NAVIGATING THE NEW ARCTIC (NNA)

NNA Funding[1]

(Dollars in Millions)

	FY 2020 Actual	FY 2021 Estimate	FY 2022 Request
Stewardship Activities (GEO)	**$27.20**	**$30.00**	**$30.00**
Foundational Activities	**$4.25**	**$6.20**	**$7.20**
BIO	1.50	1.50	2.00
EHR	1.37	1.20	1.20
ENG	-	2.00	2.00
SBE	0.24	0.50	0.50
OISE	0.30	1.00	0.50
OPP	0.84	-	1.00
Total	**$31.46**	**$36.20**	**$37.20**

[1] Funding displayed may have overlap with other topics and programs.

Overview

Arctic temperatures are rising faster than nearly everywhere else on Earth. The rapid and wide-scale changes occurring in response to this warming portend new opportunities and risks to natural systems; social and cultural systems; economic, political, and legal systems; and infrastructure and other engineered systems 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 will require creative new directions for Arctic-specific research and education, as well as leveraging of science, engineering, and technology advances from outside the Arctic.

NNA, one of NSF's Big Ideas, embodies the Foundation's forward-looking response to these profound challenges. NNA seeks innovations in Arctic observational networks and fundamental convergence research across engineering and the social, natural, environmental, and computing and information sciences, that address 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. NNA empowers new research communities; diversifies the next generation of Arctic researchers; integrates the co-production of knowledge with local and Indigenous people and organizations; and engages with interdisciplinary, interagency, and international partners to further pan-Arctic and Arctic-global perspectives.

With respect to observational research, NNA addresses key gaps in the existing array of observation, communication, computation, and data systems. Strong coupling of observation, communication, computation, and data, including the theoretical foundations underlying these, is supported to ensure progress. NNA leverages resources with the Mid-scale RI and HDR Big Ideas as appropriate.

NNA also strongly encourages projects with components that advance STEM education; that deepen public understanding of the changing Arctic to benefit both citizens and policy makers; and that advance workforce-development objectives. NNA builds on NSF's STEM investments and the NSF INCLUDES Big Idea to encourage innovative and appropriately evaluated education and public engagement efforts that leverage exciting NNA science and inspire diverse participation in STEM.

By drawing upon expertise from across the agency, NNA investments accelerate research needed to inform decisions regarding the national security, economic development, and societal well-being of the U.S. as an Arctic nation and enable resilient, sustainable Arctic communities as a result. NSF plans to invest in NNA at least through FY 2023.

Goals

1. Improved understanding of Arctic change and its local and global effects that capitalizes on: innovative and optimized observation infrastructure; advances in understanding of fundamental processes; and new approaches to modeling interactions among the natural environment, built environment, and social systems.
2. New and enhanced research communities that are diverse, integrative, and well-positioned to carry out productive research on the interactions or connections between Arctic natural and built environments and social systems and how these connections inform our understanding of Arctic change and its local and global effects.
3. Research outcomes that inform U.S. national security, economic development, and societal well-being and enable resilient, sustainable Arctic communities.
4. Enhanced efforts in formal and informal education that focus on the multi-scale impacts of Arctic change on natural and built environments and social systems and broadly disseminate research outcomes.

In FY 2017, NSF issued a Dear Colleague letter (DCL) on the Growing Convergence Research Big Idea (NSF 17-065)[1] to explore convergence approaches within four of the research-focused NSF Big Ideas, including NNA. This DCL requested proposals for Research Coordination Networks (RCNs), workshops, and activities to enhance Arctic observational systems. In FY 2018, NSF issued a DCL on Stimulating Research Related to NNA (NSF 18-048),[2] requesting research proposals building on the FY 2017 awards, as well as proposals for workshops and RCNs. NSF awarded 25 new projects under these two DCLs and related opportunities with budgets ranging from $50,000 to $1.50 million lasting up to 60 months. In FY 2019, NSF issued a solicitation for NNA (NSF 19-511)[3] and made 13 awards to support research projects, and eight awards to support planning projects that will develop convergence research teams, with budgets ranging from $13,000 to $3.0 million lasting up to 60 months. In FY 2020, NSF issued a solicitation for NNA (NSF 20-514)[4] and made six awards to support research projects and 11 awards to support planning projects; NSF also leveraged NNA funds to support four additional research projects that serve NNA goals but are managed by other programs at NSF. In FY 2021, NSF awarded a multi-year cooperative agreement for the Navigating the New Arctic Community Office to support coordination among NNA projects, build and strengthen relationships between NNA researchers and Arctic residents, and coordinate effective knowledge dissemination, education, and outreach related to NNA and convergence research in the Arctic.

FY 2022 Investments

NSF's NNA activities in FY 2022 will focus on enabling advances in priority areas, which will be developed by building on outcomes from FY 2017 to FY 2021 activities. In FY 2021, NSF issued a revised NNA solicitation (NSF 21-524)[5] that focuses on convergent social/built/natural-environment systems science; advances in observation, communication, computation, and data systems; and community-coordination

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[1] www.nsf.gov/pubs/2017/nsf17065/nsf17065.jsp
[2] www.nsf.gov/pubs/2018/nsf18048/nsf18048.jsp
[3] www.nsf.gov/pubs/2019/nsf19511/nsf19511.htm
[4] www.nsf.gov/pubs/2020/nsf20514/nsf20514.htm
[5] www.nsf.gov/pubs/2021/nsf21524/nsf21524.htm

activities. This revised solicitation also adds a new opportunity to support larger-scale projects that will provide the foundation for the cultivation of long-term ideas, collaborations, research, synthesis, and investment in future convergence science in and regarding Arctic change. In FY 2022, NSF will continue support for NNA, and expects to issue another solicitation.

NSF will continue to coordinate and leverage NNA-related activities with external stakeholders, including:
- other federal agencies through the Interagency Arctic Research Policy Committee (IARPC) chaired by the NSF Director;
- local residents and Indigenous peoples through state and local governance structures of Alaska; and
- international partners through forums such as the biannual International Arctic Science Ministerial.

The portfolio of FY 2022 NNA activities will support the goals listed above.