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# **NSF 24-568: Scientific Ocean Drilling Coordination Office (SODCO) for the Division of Ocean Sciences**

## **Program Solicitation**

### **Document Information**

#### **Document History**

- **Posted:** April 30, 2024

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**National Science Foundation**  
Directorate for Geosciences  
Division of Ocean Sciences

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

July 30, 2024



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## Important Information And Revision Notes

Any proposal submitted in response to this solicitation should be submitted in accordance with the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) that is in effect for the relevant due date to which the proposal is being submitted. The NSF PAPPG is regularly revised and it is the responsibility of the proposer to ensure that the proposal meets the requirements specified in this solicitation and the applicable version of the PAPPG. Submitting a proposal prior to a specified deadline does not negate this requirement.

## Summary Of Program Requirements

### General Information

#### Program Title:

Scientific Ocean Drilling Coordination Office (SODCO) for the Division of Ocean Sciences

#### Synopsis of Program:

The Division of Ocean Sciences (OCE) at the National Science Foundation (NSF) requests proposals from eligible U.S. institutions to provide a *Scientific Ocean Drilling Coordination Office* (SODCO). This Coordinating Office will work with Principal Investigators (PIs) in the selection of suitable, academically or commercially available drilling and coring platforms to collect sub-seafloor samples, make sub-seafloor measurements, and install long-term borehole observatories. It is anticipated that SODCO will be supported by the NSF Ocean Drilling Program (ODP) through a Cooperative Agreement of up to five years duration with the possibility of renewal for up to an additional five years.

SODCO may work with the commercial drilling community or other drilling organizations from the United States or abroad to determine the type and availability of drilling platforms and services that may be available for NSF-funded scientific projects that require ocean drilling. SODCO will have the expertise to generate requests for bids to provide the drilling services as needed. SODCO is expected to play a proactive role in the ocean science community to encourage innovation in drilling technologies and methods in response to scientific community needs and will help guide the development of new drilling designs as requested by the ocean science community.

SODCO will coordinate and manage drilling activities for the U.S. ocean science community. Requirements for drilling activities will be derived both from long-range science plans developed by the ocean science community as well as research proposals funded by NSF. We encourage collaborations with international partners and with scientists funded by other sources. SODCO will be capable of assisting in the planning and execution of all aspects of the drilling activities.

Interested parties must respond to this solicitation with a proposal to provide for these services under a single award. SODCO award will be administered as a Cooperative Agreement with an anticipated duration of up to five-years. A mid-term management review will be required, which will guide a decision to re-compete or renew the Cooperative Agreement for up to a further five-year period.

SODCO's role is expected to be coordination and management of activities for proponents seeking to develop a deep-sea drilling program; financial support for a specific drilling expedition, including lease of a specific platform will be through another award instrument. It is expected that provision of expedition-specific platforms will therefore be accomplished early in the science proposal development process in collaboration with individual proponents that intend to establish a drilling-based research program.

**Cognizant Program Officer(s):**

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

- Kevin T. Johnson, telephone: (703) 292-7442, email: [ktjohnso@nsf.gov](mailto:ktjohnso@nsf.gov)

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

- 47.050 --- Geosciences

**Award Information**

**Anticipated Type of Award:** Cooperative Agreement

**Estimated Number of Awards:** 1

One award will be made.

**Anticipated Funding Amount:** \$40,000,000

Up to \$8M per year for up to 5 years pending availability of funds.

**Eligibility Information**

**Who May Submit Proposals:**

Proposals may only be submitted by the following:

- Institutions of Higher Education (IHEs) - Two- and four-year IHEs (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Special Instructions for International Branch Campuses of US IHEs: If the proposal includes funding to be provided to an international branch campus of a US institution of higher education (including through use of subawards and consultant arrangements), the proposer must explain the benefit(s) to the project of performance at the international branch campus, and justify why the project activities cannot be performed at the US campus.
- Non-profit, non-academic organizations: Independent museums, observatories, research laboratories, professional societies and similar organizations located in the U.S. that are directly associated with educational or research activities.
- Tribal Nations: An American Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of the Interior acknowledges as a federally recognized tribe pursuant to the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. §§ 5130-5131.

**Who May Serve as PI:**

There are no restrictions or limits.

**Limit on Number of Proposals per Organization: 1**

One proposal per organization is allowed.

**Limit on Number of Proposals per PI or co-PI: 1**

One proposal per PI or co-PI is allowed.

**Proposal Preparation and Submission Instructions**

**A. Proposal Preparation Instructions**

- **Letters of Intent:** Not required
- **Preliminary Proposal Submission:** Not required
- **Full Proposals:**
  - Full Proposals submitted via Research.gov: *NSF Proposal and Award Policies and Procedures Guide (PAPPG)* guidelines apply. The complete text of the PAPPG is available electronically on the NSF website at: [https://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=pappg](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg).
  - 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: [https://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=grantsgovguide](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide)).

**B. Budgetary Information**

- **Cost Sharing Requirements:**

Inclusion of voluntary committed cost sharing is prohibited.
- **Indirect Cost (F&A) Limitations:**

Not Applicable
- **Other Budgetary Limitations:**

Not Applicable

**C. Due Dates**

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

July 30, 2024

**Proposal Review Information Criteria**

**Merit Review Criteria:**

National Science Board approved criteria. Additional merit review criteria 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.

## I. Introduction

Scientific Ocean Drilling (SOD) and sub-seafloor sampling are tools to access Earth's geologic history, properties, and processes at locations where such information may otherwise not be available. Data from samples and measurements obtained through SOD and other methods of sub-seafloor sampling provide key parameters that allow researchers to address questions with relevance to society as well as to other fields beyond the Ocean Sciences.

SOD provides essential infrastructure to conduct multi-disciplinary sub-seafloor research into the Earth system, including earth and climate history, extent of life, geological hazards, and sub-seafloor carbon sequestration. The range of science that could be facilitated by sub-seafloor sampling and observation was defined within the recently completed [Exploring Earth by Scientific Ocean Drilling 2050 Science Framework](#) . The 2050 Science Framework is based on workshop-derived input from the [United States ocean science community](#)  and at international workshops held in Europe, Japan, China, Australia, South Korea, and India.

The SOD community is intellectually diverse, reflecting the many applications of drilling as a tool to addressing key scientific questions. Recent projects producing critical information and understanding about climate change, sea level fluctuations, hot-spot volcanism, monsoonal circulation, life in the deep biosphere, active tectonics, earthquake and volcanic hazard assessment, hydrothermal mineralization and more demonstrate the necessity for a strong and responsive SOD capability.

The success of SOD in the United States, and on U.S.-involved international projects, is dependent on the leadership of a strong *Scientific Ocean Drilling Coordination Office* (SODCO). SODCO must have the financial and managerial capacity and expertise to monitor an NSF Cooperative Agreement. A successful SODCO is needed to identify new capabilities and technologies; to establish and manage the SOD planning process; and to create a structure to facilitate and enable the ocean science community and its SOD activities, including education and public outreach activities.

## II. Program Description

NSF's Division of Ocean Sciences (OCE) within the Directorate of Geosciences (GEO) intends to continue supporting SOD after completion of the International Ocean Discovery Program (IODP) on September 30, 2024, through the submission of proposals to OCE's Ocean Drilling Program (ODP). SODCO will support or advise on an array of activities including providing contractual support for securing an appropriate platform for specific missions. In addition, SODCO will also help support instrumentation needs as well as data and sample curation needs, and potentially assist with identifying expedition staffing needs and staffing recruitment efforts.

OCE requests proposals for the establishment of a SODCO, an organization that will provide scientific leadership and oversight of SOD and sub-seafloor sampling activities funded by NSF. The proposing organization must demonstrate an in-depth understanding of current, state-of-the-art drilling technologies for recovery of rock and sediment cores and the ability to successfully manage drilling activities for the scientific community as needed. The proposing organization must also demonstrate the ability to successfully manage and monitor an NSF Cooperative Agreement.

SODCO will play a proactive role in the scientific community to encourage innovation in SOD, such as coring and downhole sampling and logging technologies in response to scientific community needs, and will help to develop new designs as requested by the scientific community. Requirements for drilling activities and development of new drilling, coring and downhole sampling tools will, to a large degree, be derived from research activities funded by NSF (including activities with international partners). As such, SODCO will also be expected to work closely with the scientific community to develop cutting edge scientific drilling, coring and downhole sampling technologies and methods and shall partner, when appropriate, with scientists on the submission of proposals seeking funding for these developments. SODCO will work closely with investigators, other agencies, contractors, and other national programs to prepare operational plans to support SOD activities worldwide, including providing detailed schedules, budgets, and resource requirements for PI-driven projects proposed to NSF.

NSF will receive and review scientific drilling proposals via standard NSF proposal submission mechanisms. If a proposal is recommended for an award, then SODCO may be requested by NSF to work with the PIs to manage the work described in the successful proposal via commercial drilling operators or other drilling organizations. These drilling activities may be supported via funding supplementary awards to SODCO and may be sub-contracted or sub-awarded to the selected drilling organization.

The recipient will prepare, and annually update, a comprehensive five-year plan for SOD development and use necessary to support the U.S. research community. This plan will include allocation of drilling infrastructure to specific projects to the degree that these commitments are known and can be estimated. To develop this document, SODCO will interact closely with the scientific community, NSF Program Managers, developers of drill core instrumentation and downhole geophysical logging tools, and industry partners.

### **Primary Tasks**

NSF will consider a wide array of possible strategies to implement such a Coordinating Office, but the essential capabilities of SODCO that should be addressed in the solicitation are:

- SODCO will assist PIs who plan to submit drilling proposals to NSF in determining appropriate platforms and technologies. This function should be performed prior to proposal submission and may be implemented via a web portal for acceptance of letters of intent or other means of information gathering. This will assist PIs of scientific projects with the development of proposals and requests for bids to provide the drilling services.
- SODCO will work with the commercial drilling community or other drilling organizations to determine the type and availability of drilling services that may be available for NSF-funded scientific projects that require ocean drilling.
- SODCO is expected to encourage innovation in SOD technologies and methods in response to scientific community needs and will help guide the development of new drilling designs as requested by the research community.
- SODCO will be expected to assist in the planning and execution of all aspects of the drilling activities that OCE supports. NSF encourages collaborations with international partners as much as is practical and with scientists funded by other sources.
- The SODCO will also be expected to provide guidance to PIs to meet core curation responsibilities as defined for legacy Deep Sea Drilling Project (DSDP), ODP, and IODP cores.

The sections below outline primary activities to be carried out by SODCO. This list is not comprehensive but is provided to enable proposers to formulate their management concepts and organizational structure.

### **Project Implementation**

- Ensure that an efficient and effective project governing structure is in place throughout the award period to support all SODCO activities. This structure will be designed to ensure close involvement of the research community in the development of SODCO capabilities, to focus scientific talent on common objectives, and to encourage broadening participation.
- Provide scientific direction and oversight of drilling projects funded by NSF that will be carried out by an organization capable of providing the necessary drilling services and with the business and financial capability to receive federal funding.
- Carry out all permitting requirements for scientific drilling activities at the expedition sites.
- Support pre-drilling activities that will strengthen science proposals that require SOD and are intended for submission to ODP or one of OCE's science programs. These activities could include scientific community planning meetings, site surveys, equipment design, and drilling plan and budget preparation.
- Provisions for curation activities must be stipulated within the proposal.

### **Scientific Community Engagement**

- Provide scientific community leadership in SOD research and development
- Establish advisory and working groups to develop long-range scientific plans for SOD
- Act as a focal point for science community input related to SOD research and drilling activities
- Develop plans for scientific workshops and conferences related to SOD
- Provide a clearinghouse for information related to SOD research and development as a service to the research community
- Coordinate information exchange between the U.S. SOD community and relevant international groups, including the International Continental Drilling Program.

### **Outreach and Education**

- Develop a website that describes current drilling capabilities that are available or in use for SOD, with examples of recent activities, as well as detailed conceptual descriptions of proposed future drilling systems.
- Develop a drilling educational program for university level students, including support for summer internships at SODCO or at an active drilling project.

In addition to the items above, proponents must describe the administrative, scientific, and technical staff required; the available office environment; and how the program will provide support services needed to ensure success of SODCO. Proposals should clearly present the management structure, capability, experience, and qualifications of the Organization(s) necessary to carry out SODCO tasks. Proposals should explain the roles and responsibilities of each known or planned team entity (including Senior/Key Personnel), the basis for its inclusion, and how it best contributes to accomplishing SOD objectives. The proposers must demonstrate a knowledge of and the ability to interact with the research community engaged in SOD. Proposing organizations must also demonstrate prior experience and current capabilities in, or have a plan for employing best practices in, broadening participation in science and engineering. The recipient organization must also demonstrate the ability to successfully manage and monitor an NSF Cooperative Agreement.

## **III. Award Information**

**Anticipated Type of Award:** Cooperative Agreement

**Estimated Number of Awards:** 1

**Anticipated Funding Amount:** \$40,000,000

Up to \$8M per year for up to 5 years pending availability of funds.

A mid-term management review will be required, which will guide a decision to re-compete or renew the Cooperative Agreement for up to a further five-year period.

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

## **IV. Eligibility Information**

### **Who May Submit Proposals:**

Proposals may only be submitted by the following:

- Institutions of Higher Education (IHEs) - Two- and four-year IHEs (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Special Instructions for International Branch Campuses of US IHEs: If the proposal includes funding to be provided to an international branch campus of a US institution of higher education (including through use of subawards and consultant arrangements), the proposer must explain

the benefit(s) to the project of performance at the international branch campus, and justify why the project activities cannot be performed at the US campus.

- Non-profit, non-academic organizations: Independent museums, observatories, research laboratories, professional societies and similar organizations located in the U.S. that are directly associated with educational or research activities.
- Tribal Nations: An American Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of the Interior acknowledges as a federally recognized tribe pursuant to the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. §§ 5130-5131.

#### **Who May Serve as PI:**

There are no restrictions or limits.

#### **Limit on Number of Proposals per Organization: 1**

One proposal per organization is allowed.

#### **Limit on Number of Proposals per PI or co-PI: 1**

One proposal per PI or co-PI is allowed.

## **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 Research.gov or Grants.gov.

- Full Proposals submitted via Research.gov: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the *NSF Proposal and Award Policies and Procedures Guide (PAPPG)*. The complete text of the PAPPG is available electronically on the NSF website at: [https://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=pappg](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg). Paper copies of the PAPPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from [nsfpubs@nsf.gov](mailto:nsfpubs@nsf.gov). The Prepare New Proposal setup will prompt you for the program solicitation number.
- 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: [https://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=grantsgovguide](https://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) 292-8134 or by e-mail from [nsfpubs@nsf.gov](mailto:nsfpubs@nsf.gov).

See PAPPG Chapter II.D.2 for guidance on the required sections of a full research proposal submitted to NSF. Please note that the proposal preparation instructions provided in this program solicitation may deviate from the PAPPG instructions.

In addition to the guidance specified in the PAPPG, the Project Description shall include the following components:

**a. Management Capability** - Clearly present the management structure, capability, experience, and qualifications of the managing organization and supporting organizations necessary to carry out the proposed scope. Clearly explain and justify the roles, responsibilities, and lines of authority for each entity (including Senior/Key Personnel within functional units of SODCO), the basis for inclusion such as the competencies they provide, and how they contribute to accomplishing SODCO's objectives. Describe plans for recruiting, developing, and retaining an expert staff and best practices for



inclusion of the full spectrum of diverse talent in science, engineering, and education at all levels within the coordination office's activities. Describe risk management practices. Discuss how any pending or existing partnership agreements of significance, as evidenced by formal memoranda/letters of agreement or intent, are likely to enhance the science goals and management of SODCO operations and maintenance.

**b. Operations** - Describe the approach to performing the proposed scope of work, including subcontracting of appropriate platforms; operations of instrumentation services, including seafloor instrumentation; data services and cyberinfrastructure; and education, outreach, workforce development, and community engagement. The following must be addressed in the Project Description: (1) key assumptions, sensitivities, risks, uncertainties, or other elements driving estimated costs, scope, and schedule, (2) associated potential impacts to science, and (3) plans on how to routinely reassess cost drivers and actual costs and make adjustments at least annually. Discuss the approach for developing a robust Annual Plan and Budget to manage SODCO operations. Describe strategies to be followed that will align with NSF's estimated annual funding threshold for SODCO operations. Describe the approach to providing and overseeing safe and reliable long-term operation of SODCO that will effectively respond to the needs of the associated scientific community. Discuss any special qualifications or organizational experience relevant to SODCO operations, cyberinfrastructure, and data delivery and how this will help to successfully perform the activities described in the prospective cooperative agreement.

For *Instrumentation Services and Data Services and Cyberinfrastructure*, discuss the scientific rationale for the portfolio of activities to be supported. Discuss how all SODCO data assets, including hardware, software, and technical data will be tracked and maintained. Discuss the lifecycle management plan and facilities for refurbishing or upgrading active infrastructure as appropriate.

Outline the plan for warehousing/storing/reusing inactive infrastructure, if any, to be removed from active operations. Discuss the approach to decision making with respect to replacing infrastructure considering scientific priorities and budgetary limitations.

For *Education, Outreach, Workforce Development, and Community Engagement*, describe and justify the proposed training and outreach efforts and their intended audiences. Describe how the coordination office will broaden participation of the full spectrum of diverse talent in STEM, including underrepresented and under-served populations. Explain how these efforts will enhance knowledge and use of SODCO data. Identify the roles of any external partners or international collaborators in these activities.

Provide a plan and detailed description of the organizational elements and procedures for establishing and managing any subawards and contracts that ensures effective and efficient performance as well as responsiveness to NSF's management specifications and requests. Describe how the proposing organization will use its internal management/advisory structure to help resolve disputes and decisions within and among its proposed governing framework.

**c. Measures of Performance** - Describe how the proposing organization will assure success relative to measures of performance applicable to operation and maintenance of SODCO and related training and other outreach activities. Include a discussion of how performance metrics and user statistics will be used to (a) assess how well SODCO is achieving its science objectives and training and outreach goals, (b) improve coordination office performance, and (c) verify consistent completion of activities defined by Annual Program Plans within budget and schedule.

Please note that all information relevant to determining the quality of the proposed work must be included as part of the Project Description.

## **B. Budgetary Information**

### **Cost Sharing:**

Inclusion of voluntary committed cost sharing is prohibited.

## **C. Due Dates**

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

July 30, 2024

#### **D. Research.gov/Grants.gov Requirements**

##### **For Proposals Submitted Via Research.gov:**

To prepare and submit a proposal via Research.gov, see detailed technical instructions available at: [https://www.research.gov/research-portal/appmanager/base/desktop?\\_nfpb=true&\\_pageLabel=research\\_node\\_display&\\_nodePath=/researchGov/Service/Desktop/ProposalPreparation](https://www.research.gov/research-portal/appmanager/base/desktop?_nfpb=true&_pageLabel=research_node_display&_nodePath=/researchGov/Service/Desktop/ProposalPreparation) For Research.gov user support, call the Research.gov Help Desk at 1-800-381-1532 or e-mail [rgov@nsf.gov](mailto:rgov@nsf.gov). The Research.gov Help Desk answers general technical questions related to the use of the Research.gov system. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this funding opportunity.

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

Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. Comprehensive information about using Grants.gov is available on the Grants.gov Applicant Resources webpage: <https://www.grants.gov/web/grants/applicants.html>. In addition, the NSF Grants.gov Application Guide (see link in Section V.A) provides instructions regarding the technical preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: [support@grants.gov](mailto: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 Research.gov for further processing.

The NSF [Grants.gov Proposal Processing in Research.gov informational page](#) provides submission guidance to applicants and links to helpful resources including the NSF [Grants.gov Application Guide](#), [Grants.gov Proposal Processing in Research.gov how-to guide](#), and [Grants.gov Submitted Proposals Frequently Asked Questions](#). Grants.gov proposals must pass all NSF pre-check and post-check validations in order to be accepted by Research.gov at NSF.

When submitting via Grants.gov, NSF strongly recommends applicants initiate proposal submission at least five business days in advance of a deadline to allow adequate time to address NSF compliance errors and resubmissions by 5:00 p.m. submitting organization's local time on the deadline. Please note that some errors cannot be corrected in Grants.gov. Once a proposal passes pre-checks but fails any post-check, an applicant can only correct and submit the in-progress proposal in Research.gov.

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

#### **VI. NSF Proposal Processing And Review Procedures**

Proposals received by NSF are assigned to the appropriate NSF program for acknowledgement and, if they meet NSF requirements, for review. All proposals are carefully reviewed by a scientist, engineer, or educator serving as an NSF

Program Officer, and usually by three to ten other persons outside NSF either as *ad hoc* reviewers, panelists, or both, who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with oversight of the review process. Proposers are invited to suggest names of persons they believe are especially well qualified to review the proposal and/or persons they would prefer not review the proposal. These suggestions may serve as one source in the reviewer selection process at the Program Officer's discretion. Submission of such names, however, is optional. Care is taken to ensure that reviewers have no conflicts of interest with the proposal. In addition, Program Officers may obtain comments from site visits before recommending final action on proposals. Senior NSF staff further review recommendations for awards. A flowchart that depicts the entire NSF proposal and award process (and associated timeline) is included in PAPPG Exhibit III-1.

A comprehensive description of the Foundation's merit review process is available on the NSF website at: [https://www.nsf.gov/bfa/dias/policy/merit\\_review/](https://www.nsf.gov/bfa/dias/policy/merit_review/).

Proposers should also be aware of core strategies that are essential to the fulfillment of NSF's mission, as articulated in [Leading the World in Discovery and Innovation, STEM Talent Development and the Delivery of Benefits from Research - NSF Strategic Plan for Fiscal Years \(FY\) 2022 - 2026](#). These strategies are integrated in the program planning and implementation process, of which proposal review is one part. NSF's mission is particularly well-implemented through the integration of research and education and broadening participation in NSF programs, projects, and activities.

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

NSF's mission calls for the broadening of opportunities and expanding participation of groups, institutions, and geographic regions that are underrepresented in STEM disciplines, which is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

## **A. Merit Review Principles and Criteria**

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

### **1. Merit Review Principles**

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

- All NSF projects should be of the highest quality and have the potential to advance, if not transform, the frontiers of knowledge.
- NSF projects, in the aggregate, should contribute more broadly to achieving societal goals. These "Broader Impacts" may be accomplished through the research itself, through activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. The project

activities may be based on previously established and/or innovative methods and approaches, but in either case must be well justified.

- Meaningful assessment and evaluation of NSF funded projects should be based on appropriate metrics, keeping in mind the likely correlation between the effect of broader impacts and the resources provided to implement projects. If the size of the activity is limited, evaluation of that activity in isolation is not likely to be meaningful. Thus, assessing the effectiveness of these activities may best be done at a higher, more aggregated, level than the individual project.

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

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

## 2. Merit Review Criteria

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

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

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

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

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

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

Broader impacts may be accomplished through the research itself, through the activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. NSF values

the advancement of scientific knowledge and activities that contribute to achievement of societally relevant outcomes. Such outcomes include, but are not limited to: full participation of women, persons with disabilities, and other underrepresented groups in science, technology, engineering, and mathematics (STEM); improved STEM education and educator development at any level; increased public scientific literacy and public engagement with science and technology; improved well-being of individuals in society; development of a diverse, globally competitive STEM workforce; increased partnerships between academia, industry, and others; improved national security; increased economic competitiveness of the United States; and enhanced infrastructure for research and education.

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

### **Additional Solicitation Specific Review Criteria**

Proposals will be assessed according to the credentials of the proposing group, which must demonstrate expertise and past accomplishments in SOD, the ability to develop new cutting-edge drilling technologies, as well as the ability to interact with the academic research community and industry. This should include, but is not limited to, a demonstrated ability in project management and oversight, advisory committee organization, developing and managing educational and outreach programs, interactive web site development, and the ability to work with the research community and NSF to plan and manage successful drilling operations. The proposing organization must also demonstrate the ability to successfully manage and monitor an NSF Cooperative Agreement. A lead principal investigator must be designated who will have direct day-to-day involvement with these activities and who will serve as the point of contact for OCE.

### **B. Review and Selection Process**

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

Reviewers will be asked to evaluate proposals using two National Science Board approved merit review criteria and, if applicable, additional program specific criteria. A summary rating and accompanying narrative will generally be completed and submitted by each reviewer and/or panel. The Program Officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation.

After scientific, technical and programmatic review and consideration of appropriate factors, the NSF Program Officer recommends to the cognizant Division Director whether the proposal should be declined or recommended for award. NSF strives to be able to tell proposers whether their proposals have been declined or recommended for funding within six months. Large or particularly complex proposals or proposals from new recipients may require additional review and processing time. The time interval begins on the deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director acts upon the Program Officer's recommendation.

After programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements or the Division of Acquisition and Cooperative Support for review of business, financial, and policy implications. After an administrative review has occurred, Grants and Agreements Officers perform the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at their own risk.

Once an award or declination decision has been made, Principal Investigators are provided feedback about their proposals. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers or any reviewer-identifying information, are sent to the Principal Investigator/Project Director by the Program Officer. In addition, the proposer will receive an explanation of the decision to award or decline funding.

## **VII. Award Administration Information**

### **A. Notification of the Award**

Notification of the award is made to *the submitting organization* by an NSF Grants and Agreements Officer. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See Section VI.B. for additional information on the review process.)

## **B. Award Conditions**

An NSF award consists of: (1) the award notice, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award notice; (4) the applicable award conditions, such as Grant General Conditions (GC-1)\*; or Research Terms and Conditions\* and (5) any announcement or other NSF issuance that may be incorporated by reference in the award notice. Cooperative agreements also are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC) and the applicable Programmatic Terms and Conditions. NSF awards are electronically signed by an NSF Grants and Agreements Officer and transmitted electronically to the organization via e-mail.

\*These documents may be accessed electronically on NSF's Website at [https://www.nsf.gov/awards/managing/award\\_conditions.jsp?org=NSF](https://www.nsf.gov/awards/managing/award_conditions.jsp?org=NSF). Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from [nsfpubs@nsf.gov](mailto: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 *Proposal & Award Policies & Procedures Guide* (PAPPG) Chapter VII, available electronically on the NSF Website at [https://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=papppg](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=papppg).

## **Administrative and National Policy Requirements**

### **Build America, Buy America**

As expressed in Executive Order 14005, [Ensuring the Future is Made in All of America by All of America's Workers](#) (86 FR 7475), it is the policy of the executive branch to use terms and conditions of Federal financial assistance awards to maximize, consistent with law, the use of goods, products, and materials produced in, and services offered in, the United States.

Consistent with the requirements of the Build America, Buy America Act (Pub. L. 117-58, Division G, Title IX, Subtitle A, November 15, 2021), no funding made available through this funding opportunity may be obligated for an award unless all iron, steel, manufactured products, and construction materials used in the project are produced in the United States. For additional information, visit NSF's [Build America, Buy America](#) webpage.

### **Special Award Conditions:**

The award associated with this solicitation will be a Cooperative Agreement (CA), not a standard grant or a contract, that will fund annual SODCO operations in accordance with approved Annual Program Plans. Any special requirements not stated herein will be negotiated at the time of award.

The cooperative agreement awarded as a result of this competition will be administered by the cognizant NSF Program Officer in cooperation with the submitting organization. The following measures will be employed in providing oversight for the cooperative agreement: Review of annual project reports, program plans, and performance metrics; Review of research and education activities and management performance annually throughout the five-year award; Site visits annually, or as necessary.

News releases and other similar items prepared by the recipient and/or its subawardees/employees that describe SODCO activities or research results will be submitted to the NSF Program Officer by email for review at least five business days prior to proposed publication and will acknowledge the sponsorship of the NSF. Public information brochures, and other similar SODCO-related material prepared by the recipient, will be sent to the NSF before being made available to the public.

The recipient will follow [NSF Logos and Usage Standards](#) including but not limited to acknowledgement of the support of the NSF on any signs identifying SODCO at its various locations. An acknowledgement of NSF support and disclaimer must appear in any publication of any material based upon or developed under this award in substantially the following terms: "SODCO is sponsored by the National Science Foundation. Any opinions, findings and conclusions or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the National Science Foundation." (The preceding sentence may be omitted from scientific articles or papers published in scientific journals.) Also, support of other agencies or international contributors shall be acknowledged as appropriate.

### **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 no later than 90 days prior to the end of the current budget period. (Some programs or awards require submission of more frequent project reports). No later than 120 days following expiration of a grant, the PI also is required to submit a final annual project report, and a project outcomes report for the general public.

Failure to provide the required annual or final annual project reports, or the project outcomes report, will delay NSF review and processing of any future funding increments as well as any pending proposals for all identified PIs and co-PIs on a given award. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF's electronic project-reporting system, available through [Research.gov](#), for preparation and submission of annual and final annual project reports. Such reports provide information on accomplishments, project participants (individual and organizational), publications, and other specific products and impacts of the project. Submission of the report via [Research.gov](#) constitutes certification by the PI that the contents of the report are accurate and complete. The project outcomes report also must be prepared and submitted using [Research.gov](#). This report serves as a brief summary, prepared specifically for the public, of the nature and outcomes of the project. This report will be posted on the NSF website exactly as it is submitted by the PI.

More comprehensive information on NSF Reporting Requirements and other important information on the administration of NSF awards is contained in the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) Chapter VII, available electronically on the NSF Website at [https://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=papppg](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=papppg).

In addition to the annual project report, the recipient will also submit a draft Annual Program Plan and Budget in advance of the next funding increment for the upcoming fiscal year of support of SODCO. The draft approved Annual Program Plan and Budget (APP) will serve to guide SODCO operations for each respective year during the cooperative agreement period of performance. The draft APP will be refined and submitted to the NSF Program Officer for approval a minimum of 90 days prior to the start of the new program operational year. Significant changes, apparent to the recipient or identified by the NSF Program Officer, in objectives or activities described in the APP, must be approved by the NSF Grants and Agreements Officer prior to implementation. The impacts and reasons for the proposed changes must be explained. The changes may or may not require modification of the approved budget. The recipient shall provide NSF Program Officials with copies of all significant revisions to documentation, upon request, substantiating all changes to the APB, whether or not NSF approval is required.

- Budget report summarizing expenditures during the current reporting period; and
- Milestone schedule status report including a list and description of milestones and activities completed, replanned or missed.

**Regular Informal Reports** including communication with the Cognizant NSF Program Officers and Grants and Agreements Officer.

### **VIII. Agency Contacts**

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

General inquiries regarding this program should be made to:

- Kevin T. Johnson, telephone: (703) 292-7442, email: [ktjohnso@nsf.gov](mailto:ktjohnso@nsf.gov)

For questions related to the use of NSF systems contact:

- NSF Help Desk: 1-800-381-1532
- Research.gov Help Desk e-mail: [rgov@nsf.gov](mailto:rgov@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](mailto:support@grants.gov).

## IX. Other Information

The NSF website provides the most comprehensive source of information on NSF Directorates (including contact information), programs and funding opportunities. Use of this website by potential proposers is strongly encouraged. In addition, "NSF Update" is an information-delivery system designed to keep potential proposers and other interested parties apprised of new NSF funding opportunities and publications, important changes in proposal and award policies and procedures, and upcoming NSF [Grants Conferences](#). Subscribers are informed through e-mail or the user's Web browser each time new publications are issued that match their identified interests. "NSF Update" also is available on [NSF's website](#).

Grants.gov provides an additional electronic capability to search for Federal government-wide grant opportunities. NSF funding opportunities may be accessed via this mechanism. Further information on Grants.gov may be obtained at <https://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 55,000 proposals each year for research, education and training projects, of which approximately 11,000 are funded. In addition, the Foundation receives several thousand applications for graduate and postdoctoral fellowships. The agency operates no laboratories itself but does support National Research Centers, user facilities, certain oceanographic vessels and Arctic and Antarctic research stations. The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

*Facilitation Awards for Scientists and Engineers with Disabilities (FASED)* provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See the *NSF Proposal & Award Policies & Procedures Guide* Chapter II.F.7 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 <https://www.nsf.gov>

- **Location:** 2415 Eisenhower Avenue, Alexandria, VA 22314
- **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](mailto:nsfpubs@nsf.gov)
  - or telephone: (703) 292-8134
- **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 proposers 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 proposers 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 [System of Record Notices, NSF-50](#), "Principal Investigator/Proposal File and Associated Records," and [NSF-51](#), "Reviewer/Proposal File and Associated Records." 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  
Policy Office, Division of Institution and Award Support

Office of Budget, Finance, and Award Management  
National Science Foundation  
Alexandria, VA 22314

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