Management and Operation of the Ocean Observatories Initiative (OOI)

PROGRAM SOLICITATION
NSF 17-524

National Science Foundation

Directorate for Geosciences
Division of Ocean Sciences

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

January 18, 2017

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

April 17, 2017

IMPORTANT INFORMATION AND REVISION NOTES

Letters of Intent submitted in response to this solicitation should be submitted in accordance with the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) (NSF 16-1).

Full Proposals submitted in response to this solicitation should be submitted in accordance with the revised NSF PAPPG (NSF 17-1), which is effective for proposals submitted, or due, on or after January 30, 2017.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Management and Operation of the Ocean Observatories Initiative (OOI)

Synopsis of Program:

The OOI is a large scale ocean observing system constructed and deployed under NSF sponsorship and oversight as a Major Research Equipment and Facilities Construction (MREFC) Project. The system includes an integrated network of cabled and uncabled arrays of instrumentation, distributed in various coastal and global ocean locations, to facilitate Ocean Science research. Since construction was completed in 2016, the OOI has been in operational status at an approximate funding level of $55,000,000 ($55M) per year.

The existing Cooperative Agreement (CA) for Construction and Initial Operation of the facility extends from September 2009 through April 2017. A National Research Council (NRC) review commissioned by NSF to examine the balance of Ocean Science research and infrastructure costs over the next decade resulted in NSF developing an implementation plan that will require significant changes to the facility operation envisioned by the current CA. The new approaches required for managing and operating the OOI in the best interest of U.S. science will most effectively be implemented by a new operating model that encourages greater efficiency, innovation, and collaboration.

This solicitation seeks the services of a qualified organization to provide scientific and technical management and operation of the OOI consistent with National Science Board policy and NSF's decisions regarding NRC recommendations. The initial period of the award is intended to cover five years, plus a maximum 6 month transition period if required, with performance expected to begin in late-2017.

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.

- Bauke Houtman, telephone: (703) 292-8583, email: bhoutman@nsf.gov
- Lisa M. Clough, telephone: 703-292-4746, email: lclough@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

Anticipated Funding Amount: $221,000,000

Annual Funding amounting to $44,000,000 for each year of operations is currently anticipated. Additional funding of up to $1,000,000 may be requested to support a transition period of up to 6 months in duration.

Eligibility Information

Who May Submit Proposals:

Proposals may only be submitted by the following:

- Universities and Colleges - Universities and two- and four-year colleges (including community colleges) accredited in, and having a campus located in, the US acting on behalf of their faculty members. Such organizations also are referred to as academic institutions.
- Non-profit, non-academic organizations: Independent museums, observatories, research labs, professional societies and similar organizations in the U.S. associated with educational or research activities.

Who May Serve as PI:

There are no restrictions or limits.

Limit on Number of Proposals per Organization: 1

1 as Lead Awardee. No limit as a subawardee.

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

No Limit.

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Submission of Letters of Intent is required. Please see the full text of this solicitation for further information.
- **Preliminary Proposal Submission:** Not required
- **Full Proposals:**
  - Full Proposals submitted via FastLane: NSF Proposal and Award Policies and Procedures Guide, Part I: Grant Proposal Guide (GPG) Guidelines apply. The complete text of the GPG is available electronically on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg.
  - Full Proposals submitted via Grants.gov: NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov Guidelines apply (Note: The NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide)

B. Budgetary Information

- **Cost Sharing Requirements:**

  Inclusion of voluntary committed cost sharing is prohibited.

- **Indirect Cost (F&A) Limitations:**

  Not Applicable

- **Other Budgetary Limitations:**

  Other budgetary limitations apply. Please see the full text of this solicitation for further information.

C. Due Dates

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

  January 18, 2017

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

  April 17, 2017

Proposal Review Information Criteria

Merit Review Criteria:

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

Award Administration Information

Award Conditions:

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

Reporting Requirements:

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

TABLE OF CONTENTS

I. INTRODUCTION

The National Science Foundation (NSF) is authorized by the National Science Act of 1950, as amended, to initiate and support basic and applied research and programs to strengthen scientific research potential. To achieve these goals, NSF supports facilities that provide research capabilities in various scientific disciplines. One such facility, the Ocean Observatories Initiative (OOI), provides services and infrastructure to support research and education in the Ocean Sciences.

The OOI consists of an integrated network of cabled and uncabled arrays of instrumentation distributed in various coastal and global ocean locations. Data flow is enabled by an integrated system of hardware and software (“cyberinfrastructure”) that receives, processes, and broadly distributes measurements from over 800 instruments in the fixed and mobile locations comprising the observatory. The OOI is designed to accommodate new instruments to support future work proposed by the user community.

This infrastructure facilitates interdisciplinary investigation of short-term meteorological, tectonic, volcanic, geological, geophysical and ecological events, as well as long-term trends in ocean circulation patterns, climate change, ocean acidity, geophysical events and ecosystems. Research pertaining to several multi-disciplinary domains and associated scientific questions is made possible by the OOI, including but not limited to those related to:

- Ocean-Atmosphere Exchange.
- Climate Variability, Ocean Circulation, and Ecosystems.
- Turbulent Mixing and Biophysical Interactions.
- Coastal Ocean Dynamics and Ecosystems.
- Fluid-Rock Interactions and the Sub-seafloor Biosphere.
- Plate-Scale, Ocean Geodynamics.

The OOI construction was completed operational status was achieved at a funding level of $55M for 2016. The period of performance for the existing Cooperative Agreement for Construction and Initial Operation of the facility concludes in April 2017, although this may be extended as needed to allow for a transition period to a new CA. The current Awardee, the Consortium for Ocean Leadership (COL), serves as the Program Office for the OOI and is the prime party to large subawards with Woods Hole Oceanographic Institution (WHOI) for the Global and the eastern Coastal Arrays, Oregon State University (OSU) for the western Coastal Array, the University of Washington (UW) for the Regional Cabled Array and Rutgers University for the Cyberinfrastructure component.

As a result of the trend of escalating facilities costs relative to funding available for Principal Investigator (PI)-driven research, the NSF Division of Ocean Sciences commissioned an independent review by the Ocean Studies Board, Division of Earth and Life Studies of the National Research Council (NRC).to prioritize science questions and drivers for the next decade and to analyze the research infrastructure needed to address these drivers. The report titled "Sea Change 2015-2025 Decadal Survey of Ocean Sciences" (hereafter, "*Sea Change*") was completed in early 2015 (https://www.nap.edu/catalog/21655/sea-change-2015-2025-decadal-survey-of-ocean-sciences). The report included several recommendations to sustain NSF's core ocean research programs during expected periods of declining or flat budgets, one of which was an immediate 10% overall reduction of funding for major infrastructure supported by NSF's Division of Ocean Sciences (NSF-OCE). The recommendation also included a weighted decrease of 20% in annual Management and Operation costs for the OOI Program. As described in NSF-OCE's reply to *Sea Change* (http://www.nsf.gov/geo/oce/pubs/nsf-oce-sea-change-reply-may-11-2015.pdf), NSF determined the most effective way of implementing this recommendation is through an open re-competition of the expiring Cooperative Agreement that encourages greater emphasis on efficiency, innovation and collaboration. This approach supports the National Science Board principle of conducting a review to determine if the best interest of U.S. science and engineering is still being served by the OOI while also ensuring optimum scientific impact and the most effective use of taxpayer dollars.

Accordingly, this solicitation seeks the services of a qualified organization or consortium, through a Cooperative Agreement, to provide technical management and, in partnership with an independent board, scientific management and operation of the OOI. The Awardee will work closely with NSF and the scientific community to ensure that OOI capabilities support, sustain, and advance frontier science within available resources. Also, the Awardee will plan and execute a viable, coherent, and inclusive program to support multi-user research and education, consistent with guidance and independent oversight provided by the scientific community.

The initial period of the award is intended to cover five years beginning in late 2017 or as soon as a new Cooperative Agreement is in place. The five year period can be extended by a transition period of up to six (6) months from award receipt to the full transfer of operating authority for proposing organizations other than the incumbent. Annual Reviews will be conducted in addition to a comprehensive Management Review after the first three years of Awardee performance. Results of the latter review will guide a decision to re-compete or renew the Cooperative Agreement for a second five year period, with renewal also contingent on submission of a meritorious proposal.

II. PROGRAM DESCRIPTION

A. Background

A major theme of *Sea Change* is that steadily rising costs for OCE's large infrastructure, such as the OOI, pose significant challenges to NSF's fundamental mission of supporting core scientific research and technological innovation. The report acknowledged that the OOI offers unique and unprecedented opportunities to study ocean processes. The intent of this solicitation is to move forward with this program and implement the Sea Change recommendation to reduce NSF's annual OOI funding by ~20%, from the current level of ~$55,000,000 ($55M) to ~$44,000,000 ($44M).

It is expected that proposers will explore innovative operational and management approaches to maximizing OOI data flow to the research community within the $44M operations budget level. Domestic and international partnerships that offer cost savings with academic, commercial, governmental, and/or non-profit institutions are encouraged. Rationale for proposed scope reductions of marine and/or cyberinfrastructure components, if any, to achieve annual budget limits must be provided. Proposers should draw upon guiding documents such as *Sea Change*, OOI science planning documents, and other documentation and community driven efforts to structure their response in terms of geographic coverage, scientific focus, technological capability, and budgetary projections.

B. Description of the OOI Facility

A detailed description of OOI components, sites, instruments and equipment is available at the OOI website (http://oceanobservatories.org). The exact configuration of the system at each site at any particular time will depend upon the results of the most recent deployment and recovery cruises. The OOI includes four global-scale high-latitude mooring arrays, a regional cabled array, and two coastal arrays. There are a total of 41 instrumented moorings with two-way communications, a fleet of 32 instrumented gliders, more than 900 kilometers of undersea cable, and over 800 instruments distributed throughout the observatory. The associated cyberinfrastructure component supports advanced acquisition, storage, management, integration, and visualization of data via the internet for open, unrestricted use by the entire science community as well as the general public.

B.1 Global Component Overview

The Global Arrays are located at Station Papa in the North Pacific (50^{o} N, 145^{o} W), the Irminger Sea southwest of Greenland (60^{o} N, 39^{o} W), the Argentine Basin in the South Atlantic (42^{o} S, 42^{o} W) and the Southern Ocean southwest of Chile (55^{o} S, 90^{o} W). Each site includes one Surface Mooring, one Subsurface Profiler Mooring co-located with the Surface Mooring, two Flanking Subsurface Moorings, three Open Ocean Gliders that traverse within the mooring array, and two Profiling Open Ocean Gliders that sample the water column near the Profiler Mooring. Station Papa is unique in that the Surface Mooring at the site is operated and maintained by the National Oceanic and Atmospheric Administration, with other elements of the array operated and maintained by the NSF. The Surface Moorings and Flanking Subsurface Mooring positions form an equilateral triangle with side lengths approximately ten times the water depth at the respective locations. Since the water depth range varies between 2800 meters at the Irminger Sea location and 5200 meters at the Argentine Basin, there are significant differences in total area observed within each global array. Also, water depth at the Irminger Sea site requires only one wire-following profiler while the other, deeper sites require two. Power needs of the moorings and gliders are provided by long lasting, high capacity batteries. Battery power for the surface moorings is augmented by integrated wind and solar power sources.

B.2 Coastal Component Overview

The Coastal component of the OOI includes the Pioneer Array, located south of Martha's Vineyard off the coast of New England in the Atlantic Ocean, and the Endurance Array, with elements located in two lines in the Pacific Ocean, one west of Grays Harbor, WA, and the other west of Newport, Oregon. The Pioneer Array is planned to be relocatable, with relocation to be addressed through a separate NSF proposal process on a timeframe decided by the community and in discussion with NSF. Although Pioneer and Endurance have many similarities in terms of the scientific instrumentation and gliders deployed, there is less commonality in their overall configuration than that found between the global array sites.

Pioneer Array infrastructure includes three surface moorings, five profiler moorings, and two surface-piercing profiler moorings.

Associated mobile assets include six gliders, instrumented and designed to acquire water column data in areas beyond the outer perimeter formed by the fixed moorings. Pioneer Surface Moorings include a surface buoy section, a mooring riser section positioned 5 meters below the sea surface, and a multifunction node located 2 meters above the seafloor. Equivalent sections of the three surface moorings are outfitted with comparable instrumentation suites. The surface moorings are also equipped with wind and solar power generation capability. The five Pioneer Profiler Moorings include a standard suite of instruments mounted on a wire following profiler that moves between 15 meters below the sea surface to 3 meters above the seafloor. Two Surface Piercing Profiler Moorings equipped with identical instrumentation packages can move from the sea surface to 2 meters above the seafloor. The six Pioneer Gliders traverse from the sea surface to a maximum depth of 1000 meters at speeds up to approximately 0.35 meters/second. Power for each Profiler Mooring, Surface Piercing Mooring and Glider is provided by high capacity batteries on each unit that enable extended (six month) operations. There is no cabled power for the Pioneer Array.

Endurance Array infrastructure includes surface moorings, profiler moorings, surface-piercing profiler moorings, and gliders deployed along lines extending from inshore to offshore from the coast of Oregon (~44.66^{o} N) and the coast of Washington (~47.1^{o} N). The Oregon line includes three surface moorings (located inshore, shelf and offshore), two profiler moorings (shallow and deep), two surface-piercing profiler moorings (inshore and shelf), and two seafloor mounted Benthic Experiment Packages (BEPs) located on the shelf and offshore. One primary node from the regional cabled array supplies power and communications to the profiler moorings and one BEP. A second primary node from the cabled array is connected to one of the surface piercing profilers and the remaining BEP sited on the shelf. The Washington line includes three surface moorings (located inshore, shelf and offshore), a single offshore profiler and mooring, and two surface-piercing profiler moorings (inshore and shelf). No BEPs are deployed on the Washington line and this line is not connected with the cabled array. Mobile assets include six instrumented coastal gliders, half of which have shallow dive (200m) capability and half of which are equipped for deep dives (1000m). Moorings that are not connected to the cabled array are similar in design between the Washington and Oregon lines as well as between the Endurance and Pioneer Coastal Arrays. Mooring instrumentation suites are also largely similar, although differences exist due to different areas of research emphasis between sites. There is standardization between instruments intended for measurement of the same set of variables.

B.3 Regional Cabled Component Overview

The Regional Cabled Array includes approximately 900 kilometers of fiber optic cable and connected instruments (primary infrastructure) to stream seafloor and water column data across the Juan de Fuca tectonic plate. A Shore Station in Pacific City, Oregon supplies high power and high bandwidth to seven subsea terminals (primary nodes), which convert high power voltage (10 kV) to a lower level (375 V) for distribution to a total of 17 medium and low power junction boxes connected by approximately 60 kilometers of extension cables to scientific instrumentation (secondary infrastructure). Primary nodes are located in the general area of Axial Seamount (46^{o} N, 130^{o} W), Hydrate Ridge (45^{o} N, 125^{o} W) and at a mid-plate location between the two sites. The Axial Seamount site is served by two primary nodes, one of which is connected exclusively to seafloor instrumentation at Axial Caldera, with the second serving both seafloor instrumentation and water column profiler moorings at nearby Axial Slope Base. Similarly, the site at Hydrate Ridge is served by two primary nodes, one of which is connected exclusively to seafloor instrumentation at the ridge peak, with the second serving both seafloor instrumentation and water column profiler moorings at the Slope Base. Two additional primary nodes serving cabled moorings for the Endurance Coastal Array are located inshore from Hydrate Ridge and the mid-plate node.

B.4 Cyberinfrastructure Component Overview

The Cyberinfrastructure serves to integrate and manage data received from the global, coastal, and regional cabled components of the OOI and to continuously distribute observatory data online to scientists and other interested users. Through the OOI website, users have the capability to view or download one or more data products from any platform or instrument within the observatory in various formats, and will have access to any documents or reports hosted within the cyberinfrastructure.

C. Description of Awardee Responsibilities

C.1 Core Expectations

The Awardee will work closely with NSF and the scientific research community to ensure that the Ocean Observatories Initiative continues to support, sustain and advance frontier science as enabled by the OOI's unique research capabilities and as promoted through a culture of excellence. The Awardee will manage facilities and equipment provided by NSF to fulfill the approved programmatic scope, and will provide support and technical personnel to manage and operate the OOI as a well-integrated research facility.

The observatory is intended for operations 24 hours per day 7 days a week. This operational tempo requires the Awardee to identify, acquire, and manage the resources and scientific/technical expertise to monitor and maintain data flows enabled by OOI marine and cyber infrastructure. Around-the-clock monitoring of OOI operations may not be required, but the capability to identify and take mitigating or corrective action in response to actual or potential malfunctions is required on a continuous basis.

Marine infrastructure must be periodically turned, that is, retrieved and replaced with a fully instrumented standby unit that has been refurbished or, in some instances, newly fabricated. The global moorings and gliders are currently designed to operate on an annual turn cycle. The cabled moorings in the Endurance Coastal Array are also currently designed to be turned annually, while cabled seafloor instrumentation is turned according to the maintenance schedule for specific instruments and platforms. Uncabled Coastal Moorings are currently designed to be turned every 6 months, with a more frequent 3 month turn cycle applied to Coastal Gliders and Coastal Surface Piercing Profilers. These intervals, identified here and required in Section C.2 below, are based on available technology incorporated into the current design. Less frequent turn cycles, if possible and without compromising delivered data, would be significantly advantageous to OOI Management and Operations.

Ship and Technician time aboard suitably equipped vessels is required for the retrieve/deploy turn evolutions. Capability to provide the use, transport and deployment of a Remotely Operated Vehicle (ROV) by a suitably equipped ship is required for servicing the cabled seafloor instrumentation and platforms.

Through this solicitation, NSF-OCE intends to support Management and Operation of the OOI facility within available resources while maximizing its benefits for the scientific community and other stakeholders. The effort includes a 5-year base performance period with an option for an additional 5 years. Work will be performed in accordance with the prospective Cooperative Agreement and each year's approved Annual Work Plan (AWP). AWPs to manage and operate all facets of the OOI will include a detailed budget for each task element described below, itemized by expected costs of salaries and fringe benefits, travel, supplies, shipping, communication, ship operations, other contractual services, equipment, other direct costs, etc. The AWP will be consistent with *Sea Change* recommendations as well as NSF's reply to *Sea Change*, and will be capped at a not-to-exceed amount of $44M per year, for each of the 5 years. The Awardee will ensure that planning, executing, and reporting of science operations of the OOI integrates the requirements of NSF with the needs of the associated scientific community and associated stakeholders.

C.2 External Advisory Structure and Governance

An Ocean Observatories Initiative Facility Board (OOIFB) will be separately established by NSF to provide independent input and guidance to the OOI Management and Operations Awardee resulting from this Solicitation. Key responsibilities of the OOIFB will include:

- Providing leadership and guidance as to the appropriateness of Awardee Annual Work Plans in fulfilling the OOI Science Plan.
- Establishing subpanels as required for the purpose of obtaining in-depth assessments of highly specialized aspects of OOI components and operations.
- Serving as the primary conduit and liaison between the OOI community and the successful proposer for this Solicitation.
- Assisting in identifying and developing collaborative relationships with potential governmental, industrial, and international partners in the OOI, where appropriate.
- Monitoring the appropriateness of existing performance standards for hardware and cyberinfrastructure, and
- Facilitating development and evolution of practices and technologies to increase the scientific utility of the OOI.

Membership of the OOIFB will include at least seven non-conflicted members of the oceanographic science community, one of whom will serve as Chair. The OOIFB will include two representatives from the Awardee in addition to the non-conflicted scientists. As a minimum, OOIFB meetings will convene at least annually and minutes will be made publically available. Representatives from OOI partner members, UNOLS and NSF will also be invited to participate in the meetings. The Awardee will be expected to establish and maintain regular interaction with the OOIFB during the performance period of the CA.

C. 3 Statement of Work

Proposals submitted pursuant to this solicitation must be based on a detailed, integrated, and well-defined Work Breakdown Structure (WBS) and its associated WBS Dictionary. Each section of the Project Description and each element of the proposed budget must be tied clearly and directly to the proposal WBS. The WBS shall include but not be limited to the activities described in the following tasks:

1. Management and Operations

For the organizational structure and staff, the Awardee, with a single entity designated as the Lead, will provide expertise, vision, and leadership in planning, coordinating, overseeing, reviewing, and reporting of OOI operations. This will include:

- Managing activities, equipment, and facilities required to procure operational material, implement defined operational processes, obtain and manage subawardee and subcontractor support as needed.
- Tracking and managing observatory assets.
- Managing subawardee and subcontractor support to ensure the cyberinfrastructure component provides technical quality and consistency of products, services and processes for continuous OOI operations.
- Managing and controlling program operations budgets and expenditures.
- Planning and coordinating training necessary for system operations.
- Implementing Configuration Management and Change Control Plans, convening change control boards, administering change orders, and maintaining updated OOI documentation.
- Addressing environmental, health, and safety issues affecting each OOI component.
- Preparing Annual Work Plans that describe operational plans and associated budgets.
- Developing and implementing metrics to assess and improve the OOI performance.
- Maintaining liaison with a separately funded, OOI External Advisory Structure formed by NSF.
- Reporting in accordance with program requirements.
- Community interaction.

For the Marine Components of the OOI (Global, Coastal, and Regional Cabled Arrays), the Awardee, inclusive of subawardees, will provide and manage the resources to accomplish effective Management and Operation. This will include:

- Configuring, monitoring, and controlling moored and cabled equipment, and gliders.
- Managing maintenance and refurbishment of instrumentation, equipment, and infrastructure.
- Planning and coordinating cruise activities required for deployment and recovery of the marine elements of the OOI.
- Monitoring and integrating quality data products from the Global, Coastal, and Regional Cabled components with OOI Cyberinfrastructure.
- Executing and maintaining licenses and permits associated with the Regional Cabled and Cabled Coastal Endurance on-shore and offshore infrastructure.
- Managing telemetry fees and fuel costs associated with installed or in-test equipment.
- Managing technical and engineering support as needed to resolve system and equipment failures.
- Planning and managing periodic actions necessary to relocate the Pioneer Array based on operational site durations of 5 to 7 years, with relocation addressed through an NSF proposal process, which will include discussions with the community and NSF on budget and timeframe criteria.

The Awardee will also provide the resources necessary for Management and Operation of OOI cyberinfrastructure. Activities associated with this element include:

- Assuring readiness of the system for data delivery.
- Providing technical support to Users of the Observatory data products.
- Maintaining software licenses necessary for system operation.
- Maintaining and upgrading network and hardware infrastructure for optimal performance.
- Maintaining data product quality and application utility through robust service performance monitoring.
- Reporting of system status to all users.

2. Refurbishment

This task includes the effort needed to prepare recovered marine infrastructure, such as moorings, nodes, instruments, and other subassemblies for their next deployment. It should include an operations review and improvement approach and may require engineering support but will not include new instrument development work. Activities include coordinating with instrument and equipment vendors, executing equipment and material procurements, providing labor to clean, disassemble, renew or replace parts and/or equipment, and reassembling, integrating and testing moorings and sub-assemblies to meet scheduled array turns and deployment cruises. Future extension of the currently required refurbishment intervals identified below would be a programmatic advantage.

A. Global Array Refurbishment

For the Global Array sites, the deployment/recovery operational turns are currently on a 12 month cycle and the Awardee is expected to provide at least the same level of performance during working conditions governed by an acceptable “weather window”

as defined by likely wind and wave conditions. Activities include providing labor, material, equipment, parts, and supplies to refurbish:

- Global Surface Moorings.
- Flanking Moorings.
- Hybrid Profilers.
- Global Gliders.
- Global Instruments.

Refurbishments to support the 12 month turns are expected to vary to some degree between the Arrays, and planning must be tailored accordingly. The Global Surface Mooring at Station Papa will be refurbished and maintained by NOAA.

B. Coastal Array Refurbishment

For the Pioneer and Endurance Coastal Moorings, the deployment/recovery operational turns for each uncabled site is currently on a 6 month cycle and the Awardee is also expected to provide at least the same level of performance during working conditions governed by an acceptable “weather window” as defined by likely wind and wave conditions. Activities include providing labor, material, equipment, parts, and supplies to refurbish:

- Coastal Surface Moorings.
- Coastal Profiler Moorings.
- Coastal Surface Piercing Profilers (CSPP).
- Coastal Instruments.

Exceptions to the 6 month deployment/recovery scenario for OOI Coastal Components include the Coastal Gliders and Coastal Surface Piercing Profiler Moorings, which currently require refurbishment on a 3 month cycle, and the Cabled Moorings of the Endurance Array, which currently require a 12 month cycle.

C. Regional Cabled Array Refurbishment

The Awardee will perform deployment/recovery operational turns during favorable weather windows for the Regional Cabled Array on a 12 month cycle. This will require developing equipment specific plans for each turn cycle since it is not expected that all elements of the cabled array will require annual servicing. Activities include providing labor, material, equipment, parts and supplies to refurbish:

- Cabled Primary Nodes.
- Cabled Secondary Nodes.
- Cabled Deep Profilers.
- Cabled Shallow Profilers.
- Cabled Platform Interface Controllers.
- Cabled Instruments.
- Cabled Vertical Mooring.
- Primary Cables.
- Secondary (Extension) Cables.
- Endurance Array Benthic Experiment Package.

The Awardee will also administer and support the long-term Lease Agreement for the Cable Station facility in Pacific City, Oregon, that serves to operate and maintain the OOI terminal station equipment.

3. Deployment and Recovery Cruises

The Awardee should plan and execute the ship-dependent activities necessary to support the continuous operation of OOI marine infrastructure through the Academic Research Fleet (ARF) and leverage the use of facilities funded by NSF, whenever possible. The identification of weather contingency and pursuit of advantageous weather windows should be incorporated into cruise planning and scheduling. Activities include providing:

- Labor.
- Ship Time.
- Mobilization, Travel, and other Deployment Support.

These activities, in varying degrees, are associated with Deployment and Recovery cruises for all OOI marine infrastructure including the Global, Coastal, and Regional Cabled components.

A. Global Array

The Annual Deployment and Recovery Cruises for each of the Global Array sites require the Awardee to provide qualified labor for cruise planning, pre-cruise set up, test and mobilization of moorings, sea time, and pre/post cruise packing and unpacking of material and equipment. The Awardee will identify suitably equipped ships for servicing each site and schedule ship time such that cruises will limit transit times and take advantage of favorable weather conditions. The Awardee will further provide efforts needed to support Mobilization, Travel, and other Logistics activities, including portside cranes/forklifts and material and equipment shipping for the Global Array Deployment and Recovery Cruises.

B. Coastal Array

Deployment and Recovery Cruise activities for the Coastal Array sites are similar to those for the Global Array, except that there are variations in the type and amount of infrastructure and the Coastal Array cruises are performed every 6 months. Also, two additional cruises of a lesser scope are required for Coastal Gliders and Coastal Surface Piercing Profiler (CSPP) Moorings, and for Endurance Array Coastal Gliders and CSPP Moorings, to perform their 3 month service intervals.

C. Regional Cabled Array

The Regional Cabled Array Deployment and Recovery Cruises are performed on an annual basis. The associated Labor, Ship Time and Mobilization, Travel, and other Logistics activities also require that the Awardee provide an ROV that can be loaded, transported, and controlled from the servicing ship for the duration of each cruise.

4. Cyberinfrastructure and Data Delivery

For the Cyberinfrastructure Component, the Awardee will provide the resources needed to ensure technical quality and consistency of products, services, and processes for continuous OOI operations. This includes system planning and verification, technical change

control, management and supervision of external contracts, and coordination with other organizations across the OOI to insure effective systems integration. Activities associated with this task include:

- Collecting output from the marine components of the OOI, including telemetered, recovered, streaming, and supplemental data.
- Monitoring this output to assess the operational status of observatory instrumentation.
- Applying Cyberinfrastructure capability to perform the data processing actions needed to deliver and store science and engineering data products for ready access by the user community.
- Applying Quality Assurance/Quality Control algorithms to the data from the marine components and instrumentation.
- Collecting and archiving raw data, data products and all associated metadata.
- Coordinating, refining, and maintaining the interface between the marine components and OOI Cyberinfrastructure.
- Maintaining and upgrading the sites, equipment, and networks that support effective OOI data collection, processing, and accessibility.
- Developing and implementing an information security program that addresses roles and responsibilities, risk assessment, technical/administrative/physical safeguards, policies and procedures, awareness and training, and notification procedures (in the event of a cyber-security breach).
- Community interaction.

III. AWARD INFORMATION

Estimated program budget and award size/duration is subject to the availability of funds but not more than $44M per year.

The successful proposal will be awarded as Cooperative Agreement that may include implementing Cooperative Support Agreement(s). NSF anticipates that the initial award commitment will be for five years, with continuation for a maximum of a further five years contingent on the availability of funds and the successful outcome of a comprehensive external review of Awardee performance and facility success in the third or fourth year of the initial period (see Section VII.B, "Special Award Conditions").

All budget amounts given in this program solicitation are for planning purposes only; actual annual funding increments will be determined on the basis of Annual Work Plans (AWPs) submitted by the Awardee and approved by NSF, subject to the availability of appropriated funds and contingent upon successful performance of the Awardee.

If a new Awardee is selected to replace the incumbent, NSF will fund appropriate transition costs for a transition period of up to 6 months. Relevant transition activities include interviewing and hiring personnel, assigning subcontracts, transferring data and property, and obtaining permits and licenses. During this transition period, the new Awardee will have the appropriate level of access to incumbent personnel and facilities as determined by NSF.

IV. ELIGIBILITY INFORMATION

Who May Submit Proposals:

Proposals may only be submitted by the following:

- Universities and Colleges - Universities and two- and four-year colleges (including community colleges) accredited in, and having a campus located in, the US acting on behalf of their faculty members. Such organizations also are referred to as academic institutions.
- Non-profit, non-academic organizations: Independent museums, observatories, research labs, professional societies and similar organizations in the U.S. associated with educational or research activities.

Who May Serve as PI:

There are no restrictions or limits.

Limit on Number of Proposals per Organization: 1

1 as Lead Awardee. No limit as a subawardee.

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

No Limit.

Additional Eligibility Info:

Consortia may include partnerships with commercial and/or international organizations, but NSF requires that an academic or non-profit U.S. organization serve as the lead organization.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Letters of Intent *(required)*:

Each proposing organization must submit a Letter of Intent (LOI) through FastLane; full proposals may be submitted only by organizations that have submitted a LOI by the LOI due date.

LOIs will be used by NSF to ensure that the appropriate expertise is available for participation in the review and selection process, to foresee potential conflicts of interest, to identify any potential gaps in the capabilities being proposed, and to anticipate special award conditions that may be necessary to accommodate the proposed organizational and governance structure. The LOI is a statement of a proposer's preliminary plans - the senior personnel, collaborating or partnering organizations, and proposed plans may change between submission of the Letter of Intent and submission of the Full Proposal.

Letter of Intent Preparation Instructions:

Complete submission of a Letter of Intent (LOI) requires two separate components that must each be submitted prior to the LOI due date.

FastLane LOI Component

Submit the following LOI information via FastLane:

- Project Title
- Synopsis (a brief abstract of maximum 2,500 characters of plain text)
- Point of Contact for NSF Inquiries
- Project PI Information
- Participating Organizations

Submission of this component via FastLane will produce **a FastLane LOI ID** that must be included in the PDF LOI Component described below.

PDF LOI Component

Via an email to the Cognizant Program Officers named herein, submit a document of no more than 5 pages in length in Portable Document Format (PDF) that addresses the following:

- A description of the proposer's strategic vision and proposed management concept for the planned OOI activities;
- A description of the envisioned organizational and governance structure to support the planned OOI activities, including the identification of all collaborating and partnering institutions and their roles;
- A list that identifies full names and affiliations of proposed Key Personnel, including all PIs, co-PIs, and senior personnel; and
- A brief synopsis of the proposer's organizational expertise in operating large scientific facilities.

The PDF document should include the **FastLane LOI ID** in a running header and must be consistent with NSF Grant Proposal Guide formatting guidelines (NSF GPG Section II.B).

Letter of Intent Preparation Instructions:

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

- Submission by an Authorized Organizational Representative (AOR) is required when submitting Letters of Intent.
- Submission of multiple Letters of Intent is not allowed

  Other Participating Organizations are allowed

  Subrecipients may participate in more than one letter of intent

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.

See Chapter II.C.2 of the GPG 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 GPG instructions.

The Full Proposal shall conform to the guidelines specified in the NSF PAPPG or the NSF Grants.gov Application Guide, except where detailed below.

Proposers are reminded to review procedures under "Proprietary or Privileged Information" in Chapter II.D.1 of the PAPPG and to mark only such information, including patentable ideas, trade secrets, privileged or confidential commercial or financial information, disclosure of which might harm the proposer, with the appropriate legend such as, "The following is (proprietary or confidential) information that (name of proposing organization) requests not be released to persons outside the Government, except for purposes of review and evaluation." Please also see the section entitled "Privacy Act and Public Burden Statements" below.

The following information is required for the Full Proposal:

1. **PI/Co-I Information:** This should follow the standard PAPPG or NSF Grants.gov Application Guide guidelines.
2. **Cover Sheet:** A cover sheet must be submitted and electronically signed by an Authorized Organizational Representative for all full proposals. Proposers should select "Center/Research Infrastructure" for the Type of Proposal.
3. **Project Summary:** This section should provide a summary of the key points of the proposal and should be understandable to a scientifically or technically literate lay reader. This section must follow the standard PAPPG or NSF Grants.gov Application Guide guidelines. Proposals that do not include an overview and separate statements on intellectual merit and broader impacts within the Project Summary will not be accepted by FastLane or will be returned without review.
4. **Program Description (up to 75 pages):** The Program Description section of each proposal should be structured as a preliminary Management Plan that addresses the capabilities of the proposing organization to manage and operate the OOI with respect to the areas described in Section II C of this solicitation. The content of the Management Plan should map to the following items 4a-4c and shall be limited to no more than **75** pages, not including the Budget and Supplementary Documentation described below (Collaborative Arrangements, Work Breakdown Structure Dictionary and Transition Plan), which should be submitted as Appendices: The Management Plan shall:
    a. Clearly present the management structure, capability, experience, and qualifications of the Organization(s) necessary to carry out the program. Include an aggregated description of the internal and external resources (both physical and personnel) that the organization and its collaborators will provide to the program. Explain the roles and responsibilities of each known or planned team entity (including Key Personnel), the basis for its inclusion, and how it best contributes to accomplishing OOI objectives. Provide biographical sketches of all Key Personnel. Discuss how any pending international partnership agreements, as evidenced by formal memoranda/letters of agreement, are likely to enhance OOI Management and Operation.

       Discuss in detail how the proposing organization will establish maintain liaison and interaction with the External Advisory Structure (OOIFB) established by NSF.

       Provide a plan and detailed description of the organizational elements and procedures for subaward and subcontract establishment and management that ensures effective and efficient performance as well as responsiveness to NSF direction. Describe how the proposer will use its internal management/advisory structure to help resolve disputes and decisions with and among its principal subawardees.

       Discuss how all OOI infrastructure assets, including hardware, software, and technical data will be tracked and maintained. Discuss the plan and facilities for refurbishing active infrastructure to be retrieved and redeployed and a plan for warehousing/storing/reusing inactive infrastructure, if any, to be de-scoped. Discuss the approach to decision-making with respect to replacing operating infrastructure damage or losses (gliders, moorings, cable failures, etc.) in light of scientific priorities and budgetary limitations.

    b. Thoroughly describe the approach to performing the Statement of Work Tasks including:
        - Operations Management.
        - Refurbishment.
        - Deployment Cruises.
        - Cyberinfrastructure and Data Delivery.

       For the Operations Management task description, discuss the approach for developing robust Annual Work Plans to accomplish OOI Management and Operation. Describe strategies to be followed that will align with the budgetary recommendation of the NRC *Sea Change* report and NSF's annual target cost of $44M for OOI operations. Describe the approach to providing and overseeing safe and reliable long-term operation of the OOI that will effectively respond to the needs of the associated scientific community. Discuss any special qualifications or organizational experience relevant to OOI Management and Operation, Cyberinfrastructure, and data delivery and how this will help to successfully perform the prospective Cooperative Agreement.

    c. Discuss how the proposing organization will assure success relative to measures of performance applicable to Management and Operation of the OOI. Include a discussion of how performance metrics and user statistics will be used to (a) assess how well OOI is achieving science objectives and (b) improve facility performance as related to Government Performance Results Act criteria, including Quality of Product/Services, Cost Control, Timeliness, Business Relations and (c) verify consistent completion of activities defined by Annual Work 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, unless otherwise directed in this solicitation.

5. **References Cited:** This section should follow the standard PAPPG or NSF Grants.gov Application Guide guidelines.
6. **Biographical Sketches:** A resume, limited to 2 pages, must be provided for the PI, each co-PI, all Key Personnel, and any other senior personnel as required in PAPPG Chapter II.C.2.f
7. **Budget:** See the instructions in Section B, below.
8. **Current and Pending Support:** This section should follow the standard PAPPG or NSF Grants.gov Application Guide guidelines.
9. **Supplementary Documentation:** Except as specified in this item or in the NSF PAPPG (see Chapter II.C.2.j), special information relevant to determining the quality of the proposed work must be included either as part of the Project Description or as part of the budget justification
    a. **Documentation of collaborative arrangements of significance to the proposal:** Proposers should document with formal memoranda/letters of collaboration any collaborative arrangements of significance in performing the proposed work. Letters of support are not permitted under this solicitation, and proposals containing such letters may be returned without review. Please see the NSF PAPPG Chapter II.C.2.d (iv) for further details.**Work Breakdown Structure Dictionary (text-searchable PDF up to 20 pages in length):** Proposers will develop a document that provides detailed information about each element in the WBS, such as a brief definition of the scope of work, deliverables, budget justification and schedule estimates, assessment measures, and milestones.
    b. **Transition Plan:** Proposing organizations, other than the incumbent, may be funded for an additional transition period of up to six (6) months preceding the transfer of operating authority. If a new Awardee is selected to manage, operate, and maintain the OOI, the incumbent will cooperate with the successor to the extent necessary to facilitate uninterrupted support for OOI during the transition period, and will provide transfer of legal rights to relevant property and equipment. NSF will support appropriate transition costs incurred by the successor Awardee in an amount up to $1 Million if different from the current Awardee.

   Organizations other than the incumbent for a given capacity must provide, as a Supplementary Document not to exceed 15 pages, a detailed transition plan and budget for a transition period of up to 6 months following the new award. The transition plan must include at a minimum:

    - A proposed duration and schedule for the transition period.

- Estimated resource needs for the transition period.
- Plans for personnel recruiting, orientation, and training.
- Plans for changes to staffing, facilities, or operational modes.
- A plan to acquire office infrastructure and manage the transfer of assets, inventory, commitments, plans, and documents.
- Identification of assumptions that underlie the transition plan.
- A detailed budget for the transition period, presented in accordance with instructions given in Section V.B.

10. **Single Copy Documents:** Information for the items below should be entered via the Single Copy Documents section in FastLane.
    a. **Collaborators and Other Affiliations Information:** For all PIs, co-PIs, named senior personnel, and/or contractors (including for subawardees), provide the names of all persons, participants and affiliates with potential conflicts of interest, with format as specified in Chapter II.C.1.e of the NSF PAPPG. For each person, be sure to include information for all collaborators and other affiliations as specified in Chapter II.C.1.e of the NSF PAPPG, as well as for all known individuals who would act as external advisory committee members for OOI; and all subcontractors who would receive funds through the award.
    b. **Additional Single Copy Document - Project Personnel:** Provide the full names, affiliations, educational background, and specific role for each person for whom support is sought, including all PIs, co-PIs, named senior personnel, and/or contractors (including subawardees).
    c. **Additional Single Copy Document - Copy of Letter of Intent.** Proposers must submit a single PDF document that combines both the FastLane LOI component and the PDF LOI component described in Section V.A. Proposals lacking this combined document may be returned without review.
11. **The following section is NOT required for the Full Proposal:**

Facilities, Equipment and Other Resources (all relevant information must be provided in the Project Description and Appendices). Proposers should insert text or upload a document in that section of the proposal that states, "Not Applicable for this Program Solicitation." Doing so will enable FastLane to accept your proposal.

General Information:

A Proposer's Conference may be announced by NSF prior to the full proposal deadline, if organizations that have submitted a Letter of Intent request it.

Site visits to facilities at Woods Hole Oceanographic Institute (relating to the OOI Coastal/Global Component), the University of Washington (the OOI Regional Cabled Component) and Rutgers University (the OOI Cyberinfrastructure Component) will be considered for potential proposers. If they occur, these site visits will be guided and managed by NSF staff.

For additional information on this competition, NSF practices and policies, and/or access to the Resource Library that provides further detail, proposing organizations should contact the Cognizant Program Officers, Bob Houtman (bhoutman@nsf.gov) and Lisa Clough (lcough@nsf.gov). The following publically available documents will be informative:

- Investing in Science, Engineering, and Education for the Nation's Future: NSF Strategic Plan for 2014-2018 http://www.nsf.gov/pubs/2014/nsf14043/nsf14043.pdf
- Sea Change, 2015-2025 Decadal Survey of Ocean Sciences Sea Change: 2015-2025 Decadal Survey of Ocean Sciences |The National Academies Press.
- NSF Reply to Sea Change http://www.nsf.gov/geo/oce/pubs/nsf-oce-sea-change-reply-may-11-2015.pdf.
- Ocean Observatories Initiative Science Plan, Revealing the Secrets of Our Ocean Planet, January 2005 http://oceanleadership.org/files/OOI_Science_Plan.pdf
- Large Facility Manuals and Guidelines
  a. Large Facilities Manual http://www.nsf.gov/pubs/2015/nsf15089/nsf15089.pdf
  b. National Science Foundation, Office of Budget, Finance, and Award Management , BUSINESS SYSTEMS REVIEW (BSR) GUIDE, Final Version 3.2 , December 5, 2011 http://www.nsf.gov/pubs/2013/nsf13100/nsf13100.pdf.
- Ocean Observatories Initiative Website http://oceanobservatories.org.

In addition to the above, proposing organizations should review documentation that is being made available through the NSF-maintained Resource Library. The documents are grouped in categories that include:

- Cooperative Agreements, Annual Reports, and Program Plans.
- OOI Concept of Operations.
- Inventories of NSF and non-NSF owned equipment associated with OOI.
- Information Related to Environmental Issues and Licensing.
- Memoranda of Understanding and Similar Agreements.
- NSF and OCE Data Policies.
- Frequently Asked Questions (FAQs).

B. Budgetary Information

Cost Sharing:

Inclusion of voluntary committed cost sharing is prohibited.

Other Budgetary Limitations:

Other budgetary limitations apply. Please see the full text of this solicitation for further information.

Budget Preparation Instructions:

The full proposal should include a budget on the budget form in FastLane or the R&R Budget Form in Grants.gov for each year of the initial five-year operational period (2018-2022) proposed. The budget should be based on total funding of no more than $44,000,000 per year. Fastlane and Grants.gov will automatically provide a cumulative budget. The proposal should provide all staffing and budgeting information needed to describe how the organization would fulfill the Awardee responsibilities in Section II of this solicitation. Requested budget amounts for each year of the proposal should reflect the level considered necessary to perform the NSF-funded activities described in the proposal.

A budget justification tied directly to the integrated WBS and WBS Dictionary for the proposal shall be submitted with the budgets for each year, and shall be in sufficient detail to show how the proposer reached the amounts specified in the budget. NSF anticipates performing a cost analysis of successful proposal budget(s) in accordance with NSF's Large Facilities Manual (LFM; NSF 15-089,

dated June 2015 or subsequent revision). A draft version of LFM Section 4.2 (Cost Estimating and Analysis) will be provided for proposal preparation. Proposing organizations are required to follow the instructions in the NSF PAPPG, Chapter II.C.2.g, Budget and Budget Justification.

Enter the anticipated total level of subrecipients support on line G5, Subawards, of the FastLane budget or line F5 of the R&R Budget Form in Grants.gov. Proposals require the inclusion of separate budgets for subrecipient agreements that exceed $250,000 per year, with a budget justification and detailed explanation of the proposing organization's cost analysis of that budget, for a maximum of 3 pages each. Examples include budgeted months and salaries for personnel, quotations to support budgeted equipment, itemized listing of material and supplies with support quotations, statements of risk assessments and monitoring plans for each subrecipient, cost price analysis to support that the proposed subaward amounts are reasonable, and copies of the subrecipients responsibility determinations, including adequacy of accounting system and financial capability. For subawards valued at less than $250,000 year, include the costs in the aggregate on the subaward line in the budget.

Proposing organizations other than the incumbent must also provide a separate budget for a transition period of up to 6 months following the new award. This information must be provided as part of the required Transition Plan (see Section V.A.7.c.). The budget must be presented in the same style with all applicable budget line items as for the budget for each year of the proposal. If a new Awardee is selected to manage and operate the OOI, the incumbent will cooperate with the successor to the extent necessary to facilitate uninterrupted support for the facility during the transition period and will provide transfer of legal rights to relevant property and equipment. NSF will support appropriate transition costs incurred by a successor Awardee if different from the current Awardee. The transition budget should not include non-renewal costs of the incumbent. If a new operator is selected, the incumbent may submit to NSF costs related to the Cooperative Agreement non-renewal, and these costs will be considered separately.

Organizations that have not previously received NSF awards should review the NSF Prospective New Awardee Guide (https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pnag161&org=NSF) and current NSF Large Facilities Manual (http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf15089) for additional guidance in preparing their budget submission.

C. Due Dates

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

  January 18, 2017

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

  April 17, 2017

D. FastLane / Grants.gov Requirements

For Proposals Submitted Via FastLane:

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

For Proposals Submitted Via Grants.gov:

Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. Comprehensive information about using Grants.gov is available on the Grants.gov Applicant Resources webpage: http://www.grants.gov/web/grants/applicants.html. In addition, the NSF Grants.gov Application Guide (see link in Section V.A) provides instructions regarding the technical preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: support@grants.gov. The Grants.gov Contact Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this solicitation.

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

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

VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

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

action on proposals. Senior NSF staff further review recommendations for awards. A flowchart that depicts the entire NSF proposal and award process (and associated timeline) is included in the GPG as Exhibit III-1.

A comprehensive description of the Foundation's merit review process is available on the NSF website at: http://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 *Investing in Science, Engineering, and Education for the Nation's Future: NSF Strategic Plan for 2014-2018*. These strategies are integrated in the program planning and implementation process, of which proposal review is one part. NSF's mission is particularly well-implemented through the integration of research and education and broadening participation in NSF programs, projects, and activities.

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

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

A. Merit Review Principles and Criteria

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

1. Merit Review Principles

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

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

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

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

2. Merit Review Criteria

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

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

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

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

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

1. What is the potential for the proposed activity to
    a. Advance knowledge and understanding within its own field or across different fields (Intellectual Merit); and
    b. Benefit society or advance desired societal outcomes (Broader Impacts)?
2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
3. Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?

4. How well qualified is the individual, team, or organization to conduct the proposed activities?
5. Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?

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

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

Additional Solicitation Specific Review Criteria

Review criteria will also include assessment of the quality and extent to which the Proposal Deliverables described in Section V address the following:

1. Management Capability

- Ability of the proponent organization's structure, experience, qualifications and past history to serve and support the Ocean Sciences community.
- Suitability of the proposed internal and external resources (both physical and personnel) that the organization and its collaborators will provide to the OOI.
- Adequacy and completeness of the definition of roles and responsibilities of participating organizations and Key Personnel.
- Enhancements to the scientific benefits and affordability of the OOI resulting from any proposed partnerships.
- Ability to efficiently procure services, equipment, and material necessary for OOI Management and Operation during performance of the prospective CA.
- Sufficiency of the proposed approach to tracking and maintaining current OOI infrastructure assets, including hardware, software, and technical data.

2. Statement of Work Tasks

a. Operations Management

- Understanding of essential Operations Management activities such as those related to subaward and subcontract formation and administration, asset tracking and management, environmental, safety and health issues, reporting, budgeting, and project controls.
- Approach to obtaining the necessary resources and to effectively plan, implement, and execute Operations Management for the Global, Coastal, Regional Cabled, and Cyberinfrastructure components of the OOI.
- Approach to developing Annual Work Plans that meet budgetary guidance herein, broken out by major elements for a comprehensive, proposed work breakdown structure.
- Approach to engaging the Science and User Community to provide confidence in the data produced by the OOI and to maximizing the scientific return on the investment in OOI construction and operations.

b. Refurbishment

- Understanding of efforts necessary to refurbish elements of the marine components of the OOI within the Global, Coastal, and Regional Cabled Arrays.
- Reasonableness and effectiveness of approach to refurbish instruments and equipment within the OOI marine components, including the capability to engage necessary suppliers and subcontractors.

a. Deployment and Recovery Cruises

- Understanding of ship-dependent efforts necessary to maintain the Marine Components of the OOI.
- Approach to securing suitably equipped Academic Research Fleet vessel time needed to deploy, recover, and redeploy instruments and equipment for the Global, Coastal, and Regional Cabled Arrays.
- Approach to acquiring a Remotely Operated Vehicle (ROV) for Regional Cabled Array cruises that can be loaded, transported, and controlled from the servicing ship.

b. Cyberinfrastructure and Data Delivery

- Understanding of the scope of OOI Data Management, Delivery and Quality Control activities necessary to provide and sustain delivery of high quality, publicly available data/metadata from over 800 widely distributed instruments via the internet.
- Approach to maintaining and refining the interface between OOI Marine Components and the Cyberinfrastructure.
- Level of cyberinfrastructure experience of the proposer’s organization and quality of past performance of analogous activities.
- Approach to establishing and maintaining information security for the OOI program.
- Approach to maintaining an accessible OOI data archive.

3. Measures of Performance

- Proposed approach to identifying and implementing discrete measures of performance for the OOI.
- Credibility of approach to interpreting performance metrics and statistics to improve the facility with respect to science objectives and community and NSF expectations.

4. Proposed Budget

- Reasonableness and realism of the estimated costs and justification for each WBS element of OOI Management and Operation during the performance period of the prospective Cooperative Agreement.
- Alignment of proposed budget with the required cost categories and the reasonableness of estimates therein, as informed by available NSF cost data.
- Reasonableness of the approach to achieving Management and Operation of the OOI within the $44,000,000 funding threshold.

5. Supplementary Documentation

- Advantages of proposed collaborative arrangements to OOI Management and Operation.
- Adequacy of proposed Work Breakdown Structure Dictionary in defining activities to accomplish OOI Management and Operation.
- Proposed approach for transition of OOI Management and Operation as applicable, with respect to personnel resources, physical and intellectual property, and subaward/contractual commitments.

B. Review and Selection Process

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

Panel and NSF Internal Review will focus on the Merit Review Principles and Criteria and Additional Solicitation Specific Review Criteria described herein.

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 applicants whether their proposals have been declined or recommended for funding within six months. Large or particularly complex proposals or proposals from new awardees may require additional review and processing time. The time interval begins on the deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director acts upon the Program Officer's recommendation.

After programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of 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 a Grants Officer in the Division of Acquisition and Cooperative Support. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See Section VI.B. for additional information on the review process).

B. Award Conditions

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

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

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

Special Award Conditions:

The award associated with this solicitation will be a Cooperative Agreement, not a standard grant or a contract, that will fund annual OOI Management and Operation in accordance with approved Annual Work Plans. Any special requirements not stated herein will be negotiated at the time of award. Cooperative Agreements involve substantial involvement of the Government, particularly in oversight of award performance. The following are some of the measures NSF uses to conduct oversight:

- Review of Annual Reports, Program Plans, and Performance Metrics.

- Site visits, annually or as necessary.
- Review of management performance and operation activities approximately midway through the initial five-year award.
- Business Systems Review at least once during the award period.
- Incurred Cost Audit at the end of the award or if risk is determined
- Accounting System Audit every two years or if risk is determined

This award will be subject to the following Cooperative Agreement Terms and Conditions:

1. Cooperative Agreement Financial & Administrative Terms and Conditions (CA-FATC): https://nsf.gov/pubs/policydocs/cafatc/cafatc_716.pdf.

2. Cooperative Agreement Supplemental Financial/Administrative Terms and Conditions for Large Facilities (CAFATC): https://nsf.gov/pubs/policydocs/cafatc/cafatc_lf716.pdf. Costs associated with this award will be in accordance with 2 CFR 200 - Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, or Federal Acquisition Regulation (FAR) Part - 31 Contract Cost Principles and Procedures, as applicable.

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 project report, and a project outcomes report for the general public.

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

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

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

In addition to the Annual Project Report, Final Project Report, and Project Outcomes Report the Awardee will provide the following:

A Draft Annual Work Plan (AWP) for the coming project year a minimum of 60 days prior to the end of the current fiscal year that establishes the technical approach to fulfilling NSF goals and requirements and cost targets for expenditures for the next program operational year which begins January 1. The AWP will cover the upcoming operational year and will address, but not be limited to, Programmatic Goals, Metrics and Milestones, Field Activities, Staffing and Organization Plans, Project Budgets, Major Planning Activities, and Insurance, Permitting and Environmental Considerations. AWP contents will reflect the schedules, funding levels, guidelines and formats approved by the NSF Program Officer, with detailed budgets for each Work Breakdown Structure Element. The draft approved Annual Work Plans will serve to guide OOI Management and Operation or each respective year during the Cooperative Agreement period of performance. The draft AWP will be refined and submitted to the NSF Program Officer for approval a minimum of 60 days prior to the start of the new program operational year. Significant changes, apparent to the Awardee or identified by the NSF Program Officer, in objectives or activities described in the Annual Work Plan, 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. Awardee shall provide NSF Program Officials with copies of all significant revisions to documentation, upon request, substantiating all changes to the AWP, whether or not NSF approval is required.

Weekly Activity Report summarizing ongoing Awardee efforts.

Monthly Report summarizing program accomplishments, status and issues.

Quarterly Report linked to Annual Work Plan including:

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

Annual Performance Report submitted once per year, no later than one month prior to a regular performance review of the OOI Project Team. This report will provide a comprehensive analysis of the OOI Project over the reporting period for external review and include NSF Government Reporting Act goals and results for OOI operations. The Annual Performance Report may be submitted separately or as a separate section within the Annual Project Report.

Regular Informal Reports including communication with the NSF Program Officer.

News releases and other similar items prepared by the Awardee and/or its subcontractors/employees that describe OOI activities or research results will be submitted for NSF review at least two days prior to proposed publication and will acknowledge the sponsorship of the NSF. Public information brochures, and other similar OOI-related material prepared by the Awardee, will be sent to the NSF before being made available to the public. The text of any planned Congressional testimony related to the OOI will be submitted to NSF for approval prior to its presentation.

The Awardee will acknowledge the support of the NSF on any signs identifying the OOI 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 contract in substantially the following terms:

"The Ocean Observatories Initiative 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.

Prior to award of the Cooperative Agreement, the potential Awardee will be required to participate in a review of their financial and procurement systems. Within a 3 year period following award of the Cooperative Agreement, the Awardee will be required to participate in a Business Systems Review, which is intended to evaluate Awardee business practices against government requirements, as well as to provide guidance on best practices (NSF Business Systems Review (BSR) Guide http://www.nsf.gov/pubs/2013/nsf13100/nsf13100.pdf).

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:

- Bauke Houtman, telephone: (703) 292-8583, email: bhoutman@nsf.gov
- Lisa M. Clough, telephone: 703-292-4746, email: lclough@nsf.gov

For questions related to the use of FastLane, contact:

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

For questions relating to Grants.gov contact:

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

IX. OTHER INFORMATION

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

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 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 55,000 proposals each year for research, education and training projects, of which approximately 11,000 are funded. In addition, the Foundation receives several thousand applications for graduate and postdoctoral fellowships. The agency operates no laboratories itself but does support National Research Centers, user facilities, certain oceanographic vessels and Arctic and Antarctic research stations. The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

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

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

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

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

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

• **Location:**	4201 Wilson Blvd. Arlington, VA 22230
• **For General Information** (NSF Information Center)**:**	(703) 292-5111
• **TDD (for the hearing-impaired):**	(703) 292-5090
• **To Order Publications or Forms:**	
Send an e-mail to:	nsfpubs@nsf.gov
or telephone:	(703) 292-7827
• **To Locate NSF Employees:**	(703) 292-5111

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

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
Office of the General Counsel
National Science Foundation
Arlington, VA 22230