Navigating the New Arctic (NNA)

PROGRAM SOLICITATION
NSF 22-520

REPLACES DOCUMENT(S):
NSF 21-524

National Science Foundation

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

February 16, 2022

February 08, 2023

Second Wednesday in February, Annually Thereafter

IMPORTANT INFORMATION AND REVISION NOTES

Important Information

Innovating and migrating proposal preparation and submission capabilities from FastLane to Research.gov is part of the ongoing NSF information technology modernization efforts, as described in Important Notice No. 147. In support of these efforts, proposals submitted in response to this program solicitation must be prepared and submitted via Research.gov or via Grants.gov, and may not be prepared or submitted via FastLane.

REVISION NOTES

- NNA has discontinued the Planning Grant Track.
- NNA has added a new track for NNA Incubator Grants.
- Guidance on the role of the new NNA Community Office has been provided.
- Minor revisions and clarifications have been made.

Any proposal submitted in response to this solicitation should be submitted in accordance with the revised *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) (NSF 22-1), which is effective for proposals submitted, or due, on or after October 4, 2021.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Navigating the New Arctic (NNA)

Synopsis of Program:

In 2016, the National Science Foundation (NSF) unveiled a set of "Big Ideas," 10 bold, long-term research and process ideas that identify areas for future investment at the frontiers of science and engineering. The Big Ideas represent unique opportunities to position our Nation at the cutting edge of global science and engineering leadership by bringing together diverse disciplinary perspectives to support convergence research. As such, even though proposals must be submitted to the Directorate for Geosciences when responding to this solicitation, once received, the proposals will be managed by a cross-Directorate team of NSF Program Directors.

Arctic temperatures are warming faster than nearly everywhere else on Earth, with some models projecting that continued warming could produce an ice-free Arctic Ocean in a few decades. The 6th Assessment Report from Working Group 1 of the Intergovernmental Panel on Climate Change highlighted the consequences of this warming, including the loss of mass from the Greenland Ice Sheet, lengthening fire seasons, increasing extreme heat events, thinning and loss of Arctic sea ice, threat of ocean acidification, and reductions in spring snow cover. The rapid and wide-scale changes occurring in response to this warming portend new opportunities and unprecedented risks to natural environments; social and cultural systems; economic, political and legal systems; and built environments of the Arctic and across the globe. Gaps in scientific observations and the prevalence of interdependent social, natural, and built systems in the Arctic make it challenging to

predict the region's future. Understanding and adapting to a changing Arctic requires creative new directions for Arctic-related research, education, workforce development, and leveraging of science, engineering, and technology advances from outside the Arctic.

Navigating the New Arctic (NNA) embodies an important forward-looking response by the Foundation to these profound challenges. NNA seeks innovations in fundamental convergence research across the social, natural, environmental, computing and information sciences, and engineering that address the interactions or connections among natural and built environments and social systems, and how these connections inform our understanding of Arctic change and its local and global effects.

This solicitation requests proposals that fall within one of three tracks: **NNA Incubator Grants**, dedicated to developing convergent teams to carry out research projects of larger scope in the future; **NNA Research Grants**, aimed to support creative projects on fundamental research that address convergent scientific and engineering challenges related to the rapidly changing Arctic; and **NNA Collaboratory Grants**, designed to support collaborative teams undertaking research and training initiatives addressing grand challenges related to the rapidly changing New Arctic.

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.

- NNA Working Group, telephone: (703) 292-8030, email: nna@nsf.gov

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

- 47.041 --- Engineering
- 47.049 --- Mathematical and Physical Sciences
- 47.050 --- Geosciences
- 47.070 --- Computer and Information Science and Engineering
- 47.074 --- Biological Sciences
- 47.075 --- Social Behavioral and Economic Sciences
- 47.076 --- Education and Human Resources
- 47.079 --- Office of International Science and Engineering
- 47.083 --- Office of Integrative Activities (OIA)

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant or Cooperative Agreement

Estimated Number of Awards: 20

The number of awards is dependent upon the availability of funds; the number of proposals received; and the degree to which proposals meet the solicitation goals, NSF merit review criteria, and solicitation-specific review criteria.

Anticipated Funding Amount: $30,000,000

This solicitation will consider proposals for three types of projects:

- **NNA Incubator Grants** with a total budget of up to $300,000 and a maximum duration of 24 months.
- **NNA Research Grants** with a total budget of up to $3,000,000 and a maximum duration of 5 years.
- **NNA Collaboratory Grants** with no budget restrictions and a maximum duration of 5 years.

Project durations and budgets must be commensurate with the scope of the work proposed, and with guidance provided elsewhere in this solicitation regarding anticipated program resources. NSF anticipates a portfolio of awards with a range of budgets and durations up to these maxima.

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

Eligibility Information

Who May Submit Proposals:

The categories of proposers eligible to submit proposals to the National Science Foundation are identified in the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG), Chapter I.E. Unaffiliated individuals are not eligible to submit proposals in response to this solicitation.

Who May Serve as PI:

There are no restrictions or limits.

Limit on Number of Proposals per Organization:

There are no restrictions or limits.

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

There are no restrictions or limits.

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Not required

- **Preliminary Proposal Submission:** Not required

- **Full Proposals:**

  - Full Proposals submitted via Research.gov: *NSF Proposal and Award Policies and Procedures Guide* (PAPPG) guidelines apply. The complete text of the PAPPG is available electronically on the NSF website at: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg.
  - Full Proposals submitted via Grants.gov: *NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov* guidelines apply (Note: The *NSF Grants.gov Application Guide* is available on the Grants.gov website and on the NSF website at: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide).

B. Budgetary Information

- **Cost Sharing Requirements:**

  Inclusion of voluntary committed cost sharing is prohibited.

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

  Not Applicable

- **Other Budgetary Limitations:**

  Not Applicable

C. Due Dates

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

  February 16, 2022

  February 08, 2023

  Second Wednesday in February, Annually Thereafter

Proposal Review Information Criteria

Merit Review Criteria:

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

Award Administration Information

Award Conditions:

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

Reporting Requirements:

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

TABLE OF CONTENTS

I. INTRODUCTION

NNA addresses convergent scientific, engineering, and educational challenges in, and related to, the rapidly changing Arctic. The solutions to these challenges are needed to understand and forecast environmental change; advance economic prosperity; promote human and ecological health; and preserve security for the United States, the circumpolar Arctic region, and the globe. NNA encourages proposals for projects that leverage partnerships to address fundamental science issues of societal importance. These partnerships may include projects with stakeholders such as state and local governments, other nations, regional and international groups with interests in the Arctic, the private sector, STEM educators and students, and local and Indigenous community members.

Major goals of NSF's NNA Big Idea include:

- Improved understanding of Arctic change, and its local and global effects, that capitalizes on innovative and optimized observing platforms, advances in understanding of fundamental processes, and new approaches to modeling interactions among the natural environment, built environment, and social systems.
- New and enhanced research communities that are diverse, integrative, and well-positioned to carry out productive research on the interactions or connections between natural and built environments and social systems and how these connections inform our understanding of Arctic change and its local and global effects.
- Research outcomes that inform economic development, national security, natural resource management, and societal well-being, and enable resilient Arctic communities.
- Enhanced efforts in formal and informal education that focus on the social, built, and/or natural impacts of Arctic change on multiple scales and broadly disseminate research outcomes.

II. PROGRAM DESCRIPTION

To successfully address NNA goals, proposals are expected to be convergent in nature as defined by NSF. In traditional interdisciplinary research, researchers may come together with their own disciplinary expertise and skills to address questions of interest that cross disciplinary boundaries, but largely remain focused on their individual research approaches. Convergence science takes this approach further, in that researchers from traditionally distinct disciplines come together at the onset of project creation to jointly form research questions, novel methodologies, and innovative theoretical approaches.

At a broad scale, NNA considers three major elements that are critical to understanding the rapidly changing Arctic, as depicted in the Venn diagram in this solicitation. The natural environment comprises atmospheric, biological, cryospheric, ecological, geological, hydrospheric, and marine features and processes and their dynamics and interactions. The built environment encompasses human-built physical infrastructure, telecommunications, cyberinfrastructure, and data systems and their interactions. Finally, social systems focus on human culture, behavior and social organizations and how social, economic, political, cultural, and environmental forces affect the lives of people and how people in turn respond to and shape those forces. To fulfill a convergence approach, NNA proposals must clearly articulate the intellectual and scientific contributions from engineering, social, and/or natural science methods and theories and demonstrate how these approaches are being merged for a convergence approach.
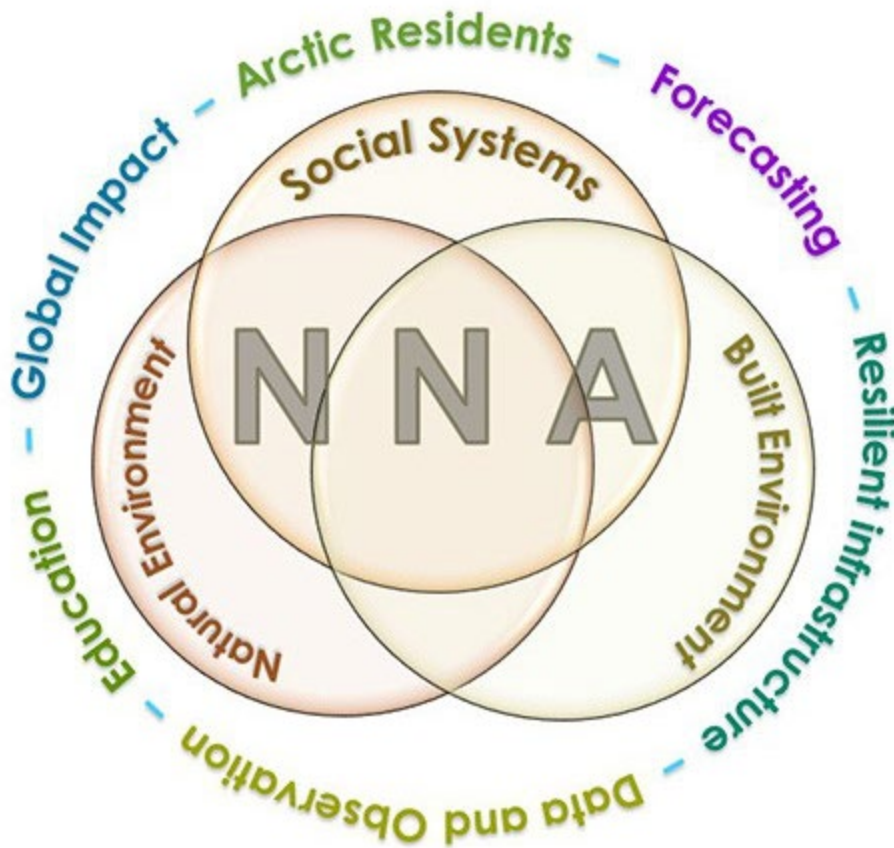
In addition to the convergence approach described above, all NNA proposals must address at least one of the following NNA research focus areas, listed in alphabetical order (FAQs with more detailed guidance on each area will be posted on the NNA web page):

- **Arctic Residents.** Convergence research approaches to understand the complex relationship between Arctic residents and their natural and cultural landscapes. Studies are needed to better understand how social, economic, and governance systems interact with infrastructure and how environmental and biophysical changes in the Arctic impact these interactions.
- **Data and Observation.** Innovations in interoperable national and international Arctic observing networks, instruments, and technologies; shared and open data collections; artificial intelligence; machine learning; and/or intelligent data management, analysis, and/or modeling efforts that address impacts and new opportunities related to NNA goals. Engaging local and global communities in the design and deployment of these new technologies and observing networks is strongly encouraged.
- **Education.** Research on the effectiveness of formal and informal education activities; method(s) and impact(s) of dissemination of STEM research results; and formation of collaborations for convergence research in the Arctic. Studies are also needed on diverse methods to create an informed public, which is critical to the development of national policies and priorities.
- **Forecasting.** Studies to understand and forecast interdependent changes in the biogeochemical, geophysical, built, biological, ecological, institutional, and social processes occurring in the Arctic, including, when appropriate, global feedbacks. The dramatic expansion of information provides an exciting opportunity for the science community to understand present conditions and model possible futures to which society must respond.
- **Global Impacts.** Understanding and forecasting global influences, consequences, and opportunities arising from a changing Arctic. Studies are needed to help researchers understand how biophysical and other changes in the Arctic link to environmental, social, geopolitical, and economic realities in the rest of the world.
- **Resilient Infrastructure.** Studies enabling fundamental science and engineering research in forward-looking, adaptable, and resilient infrastructure to meet current and future challenges of a changing Arctic. Infrastructure must be capable of withstanding extreme and variable temperatures in Arctic marine, freshwater, soil, and sediment environments, as well as adapt to ongoing changes in the atmospheric, cryospheric, marine, terrestrial, and institutional systems.

This NNA solicitation requests proposals that fall within three proposal submission tracks: Incubator Grants, Research Grants, and Collaboratory Grants.

NNA Incubator Grants

Under this track, this solicitation calls for proposals that support activities related to convergence research team formation, pilot convergence research, testing project feasibility, and/or engagement in capacity-building to address important challenges related to the changing Arctic, its global impact, and advance Arctic science and engineering through education. Incubator grants are intended to provide teams with the resources necessary to create common dialogue among diverse researchers and project partners and/or synthesize ideas across disciplines that will create a strong base for future larger-scale projects. One is not required to submit an Incubator Grant proposal to participate in future NNA competitions or other NNA tracks.

NNA Incubator Grant proposals should show clear potential to develop novel, leading edge research ideas and should address important societal challenges, build significant educational opportunities, and/or engage community stakeholders and Arctic residents. NSF particularly encourages Incubator Grant proposals that reflect integrative, convergence research; tangible research capacity-building; meaningful community engagement; and efforts to advance education. Proposals must present a strategy for crystallizing the research questions for a future high-impact project that can (1) contribute to the goals of NSF's NNA Big Idea; and (2) address interactions or connections **between two or more** major elements depicted in the NNA Venn diagram. Unlike the Planning Grant Track in previous NNA solicitations (e.g., NSF 21-524), Incubator grants can be used to support convergence research activities.

NNA Research Grants

Under this track, this solicitation calls for creative proposals for fundamental research to confront convergent scientific and engineering challenges related to the rapidly changing Arctic. Proposals must (1) address at least one of the NNA focus areas; (2) address questions on the interactions or connections **between two or more** of the major elements depicted in the NNA Venn diagram; (3) have a strong connection to real-world needs of the changing Arctic or its global impact with clear evidence of appropriate expertise within the investigative team; and (4) clearly articulate how methods and theories from the social, natural, environmental, and/or computing and information sciences, and/or engineering contribute to the intellectual merit and broader impacts of the proposed research. The methods and theories used should clearly correspond to the Venn diagram elements that would be addressed by the proposed research.

NNA Collaboratory Grants

Under this track, NNA encourages the research community to organize and collaborate on multifaceted, complex challenges and opportunities related to the rapidly changing Arctic. NNA Collaboratory awards are intended to support activities that involve a breadth of collaborations, working together to address grand challenge questions of a scope broader what is expected for a Research Grant, with outcomes that have far-reaching implications for scientists, engineers, and educators, Arctic residents, and the global community. These activities could include, but are not limited to, collaboration among multiple institutions from different geographic and/or global perspectives; synthesis of research efforts around a significant theme; the development of new and diverse research and/or workforce communities; new partnerships for synthesis and data reuse; and/or large-scale field efforts leading to enhanced convergence understanding of Arctic change and its local, regional, and global impacts. These activities do not include the construction or rehabilitation of substantial physical infrastructure. The budget for NNA Collaboratory Grants is intentionally flexible as NSF envisions the diversity of NNA Collaboratory activities may necessitate varied investments.

Successful NNA Collaboratory Grants must (1) address at least one of the NNA focus areas; (2) address interactions or connections **among all three major elements** depicted in the NNA Venn diagram; (3) clearly articulate how methods and theories from the social, natural, environmental, and/or computing and information sciences, and/or engineering contribute to the intellectual merit and broader impacts of the proposed project; and (4) present a vision for the future of convergence research on NNA-related themes. The methods and theories used should clearly correspond to the Venn diagram elements that would be addressed by the proposed project. NSF anticipates that the most competitive NNA Collaboratory Grant proposals will articulate a vision and trajectory for the future of convergence research related to NNA goals.

Guidance for Proposing Teams on the NNA Community Office

In February 2021, the NNA Community Office (NNA-CO) was established by a team from the University of Colorado Boulder, University of Alaska Fairbanks, and Alaska Pacific University (nna-co.org). The NNA-CO is designed to build awareness, partnerships, opportunities, and resources for collaboration and equitable knowledge generation within, between, and beyond the research projects funded by NNA. The NNA-CO provides multiple resources for prospective and current PIs and organizes the annual NNA Community Meeting. Prospective PIs to the NNA Program are encouraged to take advantage of these resources when preparing a proposal in response to this solicitation.

Given that the NNA-CO is funded to support all NNA PIs, NNA proposals may not include letters of collaboration from NNA-CO personnel in their capacity as a representative from the NNA-CO.

Special Considerations for Collaborations with Arctic Communities in NNA Proposals

Given the deep knowledge held by local and Indigenous residents in the Arctic, NSF recognizes that collaborations involving local and Indigenous residents and scientists will often enhance NNA projects. Although collaborations are not required, where applicable, NSF recognizes that these partnerships will take a variety of forms based on the nature of the scientific projects, needs, and capacity of community members and organizations and the intensity of planned activities. NSF has recently issued a Dear Colleague Letter (NSF 21-077) that outlines how NSF programs that fund projects in the Arctic have been working to improve the inclusion of local and Indigenous voices in Arctic research. As outlined in that DCL, NSF has launched a landing page (https://www.nsf.gov/ace) on Arctic Community Engagement. This website highlights numerous solicitations and resources that welcome and encourage the inclusion of local Arctic communities and Indigenous Knowledge in NSF-funded projects, as well as encourage the development of proposals to build capacity to better support this work in the Arctic. We encourage prospective NNA PIs to explore these resources as they develop their proposals.

The following exemplify possible forms of engagement but do not comprise an exhaustive list. As with any project activity, all collaborations need to be clearly articulated with budget adequately allocated to support the proposed research and collaborations. We also encourage PIs to allow for sufficient time to build collaboration for proposals. Given subsistence responsibilities and schedules of tribal and Indigenous leadership meetings, this timing could be on the order of months or more.

NNA Research Sites Near Arctic Residents. Proposers preparing projects working near, or impacting, Arctic communities are strongly encouraged to work with potentially affected communities early in the proposal development stages. In accordance with the Interagency Arctic Research Policy Committee (IARPC) *Principles for Conducting Research in the Arctic*, researchers should coordinate their field activities with nearby communities and are expected to share results with the community following each field season and/or at the end of the project. Investigators should include travel funds and related expenses as necessary for this in their proposal budget. Some projects may require discussion with tribal or subsistence co-management organizations. Time for dialogue should be included in the project schedule and travel and salary funds for these meetings should be included in the proposal budget. The Arctic Research Support and Logistics (RSL) program may also support requests to visit communities on an ad hoc basis to support communication with local communities. Please contact the RSL Program Directors for information about these opportunities.

Community engagement and outreach are important components of both integrative research and research capacity-building. Here, community engagement refers to substantive interaction with community partner organizations and anchor institutions such as governments; federal, state, and local agencies; schools, libraries, health and social service providers; tribes and Indigenous-serving organizations; non-profits; cultural organizations; and businesses. In accordance with the IARPC *Principles for Conducting Research in the Arctic*, investigators and community partners are encouraged to work closely to develop and evaluate creative approaches to achieving meaningful engagement for mutual benefit. Community engagement may or may not involve co-production of knowledge. Relevant activities should be clearly defined, operationalized, and justified in relation to relevant scholarship and project objectives.

Co-production of Knowledge with Arctic Indigenous communities is encouraged when appropriate and must be explicitly described, justified, and supported in the proposal text and project budget. NSF identifies co-production of knowledge as the integration of different knowledge systems and methodologies to

systematically understand the phenomena, systems, and processes being studied in a research project. A co-produced approach includes research in which local and Indigenous peoples and organizations fully engage in the complete research process cycle from the development of research questions; to the collection, use and stewardship of data; and the interpretation, application, and dissemination of results. In the Arctic, this often takes the form of Indigenous knowledge holders working collaboratively as part of project teams to identify, develop, and address shared research questions; shape methodologies; and agree upon appropriate outreach and data sharing activities.

Given the diversity of peoples, worldviews, ideas, approaches, and methodologies in the Arctic, co-production of knowledge in NNA projects will take various forms. A substantive suite of resources regarding best practices in co-produced research with Indigenous partners has been collected by IARPC and can be found *here*.

The proposed co-produced approach should be well justified in the Management and Integration Plan and will be evaluated in relation to the theoretical and methodological approach to co-production; budgetary, disciplinary, and management balance among collaborative partners; and the potential for the collaboration to yield insights that are unlikely in the absence of co-produced approaches. If intending to pursue co-production of knowledge, community engagement **must** begin well in advance of proposal submission, and PIs are recommended to put into practice the IARPC *Principles for Conducting Research in the Arctic*.

III. AWARD INFORMATION

This solicitation will consider proposals for three types of projects:

- **NNA Incubator Grants** with a total budget of up to $300,000 and a maximum duration of 24 months.
- **NNA Research Grants** with a total budget of up to $3,000,000 and a maximum duration of 5 years.
- **NNA Collaboratory Grants** with no budget restrictions and a maximum duration of 5 years.

Project durations and budgets must be commensurate with the scope of the work proposed, and with guidance provided elsewhere in this solicitation regarding anticipated program resources. NSF anticipates a portfolio of awards with a range of budgets and durations up to these maxima.

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

IV. ELIGIBILITY INFORMATION

Who May Submit Proposals:

The categories of proposers eligible to submit proposals to the National Science Foundation are identified in the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG), Chapter I.E. Unaffiliated individuals are not eligible to submit proposals in response to this solicitation.

Who May Serve as PI:

There are no restrictions or limits.

Limit on Number of Proposals per Organization:

There are no restrictions or limits.

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

There are no restrictions or limits.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

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

- Full Proposals submitted via Research.gov: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the *NSF Proposal and Award Policies and Procedures Guide* (PAPPG). The complete text of the PAPPG is available electronically on the NSF website at: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg. Paper copies of the PAPPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from nsfpubs@nsf.gov. The Prepare New Proposal setup will prompt you for the program solicitation number.
- Full proposals submitted via Grants.gov: Proposals submitted in response to this program solicitation via Grants.gov should be prepared and submitted in accordance with the *NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov*. The complete text of the *NSF Grants.gov Application Guide* is available on the Grants.gov website and on the NSF website at: (https://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide). To obtain copies of the Application Guide and Application Forms Package, click on the Apply tab on the Grants.gov site, then click on the Apply Step 1: Download a Grant Application Package and Application Instructions link and enter the funding opportunity number, (the program solicitation number without the NSF prefix) and press the Download Package button. Paper

copies of the Grants.gov Application Guide also may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from nsfpubs@nsf.gov.

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

Collaborative Proposals. All collaborative proposals submitted as separate submissions from multiple organizations must be submitted via Research.gov. PAPPG Chapter II.D.3 provides additional information on collaborative proposals.

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

Special instructions for submitting to this Big Idea solicitation

Research.gov Users: The Prepare New Proposal setup will prompt you for the program solicitation number (located on the first page of this document). Compliance with this requirement is critical to determining the relevant proposal processing guidelines. As stated previously, even though proposals must be submitted to the Directorate for Geosciences, once received, the proposals will be managed by a cross-disciplinary team of NSF Program Directors.

Grants.gov Users: The program solicitation number will be pre-populated by Grants.gov on the NSF Grant Application Cover Page; however, you will need to locate the Division Code, Program Code, Division Name, and Program Name for the specific solicitation you are applying to by visiting the Fastlane web site. As stated previously, even though proposals must be submitted to the Directorate for Geosciences, once received, the proposals will be managed by a cross-disciplinary team of NSF Program Directors.

Additional Guidance on Proposal Submission

Cover Sheet

Proposal Title: For submission of a collaborative proposal from multiple organizations, the title must begin "Collaborative Research: NNA Incubator:", "Collaborative Research: NNA Research:", or "Collaborative Research: NNA Collaboratory:". Please note that if submitting via Research.gov, the system will automatically insert the prepended title "Collaborative Research" when the collaborative set of proposals is created.

Otherwise, the title of the proposal must begin with "NNA Incubator:", "NNA Research:", or "NNA Collaboratory:".

Project Description:

In addition to the requirements of the PAPPG, the Project Description must fully describe the relevance of the project to the goals of NSF's NNA Big Idea and provide the information required for NNA Incubator Grants, Research Grants, or Collaboratory Grants (as applicable) as detailed in Section II.

Supplementary Documents:

Supplementary documents are limited to the specific types of documents listed in the PAPPG, with the following exception:

Management and Integration Plan: A Management and Integration Plan up to 6 pages in length is required for all proposals.

The Management and Integration Plan must begin with a section entitled "Convergence Statement" that explicitly address the following components:

- Which of the three NNA Venn diagram elements does the proposed project address?
- Which of the six focus areas listed above does the proposed project address?
- Are there education and workforce development components?
- If applicable, what is the nature of international collaborations and what is the justification for funding to a foreign organization, including any subaward or consultant arrangements?

The Management and Integration Plan should also: a) list all PIs, co-PIs, and Senior Personnel on the project and their roles and responsibilities; b) describe how the group effort will be coordinated; c) describe how the disciplinary components will be integrated; d) describe collaborations and partnerships, including any roles of local and Indigenous collaborators, and their integration with the project; e) articulate any relevant ethical and/or environmental considerations associated with the project (see solicitation text and FAQs for more information), and f) describe the planning process for uncertainties related to the COVID-19 pandemic. **Information must also be provided on who from the research team will be responsible for the execution of the tasks described in the management and integration plan**. A clear timeline of expected outcomes should be included.

Letters of Collaboration: The Project Description must fully detail any substantial collaborations and engagements (included or not included in the budget) with partner organizations. Letters of Collaboration should be provided in the Supplementary Documents section of the proposal and follow the format instructions specified in the NSF PAPPG. *If requesting a letter of collaboration, please allow for sufficient time for potential collaborations to respond to your request. Given that many tribal councils and local organizations meet once a month or less, sufficient time in some cases may be two or more months.* Note that no letters of collaboration are allowed from NNA-CO personnel in their capacity as a representative from the NNA-CO.

NSF recognizes that community-based organizations may need to explain in more detail how the proposed collaboration will meet their needs and goals, particularly with relation to the cultural and social aspects of the communities they represent. Therefore, letters of collaboration from community-based organizations may deviate from the PAPPG-specified format as needed to document the unique nature of the collaboration. "Community-based organizations" include those that primarily represent, research, and/or lead Indigenous and non-Indigenous residents of the Arctic. These can include, but are not limited to, tribal colleges and councils, local and international Indigenous organizations, and non-profit organizations. These do not include universities or major research facilities.

Data Management Plan: All NNA proposals must include a Data Management Plan that describes how the project will provide open and rapid access to quality-controlled and fully documented data and information during and after the project. This plan must be included as a Supplementary Document and be consistent with NSF's policy on dissemination and sharing of research results and NSF's PAPPG. The Data Management Plan must specifically discuss how the investigators will achieve the following data archiving and reporting requirements:

For all NNA projects, metadata files, full data sets, and derived data products must be deposited in a long-lived and publicly accessible archive within two years of collection, or by the end of the award, whichever comes first. In addition, a description of metadata, full data sets, and derived data products, and information describing how to access them, must be submitted to the NSF Arctic Data Center within the same time frame.

Exceptions to the above data reporting requirements may be granted for social science data and Indigenous Knowledge, where privacy or intellectual property rights might take precedence. Any such exception must be requested as part of the Data Management Plan.

Any limitations on access to metadata, full data sets, and/or derived data products for NNA projects that extend beyond the time limits given above must be based on compelling justification and documented in the Data Management Plan. Any such limitation on access that arises following award requires prior NSF approval with documentation in NSF's internal systems.

Proposals Involving Arctic Fieldwork or Ship Time

The Arctic Research Support and Logistics (RSL) program provides support for the fieldwork of projects awarded by the Arctic Sciences Section and may support other projects on a reimbursable basis. The RSL program supports a prime logistics contract, the Arctic Research Support and Logistics Services contract, currently operated by Battelle Arctic Research Operations. The RSL program also funds ship time, ice core drilling support, infrastructure support for monitoring networks, and related support for field projects. The RSL program can fund many of these third-party research support and logistics service providers directly or funds can be requested through the proposal budget. Investigators may decide how best to arrange for the logistics costs and may reach out to the RSL program managers or the cognizant science program officer to discuss these arrangements.

Proposals involving fieldwork in the Arctic must 1) describe the field activities in the body of the proposal, including a schedule of proposed work, and 2) describe the costs of the fieldwork either in the grant budget or in Supplementary Documents. The total cost of a project including fieldwork is considered at the time of review. Any science support provided by third-party organizations must be described in a 1–2-page Supplementary Document that outlines the scope of support and a cost estimate. Please allow service providers 4-6 weeks to prepare Supplementary Documents to include in proposals and initiate the request far in advance of proposal submission. For any instrument or infrastructure deployed to the field, investigators should include the scope and cost for the demobilization or other disposal of the property.

Proposals requesting support for fieldwork should expect to go to the field no sooner than 12 months after proposal submission, or 18 months for proposals including ship time requests, to allow time to plan, budget, and complete environmental compliance documentation. Per the NSF PAPPG, awardees are responsible for acquiring and complying with all permits necessary for their work and are responsible for all activities conducted under the award. NSF is not responsible for costs associated with medical evacuations or other interruptions to scheduled fieldwork and reserves the right to seek reimbursement for costs incurred for search, rescue, or medical evacuation. Proposers should ensure all members of the field team are covered by institutional medical evacuation insurance or request funds to purchase medical evacuation insurance, which is an allowable grant cost. All Investigators should have a risk management plan for their fieldwork including a plan for emergencies. The Battelle ARO contractor can help Investigators develop these plans and offers training relevant to fieldwork.

NSF's prime contractor for Arctic field research support is currently Battelle Arctic Research Operations. For assistance from Battelle Arctic in planning field support, email arctic.planning@battelle.org. The Battelle Arctic website (https://battellearcticgateway.org/) provides more information on services available for researchers. Frequently used field support and service organizations are listed below. Investigators should reach out to these providers directly when preparing their proposals and request a scope and cost document for the Supplementary Documents if the support has an incremental cost.

- UNAVCO for geodesy
- Incorporated Research Institutions for Seismology (IRIS) for geophysical studies
- Ice Drilling Program (IDP) for ice core drilling and drill development
- Ice Core Facility (ICF) for ice core archival and sample requests
- Polar Geospatial Center (PGC) for satellite imagery - researchers working on glaciers or the Greenland Ice Sheet are encouraged to notify PGC early in the planning process of potential imagery needs and request imagery from PGC as soon as an award is received.
- Toolik Field Station (TFS) for access to this field station

Proposals requesting ship time on U.S. Coast Guard (USCG; http://icefloe.net) or University-National Oceanographic Laboratory System (UNOLS; https://www.unols.org) vessels should complete a UNOLS Ship Time Request (https://strs.unols.org) and include it as Supplementary Documentation. Refer to guidance on requesting ship time here: https://www.nsf.gov/news/news_summ.jsp?cntn_id=191729&org=OCE. Please contact the ship operator for more information during proposal development. Other international and regional class vessels are available and can be arranged by Battelle. If requesting ship time on foreign research vessels, please contact Frank Rack at frack@nsf.gov to coordinate with NSF; proposals involving foreign research vessels should have Supplementary Documentation describing the scope and cost and outline the partnership arrangement with points of contact.

For work in Greenland, follow the process laid out by the Government of Greenland (http://naalakkersuisut.gl/en/About-government-of-greenland/Travel-activities-in-remote-parts-of-Greenland). In response to the requirement that researchers in remote parts of Greenland carry DKK 1,000,000 in Search and Rescue (SAR) insurance payable to the Danish State (http://naalakkersuisut.gl/en/About-government-of-greenland/Travel-activities-in-remote-parts-of-Greenland/Procedure-and-forms), NSF made an agreement with the Government of Greenland for Search and Rescue costs as a self-insured government agency. NSF provides the names of each traveler under the auspices of NSF to the Government of Greenland. NSF would coordinate SAR activities with the Government of Greenland and reserves the right to seek reimbursement for costs incurred. For work based out of Thule Air Base, please coordinate with Battelle Arctic Research Operations, and please reach out to Jennifer Mercer at jmercer@nsf.gov to coordinate with NSF.

Environmental Policy Considerations of Fieldwork

Federal agencies must comply with the National Environmental Policy Act (NEPA) and other applicable laws and policies such as the Endangered Species Act, the Marine Mammal Protection Act, and the National Historic Preservation Act. Projects will be assessed for environmental impacts prior to award and additional conversations or mitigation efforts may be required. PIs should expect to be involved in the assessment and environmental compliance process for their projects. Investigators may need to travel to communities or meetings as part of the environmental compliance for projects and should request these funds in their award. The RSL program may also provide travel funds if needed to ensure that appropriate dialogue takes place. Researchers proposing work that may affect cultural or historic properties, or whose work involves tribal lands, must cooperate with NSF in complying with the consultation requirements of section 106 of the National Historic Preservation Act and the Native American Graves Protection and Repatriation Act (NAGPRA). For additional information on cultural or historic preservation issues, see the Advisory Council on Historic Preservation's web site at http://www.achp.gov/work106.html; for information concerning NAGPRA see http://www.nps.gov/nagpra/. Contact the Environmental Officer of the Office of Polar Programs, Dr. Polly Penhale (ppenhale@nsf.gov) for guidance on environmental consultations, permitting, and NSF's obligations under existing environmental laws.

B. Budgetary Information

Cost Sharing:

Inclusion of voluntary committed cost sharing is prohibited.

Budget Preparation Instructions:

Budgets for all projects must include funding for one or more designated NNA project representatives (PI/co-PI/senior personnel or NSF-approved replacement) to attend the annual NNA Community Meeting organized by the NNA-Community Office during the proposed lifetime of the award (see section VII of this program solicitation). For multi-organization projects, investigators from each participating organization are expected to attend. There may be anticipated circumstances for a given project that mean not every participating organization can be represented, which should be clearly articulated in the budget justification. For budget preparation purposes, PIs should assume these meetings will be held annually in the Washington, D.C. area as a budget placeholder. Further information on the timing, location, and format of the meetings will be available from the NNA-CO.

C. Due Dates

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

    February 16, 2022

    February 08, 2023

    Second Wednesday in February, Annually Thereafter

Second Wednesday in February, recurring

D. Research.gov/Grants.gov Requirements

For Proposals Submitted Via Research.gov:

To prepare and submit a proposal via Research.gov, see detailed technical instructions available at: https://www.research.gov/research-portal/appmanager/base/desktop?_nfpb=true&_pageLabel=research_node_display&_nodePath=/researchGov/Service/Desktop/ProposalPreparationandSubmission.html. For Research.gov user support, call the Research.gov Help Desk at 1-800-673-6188 or e-mail rgov@nsf.gov. The Research.gov Help Desk answers general technical questions related to the use of the Research.gov system. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this funding opportunity.

For Proposals Submitted Via Grants.gov:

Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. Comprehensive information about using Grants.gov is available on the Grants.gov Applicant Resources webpage: https://www.grants.gov/web/grants/applicants.html. In addition, the NSF Grants.gov Application Guide (see link in Section V.A) provides instructions regarding the technical preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: support@grants.gov. 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 Research.gov may use Research.gov to verify the status of their submission to NSF. For proposers that submitted via Grants.gov, until an application has been received and validated by NSF, the Authorized Organizational Representative may check the status of an application on Grants.gov. After proposers have received an e-mail notification from NSF, Research.gov should be used to check the status of an application.

VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

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

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

Proposers should also be aware of core strategies that are essential to the fulfillment of NSF's mission, as articulated in *Building the Future: Investing in Discovery and Innovation - NSF Strategic Plan for Fiscal Years (FY) 2018 – 2022*. These strategies are integrated in the program planning and implementation process, of which proposal review is one part. NSF's mission is particularly well-implemented through the integration of research and education and broadening participation in NSF programs, projects, and activities.

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

(STEM) workforce by investing in building the knowledge that informs improvements in STEM teaching and learning.

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

A. Merit Review Principles and Criteria

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

1. Merit Review Principles

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

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

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

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

2. Merit Review Criteria

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

The two merit review criteria are listed below. **Both** criteria are to be given **full consideration** during the review and decision-making processes; each criterion is necessary but neither, by itself, is sufficient. Therefore, proposers must fully address both criteria. (PAPPG Chapter II.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 PAPPG 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 other underrepresented groups in science, technology, engineering, and mathematics (STEM); improved STEM education and educator development at any level; increased public scientific literacy and public engagement with science and technology; improved well-being of individuals in society; development of a diverse, globally competitive STEM workforce; increased partnerships between academia, industry, and others; improved national security; increased economic competitiveness of the United States; and enhanced infrastructure for research and education.

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

Additional Solicitation Specific Review Criteria

Proposals submitted in response to this program solicitation will be evaluated by a multi-disciplinary group of reviewers and may include *ad hoc*, site visits, reverse site visits, and/or panel review.

NSF anticipates that all NNA proposals will be evaluated for total logistics costs and feasibility prior to funding, regardless of whether the logistics costs are in the proposal budget or provided directly by NSF to a third-party provider.

In addition to NSB-approved merit review criteria, reviewers will be asked to consider the following questions for all NNA proposals:

- To what degree does the proposed work align with the goals of NSF's NNA Big Idea, including addressing the NNA Venn Diagram and focus areas?
- To what degree does the Management and Integration Plan engender confidence that the research team will effectively coordinate activities through a convergence approach to achieve the goals of the proposed project?

B. Review and Selection Process

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

Ad hoc, panel, site visit or reverse site visit

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

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

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

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

B. Award Conditions

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

*These documents may be accessed electronically on NSF's Website at https://www.nsf.gov/awards/managing/award_conditions.jsp?org=NSF. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from nsfpubs@nsf.gov.

More comprehensive information on NSF Award Conditions and other important information on the administration of NSF awards is contained in the NSF *Proposal & Award Policies & Procedures Guide* (PAPPG) Chapter VII, available electronically on the NSF Website at https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg.

Special Award Conditions:

NNA Community Meetings

To accelerate the rate of dissemination of ideas among researchers, to build an intellectual research core to address NNA challenges, and to enable enhanced research collaborations, the NNA Community Office will organize annual NNA Community Meetings with participation from all funded projects and other

representatives from academia, industry, government, and community organizations. As noted in "Budget Preparation Instructions," all NNA project budgets must include funding for at least one representative of the project to attend each meeting during the proposed lifetime of the award. For multi-organization projects, investigators from each participating organization are expected to attend. There may be anticipated circumstances for a given project that mean not every participating organization can be represented, which should be clearly articulated in the budget justification.

Communication, Coordination, and Engagement with Arctic Communities

In accordance with the Interagency Arctic Research Policy Committee (IARPC) *Principles for Conducting Research in the Arctic*, proposers planning projects working near Arctic communities are strongly encouraged to discuss the proposed work with those communities while the project is being developed and throughout the research period, as appropriate. Researchers should coordinate their field activities with nearby communities and are expected to share results with the community following each field season and/or at the end of the project. Investigators should include travel funds for this in their proposal budget. Some projects may require discussion with Indigenous or subsistence co-management organizations. Time for dialogue should be included in the project schedule and funds for these meetings, both in person and virtual, should be included in the proposal budget.

Policies Related to Arctic Fieldwork

Participants in NSF-sponsored Arctic fieldwork are required to comply with the following NSF policies: Polar Code of Conduct, Field Safety Risk Management, Physical Qualifications for Arctic Fieldwork, and IT Security Rules of Behavior. Failure to comply can result in removal from the field or from NSF facilities, retraction of funding, debarment, and referral to law enforcement as appropriate. These policies are available on the Arctic Research Support and Logistics program website and the NSF https://battellearcticgateway.org/"prime Arctic logistics contractor website.

Acknowledgement of Support

Grantees will be required to include appropriate acknowledgment of NSF support under Navigating the New Arctic in any publication (including World Wide Web pages) of any material based on or developed under the project, in the following terms:

"This material is based upon work supported by the National Science Foundation Navigating the New Arctic Big Idea under Grant No. (Grantee enters NSF grant number.)"

Grantees also will be required to orally acknowledge NSF support using the language specified above during all news media interviews, including popular media such as radio, television, and news magazines.

Any cooperative agreement awarded in response to this solicitation will contain the following term and condition:

Ensuring Adequate COVID-19 Safety Protocols

a. This clause implements Section 3(b) of Executive Order 14042, Ensuring Adequate COVID Safety Protocols for Federal Contractors, dated September 9, 2021 (published in the Federal Register on September 14, 2021, 86 FR 50985). Note that the Department of Labor has included "cooperative agreements" within the definition of "contract-like instrument" in its rule referenced at Section 2(e) of this Executive Order, which provides:

    For purposes of this order, the term "contract or contract-like instrument" shall have the meaning set forth in the Department of Labor's proposed rule, "Increasing the Minimum Wage for Federal Contractors, " 86 Fed. Reg. 38816, 38887 (July 22, 2021). If the Department of Labor issues a final rule relating to that proposed rule, that term shall have the meaning set forth in that final rule.

b. The awardee must comply with all guidance, including guidance conveyed through Frequently Asked Questions, as amended during the performance of this award, for awardee workplace locations published by the Safer Federal Workforce Task Force (Task Force Guidance) at https://www.saferfederalworkforce.gov/contractors/

c. *Subawards*. The awardee must include the substance of this clause, including this paragraph (c), in subawards at any tier that exceed the simplified acquisition threshold, as defined in Federal Acquisition Regulation 2.101 on the date of subaward, and are for services, including construction, performed in whole or in part within the United States or its outlying areas. That threshold is presently $250,000.

d. *Definition*. As used in this clause -

United States or its outlying areas means—

1. The fifty States;
2. The District of Columbia;
3. The commonwealths of Puerto Rico and the Northern Mariana Islands;
4. The territories of American Samoa, Guam, and the United States Virgin Islands; and
5. The minor outlying islands of Baker Island, Howland Island, Jarvis Island, Johnston Atoll, Kingman Reef, Midway Islands, Navassa Island, Palmyra Atoll, and Wake Atoll.

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 Proposal & Award Policies & Procedures Guide* (PAPPG) Chapter VII, available electronically on the NSF Website at https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg.

Special Reporting Requirements:

Data Management Policy. Proposals submitted under this solicitation are required to include a Data Management Plan as detailed in Section V.A of this solicitation. Principal Investigators are required to provide updates on the status of metadata and data archival in annual project reports. Compliance with the project Data Management Plan must be documented in the final project report. URLs for archived metadata and data should be included in these reports in the section entitled "Products-Websites or Other Internet Sites." Archiving of data and metadata, and execution of the Data Management Plan, must be completed prior to the submission of the final project report. Final project report approval is contingent upon successful data and metadata archiving and execution of the Data Management Plan.

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:

- NNA Working Group, telephone: (703) 292-8030, email: nna@nsf.gov

For questions related to the use of FastLane or Research.gov, contact:

- FastLane and Research.gov Help Desk: 1-800-673-6188

  FastLane Help Desk e-mail: fastlane@nsf.gov.

  Research.gov Help Desk e-mail: rgov@nsf.gov

For questions relating to Grants.gov contact:

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

IX. OTHER INFORMATION

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

Grants.gov provides an additional electronic capability to search for Federal government-wide grant opportunities. NSF funding opportunities may be accessed via this mechanism. Further information on Grants.gov may be obtained at https://www.grants.gov.

ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) is an independent Federal agency created by the National Science Foundation Act of 1950, as amended (42 USC 1861-75). The Act states the purpose of the NSF is "to promote the progress of science; [and] to advance the national health, prosperity, and welfare by supporting research and education in all fields of science and engineering."

NSF funds research and education in most fields of science and engineering. It does this through grants and cooperative agreements to more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations and other research organizations throughout the US. The Foundation accounts for about one-fourth of Federal support to academic institutions for basic research.

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

Facilitation Awards for Scientists and Engineers with Disabilities (FASED) provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See the *NSF Proposal & Award Policies & Procedures Guide* Chapter II.E.6 for instructions regarding preparation of these types of proposals.

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

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

> The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for research and education in the sciences, mathematics, and engineering.
>
> To get the latest information about program deadlines, to download copies of NSF publications, and to access abstracts of awards, visit the NSF Website at https://www.nsf.gov
>
> - **Location:**   2415 Eisenhower Avenue, Alexandria, VA 22314
>
> - **For General Information**   (703) 292-5111
>   (NSF Information Center)**:**
>
> - **TDD (for the hearing-impaired):**   (703) 292-5090
>
> - **To Order Publications or Forms:**
>
>   Send an e-mail to: nsfpubs@nsf.gov
>
>   or telephone: (703) 292-8143
>
> - **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 System of Record Notices, NSF-50, "Principal Investigator/Proposal File and Associated Records," and NSF-51, "Reviewer/Proposal File and Associated Records." Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

An agency may not conduct or sponsor, and a person is not required to respond to, an information collection unless it displays a valid Office of Management and Budget (OMB) control number. The OMB control number for this collection is 3145-0058. Public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding the burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to:

Suzanne H. Plimpton
Reports Clearance Officer
Policy Office, Division of Institution and Award Support
Office of Budget, Finance, and Award Management
National Science Foundation
Alexandria, VA 22314

| Policies and Important Links | | Privacy | | FOIA | Help | | Contact NSF | | Contact Web Master | | SiteMap |

National Science Foundation, 2415 Eisenhower Avenue, Alexandria, Virginia 22314, USA
Tel: (703) 292-5111, FIRS: (800) 877-8339 | TDD: (703) 292-5090 or (800) 281-8749

Text Only