accreditation body and may include colleges of education, community colleges, and K-12 school districts or individual schools.

Each Center in the network has a regional and/or thematic focus. Regional Centers develop most of their efforts in a particular geographical region. A thematic Center focuses its efforts on a particular intellectual theme or topic, and applies these efforts on a national scale. Both regional and thematic Centers are expected to contribute broadly to the national effort of improving ocean sciences education and public outreach, as well as the integration of ocean sciences research into education and public outreach.

Each Center must designate a director who has the capacity and vision to develop and lead the team. In addition, each Center must have an internal management structure capable of supporting the education, outreach, research, and evaluation missions of the Center in a manner that balances the interests of the different institutions involved. Centers will support personnel having expertise to engage the oceanographic research community and the formal and informal educational communities in efforts to advance the availability and quality of information on the oceans. The office(s) for each Center may be located at any of the Center's affiliates. Affiliates of a Center need not be in close proximity to each other, but all personnel associated with a Center must work together as a team.

Each Center must have a person who has the responsibility of helping ocean scientists at any institution within their region (or with an interest in their thematic area) to develop compelling Broader Impacts activities.

Each Center is to have an external Advisory Board composed of representatives of the research, formal education, and informal education communities. The external Advisory Board should regularly provide advice to each Center on its operations, direction, priorities, and opportunities. Advisory Board reports will be provided to the cognizant NSF Program Officer, and NSF expects to attend selected Advisory Board meetings as part of its oversight of the Center's progress.

Each COSEE Center is expected to have a Center evaluator. The Center evaluator must participate in and contribute to efforts of the National Network Evaluator. NSF expects that the primary role of the Center evaluator is to participate in the national evaluation effort that is structured and coordinated by the National Network Evaluator and the Evaluation Working Group. NSF expects that 5% of the total budget should be allocated for this purpose. Other evaluation activities at the Center level may be necessary for the effective development and/or management of the Center's activities. If so, a plan for these other evaluation activities, and their estimated costs, should be described in a document that is included as a Supplementary Document (see section V.A. Proposal Preparation Instructions).

Each Center is responsible for determining, with the guidance of their institution, whether their activities require the oversight of an Institutional Review Board for the Protection of Human Subjects (see Chapter VII.A at <http://www.inside.nsf.gov/pubs/pam/pam0409/0409.pdf>). The Center must comply with all applicable regulations in this matter. Failure to have Institutional Review Board approval may delay the start of funding or the relevant proposed activities.

- b. **Structure of the COSEE Network:** The COSEE network consists of a set of collaborating COSEE Centers (currently eleven funded Centers) plus the Central Coordinating Office and the National Network Evaluator. Information on each Center, the Central Coordinating Office, and the National Network Evaluator is available on the COSEE webpage (<http://www.cosee.net/>). Proponents are advised to review the efforts and objectives of currently-funded COSEE Centers. Additional information on funded COSEE activities (abstracts of awards, funding levels and durations, etc.) is available from the NSF website (<http://www.nsf.gov/> awards search). Further information on the structure and functioning of the COSEE Network can be obtained from the Central Coordinating Office.

The COSEE Centers each provide one representative to a management group called the COSEE Council. The Council meets formally two or three times a year and communicates informally between these meetings. The COSEE Council addresses issues related to long-term planning, the coordination of COSEE activities across Centers, and collaborations. All funded COSEE Centers and the Central Coordinating office are expected to be represented at the COSEE Council meetings. COSEE also holds annual Network-wide meetings where all

COSEE PIs are expected to attend, as well as occasional special focus meetings. All COSEE Centers must allocate personnel time and related travel expenses to participate in these meetings and follow-on activities/projects (see budget section for details).

The Central Coordinating Office organizes national oversight of the COSEE effort, enhances communication and collaboration among the Centers, and documents COSEE activities and outcomes. The Central Coordinating Office obtains advice from the individual COSEE Centers, the COSEE Council, the COSEE National Advisory Board, the National Science Foundation, and other sources in setting priorities, planning, and enhancing the national impact of the COSEE network. The Central Coordinating Office also maintains the COSEE website and supports some website development for each Center.

There are many planning and coordinating activities that occur at the Network level, and these activities are managed by the Central Coordinating Office. Most of this effort occurs in Working Groups that focus on particularly important issues: Governance Working Group, Website Working Group, Evaluation Working Group, Diversity Working Group, Messaging/Marketing Working Group, Decadal Review Working Group, Strategic Business Plan Implementation Working Group, and Scientist Engagement Working Group. Participants in these Working Groups are personnel from the various COSEE Centers; almost all Working Group discussions are by teleconference. Participation in these Working Groups can require a substantial investment of time; this circumstance should be considered in developing the proposed activities and budgets for the Center.

The National Network Evaluator is responsible for collecting, organizing, and interpreting data on activities that occur at the Network Level. The National Network Evaluator and the Evaluation Working Group can serve as intellectual resources for the evaluation efforts at the Center Level, but all evaluation efforts for Center activities are the responsibility of the Center evaluator(s).

Each Center must reserve funds (a minimum of 10% of the overall budget) for personnel, travel and other expenses associated with participation in national COSEE efforts and Working Groups. Attendance at annual PI meetings and COSEE Council meetings is required. Participation in various COSEE-sponsored events and activities that promote ocean education on a national level is expected.

- c. **Potential COSEE Activities: Each Center should be a multi-faceted collaborative activity with the primary goal of improving the integration of ocean research and education.** As new concepts and knowledge from the ocean sciences research community are developed, it is important that innovative collaborations flourish among the research, education, and public outreach communities in ways that disseminate knowledge, create broader public awareness of the role of scientific discovery in society, and enhance educational opportunities and content. The COSEE Centers, and the collective network of individual Centers, have a crucial role in fostering communications and collaborations amongst the ocean sciences research, education, and public outreach communities.

Each Center is expected to describe its proposed activities, formulated on these themes:

[1] Develop sustainable ocean science education and public outreach activities with leading-edge ocean scientists and graduate students;

[2] Use Ocean Literacy Essential Principles in developing educational activities (see www.coexploration.org/oceanliteracy/);

[3] Ensure that underrepresented communities have improved access to ocean science education and research results. Individual Centers should make a concerted effort to include underrepresented groups in their planning processes, management team, and all educational activities, both formal and informal.

NSF places a strong emphasis on encouraging COSEE Centers to provide support for the ocean science research community in developing high-quality and effective activities that fulfill the Broader Impacts expectations for research proposals. Proposals submitted to this solicitation should address, in a substantive manner, how the proposed activities will contribute to this important goal. Proposals should also include a description of how the Center will increase its impact in the ocean science research community by expanding the number of ocean scientists that it supports over the requested period of funding.

It is expected that each Center will use its capabilities, partnerships, and expertise to develop a set of innovative, effective, and catalytic activities that advance ocean sciences education and sustained engagement with the ocean sciences research community. Examples of such activities might include:

- Establish and/or expand connections between people and organizations conducting ocean science research and those providing educational leadership or those providing outreach among diverse communities;
- Develop innovative citizen science initiatives involving ocean scientists;
- Develop mentoring and research experiences for underrepresented high school students in partnership with ocean scientists;
- Facilitate the integration of ocean science research into high-quality educational materials for formal and/or informal education settings. Ocean science topics with broad public interest such as climate change, ocean acidification, and ocean impacts on human health are of particular interest;
- Provide pedagogical expertise and guidance for ocean scientists to improve their ability to communicate complex research topics to students, other educators, and the public;
- Create new professional development opportunities for a variety of COSEE audiences, including teachers, other educators, and scientists. After development with COSEE funding, Centers are expected to support the ongoing costs of teacher professional development activities with other funding;
- Provide incentives and assistance for school districts (or smaller administrative units) and teachers to integrate ocean sciences into their curricula. For example, Center personnel could help school districts identify ocean-related curricula that would be appropriate for them and help align the curricula to state or national standards as necessary;
- Foster the effective use of ocean observing data and cyberinfrastructure for ocean sciences education and outreach; and
- Provide career information. For example, a Center could provide middle school and high school students, teachers, and counselors information on careers in ocean sciences, including marine technology, industry, non-college teaching, advocacy, and policy-related careers.

Professional development of educators is an important activity in many COSEE Centers and across the COSEE Network. This professional development takes many forms, occurs in many settings, and serves multiple audiences. Teachers and educators in informal science venues are able to learn of recent developments in ocean

science research and develop skills and tools to introduce ocean science topics in their particular environments. Scientists can develop better teaching and communication skills, improve pedagogical understanding, and formulate effective, high-impact Broader Impacts activities in support of their funded research programs. *NSF expects that professional development activities for educators need to be consistent with the procedures and practices described in the document titled "National COSEE Network Professional Development of Educators", which is available at <http://www.cosee.net>.*

For proposals funded through this solicitation, NSF considers two types of educator professional development to be high priorities: [1] Professional development for K-12 educators involving systemic interaction with a state reform effort, a school district, or other school administrative unit; the goal is to foster educator professional development in the ocean sciences in an environment with demonstrated administrative support for incorporating ocean sciences educational topics; and [2] Professional development that serves the career development interests of ocean scientists and graduate students in improving their teaching and communication skills, pedagogical understanding, and Broader Impacts activities. Other forms of educator professional development are considered low priorities at this time.

To the extent that a Center proposes to develop new curricular materials, it is expected that the proponents will provide evidence that there is a *bona fide* demand for the proposed new materials, describe how these materials are to be evaluated and tested, and provide a plan for dissemination of these materials once developed. Material development and testing efforts should be completed within two years, with subsequent years of funding devoted to dissemination efforts.

Although a Center may work to foster demonstration programs consistent with its goals, its primary role should be catalytic, not programmatic. For example, funds might be used to organize workshops that provide opportunities for an exchange of ideas and expertise between scientists and educators, but would not be used to support research programs, for construction of museum displays, or for participant costs in ongoing educational programs.

Proponents are urged to consider affiliation with other NSF-funded systemic science education reform efforts, including programs funded via the Louis Stokes Alliances for Minority Participation (LSAMP), Advanced Technological Education (ATE), Alliances for Graduate Education Program (AGEP) and the Graduate K-12 program (GK12). Information on these programs may be found via the NSF website at <http://www.nsf.gov/dir/index.jsp?org=EHR>. Funding for specific programs of this nature should not be requested via a COSEE proposal. For undergraduate course development, teacher preparation and two-year technical programs, please refer to NSF's Division of Undergraduate Education (DUE) website (<http://www.nsf.gov/div/index.jsp?div=DUE>). Additional funding opportunities are available on NSF's Division of Research on Learning (DRL) in Formal and Informal Settings website (<http://www.nsf.gov/div/index.jsp?div=DRL>).

- d. **Required Information** For a COSEE Center to be successful, it must select an innovative and meaningful set of activities to undertake, and it must have a sufficiently well developed management and administrative structure to implement these activities effectively. Proponents should develop their plans for a Center on the strengths of their recent activities, and their ability to foster communications between the education, public outreach, and ocean sciences research communities in ways that develop innovative, effective, and catalytic activities. In the process of forming the partnerships that develop the proposed activities of a Center, attention should focus on how to integrate the institutional partners into shared projects that can bridge the educational, public outreach, and research communities rather than have them operate on "parallel tracks". It is important that the individual goals of the leaders and institutions are aligned with the overall goals of the COSEE Center.

All proposals must include a description of results from prior NSF support. **Proposals from organizations or individuals with prior support from the COSEE program should document their results and provide specific evidence that their COSEE activities have been productive, catalytic, and innovative at both the regional and national level.** Proposals to establish new Centers should describe the senior investigators' past activities and successes in developing collaborative interactions between the research and education communities, as well as their proposed new activities for which funding is requested.

Proposals should be focused primarily on new and catalytic activities. For proposals that request funding to continue an ongoing activity, **evidence should be included in the proposal demonstrating that each ongoing activity has been productive, catalytic, and/or innovative and will engage increasing numbers of ocean scientists over the duration of funding.** Funding should not be requested for continuing any programmatic activity unless the specific activity is effective at connecting ocean scientists and graduate students with the education and public outreach communities or enhances the professional development of ocean scientists in other ways. Proposals that request funding to continue ongoing activities should specifically list the names and affiliations of scientists (tabulated by activity and year) who have participated in these activities as a Supplementary Document. (see section V.A. Proposal Preparation Instructions)

All proposals for COSEE Centers must include a description of the activities to be undertaken if the proposed Center is funded. In addition to the expectations described above, this description of activities should include the following:

- Significant collaborations between research, education, and public outreach organizations dedicated to the improvement of ocean science education, with clearly defined roles for all collaborators and partners;
- Each proposed activity must include a description of the role(s) that scientists have in developing and implementing the activity;
- Information on the backgrounds and professional experiences of senior investigators that is relevant to their ability to form, nurture, and lead the proposed activities in a multi-institutional setting. Because the goals of being catalytic and bridging the education, public outreach, and research communities require special talents, information on the support of these goals is important;
- A coherent and well-organized management plan for the Center that represents the balanced interests of all partners. Centers function most effectively if a support position is designated for maintaining internal communications and monitoring progress of all center participants (more detailed information may be included in the Supplementary Documents section-see section V.A. Proposal Preparation Instructions);
- The general framework for the operation of an external Advisory Board that meets at least annually and provides an annual report to NSF (more detailed information may be included in the Supplementary Documents section-see section V.A. Proposal Preparation Instructions);
- Plans for effective engagement of segments of the population that have historically been underrepresented as learners, teachers, and researchers in ocean sciences;
- A budget that reflects an appropriate balance between resources and responsibility for all collaborators. A minimum of 10% of the budget should be devoted to participation in national activities of the COSEE network. This minimum could include travel expenses to attend COSEE meetings, salary expenditures for the necessary commitments of time to participate in COSEE planning activities, funds to produce a

nationally-recognized educational material, etc. If there are particular contributions to the national activities of the COSEE network envisaged by a proponent, they should be described in the proposal;

Proposals should include salaries (up to 12 months per year) and related personnel costs. Typical personnel may include: PI, Center coordinator, communications manager, research specialist, education specialist, and public affairs/media specialist. Participant support costs (travel; workshop per diem) are also expected to be a significant portion of the budget in some cases. Participant support funds may not be diverted by the grantee to other categories of expense without the prior written approval of the cognizant NSF Program Officer. Administration or clerical support for travel arrangements or workshop-related activities, if requested, must be justified as non-routine, and specifically identified with a project activity.

No funds for capital equipment will be provided. Centers are to use the national COSEE logo and may not use funding to develop new logos. Centers are expected to link to the National COSEE website and ensure that any regional website development is compatible with the national website.

REFERENCES

Advisory Committee for Environmental Research and Education, 2009. *Transitions and Tipping Points in Complex Environmental Systems. A Report by the NSF Advisory Committee for Environmental Research and Education*, National Science Foundation, Arlington, VA.

Advisory Committee for Geosciences, 2009. *GEO Vision Report. A Report by the NSF Advisory Committee for Geosciences*, National Science Foundation, Arlington, VA.

American Association for the Advancement of Science, 1990. *Science for All Americans*. Oxford University Press, New York.

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National Science Foundation, 2006. *Investing in America's Future: Strategic Plan FY 2006-2011*. National Science Foundation, Arlington, VA.

National Science Foundation Taskforce on Cyberlearning, 2008. *Fostering Learning in the Networked World: The Cyberlearning Opportunity and Challenge*, National Science Foundation, Arlington, VA.

NOAA Research Council, 2008. *Understanding Global Ecosystems to Support Informed Decision Making: A 20 year Research Vision*. National Oceanic and Atmospheric Administration, Washington, D.C.

Pew Ocean Commission, 2003. *America's Living Oceans: Charting a Course for Sea Change*, Arlington, VA 2003.

U.S. Commission on Ocean Policy, 2004. *An Ocean Blueprint for the 21st Century*, Washington, D.C.

III. AWARD INFORMATION

Estimated program budget, number of awards and average award size/duration are subject to the availability of funds. Approximate number of awards: seven COSEE Centers for up to five years at a maximum of \$530,000/year for the first year, increasing by up to \$20,000/year up to \$610,000/year,

IV. ELIGIBILITY INFORMATION

Organization Limit:

- Eligible organizations include academic institutions of higher learning, located and accredited in the U.S., that award degrees in geoscience or environmental science, and U.S. oceanographic research institutions, professional societies, non-profit or not-for-profit consortia, informal science centers, museums, aquaria, and state and local education agencies. Collaboration among three or more different types of organizations listed above is required.

Each COSEE Center must represent a minimum of three partners including at least one organization from each of the following sectors: [1] ocean science research institutions; [2] formal education institutions; and [3] informal education institutions.

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI:

None Specified

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

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

- Full proposals submitted via FastLane: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF Grant Proposal Guide (GPG). The complete text of the GPG is available electronically on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg . Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@nsf.gov . Proposers are reminded to identify this program solicitation number in the program solicitation block on the NSF Cover Sheet For Proposal to the National Science Foundation. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.
- Full proposals submitted via Grants.gov: Proposals submitted in response to this program solicitation via Grants.gov should be prepared and submitted in accordance with the NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov. The complete text of the NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: (http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide). To obtain copies of the Application Guide and Application Forms Package, click on the Apply tab on the Grants.gov site, then click on the Apply Step 1: Download a Grant Application Package and Application Instructions link and enter the funding opportunity number, (the program solicitation number without the NSF prefix) and press the Download Package button. Paper copies of the Grants.gov Application Guide also may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@nsf.gov.

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

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

The project title should begin with "COSEE:". In order to facilitate effective review of proposals, the following items may be included within the Supplementary Documents section of Fastlane (Grants.gov users: supplementary documents should be attached in Field 11 of the R&R Other Project Information Form): [1] Table of contents listing all documents included in the Supplementary Documents section; [2] Information on the proposed external advisory board and/or additional information on the management structure of the Center (3 pages maximum); [3] Listing of major collaborating institutions and the senior personnel involved at each institution (2 pages maximum); [4] If the proposal requests funding to continue ongoing (not newly proposed) activities, a list of the names and affiliations of scientists (tabulated by activity and year) who have participated in these activities within the last 5 years should be included; [5] Letters of support or collaboration (10 maximum); and [6] Plan for the proposed evaluation activities to be conducted at a Center beyond those that are in support of the national evaluation effort (3 pages maximum).

Refer to Section II--Program Description, for specific proposal preparation information and instructions. Supplementary materials are to be included within the Supplementary Documents section of FastLane or Grants.gov.

B. Budgetary Information

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

C. Due Dates

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

April 15, 2010

Proposals for COSEE Centers

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:

The Project Description should address the criteria used by reviewers to judge the merit of the proposal. In addition to NSF's two general criteria (Intellectual Merit and Broader Impacts), the following criteria are applicable:

- Does the project have the potential to increase understanding of the oceans by students, the public, and members of underrepresented groups?

- Does the project have the potential to reach a significant number of ocean scientists who desire assistance developing Broader Impacts components of future research proposals?
- Do the management structure and leadership plans foster an environment that is likely to lead to a successful Center?
- Is the budget appropriate for the size and scope of the proposed effort and does it fairly reflect the contributions of each organization?
- Is the project supported by adequate facilities, resources, and institutional commitment?
- If the project involves professional development for K-12 educators, is there systemic interaction with a state reform effort, a school district, or other school administrative unit in ways that support the incorporation of ocean sciences educational topics?

B. Review and Selection Process

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

Reviewers will be asked to 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 .

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.

Additional Reporting Requirements: The COSEE Evaluation Working Group is currently considering additional reporting requirements or formats for annual progress reports to enable this group to evaluate and analyze the impact of COSEE activities across the Network. Consequently, NSF may decide to require minor additional reporting requirements for annual progress reports in response to final recommendations from this working group.

VIII. AGENCY CONTACTS

General inquiries regarding this program should be made to:

- Donald Elthon, Program Director, 725, telephone: (703) 292-8475, fax: (703) 292-9085, email: delthon@nsf.gov
- Elizabeth Rom, Program Director, 725, telephone: (703) 292-7709, fax: (703) 292-9085, email: elrom@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 Midson, Assistant Program Director, 725, telephone: (703) 292-8145, fax: (703) 292-9085, email: bmidsn@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

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