National Science Foundation

FY2024
Agency Financial Report

MISSION

To promote the progress of science; to advance the national health, prosperity, and welfare;

and to secure the national defense; and for other purposes.

—from The National Science Foundation Act of 1950 (P.L. 81-507)

VISION

A nation that leads the world in science and engineering research and innovation, to the benefit of all, without barriers to participation.

—from "Leading the World in Discovery and Innovation, STEM talent Development and the Delivery of Benefits from Research"
NSF Strategic Plan for FY 2022-2026

ABOUT THIS REPORT

The National Science Foundation (NSF) issues this report for fiscal year (FY) 2024 to provide financial management and to demonstrate accountability to our stakeholders and the American public. These reports are produced using guidance from the Office of Management and Budget and meet the requirements of the Chief Financial Officers (CFO) Act, as amended by the Government Management Reform Act of 1994, the Federal Managers' Financial Integrity Act of 1982, the Reports Consolidation Act of 2000, and the Government Performance and Results Modernization Act of 2010.

The ***Agency Financial Report*** (AFR) focuses on financial management and accountability. Below is a high-level summary of the AFR's three chapters:

- *Chapter 1: Management's Discussion & Analysis* provides a high-level overview of NSF's organizational structure, strategic framework, programmatic and financial performance, and management assurances related to NSF's internal controls.
- *Chapter 2: Financials* includes the results of NSF's annual financial statement audit and financial statements and accompanying documents.
- *Chapter 3: Appendices (Other Information)* contains the memorandum from the NSF Inspector General (IG) on the agency's FY 2024 management challenges, NSF management's progress report on the challenges identified by the IG for FY 2024, information on grant reporting, patents and inventions resulting from NSF support, and other relevant information.

NSF by the Numbers	
$9,060,000	FY 2024 Appropriations (does not include mandatory accounts)
1,850	Colleges, universities, and institutions receiving NSF funding in FY 2024
40,000	Proposals evaluated in FY 2024 through a competitive merit review process
11,000	Competitive awards funded in FY 2024
187,829	Proposal reviews conducted in FY 2024
357,600	Estimated number of people NSF supported directly in FY 2024 (researchers, postdoctoral fellows, trainees, teachers, and students)
70,000	Students supported by NSF Graduate Research Fellowships since 1952

Numbers are rounded.

The ***Annual Performance Report*** (APR) also provides information on the progress NSF has made toward achieving its goals and objectives as described in the agency's strategic plan and Annual Performance Plan, including the strategic objectives, performance goals, and Agency Priority Goals. The *APR* is included in NSF's annual Budget Requests to Congress. The AFR and APR are available on NSF's website as they are completed.[1] We welcome your suggestions on how we can make these reports more informative. You can reach us at: accountability@nsf.gov or call (703) 292-8200.

[1] Online resource for NSF's accountability reports: https://www.nsf.gov/about/performance/

TABLE OF CONTENTS

MESSAGE FROM THE DIRECTOR

Photo: NSF/Stephen Voss

I am pleased to present the National Science Foundation's (NSF's) *Fiscal Year 2024 Agency Financial Report (AFR)*. The AFR is NSF's principal report demonstrating our commitment to sound financial management and providing key financial and performance information to our stakeholders and the American people. Since 1950, NSF has invested in ideas and innovations that have shaped the modern world — pushing the boundaries of what's possible and deepening humanity's understanding of the world. NSF-funded research has resulted in the growth and operation of the modern internet, Magnetic Resonance Imaging (MRI), LASIK eye surgery, and 3D printing. As we further invest in the immense talent living in every corner of the United States (U.S.), we are building the industries of tomorrow and ensuring the U.S. leads the world in the innovations of the future.

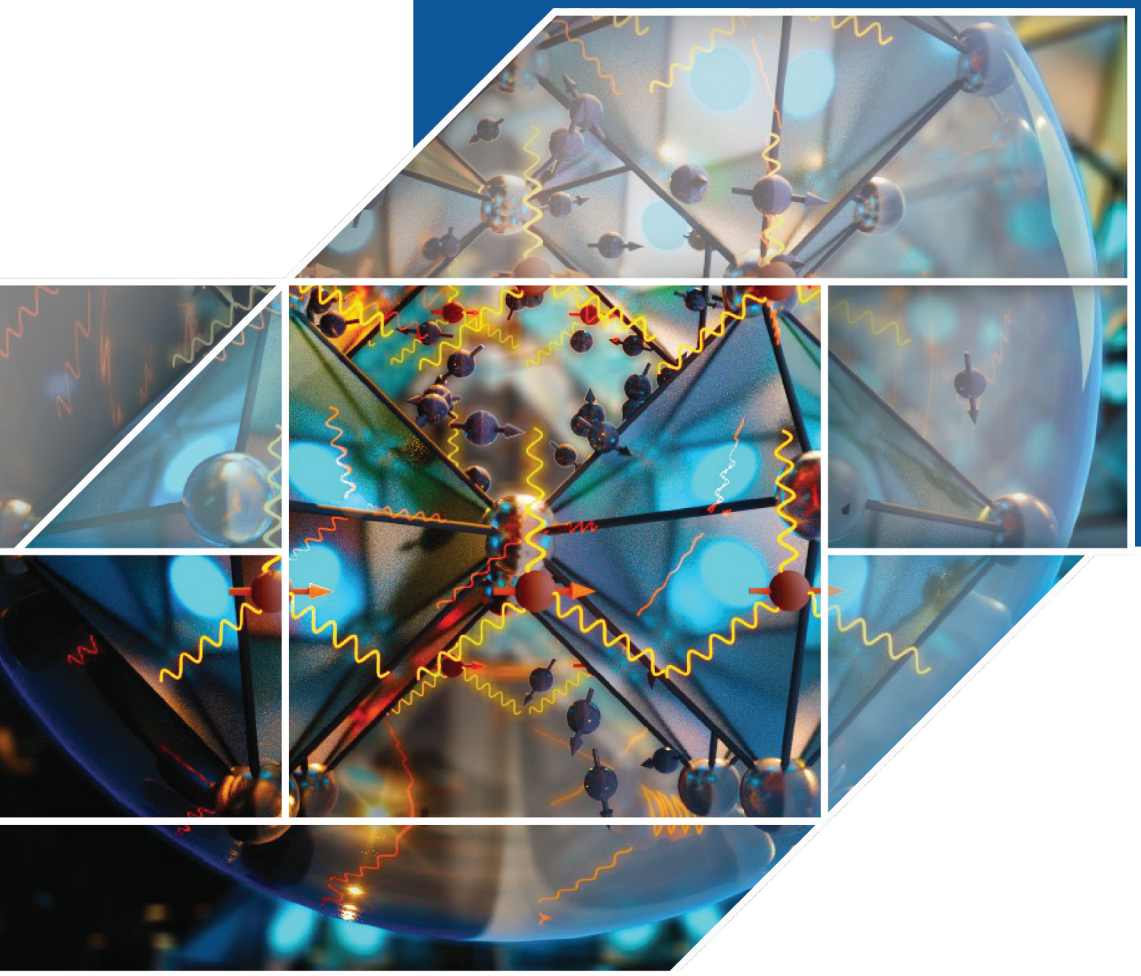
As the Foundation approaches its 75th anniversary, NSF continues to expand its reach through new, cross-sectoral partnerships and multi-disciplinary awards. In FY 2024, NSF led major investments in basic and translational research into some of the biggest challenges facing society today: advanced manufacturing, biotechnology, microelectronics and semiconductors, and quantum computing. NSF partnered with academia and industry to optimize CHIPS investments and tackle semiconductor design and manufacturing challenges, including providing training across the nation for skills that are crucial for global competitiveness.

The Foundation is committed to growing domestic talent across the Nation to populate the U.S. STEM workforce of the future. The Established Program to Stimulate Competitive Research (EPSCoR) promotes the development of research competitiveness among specific states and territories that have historically received less funding for scientific research. NSF made significant investments in EPSCoR jurisdictions to enhance research facilities, form new networks, support workforce development, seed the life-changing scientific discoveries of tomorrow, and accelerate economic growth. Through these awards, NSF exceeded the ambitious CHIPS and Science Act target of 16 percent of all research funding going to EPSCoR jurisdictions in FY 2024.

NSF programs rely on the careful stewardship of public funds and reporting of accurate data and information on NSF's fiscal operations, as detailed in this report. NSF uses a rigorous merit review system to ensure proposals are evaluated in a fair, competitive, transparent and in-depth manner. With the publication of the *FY 2024 Agency Financial Report*, I am pleased to report that for 27 consecutive years, NSF has received an unmodified "clean" opinion on its financial statements. The independent auditors did not identify any material weaknesses. In addition, NSF provided reasonable assurance that the agency complied with the Federal Managers' Financial Integrity Act and that internal controls were operating effectively to support accurate financial reporting. NSF is committed to ensuring funds are used effectively to support the Foundation's mission and strategic goals. We present this AFR as an artifact of our accountability as we continue to promote the progress of science; advance the national health, prosperity, and welfare; and secure national defense.

Sethuraman Panchanathan

Chapter 1
Management's Discussion and Analysis

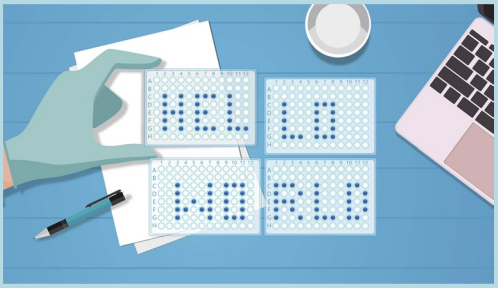


Agency Overview

Mission and Vision

The National Science Foundation (NSF) was established in 1950 "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense..."[1] This mission has become even more dynamic over time as the global landscape of science, technology, and education continues to evolve rapidly. For example, it was also in 1950 that Alan Turing published a paper on "thinking machines," which seemed like science fiction to most people at the time. By the early 1960s, NSF invested in foundational artificial intelligence (AI) research, setting the stage for today's understanding and use of AI technologies. Today, AI is so embedded in daily life that it has become a federal priority in terms of security and governance.

In fiscal year 2024 (FY 2024), NSF launched the National Artificial Intelligence Research Resource (NAIRR) pilot program in collaboration with 12 other federal agencies and 26 non-governmental partners. This program aims to provide a national research infrastructure that connects United States (U.S.) researchers to the computing data, software, models, and educational resources needed to realize the vision of a full NAIRR—an ecosystem where ideas and innovations from a diverse pool of talent can thrive and benefit all Americans. The two-year NAIRR pilot, as directed in the *Executive Order on the Safe, Secure and Trustworthy Development and Use of Artificial Intelligence,* provides shared resources that would otherwise be cost-prohibitive to obtain, maintain, and secure for individual institutions in the research and education communities.



The AI-based system, named Coscientist, uses a simple, plain language prompt to execute experiments with robotic lab equipment with minimal human direction.

Credit: NSF

Accelerating discovery through AI-assisted chemical innovations

Researchers, supported by two NSF Centers for Chemical Innovation, developed an artificial intelligence-based system capable of planning and carrying out real-world chemistry experiments using robotic lab equipment with minimal human direction. The AI-based system, named Coscientist, uses large language models to design, plan, and execute an experiment with a simple, plain language prompt. This includes the ability to analyze the resulting experimental data to determine what worked and what didn't. This research showcases the potential for AI to become a sort of hyper-efficient lab partner that can help human scientists make more discoveries, while also improving the replicability and reliability of experimental results. This advancement will inform rules and policies that can effectively prevent harmful uses of AI, whether intentional or accidental.

[1] National Science Foundation Act of 1950 (Public Law 81–507).

NSF's Graduate Research Fellowship Program (GRFP) has its origins in the early years of the Foundation, dating back to 1952. Since then, GRFP has funded approximately 70,000 Graduate Research Fellows, many of whom have since made groundbreaking discoveries in STEM research, including 40 who went on to receive the Nobel Prize for their contributions. In total, NSF has funded the research of 268 individuals who have won the Nobel Prize, along with 50 individuals who have won the Association for Computing Machinery (ACM) A. M. Turing Award, often referred to as the "Nobel Prize of Computing."

As the Foundation approaches its 75th anniversary, there are many NSF-funded discoveries that originated as hypotheses and ultimately developed into real-world applications benefitting the American public. Across all fields of science, technology, engineering, and mathematics (STEM), NSF's investment in fundamental research and development (R&D) has been a catalyst for transformative breakthroughs with multidisciplinary teams developing novel materials with broad, practical applications in healthcare, climate change, computing, and education. Researchers supported by the NSF Materials Innovation Platform in FY 2024 discovered that building semiconductor devices in 3D, rather than stacking up multiple 2D layers, leads to faster, more capable chips with improved energy efficiency and processing power than the 2D chips currently used in electronic devices. The NSF Physics Frontiers Center and Quantum Leap Challenge Institute also supported the first demonstration of electrically neutral atoms to create a programmable, logical quantum processor with up to 48 logical qubits—a large increase over previous achievements and a potential turning point in the race to create quantum computers capable of performing tasks beyond the abilities of traditional computers.

UNIGRID Battery, a California-based startup and NSF Small Business Innovation Research awardee, has developed affordable and non-flammable batteries using domestically sourced sodium; this advancement could significantly reduce import reliance and alleviate supply chain limitations on lithium-based materials.

Credit: UNIGRID

Sodium-Based Solid-State Batteries for Stationary Energy Storage

Safe and sustainable energy storage technologies are necessary to meet increasing global energy demands, stabilize the grid, and accelerate further renewable energy generation. UNIGRID Battery, a California-based startup, develops affordable and non-flammable sodium-ion batteries that utilize abundant, domestically sourced materials. With support from NSF's Small Business Innovation Research program, UNIGRID is accelerating and scaling up its battery production to meet commercial demands. Demonstrating the properties of their sodium-ion battery at this commercial scale—including its energy density, cost, manufacturability, and electrochemical properties—will provide crucial technology and manufacturing validation for the stationary energy storage sector. This advancement will create new energy storage market opportunities, eliminate the risk of battery fires, and maximize the usage of renewable energy.

The NSF vision is for the U.S. to be a nation that leads the world in science and engineering research and innovation, to the benefit of all, without barriers to participation. One way that NSF makes that vision a reality is by defining core values that guide how the Foundation makes decisions, sets priorities, addresses challenges, and works with the scientific community. These values of scientific leadership, diversity and inclusion, integrity and excellence, public service, and innovation and collaboration

have steered the agency to fund breakthroughs and innovations that represent American ingenuity. NSF programs provide every aspiring scientist and engineer an opportunity to prepare for and compete in their field and contribute to our legacy of innovation.

Aside from targeted funding opportunities for NSF's scientific focus areas, the Foundation continually evaluates and supplements STEM learning across the country to ensure that future generations are encouraged to challenge the limitations of today's human knowledge. NSF is investing $90 million over five years in SafeInsights, a unique national scientific cyberinfrastructure. This initiative aims to transform research in learning and STEM education by leveraging data across a range of major digital learning platforms, which currently serve tens of millions of learners across different educational levels in the U.S.

CBIKS is organized based on Indigenous models of consensus decision-making and intergenerational learning and responsibility. Through this convergent and collaborative model, CBIKS can advance not only what we know about interactions between the natural world and human societies, but also how we investigate and address related societal challenges.

Credit: Ora Marek-Martinez

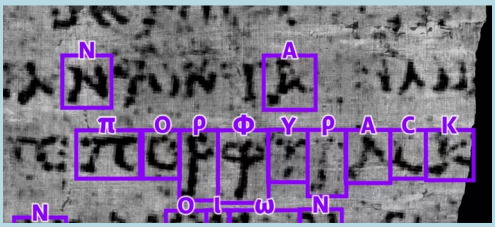
Center for Braiding Indigenous Knowledges and Science (CBIKS)

CBIKS aims to build new approaches and capacity for effectively and ethically integrating Western and Indigenous science to address pressing challenges—including environmental variability, food security, and cultural heritage conservation. This five-year, $30 million international NSF Science and Technology Center, headquartered at the University of Massachusetts Amherst, will partner with almost 60 institutions and Indigenous communities at eight regional research hubs across the U.S. and internationally. Through community-based projects, CBIKS will develop best practices, methods, and ethical guidelines that utilize Western and Indigenous science together throughout the research process. CBIKS will also make major advances in broadening the participation of underrepresented groups in STEM by training a new cohort of Indigenous scientists and resource managers.

NSF continues to operate some of the finest astronomical research facilities in the world, with observatories on nearly every continent, even Antarctica. In partnership with the Department of Energy's (DOE's) Office of Science, a 3,200-megapixel Legacy Survey of Space and Time (LSST) Camera has been built at the NSF-DOE Vera C. Rubin Observatory in Chile. This groundbreaking instrument will capture enormous, detailed images of the southern hemisphere sky for 10 years as part of Rubin Observatory's mission to solve longstanding scientific mysteries by building the most comprehensive timelapse view of the universe ever seen. FY 2024 also marked the first year of data from the Dark Energy Spectroscopic Instrument Survey, which researchers have reported provides new measurements and insights of dark energy and its effect on the expanding universe.

NSF funding facilitated biological advancements with meaningful implications in clinical research and treatment in FY 2024. One research team funded by NSF's Faculty Early Career Development Program developed advanced materials that can mimic the wound-healing abilities of natural platelets. These synthetic platelets stopped bleeding and enhanced healing at the site of an injury in animals; clinical trials in humans have not yet begun. The Science and Technology Center for Quantitative Cell Biology

(QCB) is developing whole-cell models by integrating cutting-edge imaging and simulation tools, which will provide understanding whole-cell behavior in unprecedented detail. The new scientific understanding of cells will have implications for many areas, most notably human health and photosynthesis. In addition, through a partnership with the Minecraft computer game, the Center is developing learning tools for communities of all ages.



This handwriting has been hidden for thousands of years. Uncovering this piece of history can reveal the roots of Western civilization and lead researchers to a more expansive and complete understanding of historical human behavior and ingenuity.

Credit: The Vesuvius Challenge

NSF-supported researcher uses machine learning to reveal secrets of ancient Roman cities

Almost 2,000 years ago, Roman cities—including Pompeii and Herculaneum—were destroyed when Mt. Vesuvius erupted, burning and carbonizing everything. But amid the devastation, a large collection of more than 800 papyrus scrolls survived, buried in the Library of Herculaneum. Discovered in 1750, this collection of manuscripts constitutes the only library known to have survived from classical antiquity, and previous attempts to unroll some of the scrolls have resulted in a complete loss of the document. A recent NSF Graduate Research Fellow worked with a team at the University of Kentucky to develop a revolutionary process using machine learning to digitally restore, enhance, and decipher these damaged manuscripts without unrolling a single scroll.

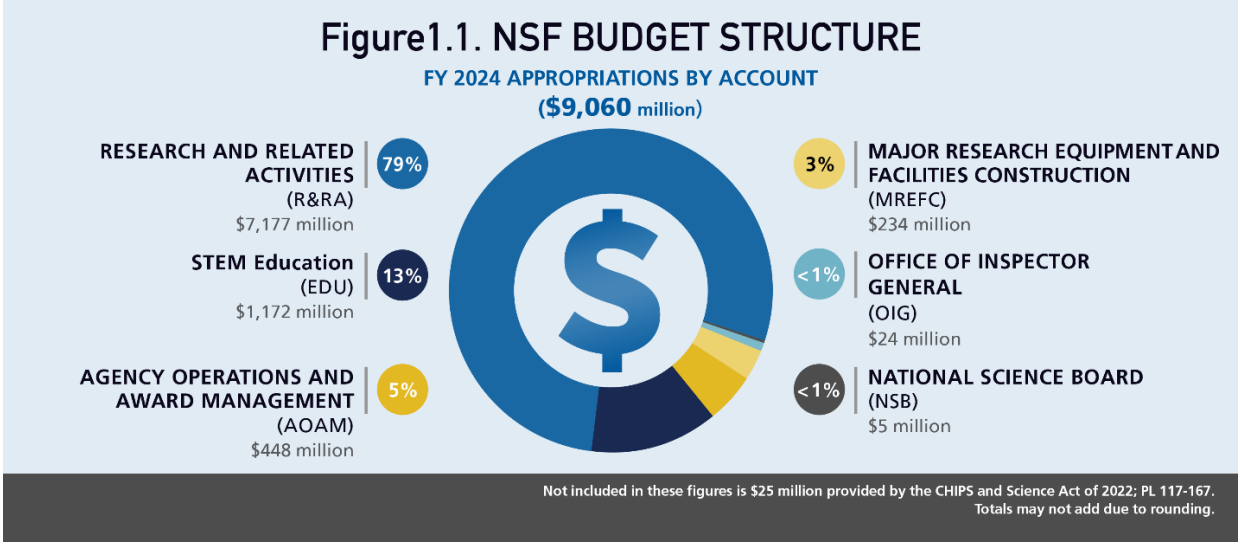
A long-standing priority for NSF is the translation of science and engineering discoveries into innovative technologies and solutions that reach the marketplace and society. NSF investments have inspired start-up creation and fostered small businesses that have forged generations of new American jobs and, through these outcomes and innovations, have benefitted our society, economic competitiveness, and national security. NSF announced the first-ever Accelerating Research Translation (ART) investment this year, awarding more than $100 million to 18 teams at academic institutions across the nation. Fueled by the CHIPS and Science Act of 2022, the ART program enables academic institutions to grow their capacity to accelerate the pace and scale of translational research to benefit society and grow the nation's economy. This investment empowers institutions to build the pathways and structures needed to translate basic discoveries into innovative technologies and solutions that reach the marketplace, fostering a robust innovation ecosystem.

NSF by the Numbers

NSF is funded primarily through congressional appropriations that are provided to six accounts (shown in Figure 1.1): Research and Related Activities (R&RA), STEM Education (EDU), Major Research Equipment and Facilities Construction (MREFC), Agency Operations and Award Management (AOAM), the National Science Board (NSB), and the Office of Inspector General (OIG). In 2024, appropriations in these six accounts totaled $9,060 million.[2] The FY 2024 appropriations were $841 million less than

[2] Amount shown is NSF's FY 2024 discretionary appropriations. This amount does not include Donations and H-1B Nonimmigrant Petitioner Receipts.

the FY 2023 appropriations. In FY 2024, R&RA, EDU, and MREFC appropriations funded the agency's programmatic activities, accounting for 95 percent of NSF's total appropriations.

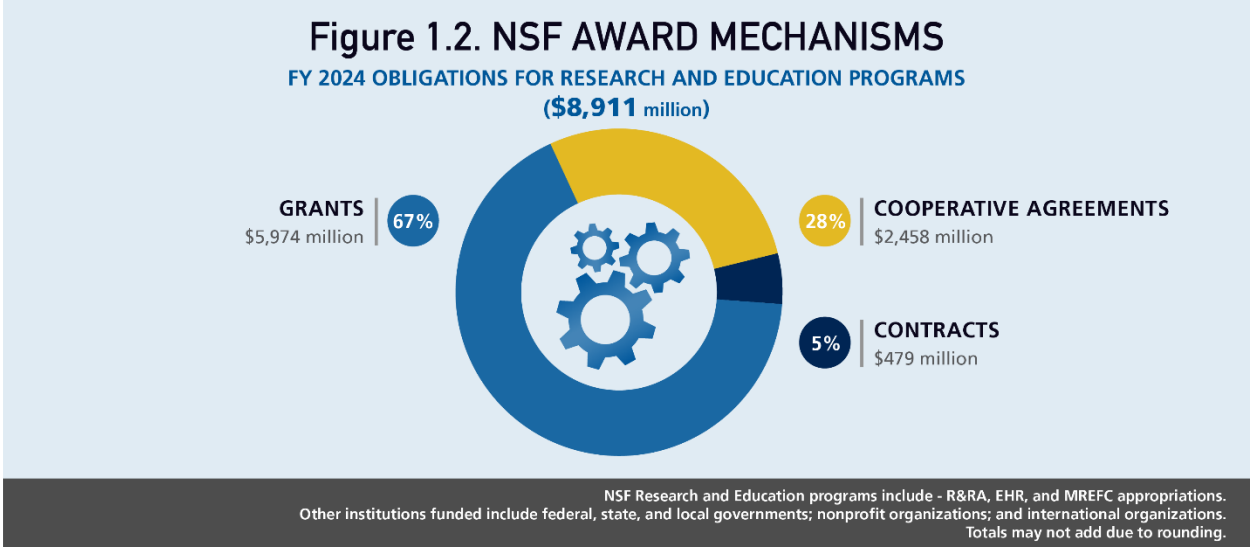


- R&RA invests in early-stage research and the development of a future-focused science and engineering workforce that can accelerate progress in fundamental and translational science and engineering research as well as support the private sector. This appropriation accounted for 79 percent of FY 2024 funding.
- Funding within NSF's EDU appropriation invests in education and training programs to help prepare a diverse, domestic STEM workforce. These investments—spanning pre-K through graduate school and beyond—ensure pathways for people and ideas ready to solve pressing global challenges in science and engineering. EDU is NSF's second-largest appropriation and is 13 percent of the agency's budget.
- The MREFC appropriation supports the acquisition, construction, and commissioning of major facilities and larger mid-scale research infrastructure, providing unique capabilities at the frontiers of science and engineering. In FY 2024, this account was 3 percent of the agency's total appropriations, totaling $234 million.
- FY 2024 AOAM funding of $448 million was consistent with the total FY 2023 AOAM spend. This account supported NSF agency operations and award management activities for the broad range of NSF programs. AOAM was 5 percent of NSF's total FY 2024 appropriations.
- Separate appropriations support the activities of the OIG and the NSB; each accounted for less than 1 percent of NSF's total FY 2024 appropriations. The NSB received an appropriation of $5 million in FY 2024, whereas the OIG appropriations totaled approximately $24 million.

In FY 2024, approximately 357,600 people were directly involved in NSF-funded programs and activities. NSF evaluated over 40,000 proposals through a competitive merit review process and made over 11,000 new competitive awards, primarily to academic institutions. Almost 32,000 members of the science and engineering community participated in the merit review process as

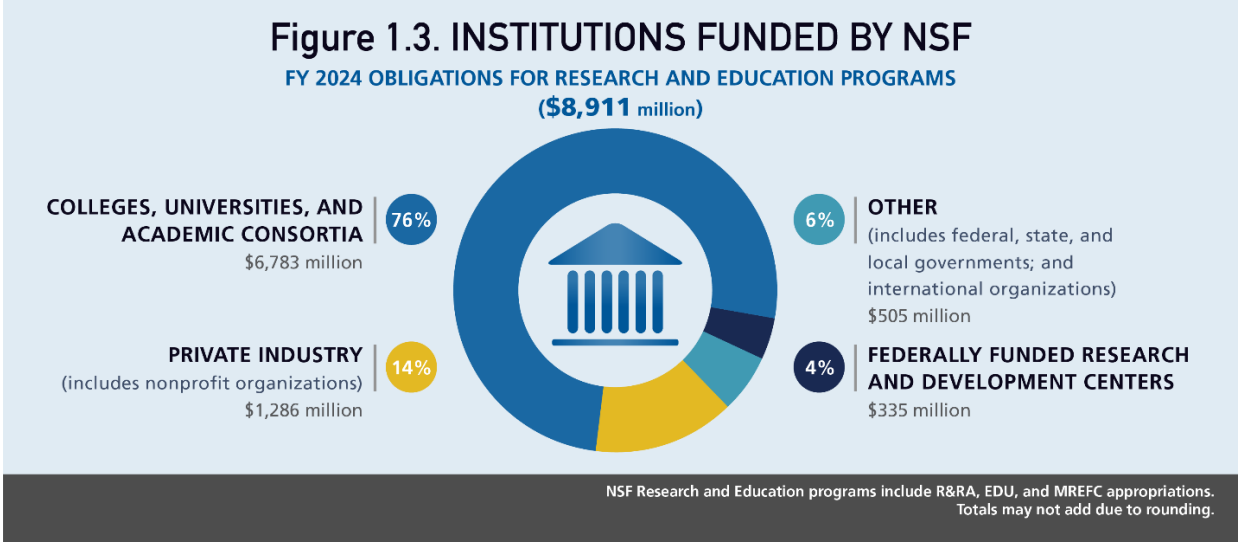
panelists and proposal reviewers.[3] Awards were made to about 1,850 institutions in all 50 states, the District of Columbia, and four U.S. territories. These institutions employ many of America's leading scientists, engineers, and educators; and they train the leading innovators of tomorrow. GRFP also reviewed over 12,500 applications for fellowships; these reviews were conducted by over 2,500 reviewers with relevant expertise. Beyond these figures, NSF programs indirectly impact millions of people, reaching pre-K-12 students and teachers, the general public, and researchers through activities including workshops; informal science activities, such as museums, television, videos, and journals; outreach efforts; and dissemination of novel curricula.

As shown in Figure 1.2, NSF's award funding was used primarily for financial assistance to carry out a public purpose through grants and cooperative agreements. Grants can be either standard awards, in which funding for the full duration of the project is awarded in a single fiscal year, or continuing awards, in which funding for a multi-year project is awarded in increments. Cooperative agreements are used when the project requires substantial agency involvement (such as research centers and major facilities). Contracts are generally used for the direct benefit of the federal government (i.e., to acquire products or services), but they may be used to benefit the public in specific circumstances. On a limited basis in FY 2024, NSF used "other arrangements" and "other transaction authority" to make awards. These two mechanisms support innovative approaches to fund programs managed by the Technology, Innovation and Partnerships (TIP) directorate.



[3] For more information about NSF's merit review process, see https://www.nsf.gov/bfa/dias/policy/merit_review/ and NSF's Merit Review Process, FY 2021 Digest (NSB-2023-14) at https://www.nsf.gov/nsb/publications/2022/merit_review/nsb202314.pdf

As shown in Figure 1.3, 76 percent of support for research and education programs ($6,783 million) was provided to colleges, universities, and academic consortia. Private industry, including small businesses and nonprofit organizations, accounted for 14 percent ($1,286 million), and support to Federally Funded Research and Development Centers accounted for 4 percent ($335 million). Other recipients (i.e., federal, state, and local governments; and international organizations) accounted for 6 percent ($505 million) of support for research and education programs.



Organizational Structure

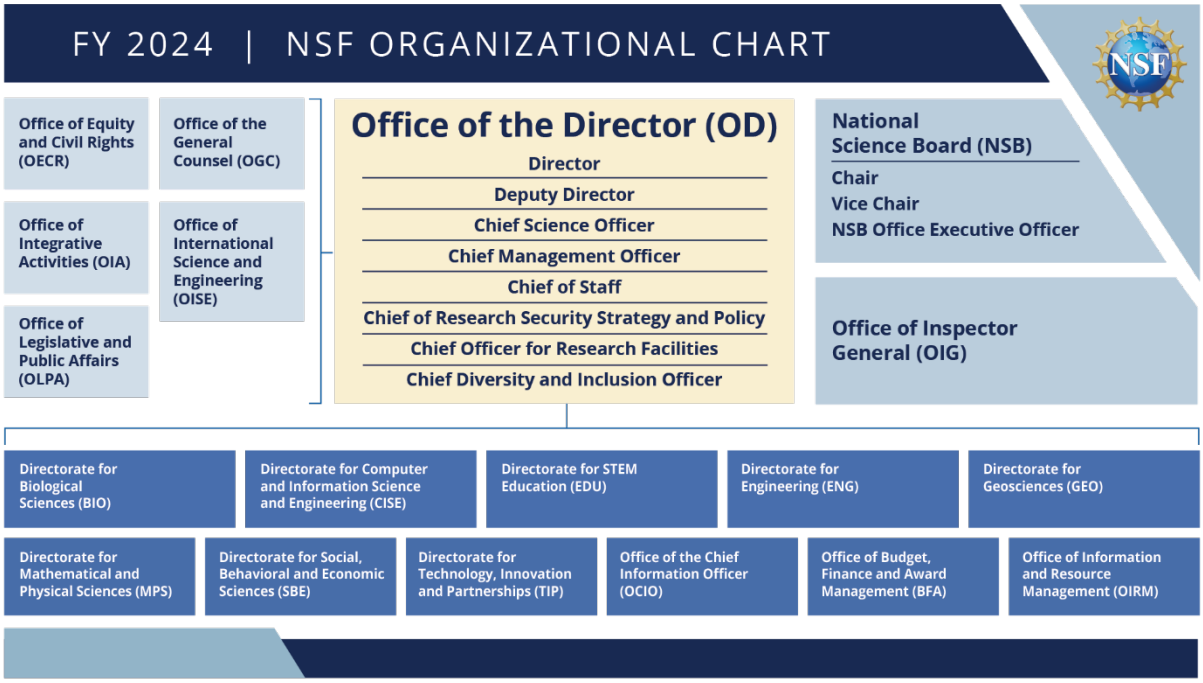
NSF is an independent federal agency headed by a director appointed by the President and confirmed by the U.S. Senate.[4] As the Foundation has grown, so has the complexity and scope of issues and workload for both the science and operational elements of the agency. In FY 2024, NSF restructured the Office of the Director to better align with the underlying authorities governing the agency's operations. The Government Performance and Results Act (GPRA) Modernization Act of 2010 established that each agency must designate the deputy head of agency, or equivalent, as the agency's Chief Operating Officer. NSF has not had a presidentially appointed, senate-confirmed Deputy Director for almost 10 years. The new organizational structure establishes a sustainable model of accountability with positions performing the duties of the Deputy Director and Chief Operating Officer during periods where the agency does not have an encumbered Deputy Director position and will better support the needs of the agency. NSF divided the Chief Operating Officer's responsibilities into two separate positions—a Chief Science Officer (CSO) and a Chief Management Officer (CMO). These co-equals report to the Director until a Deputy Director is appointed.

As shown in Figure 1.4, the Chief Science Officer oversees offices that generally align with the NSF mission space and the major fields of science and engineering, whereas the CMO has assumed responsibility for the agency's operational functions and management authorities.[4] The remaining

[4] NSF's organization chart: https://www.nsf.gov/staff/organizational_chart.pdf

members of the Executive Leadership Team report to one of these positions based on the programmatic or operational nature of their units.

Figure 1.4 FY 2024 Organizational Chart



In January 2024, NSF conducted a comprehensive reorganization of its information technology functions, marked by the establishment of the Office of the Chief Information Officer (OCIO). Through OCIO, NSF ensures that information technology initiatives are supported by a centralized structure bolstered with appropriate resources for innovation and data management, which are critical to the agency's mission now and into the future. The Office is structured into the following three divisions to meet the demands of an ever-evolving technological landscape: digital innovation and governance; data and artificial intelligence services; and development, operation and security. These investments and services support the merit review process and ensure reliability in the business applications that meet the Foundation's needs, including its financial management system.

The President appoints NSB members who are prominent contributors to the STEM research and education community; NSF's Director is an *ex officio* member of the Board.[5] The Director and 24 NSB members serve six-year terms and jointly pursue the goals and functions of NSF, including the duty to "recommend and encourage the pursuit of national policies for the promotion of research and education in science and engineering." The NSB identifies issues critical to NSF's future and helps chart the strategic direction of NSF's budget and programs.

In FY 2024, NSF's workforce comprised over 1,500 federal employees and 200 scientists on temporary appointments under the Intergovernmental Personnel Act (IPA) program. NSF regularly

[5] NSB members during FY 2024 are shown in Appendix 9 of this AFR.

recruits scientists, engineers, and educators through the IPA program who work at NSF for up to four years. They bring relevant perspectives from across the country and all fields of science, then bring knowledge of NSF programming to their home institutions from across academia. In addition to the Foundation's headquarters in Alexandria, Virginia, NSF maintains an office in Christchurch, New Zealand, to support the United States Antarctic Program.

NSF's ASPIRE enabled Purdue University to build a testbed for charging electric vehicles at highway speeds.

Credit: Greta Bell, Purdue University

NSF ASPIRE ERC breaks ground on highway test bed to develop wireless charging for electric vehicles

The NSF Engineering Research Center (ERC) for Advancing Sustainability through Powered Infrastructure for Roadway Electrification (ASPIRE) is dedicated to accelerating the nation's electric transition by creating a seamless charging experience for electric vehicle owners. One ASPIRE project, led by Purdue University began construction in May 2024 on the nation's first highway testbed to charge electric vehicles at highway speeds. Upon completion, a team of engineers will test a patent-pending dynamic wireless charging system designed to provide power to heavy-duty electric trucks traveling down the highway. This technology will lead to widespread electrification of all vehicle classes, improved air quality, and public infrastructure that provides an inexpensive, seamless charging experience.

Management Challenges

OIG issued eight management challenges for NSF at the start of FY 2024. Management's report on the significant activities undertaken in FY 2024 to address these ongoing challenges is included in *Appendix 2B: Management Challenges – NSF's Response of this Agency Financial Report (AFR).* The report also discusses planned activities to address these challenges in FY 2025 and beyond. The following are highlights of the agency's significant actions and planned next steps to address the FY 2024 OIG Management Challenges.

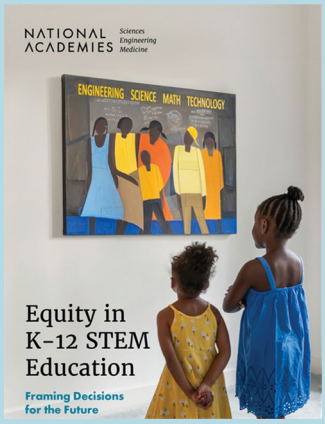
Overseeing and Managing the Risks of Sexual Assault and Harassment in Antarctica

NSF is committed to a culture free of sexual violence wherever NSF-funded activities are conducted, including research stations, vessels, field sites, and NSF-funded programs. Safe research environments are not limited to those conducting research but also include those in supportive roles, such as federal employees, contractors and affiliates who work in support of NSF or whose work is funded by NSF. The Office of Polar Programs works together with NSF's Sexual Assault and Harassment Prevention and Response (SAHPR) Program Office to address critical prevention and response elements and to expand SAHPR functions within the U.S. Antarctic Program (USAP). In FY 2024, NSF delivered bystander training to over 1,000 USAP deployers, participated in on-ice outreach, and enhanced screening procedures for contractors. Moving into FY 2025, NSF remains committed to combatting sexual assault and harassment and ensuring all NSF-funded environments are safe spaces with a positive and inclusive culture. The agency will review its existing policies and procedures to ensure they are survivor-centered and trauma-informed, develop standardized

guidelines on how to respond to reported instances of sexual assault and harassment and continue improvements to living and recreation conditions for USAP participants.

Addressing Sexual Harassment in the Scientific Enterprise

NSF has taken, and continues to take, steps to help ensure all NSF-funded research and learning environments are free from sexual harassment and other forms of harassment such as conducting Title IX compliance reviews, investigating Title IX complaints, and continued implementation of the Harassment Notification Term & Condition for NSF awardees. Additionally, NSF continually communicates its policies and guidelines so that organizations clearly understand expectations and individuals understand their rights. For example, in FY 2024 NSF expanded on the recently added safe and inclusive working environments for off-campus or offsite research certification by conducting the Safe and Inclusive Fieldwork (SAIF) Plans Pilot. Moving forward, NSF will explore the efficacy of adopting restorative approaches to address sexual and other forms of harassment and discrimination at NSF-funded off-campus or off-site research venues.



This report provides a framework for more diverse, equitable, inclusive, and accessible STEM education in K-12.

Credit: National Academies of Sciences

National Academies release NSF-funded report on equity in STEM Education

According to the National Academies of Sciences, Engineering, and Medicine, access to high-quality STEM learning opportunities is uneven across K–12 education. Individual experiences in STEM education may vary substantially based on race, ethnicity, socio-economic class, gender, and numerous other factors. Advancing equity in STEM education involves balancing short-term gains while maintaining a vision for and strategic action toward long-term, continuous, and broad systemic change. To this end, the NSF-funded Equity in K-12 STEM Education: Framing Decisions for the Future report provides a framework to guide decision-makers at all levels of the education system toward a more diverse, equitable, inclusive, and accessible STEM educational experience for all.

Increasing Diversity in Science & Engineering Education and Employment

Broadening participation throughout the STEM enterprise is critical for U.S. economic competitiveness and national security. One way NSF has addressed this Management Challenge is through the establishment of its Creating Opportunities Everywhere (COE) theme as articulated in the FY 2025 Budget Request. COE is an agency-wide commitment with meaningful actions to ensure equity in program delivery and expand access and inclusion in STEM along individual, institutional, and geographic lines. In FY 2024, NSF increased awards in programs to further COE, including a $21.5 million investment in the GRANTED program to support emerging research institutions (ERIs) and minority-serving institutions (MSIs) and doubled the number of Established Program to Stimulate Competitive Research (EPSCoR) Research Fellows. NSF has also increased funding opportunities focused on Tribal Colleges and Universities, Hispanic Serving Institutions, and persons with disabilities; and issued Dear Colleague Letters addressing systemic issues. NSF updated policy

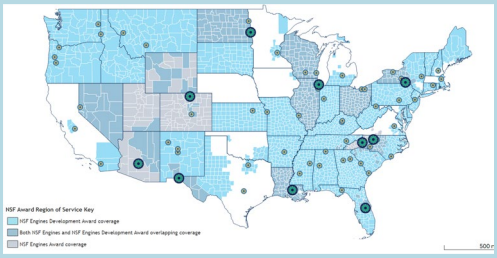
guidance on seeking and obtaining Tribal Nation approval for proposals that may impact Tribal resources or interests. Going forward, NSF will continue to implement its FY 2024-2025 Agency Priority Goal Action Plan to "Improve Representation in the Scientific Enterprise;" include Broader Impacts experts on all Committees of Visitors; and will launch a "Culture Forward Strategy" to emphasize organizational culture.

Overseeing the US Antarctic Program

Antarctica's remote location, extreme environment, and the short period of time each year during which the continent is accessible present challenges above and beyond those typically encountered for domestic construction projects and science operations. In FY 2024, NSF took steps to reduce the COVID-induced science backlog by focusing on completion of existing grants and providing additional logistics support. NSF also planned for the successful recompete of the Antarctic Support Contract and took steps to improve vetting and information security of current contractors. Going forward, NSF will award the new Antarctic Support Contract in FY 2025 and increase engineering oversight of the planned construction work on the lodging building at McMurdo Station.

Overseeing NSF's Funding Portfolio in a Changing Environment

NSF is committed to providing exceptional stewardship over its federal award funding while keeping pace with anticipated growth. NSF's approach to effectively managing a complex and changing funding environment involves strategic and methodical assessment of the current award oversight and control environments. In FY 2024, NSF completed 22 targeted business reviews of the Type 1 award recipients of the NSF Regional Innovation Engines (NSF Engines) program, half of which were organizations new to NSF funding. NSF conducted outreach activities focused on ERIs, MSIs, and non-traditional NSF recipients to educate them on processes and responsibilities in managing federal funding. Going forward, NSF will evaluate results from the FY 2024 targeted business reviews to inform its risk posture on similar programs and initiatives. The agency will also expand its business assistance function through increased outreach informed by a holistic approach to risk.



The 10 inaugural NSF Engines awards span 18 states (Hawaii and Puerto Rico not pictured) and include universities, nonprofits, and businesses.

Credit: NSF

NSF establishes 10 Regional Innovation Engines

NSF established the first-ever NSF Regional Innovation Engines in January 2024, awarding 10 teams across 18 states. With a potential NSF investment of nearly $1.6 billion over the next decade, NSF Engines represents one of the single largest broad investments in place-based R&D in the nation's history—uniquely placing science and technology leadership as the central driver for regional economic competitiveness. Each NSF Engine will transform its region into a self-sustaining, technology- and innovation-driven hub of economic activity. Through these NSF Engines, NSF aims to expand the frontiers of technology and innovation and spur economic growth across the nation through unprecedented investments in people and partnerships. NSF Engines hold significant promise to elevate and transform entire geographic regions into world-leading hubs of innovation.

Managing Human Capital

Managing human capital at NSF is complex due to the way in which the agency recruits, hires, and retains staff. NSF has evolved its human capital management framework since the pandemic, including a shift to a hybrid workforce; new pay policies; improved vetting of temporary rotator staff; and an overall increase in positions. Specific examples include the NSF Workspace Management Policy to enhance NSF workspaces through hoteling, shared workspaces, and other measures, while also establishing revised footprints that account for current space needs. NSF has also addressed areas identified by the OIG IPA vetting audit as well as other agency-identified risks by actively engaging with stakeholders to implement the agency's action plan. In FY 2024, NSF implemented the new telework and space alignment policy including space realignment for one office and four directorates. NSF developed a Hybrid Work Evaluation Dashboard to help leadership and staff assess current and trending organizational climate factors at NSF and use data to drive decisions and planning activities. Moving forward, NSF will continue communication with NSF staff regarding the *Workspace Management Policy* and *Telework and Remote Work Policy*, as workspace realignments continue through early calendar year 2025, as well as continue to implement enhanced IPA vetting for undue foreign influence.

After a devastating fire on the island of Maui, NSF utilized Rapid Research Response to expeditiously fund research to investigate if the local coral reef was impacted.

Credit: University of Hawai'i Mānoa

RAPID grants to support research after the Maui fire

A combination of drought, hurricane winds and low humidity generated an unprecedented fire in Lahaina, a coastal city on the island of Maui, Hawaii, in late 2023. The fire burned over 2,170 acres and 2,200 structures and released ash, particulate matter, and potentially toxic materials into the coastal waters near Lahaina. With support from an NSF Rapid Research Response award funded at the start of FY 2024, a team of researchers from the University of Hawai'i at Mānoa worked with the community to rapidly assess the impacts of the wildfire on Maui's coral reef and nearshore ecosystems. Research shows that pollutant (i.e., copper, lead, and organic contaminants) concentrations are slowly dissipating to safe levels with researchers continuing to monitor water quality, microbial communities, fish contaminants, and reef health.

Mitigating Threats to Research Security

NSF seeks to maintain a vibrant science and engineering community for the benefit of the Nation and to preserve the integrity of international collaboration. However, some foreign governments have made strategic efforts to interfere with or inappropriately benefit from U.S. sponsored research, undermining U.S. values. In response, in FY 2023, NSF established the Office of the Chief of Research Security Strategy and Policy (OCRSSP). In FY 2024, OCRSSP awarded funds for the SECURE Center (formerly the RSI-ISAO) and SECURE Analytics projects, delivered four research security training modules, and collected a new Foreign Financial Disclosure Reporting requirement from institutions of higher education. OCRSSP will continue to work with federal partners to meet CHIPS

and Science Act research security and related requirements, develop and deliver additional training on research security for the research community, and continue to refine and scale up research security analytics capabilities.

Mitigating Threats Posed by the Risk of Cyberattacks

NSF recognizes the rapid technological advancements and cybersecurity challenges of a digital federal government. NSF is transforming the way information technology and mission-critical data are managed. NSF's cybersecurity risk strategy is adaptive and provides resilience to emerging cybersecurity threats. NSF continues to implement a Zero Trust Architecture (ZTA) focusing on priority tasks to address the five pillars of the Zero Trust Maturity Model. NSF maintains strong access controls and a robust capability to quickly detect and respond to incidents, including state-of-the-art network and security protections. NSF's establishment of an independent OCIO was a strategic realignment to ensure that Information Technology (IT) applications and data management are supported by a centralized structure that can better manage resources to address current needs and anticipate future challenges. In FY 2024, NSF completed a data evaluation and risk analysis for Microsoft 365 and data on the Amazon Web Service (AWS) environment, implemented a phishing-resistant multi-factor authentication (MFA) option for NSF staff, and deployed resources to fully implement MFA authentication for USAP staff prior to accessing the USAP network. Moving forward, NSF will update its password monitoring capability to align with ZTA and evaluate cryptographic technologies to assist with transition to post-quantum resistant cryptography.

The Cybersecurity Workforce Data exists to better understand the cybersecurity workforce, including who is in the cybersecurity workforce, what those individuals do, and how they are trained in the United States.

Credit: Morgan State

Understanding the Cybersecurity workforce needs

Through its Cybersecurity Workforce Data Initiative, the NSF National Center for Science and Engineering Statistics is assessing the feasibility of providing nationally representative estimates and statistical information on the cybersecurity workforce. The discipline, workforce, and practice of cybersecurity continue to evolve rapidly, presenting challenges for those who seek to measure and understand a field that has become central to our national security. Authorized by the "CHIPS and Science Act of 2022", this initiative is a multi-layered, multi-year assessment to better understand the American cybersecurity workforce, including who is in the cybersecurity workforce, what those individuals do, and how they are trained. Efforts include a scan of existing definitions and data, stakeholder interviews, and public workshops. This assessment will guide preparations for a pilot data collection in 2025.

Climate-related Financial Risk

NSF established measures to evaluate the resilience of major facilities to natural hazards associated with climate change (e.g., fires, flooding, extreme wind) on a regular cadence as part of external

reviews, as defined in NSF's Sustainability Report and Implementation Plan[6] to the Council for Environmental Quality. Formal reviews of facility conditions now take place once every five years. The award recipient will generally conduct the assessments, and the resulting report will be provided to NSF. External panel recommendations help inform agency decisions around future investments in the supporting infrastructure to reduce risk to the agency and the scientific community. NSF has also formalized expectations for facility condition assessments at major facilities in the Supplemental Financial and Administrative Terms and Conditions that apply to all Major Multi-User Research Facilities, effective October 1, 2024. NSF-owned assets in the Arctic and Antarctic are constructed to withstand the harshest environments on Earth, and their conditions are routinely assessed as part of ongoing operations due to the inherent risks. NSF will consolidate recapitalization needs for the full suite of research infrastructure into a unified plan when long-term grants and contracts come to an end and transition requirements are defined.

NSF is providing funding opportunity to CRISES to help generate effective and long-lasting solutions that benefit the entire U.S. public.

Credit: NSF

Centers for Research and Innovation in Science, the Environment and Society (CRISES).
NSF is expanding its research capacity to address complex national and global crises with a human-centered approach. By investing over $1.4 million in initial projects, NSF aims to develop large multidisciplinary Centers for Research and Innovation in Science, the Environment and Society (CRISES). Through the CRISES opportunity, these centers will create evidence-based solutions for quality-of-life issues such as the environment, sustainability, climate change, community development, social equity, workforce development, and human well-being. These one-to-two-year projects bring together experts from numerous disciplines to explore the creation of centers to study and develop solutions that will address today's crises and ultimately enhance people's quality of life.

[6] NSF's cleared Sustainability Report and Implementation Plans are posted to the Council for Environmental Quality website: https://www.sustainability.gov/contributing-agencies.html.

Performance

NSF's FY 2024 performance results are based on the framework established by the agency's Strategic Plan for FYs 2022–2026: *Leading the World in Discovery and Innovation, STEM Talent Development, and the Delivery of Benefits from Research*. As listed in Table 1.1, the four strategic goals in this plan reflect four themes—Empower, Discover, Impact, and Excel—and they form the core of the plan. These themes focus on expanding frontiers, engaging people, and delivering solutions. Under each goal are two strategic objectives, which together encompass all areas of agency activity. This goal structure enables NSF to link its investments to longer-term outcomes.

Table 1.1 Strategic Goals and Objectives

Strategic Goals	Strategic Objectives
1. Empower: Empower STEM talent to fully participate in science and engineering	**1.1 Ensure accessibility and inclusivity –** Increase the involvement of communities underrepresented in STEM and enhance capacity throughout the Nation.
	1.2 Unleash STEM talent for America – Grow a diverse STEM workforce to advance the progress of science and technology.
2. Discover: Create new knowledge about our universe, our world, and ourselves	**2.1 Advance the frontiers of research –** Accelerate discovery through strategic investments in ideas, people, and infrastructure.
	2.2 Enhance research capacity – Advance the state of the art in research practice.
3. Impact: Benefit society by translating knowledge into solutions	**3.1 Deliver benefits from research –** Advance research and accelerate innovation that addresses societal challenges.
	3.2 Lead globally – Cultivate a global science and engineering community based on shared values and strategic cooperation.
4. Excel: Excel at NSF management and operations	**4.1 Strengthen at speed and scale –** Pursue innovative strategies to strengthen and expand the agency's capacity and capabilities.
	4.2 Invest in people – Attract, empower, and retain a talented and diverse NSF workforce.

NSF's FY 2024-2025 Agency Priority Goal (APG) to "Improve representation in the scientific enterprise," advances Strategic Objective 1.1. The goal continues the aim of the FY 2022-2023 APG to increase the percentage of proposals with principal investigators from groups underrepresented in STEM and from emerging research institutions by 10 percent.

NSF is pursing three strategies to advance this APG:

1. Engage and educate NSF staff on strong practices for improving diversity across NSF programs;
2. Build capacity across emerging research institutions; and
3. Diversify research funding to achieve EPSCoR funding targets included in the CHIPS and Science Act.

Progress Toward Achievement of Performance Goals

Each year, NSF issues reports to provide financial management and organizational performance information to demonstrate accountability to our stakeholders, including the American public. In addition to the AFR, NSF produces the Annual Performance Report. NSF's FY 2024 Annual Performance Report will provide a complete discussion of NSF's performance measures, including descriptions of the metrics, methodologies, results, trends, verification and validation of performance data. The topic areas of these goals and their FY 2024 targets are listed in Table 1.2.

Table 1.2 FY 2024 Performance Goals

Strategic Objective		Annual Goal Statement and Target
Empower	1.1	**1.1.a.:** APG; Increase representation. Increase the proportion of proposals received 1) with principal investigators (PIs) from groups underrepresented in STEM and 2) from emerging research institutions by 10 percent over the FY 2022 baseline. **1.1b:** Increase the percentage of NSF's research funding to institutions in EPSCoR jurisdictions to 16 percent.
	1.2	**1.2:** NSF Programs and REU/RET sites using ETAP. Increase the: • number of programs leveraging NSF's Education and Training Application (ETAP) to connect individuals (undergraduate, graduates, teachers) with NSF educational opportunities to 14, • percentage of Research Experience for Undergraduate (REU) awards utilizing ETAP to 33 percent, and • percentage of Research Experience for Teachers (RET) awards utilizing ETAP to 30 percent.
Discover	2.1	**2.1:** Major facility projects on schedule and budget. Keep negative cost and schedule variance at or below 10 percent for all Major Facility projects in the Construction Stage that are between 10 and 90 percent complete.
	2.2	**2.2:** Mid-scale infrastructure projects on schedule and budget. Keep negative cost and schedule variance at or below 10 percent for all Mid-Scale Facility projects in the Construction Stage that are between 10 and 90 percent complete.
Impact	3.1	**3.1a:** Funding from NSF Partnerships; Increase the funding invested from industry and non-profits that NSF programs leverage to support the STEM enterprise, by 20 percent over the prior fiscal year. **3.1b:** Increase the funding invested from other federal agencies that NSF programs leverage to support the STEM enterprise, by five percent over the prior fiscal year.
Excel	4.1	**4.1a:** Ensure availability of IT resources for NSF staff and the broader research community. Meet or exceed 99.6 percent availability of systems, aside from a set number of hours of planned downtime per year for maintenance and upgrades. **4.1b:** Make Timely Proposal Decisions: Inform 70 percent of applicants whether their proposals have been declined or recommended for funding within 182 days (approximately six months) of the proposal deadline, target date, or receipt date.
	4.2	**4.2a:** Employee engagement; Human Resources (HR) internal customer satisfaction **4.2a(1):** Rank as a Best Place to Work (BPTW) (top 5 in mid-size agency category) in the annual Best Places to Work rankings by the Partnership for Public Service. **4.2a(2):** Meet or exceed an average score of 5.0 out of 7.0 in overall internal (NSF staff) customer satisfaction with Human Capital Functions on the 2026 GSA Mission Support Customer Satisfaction Survey of Federal employees. **4.2b:** Cultivate a workplace environment that proactively supports, engages, and recognizes all members of the workforce. Conduct an efficacy survey of Employee Resource Groups (ERG) to gather feedback from ERG members.

Renewing NSF

The NSF FY 2022-2026 Strategic Plan emphasized the agency's continued efforts to excel at operations and management to enhance the performance of its mission and help contribute to U.S. leadership in research and education across all areas of STEM. In FY 2024, the enterprise-scale reform and process improvement efforts, collectively called Renewing NSF, continued to foster a culture of innovation and collaboration across the agency to implement key operational reforms. In FY 2024, primary outcomes included the acquisition of support services to expand engagement across the agency for continuous assessment and prioritization of evolving reform opportunities; enhancement and maturation of functionality in the Program Suitability and Proposal Concept Tool, and agency-wide formalization of the concept outline submission type in the NSF Proposal and Award Policies and Procedures Guide; migration and upgrade of internal Partnerships guidance and transition of ownership to the TIP directorate; and development and issuance of initial agency-wide implementation of a streamlined post-merit review process for declines, building from the pilot activities completed last year. In addition to these activities, renewing NSF has served as a strategic partner representing the Office of the Director to support distributed reform activities in IT Innovation Management, Account Management reform, and Project Reporting Compliance and resulting enhancements to internal and customer-facing systems and processes in FY 2024. In FY 2025, Renewing NSF will continue the close partnership with stakeholders leading enterprise innovation and cultural change efforts, while developing updated focus areas in close coordination with the CMO and strategic planning process for FY 2026-2030.

ReCoast recycles glass into sand and gravel for disaster relief and prevention, coastal restoration, and eco-construction.

Credit: Alyssa Rubio/Glass Half Full

ReCoast: Sustainable solutions for glass recycling and land preservation

Led by Tulane University, ReCoast is ensuring ecological safety and mitigation of land loss through coastal community recycling programs to keep glass out of landfills. ReCoast's team consists of over twenty scientists and engineers conducting extensive regional economic, social, cultural, and environmental research. In partnership with Glass Half Full, this multi-disciplinary research team is converting recycled glass back into its original form, sand, for a diverse set of environmental applications, including the restoration and reinforcement of eroded coastlines in their home state of Louisiana. This project is funded by the NSF Convergence Accelerator Track E: Networked Blue Economy to accelerate convergence research across ocean sectors.

Proposal Workload and Management Trends

NSF continuously monitors key portfolio, proposal workload, and financial measures to understand short- and long-term trends and to help inform management decisions. For an analysis of the long-

term trends in competitive proposals, awards, funding rate, and other portfolio metrics, see the *National Science Foundation's Merit Review Process, Fiscal Year 2021 Digest*.[7] The NSB intends to publish the subsequent digests for fiscal years 2022, 2023, and 2024 by the end of the calendar year.

Figure 1.5 identifies three key portfolio measures: competitive proposals acted upon, new awards, and funding rates.

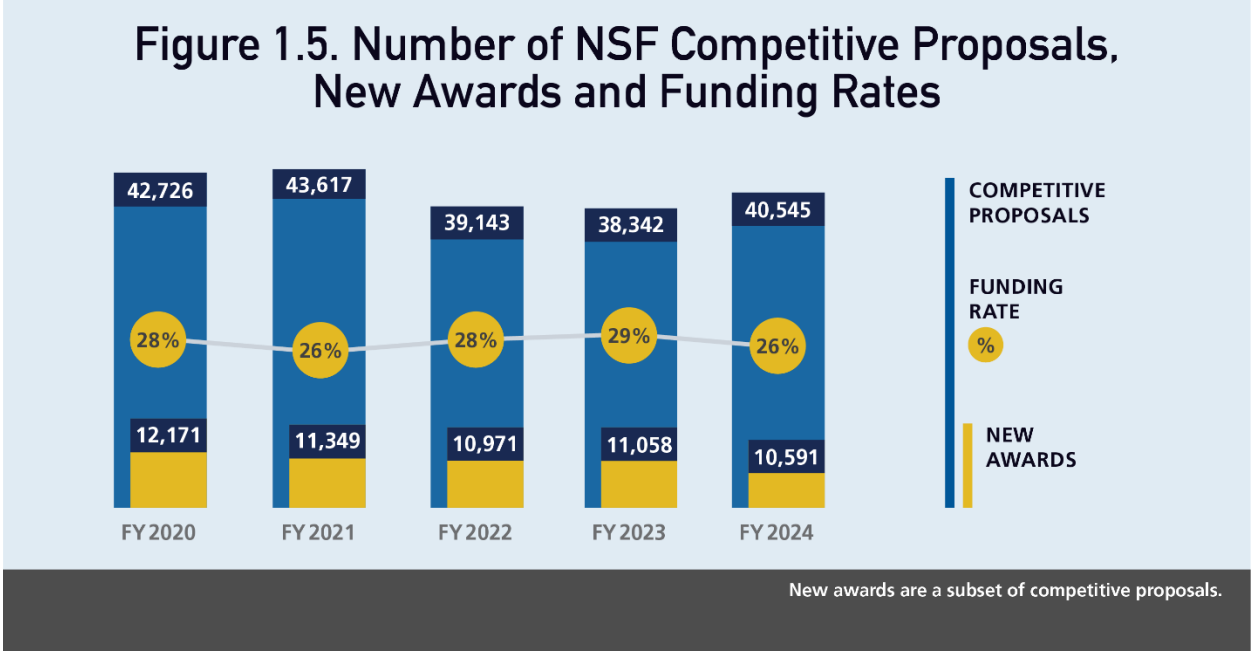


Table 1.3 provides proposal workload and management trends over five years. Highlights of these indicators are as follows:

- Between FY 2023 and FY 2024, the number of competitive proposal actions increased by 5.5 percent; from 38,342 to 40,454.
- There were 10,591 new awards in FY 2024, a decrease from FY 2023 new awards (11,058).
- The overall funding rate in FY 2024 was 26 percent, a decrease of 3 percentage points. Funding rates differ by directorate and are presented in the agency's annual budget request to Congress.
- The average annual award size of competitive awards was $256,099, a 1.5 percent decrease compared to FY 2023 ($259,967).
- The number of active awards was about the same in FY 2024: 58,081 compared to 58,477 in FY 2023. The 5-year average number of active awards is over 57,000.
- The number of employees (full-time equivalent [FTEs]) that worked these actions increased between FY 2023 and FY 2024, from 1,540 FTE to 1,580 FTE, respectively.

[7] *NSF's Merit Review Process, FY 2021 Digest* (NSB-2023-14) may be accessed at https://www.nsf.gov/nsb/publications/2022/merit_review/nsb202314.pdf

- All NSF awardee institutions are required to submit payment requests at the award level to the NSF Award Cash Management Service (ACM$). Award expenses are posted to the NSF financial system at the time of the payment request. Reliance on ACM$ reduces the burden of manual invoicing and the potential for errors or missed payments.

Table 1.3 Proposal Workload and Management Trends

	Measure	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Percent Change (FY 2024-FY 2023)	Average (FY 2020-FY 2024)
Portfolio	Competitive proposal actions	42,726	43,617	39,143	38,342	40,454	5.5%	40,856
	Competitive award actions	12,171	11,349	10,971	11,058	10,591	-4.2%	11,228
	Average annual award size (competitive awards)	$213,280	$231,202	$220,680	$259,967	$256,099	-1.5%	236,246
	Funding rate	28%	26%	28%	29%	26%	-9.2%	27%
Proposal Workload	Number of employees FTE, usage[1]	1,421	1,456	1,516	1,540	1,580	2.6%	1,502
	Number of active awards[2]	55,239	56,427	58,384	58,477	58,081	-0.7%	57,322
	Proposal reviews conducted	199,526	211,903	187,318	179,958	187,829	4.4%	193,307
Financial	Number of grant payments	22,169	23,794	27,065	27,426	25,951	-5.4%	25,281
	Award expenses incurred but not reported at 9/30 ($ in millions)[3]	$437	$461	$457	$482	$468	-2.9%	461

Notes:

[1] FTEs shown include the federal employee workforce for NSF, NSB, OIG, and U.S. Arctic Research Commission.

[2] Active awards include all active awards regardless of whether funds were received during the fiscal year.

[3] FY 2024 number reflects an accrual, and all other years reflect the validated estimate for the fiscal year. This metric does not include accruals for Small Business Innovation Research (SBIR) awards.

Financial Discussion and Analysis

NSF has a strong history of efficient and effective financial operations, which aligns with the agency's strategic goal to excel in NSF operations and management. During FY 2024, NSF focused on enhancing its financial management processes, systems, and control environment. NSF also deployed new reporting tools to provide innovative insights into financial operations and made significant progress in furthering government-wide initiatives, such as G-Invoicing.

- *Reporting Innovations and process improvements*
  - NSF fully implemented the U.S. Department of Treasury's Credit Gateway platform as a new mechanism for institutions to electronically remit funding to the agency. To drive user adoption, NSF leveraged data on remittance trends to conduct targeted outreach to institutions that frequently remit funds to NSF via check. These outreach efforts supported an overall increase in the volume of electronic remittances to 68 percent—a high-water mark in NSF's initiative to continue to reduce the volume of paper checks.
  - NSF launched its Grants with no ACM$ Payments (GNAP) initiative. GNAP aims to improve the monitoring of open grant obligations by identifying NSF awards that have not had any financial drawdowns in over a year. NSF issues quarterly GNAP notifications to NSF institutions, advising them of awards that have no spending activity. GNAP has been highly effective in its first year of operations, reducing the target open obligation population by 26 percent. NSF also implemented new enhancements to existing NSF post-award financial notifications based on customer feedback from the research community.
- *G-Invoicing:* The Department of the Treasury established a deadline of October 1, 2025, for all government agencies to adopt G-Invoicing, a web-based platform to manage interagency agreement (IAA) activity. G-Invoicing provides several benefits, such as improving internal controls and oversight, standardizing data and processes, and enhancing communication between federal trading partners. Although NSF implemented G-Invoicing in FY 2023, it still maintains legacy processes for IAAs with agencies that have not completed their implementations. NSF is committed to continuing to reconcile and close out legacy IAAs throughout FY 2025. To support this objective, NSF updated its policy to require the use of G-Invoicing for new IAAs with trading partners that have implemented the system.
- *Enterprise Risk Management (ERM):* NSF's ERM program is crucial for promoting a risk-aware culture within the organization and supporting informed decision-making and resource prioritization. In FY 2024, NSF continued to enhance its program by developing a Program Risk Management Guide. This guide assists staff in implementing efficient risk management practices within the Foundation's broader Enterprise Risk Management (ERM) governance framework. To proactively manage risks associated with new types of awards, such as Other Transactions/Other Arrangements, NSF has created a guide and tools to aid offices considering the use of these instruments. These resources facilitate discussions and documentation of risk-based decision-making that aligns with NSF's risk tolerance.

NSF's financial statements received an unmodified audit opinion, indicating they are free from significant errors or misstatements. The internal control program for financial reporting had no identified material weaknesses. The Independent Auditor's Report is in Chapter 2, Financials, followed by management's response.

Understanding the Financial Statements

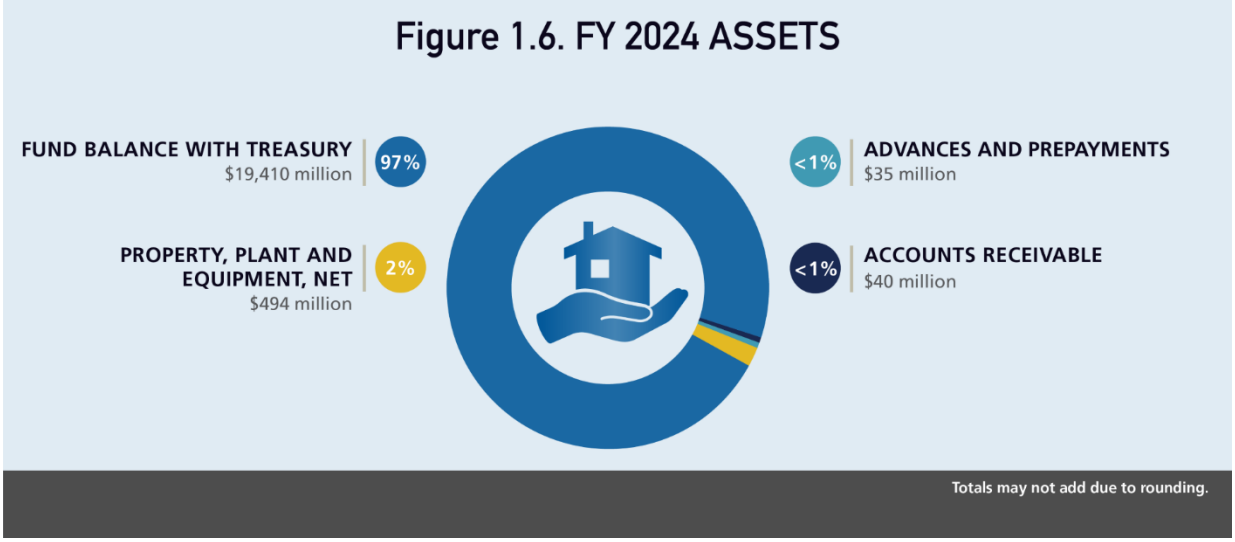
The following discussion of NSF's financial condition and results of operations should be read together with the FY 2024 financial statements and accompanying notes, found in Chapter 2, Financials, of this AFR. In accordance with the guidance in Office of Management and Budget (OMB) Circular No. A-136, *Financial Reporting Requirements,* NSF's FY 2024 financial statements and notes are presented in a comparative format to facilitate analysis of FYs 2024 and 2023. Table 1.4 summarizes the changes in NSF's financial position in FY 2024 relative to FY 2023, and explanations of changes for financial statement line items that may be of likely public or congressional interest are provided in the next section, Balance Sheet.

Table 1.4 Changes in NSF's Financial Position in FY 2024
(Dollars in Millions)

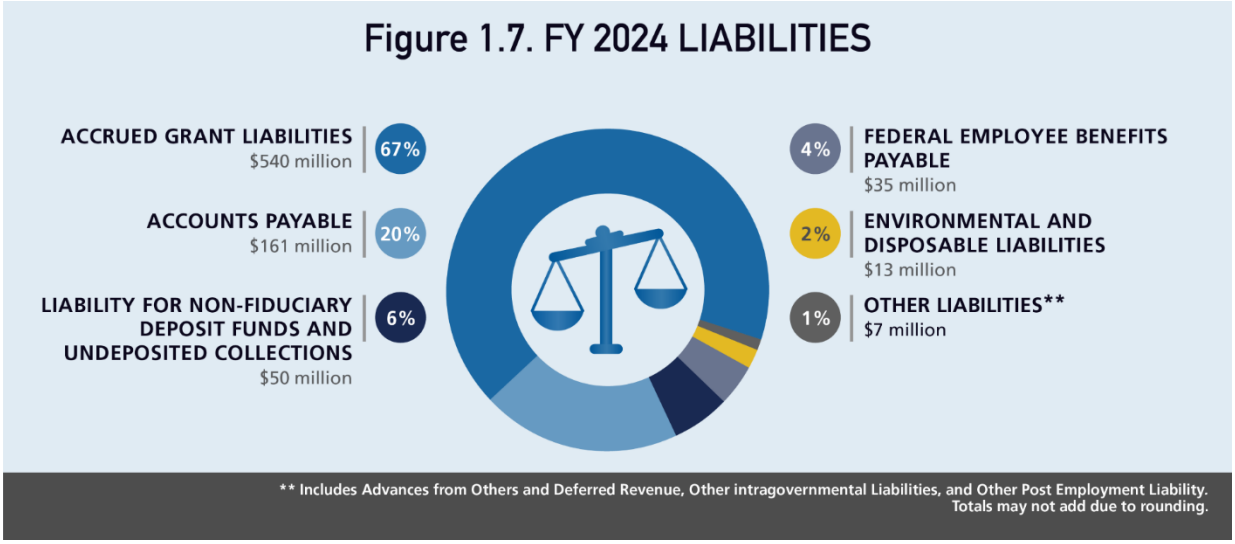
Financial Categories	Sub-Category Driving The Change	FY 2024	FY 2023	$ Change	% Change
Assets		**$19,978**	**$20,227**	**$(249)**	**-1%**
	Fund Balance With Treasury	$19,410	$19,693	$(283)	-1%
Liabilities		**$805**	**$830**	**$(25)**	**-3%**
	Liability for Non-Fiduciary Deposit Funds and Other Liabilities	$50	$71	$(21)	-30%
	Accounts Payable	$161	$170	($9)	-5%
Net Position		**$19,173**	**$19,397**	**$(224)**	**-1%**
	Unexpended Appropriations	$17,944	$18,190	$(246)	-1%
	Cumulative Results of Operations	$1,229	$1,207	$22	2%
Net Cost		**$9,432**	**$9,029**	**$403**	**4%**
Budgetary Resources		**$10,752**	**$11,075**	**$(323)**	**-3%**
	Appropriations	$9,273	$10,067	$(794)	-8%

Balance Sheet

The Balance Sheet presents the total amounts available for use by NSF (assets) against the amounts owed (liabilities) and amounts that comprise the difference (net position). In FY 2024, *Assets* (shown in Figure 1.6) decreased $249 million (1 percent) from FY 2023. Most of the change occurred in the *Fund Balance with Treasury* line, which decreased $283 million (1 percent) in FY 2024. NSF is authorized to use *Fund Balance with Treasury* to make expenditures and pay amounts due through the disbursement authority of Treasury. The *Fund Balance with Treasury* is increased through appropriations and collections and decreased by expenditures and rescissions.



In FY 2024, *Liabilities* (shown in Figure 1.7) decreased $25 million (3 percent) over the *Liabilities* reported in FY 2023. Driving this change was a $21 million decrease in *Liabilities for Non-Fiduciary Deposit Funds and Other Liabilities,* and a $9 million net decrease in *Accounts Payable.* In FY 2024, *Liabilities for Non-Fiduciary Deposit Funds (*or foreign contributions) decreased $31million. In FY 2024, *Accounts Payable (Intragovernmental)* increased $15 million while *Accounts Payable (Other Than Intragovernmental)* decreased $24 million. *Accounts Payable (Other Than Intragovernmental)* is estimated annually, by using historical data based on the actual expenses incurred but not reported, as a percentage of current fiscal year expenses. NSF determines *Accounts Payable (Intragovernmental)* by performing outreach to its federal trading partners and recording offsetting payables for any reported trading partner *Accounts Receivable*.

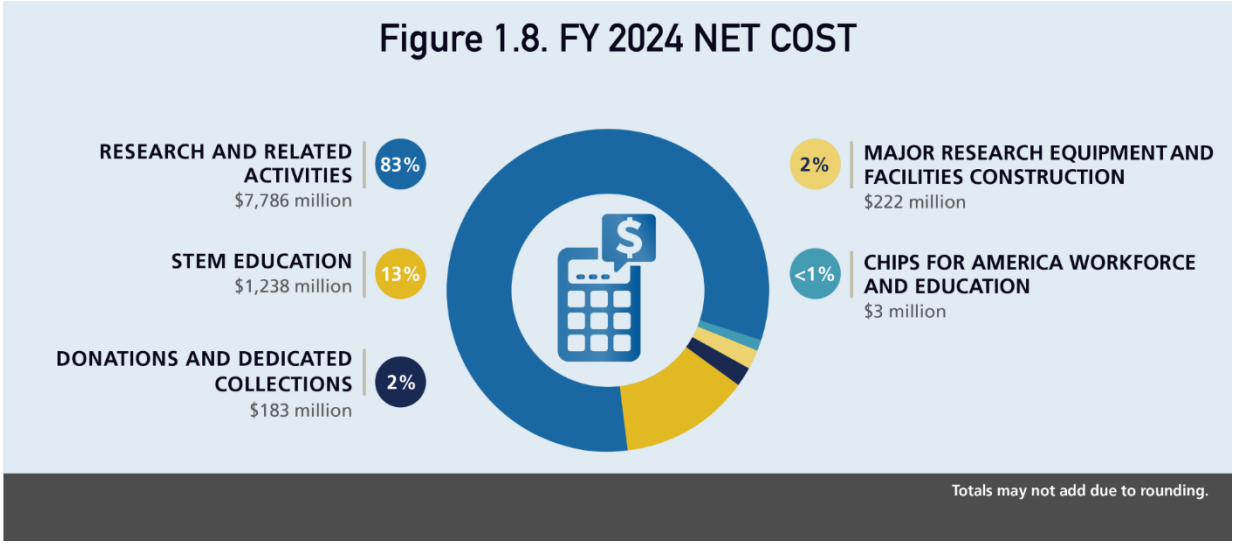


Statement of Net Cost

The Statement of Net Cost (shown in Figure 1.8) presents the annual cost of operating NSF programs. In FY 2024, *Net Cost* (summarized in Table 1.4) increased $403 million (4 percent) over the *Net Cost* reported in FY 2023. The net cost of operations of each NSF program equals the program's

gross cost less any offsetting earned revenue. Intragovernmental earned revenues are recognized when related program or administrative expenses are incurred. Earned revenue is deducted from the full cost of the programs to arrive at the *Net Cost of Operations*.

Approximately 94 percent of FY 2024 *Net Cost of Operations* (shown in Figure 1.8) was directly related to the support of R&RA, EDU, MREFC, CHIPS for America Workforce and Education, and Donations and Dedicated Collections. Additional costs were incurred for indirect general operation activities (e.g. salaries, training, and activities related to the advancement of NSF information systems technology) and activities of the NSB and the OIG. These costs were allocated to the R&RA, EDU, MREFC, CHIPS for America Workforce and Education, and Donations and Dedicated Collections programs and account for approximately 6 percent of FY 2024 *Net Cost of Operations*. These administrative and management activities support the agency's program goals.



Statement of Changes in Net Position

The Statement of Changes in Net Position presents the agency's cumulative results of operations and unexpended appropriations for the fiscal year. In FY 2024, NSF's *Unexpended Appropriations* decreased $246 million (1 percent) from FY 2023 and NSF's *Cumulative Results of Operations* (see Table 1.4), increased $22 million (2 percent) for a total net decrease in *Net Position* of $224 million.

Statement of Budgetary Resources

The Statement of Budgetary Resources provides information on how budgetary resources were made available to NSF for the year and the status of those budgetary resources at year-end. For FY 2024, *Budgetary Resources* (see Table 1.4) decreased $323 million (3 percent) from the FY 2023 level. *Appropriations* in FY 2024 for the R&RA, EDU, MREFC, and CHIPS for America Workforce and Education programs were $7,177 million, $1,172 million, $234 million and $25 million, respectively. The combined *Appropriations* in FY 2024 for the NSB, the OIG, and AOAM accounts totaled $477 million. NSF also received $157 million of funding via warrant from the Nonimmigrant Petitioner Account (H-1B); and $31 million of donations from private companies, academic institutions, nonprofit foundations, and individuals. These resources totaled $9,273 million (shown in Table 1.4) for FY 2024.

Limitations of the Financial Statements

The principal financial statements are prepared to report the financial position, financial condition, and results of operations, pursuant to the requirements of 31 U.S.C 3515(b). The statements are prepared from records of federal entities in accordance with federal generally accepted accounting principles (GAAP) and the formats prescribed by OMB. Reports used to monitor and control budgetary resources are prepared from the same records. Users of the statements are advised that the statements are for a component of the U.S. Government.

Analysis of Systems, Controls, and Legal Compliance

Management Assurances

The Federal Managers' Financial Integrity Act of 1982 (FMFIA)[8] and the OMB Circular A-123, Management's Responsibility for Enterprise Risk Management and Internal Control,[9] require NSF to evaluate annually the effectiveness of agency internal controls and provide reasonable assurance to the President and Congress on control system adequacy.

NSF assures its internal control system supports a mature, agile, and sustainable control environment. This proactive approach supports effective governance and oversight informed by internal and external risk. A strong risk-based framework ensures focus on the most consequential management issues and confidence that operations function as intended. The risk-based approach also supports a maturing ERM program.

National Science Foundation

FY 2024 Statement of Assurance

The National Science Foundation (NSF) management is responsible for managing risks and maintaining effective internal control to meet the objectives of Sections 2 and 4 of the *Federal Managers' Financial Integrity Act* (FMFIA).

NSF conducted its assessment of risk and internal control processes in accordance with OMB Circular No. A-123, *Management's Responsibility for Enterprise Risk Management and Internal Control*. Based on the results of the assessment, NSF can provide reasonable assurance that internal control over operations, reporting, and compliance was operating effectively as of September 30, 2024.

/s/
Sethuraman Panchanathan
Director

November 13, 2024

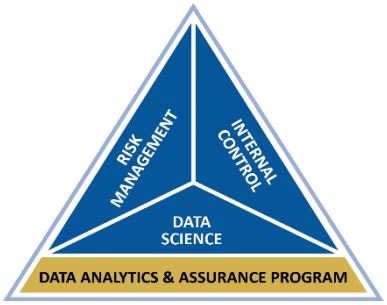
The FY 2024 unmodified Statement of Assurance, with no material weaknesses, provides reasonable assurance as to the overall adequacy and effectiveness of internal controls based on information that the system of internal control is operating efficiently and effectively. NSF's internal control assessment provides reasonable assurance that the objectives of FMFIA and the Federal Financial Management Improvement Act of 1996 (FFMIA) were achieved and that the internal control process over financial reporting is effective.

[8] FMFIA can be accessed at: https://www.congress.gov/bill/97th-congress/house-bill/1526/text
[9] OMB Circular A-123 can be accessed at: https://obamawhitehouse.archives.gov/sites/default/files/omb/memoranda/2016/m-16-17.pdf

Highlights from NSF's FY 2024 Data Analytics and Assurance Program (DAAP)

NSF's DAAP adapts knowledge sharing for ERM and internal control risks leveraged by data science and innovative technology to continuously improve the effectiveness of risk monitoring. The DAAP supports the NSF mission by:

- Dealing with the proliferation of data.
- Leveraging artificial intelligence and automation.
- Targeting and reducing the cost of compliance efforts.
- Strengthening management decision-making.



The DAAP's areas of focus for FY 2024 were as follows:

ERM – NSF continued to mature its ERM program in alignment with risk management standards issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) ERM Integrated Framework. The DAAP developed a Program Manager Guide to ERM to drive risk dialogue within programs and support program-level staff in applying ERM tools and techniques to their job duties. NSF also developed a tool to guide staff in evaluating the usage of Other Transactions/Other Arrangements funding mechanisms included in the CHIPS and Science Act.

Internal Control – Oversight of NSF's internal controls over financial reporting was conducted to evaluate program integrity in accordance with OMB Circular A-123, the Green Book, and COSO's Internal Control Integrated Framework and Internal Control Over Financial Reporting Compendium of Approaches and Examples through the following key activities:

- Assessed internal control entity-level controls
- Conducted Biannual Risk and Control Checkpoints related to key risk areas
- Conducted internal control over financial reporting risk assessment through testing and modernizing the control environment
- Completed an inventory of existing fraud risk prevention and detection activities to inform NSF's triennial improper payments risk assessment for FY 2024
- Conducted the triennial improper payments risk assessment, including quantitative (grants payment testing) and qualitative assessments.
- Provided support for the validation of the grant accrual
- Completed IT General Controls assessment
- Supported the Statement of Standards for Attestation Engagements 18 (SSAE 18) review cycle.

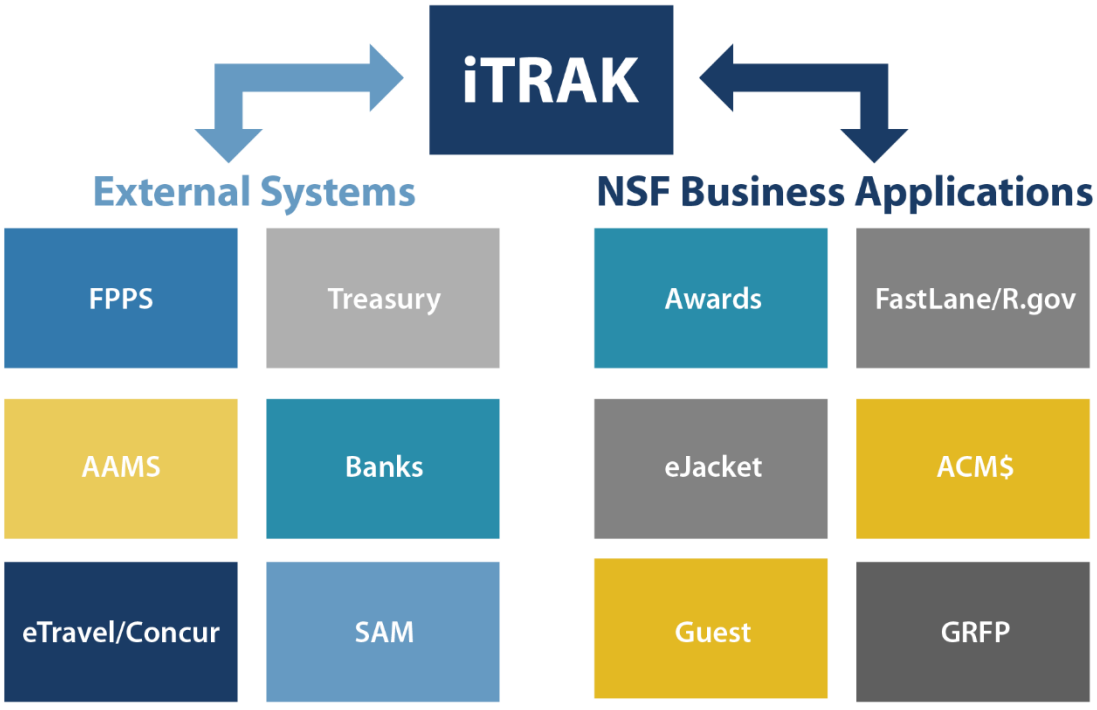
In addition, the DAAP monitors internal controls over compliance, including the *Anti-Deficiency Act; Digital Accountability and Transparency Act; Government Charge Card Abuse Prevention Act; Federal Information Security Modernization Act Management Act; Federal Financial Management Improvement Act; Single Audit Act;* and other requirements applicable to internal control.

Financial Management Systems

NSF's financial management system, iTRAK (shown in Figure 1.9), is NSF's Oracle-based, commercial-off-the-shelf financial system and is hosted off-premises in a cloud environment. In compliance with FMFIA, FFMIA, and other federal requirements, iTRAK provides automated business processes, funds control management, and financial reporting capabilities for NSF's external and internal customers, including grantees, financial and administrative staff, and program managers. iTRAK also performs system edit checks and provides an audit trail for financial transactions, thereby strengthening internal controls. By enabling efficient and effective execution of financial activities and business operations, iTRAK's service provider provides NSF assurance for its financial system through service provider audits (more technically referred to as SSAE No. 18) at the application, platform, and infrastructure levels. All three levels received unmodified audit opinions (i.e., clean) for FY 2024.

In FY 2024, NSF continued planning for its next generation financial system and will continue enhancing iTRAK's functional and technical capabilities to streamline operations and comply with emerging cybersecurity requirements and other federal mandates. NSF plans to modernize operational capabilities to enable broader agency capabilities related to financial management, such as data-driven contract writing and budget formulation.

Figure 1.9 NSF Financial Management System Framework

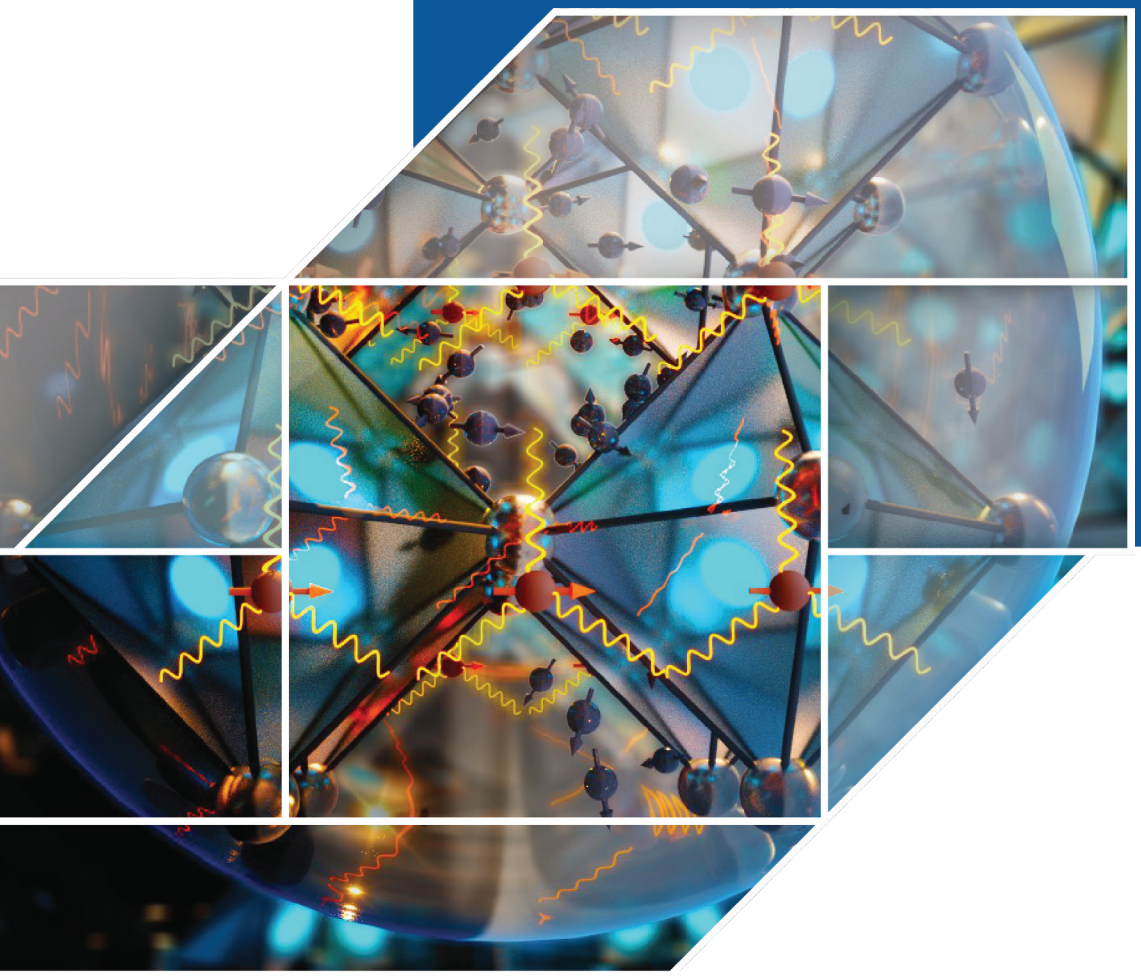


iTRAK supports the agency's stewardship role by providing managers and staff with financial data and reports to aid in data analysis so they can make informed decisions about the programs they manage and support. iTRAK interfaces with NSF's awards, grants, procurement, and business systems including:

- Award Cash Management Service (ACM$).
- MyNSF Awards (Awards)—NSF's award and award amendment processing, approval, and notification system.
- eJacket—NSF's internal proposal processing system, post-award request tracking and approval system, and document repository.
- Research.gov—Research community website that provides quick access to research information and grants management services. Research.gov replaced FastLane.
- Graduate Research Fellowship Program (GRFP) System—Provides the Division of Graduate Education with the ability to process applications and manage active fellowships.
- Guest Travel and Reimbursement System (Guest)—Internal application for NSF employees who work on the financial tasks associated with hosting flat-rate meetings.
- Automated Acquisition Management Solution (AAMS) system—NSF's commercial-off-the-shelf contract writing system (CWS) was implemented this year.

iTRAK also interfaces with LearnNSF, the Foundation's training system, as well as external systems operated by Treasury, Citibank, and federal systems such as the Federal Personnel Payroll System (FPPS), eTravel/Concur, and the General Services Administration's System for Award Management.

Chapter 2
Financials



U.S. NATIONAL SCIENCE FOUNDATION
Office of Inspector General

MEMORANDUM

DATE: November 13, 2024

TO: Dr. Darío Gil
Chair
National Science Board

Dr. Sethuraman Panchanathan
Director
U.S. National Science Foundation

FROM: Allison C. Lerner
Inspector General

SUBJECT: Audit Report No. 25-02-003, *Audit of the U.S. National Science Foundation's Fiscal Years 2024 and 2023 Financial Statements*

This memorandum transmits the Kearney & Company, P.C.'s reports on its financial statement audit of the U.S. National Science Foundation (NSF) for FY 2024, which includes FY 2023 comparative information.

Audit Reports on Financial Statements; Internal Control over Financial Reporting; and Compliance with Laws, Regulations, Contracts, and Grant Agreements

The *Chief Financial Officers Act of 1990* (CFO Act, Pub. L. No. 101-576), as amended, requires that NSF's Inspector General or an independent external auditor, as determined by the Inspector General, audit NSF's financial statements in accordance with *Government Auditing Standards* (GAS) issued by the Comptroller General of the United States. We contracted with the independent certified public accounting firm Kearney & Company, P.C. (Kearney) to audit NSF's financial statements as of September 30, 2024, and for the fiscal year then ended. The contract requires that the audit be performed in accordance with GAS; Office of Management and Budget Bulletin 24-02, *Audit Requirements for Federal Financial Statements*; and the U.S. Government Accountability Office/Council of the Inspectors General on Integrity and Efficiency *Financial Audit Manual*. For FY 2024, Kearney provided: (1) its opinion on the financial statements, (2) a report on internal control over financial reporting, and (3) a report on

compliance with laws, regulations, contracts, and grant agreements. In its audit of NSF, Kearney:

- Found that the financial statements referred to above present fairly, in all material respects, the financial position of NSF as of September 30, 2024 and 2023, and its net cost of operations, changes in net position, and budgetary resources for the years then ended, in accordance with accounting principles generally accepted in the United States of America.
- Identified no material weaknesses in internal control over financial reporting; however, it did report one significant deficiency in internal control, which relates to NSF's Information System control environment.[1]
- Identified no instances in which NSF's financial management systems did not substantially comply with the *Federal Financial Management Improvement Act of 1996* (FFMIA, Pub. L. No. 104-208).
- Identified no reportable instances of noncompliance with provisions of laws, regulations, contracts, and grant agreements tested or other matters.

NSF's response to the draft reports, dated November 13, 2024, follows Kearney's reports.

Kearney is responsible for the attached auditor's reports dated November 13, 2024, and the conclusions expressed therein. We do not express opinions on NSF's financial statements or internal control over financial reporting or on whether NSF's financial management systems substantially complied with the requirements of FFMIA, or conclusions on compliance and other matters.

Kearney's Independent Auditor's Report is meant only to be distributed and read as part of the Agency Financial Report (AFR).

We thank your staff for the assistance that was extended to the auditors during this audit. If you have any questions regarding this report, please contact Theresa S. Hull, Assistant Inspector General, Office of Audits, Inspections, and Evaluations at 703-292-7100 or OIGpublicaffairs@nsf.gov.

[1] A material weakness is a deficiency, or combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented or detected and corrected on a timely basis. A significant deficiency is a deficiency, or a combination of deficiencies, in internal control over financial reporting that is less severe than a material weakness yet important enough to merit attention by those charged with governance.

INDEPENDENT AUDITOR'S REPORT

To the Director and Inspector General of the U.S. National Science Foundation

Report on the Audit of the Financial Statements

Opinion

We have audited the financial statements of the U.S. National Science Foundation (NSF), which comprise the Balance Sheets as of September 30, 2024 and 2023, the related Statements of Net Cost and Changes in Net Position, and the combined Statements of Budgetary Resources (hereinafter referred to as the "financial statements") for the years then ended, and the related notes to the financial statements.

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the NSF as of September 30, 2024 and 2023 and its net cost of operations, changes in net position, and budgetary resources for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinion

We conducted our audits in accordance with auditing standards generally accepted in the United States of America (GAAS); the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States; and Office of Management and Budget (OMB) Bulletin No. 24-02, *Audit Requirements for Federal Financial Statements*. Our responsibilities under those standards are further described in the ***Auditor's Responsibilities for the Audit of the Financial Statements*** section of our report. We are required to be independent of the NSF and to meet our other ethical responsibilities in accordance with the relevant ethical requirements relating to our audits. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Responsibilities of Management for the Financial Statements

Management is responsible for: 1) the preparation and fair presentation of the financial statements in accordance with accounting principles generally accepted in the United States of America; 2) the preparation, measurement, and presentation of required supplementary information (RSI) in accordance with U.S. generally accepted accounting principles; 3) the preparation and presentation of other information included in the NSF's Agency Financial Report (AFR), as well as ensuring the consistency of that information with the audited financial statements and the RSI; and 4) the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the NSF's ability to continue as a going concern for a reasonable period of time beyond the financial statement date.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements, as a whole, are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not absolute assurance and, therefore, is not a guarantee that an audit conducted in accordance with GAAS and *Government Auditing Standards* will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

In performing an audit in accordance with GAAS and *Government Auditing Standards*, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the NSF's internal control. Accordingly, no such opinion is expressed
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about the NSF's ability to continue as a going concern for a reasonable period of time beyond the financial statement date.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control-related matters that we identified during the audit.

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that Management's Discussion and Analysis, Deferred Maintenance and Repairs, and Combining Statement of Budgetary Resources by Major Budget Accounts be presented to supplement the financial statements. Such information is the responsibility of management and, although not a part of the financial statements, is required by OMB and the Federal Accounting Standards Advisory Board (FASAB), who consider it to be an essential part of financial reporting for placing the financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the RSI in accordance with GAAS, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the financial statements, and other knowledge we obtained during our audits of the financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Information

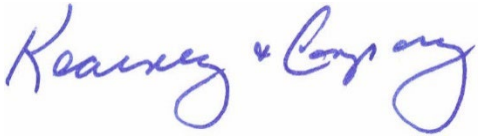
Management is responsible for the other information included in the AFR. The other information comprises the Summary of Fiscal Year 2024 Financial Statement Audit and Management Assurances, Management Challenges, Payment Integrity Information Act Reporting, Civil Monetary Penalty Adjustment for Inflation, Grants Program Reporting, Undisbursed Balances in Expired Grant Accounts, Awards to Affiliated Institutions, Awards to Assistant Director Independent Public Accountants' Home Institutions, NSF Senior Management and National Science Board, and Patents and Inventions Resulting from NSF Support, but does not include the financial statements and our auditor's report thereon. Our opinion on the financial statements does not cover the other information, and we do not express an opinion or any form of assurance thereon.

In connection with our audits of the financial statements, our responsibility is to read the other information and consider whether a material inconsistency exists between the other information and the financial statements or the other information otherwise appears to be materially misstated. If, based on the work performed, we conclude that an uncorrected material misstatement of the other information exists, we are required to describe it in our report.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards* and OMB Bulletin No. 24-02, we have also issued reports, dated November 13, 2024, on our consideration of the NSF's internal control over financial reporting and on our tests of the NSF's compliance with certain provisions of applicable laws, regulations, contracts, and grant agreements, as well as other matters for the year ended September 30, 2024. The purpose of those reports is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing,

and not to provide an opinion on internal control over financial reporting or on compliance. Those reports are an integral part of an audit performed in accordance with *Government Auditing Standards* and OMB Bulletin No. 24-02 and should be considered in assessing the results of our audits.



Alexandria, Virginia
November 13, 2024

INDEPENDENT AUDITOR'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

To the Director and Inspector General of the U.S. National Science Foundation

We have audited, in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States; and Office of Management and Budget (OMB) Bulletin No. 24-02, *Audit Requirements for Federal Financial Statements*, the financial statements, and the related notes to the financial statements of the U.S. National Science Foundation (NSF) as of and for the year ended September 30, 2024, which collectively comprise the NSF's financial statements, and we have issued our report thereon dated November 13, 2024.

Report on Internal Control over Financial Reporting

In planning and performing our audit of the financial statements, we considered the NSF's internal control over financial reporting (internal control) as a basis for designing audit procedures that are appropriate in the circumstances for the purpose of expressing our opinions on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the NSF's internal control. Accordingly, we do not express an opinion on the effectiveness of the NSF's internal control. We limited our internal control testing to those controls necessary to achieve the objectives described in OMB Bulletin No. 24-02. We did not test all internal controls relevant to operating objectives as broadly defined by the Federal Managers' Financial Integrity Act of 1982, such as those controls relevant to ensuring efficient operations.

A deficiency in internal control exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A material weakness is a deficiency, or combination of deficiencies, in internal control such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected, on a timely basis. A significant deficiency is a deficiency, or combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies; therefore, material weaknesses or significant deficiencies may exist that have not been identified. Given these limitations, during our audit, we did not identify any deficiencies in internal control that we consider to be material weaknesses.

We did identify a certain deficiency in internal control, as described in the accompanying **Schedule of Finding and Response** as Item I, that we consider to be a significant deficiency.

During the audit, we noted certain additional matters involving internal control over financial reporting that we will report to the NSF's management in a separate letter.

The U.S. National Science Foundation's Response to Findings

Government Auditing Standards requires the auditor to perform limited procedures on the NSF's response to the findings identified in our audit and described in the accompanying **Schedule of Finding and Response**. The NSF concurred with the findings identified in our engagement. The NSF's response was not subjected to the other auditing procedures applied in the audit of the financial statements and, accordingly, we express no opinion on the response.

Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and the results of that testing, and not to provide an opinion on the effectiveness of the NSF's internal control. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* and OMB Bulletin No. 24-02 in considering the NSF's internal control. Accordingly, this report is not suitable for any other purpose.

Alexandria, Virginia
November 13, 2024

Schedule of Finding and Response

Significant Deficiency

I. Information Systems (*New Condition*)

Background: The U.S. National Science Foundation (NSF) operates in a complex information system (IS) environment to execute its mission and record transactions timely and accurately. The NSF operates internal controls and relies on external providers for the administration of multiple key financial management systems, including three core financial support systems and one timekeeping system. The Award Cash Management Service module, within the Research.gov application; the MyNSF and G-Invoicing applications; and the QuickTime system all support key award/grant and payroll activities. QuickTime and G-Invoicing are administered by a service organization.

The NSF defines its control requirements within the *NSF Information Security Handbook Manual 7*, version 18. Per this guidance, the NSF is required to review accounts for compliance with account management requirements annually. Additionally, the NSF disables a user's information security access within two business days of an individual's termination.

Because of the sensitive nature of the NSF's IS environment, Kearney & Company, P.C. (Kearney) does not present specific details related to the systems, conditions, or criteria discussed within this significant deficiency. We provided those details separately to NSF management and relevant stakeholders through Notices of Findings and Recommendations (NFR).

Condition: The NSF has several deficiencies in the operating effectiveness of internal controls related to key financial support systems and service organization systems. While no single control deficiency rises to the level of a significant deficiency, in combination, these deficiencies elevate to a significant deficiency due to the pervasiveness of the access control weaknesses throughout the IS environment, the NSF's reliance on these systems for financial reporting, and the nature of some of the deficiencies repeating from the prior year.

Testing disclosed several access control deficiencies, including inconsistent implementation of user, service, and privileged account recertifications to verify the appropriateness of access to key financial management systems and untimely processing of personnel actions.

Cause: The deficiencies are a result of multiple circumstances, including a lack of NSF personnel with the knowledge to conduct access recertifications, competing organizational priorities, and ineffective quality control when reconciling system user roles to the centralized account role manager tool.

Effect: Without effective controls throughout the IS environment, the risk of unauthorized access increases, thereby increasing the risk to the systems and the data confidentiality, integrity, and availability.

Recommendations: Kearney recommends that the NSF perform the following:

1. Develop and implement a quality control review process over user access reviews, to include procedures to ensure the completeness and accuracy of the access request forms and access listings reviewed.
2. Enforce oversight policies and procedures relating to the separations process to ensure timely completion of personnel actions.

Management's Response: The NSF's response is outlined in the Management's Discussion and Analysis (MD&A) section of the Agency Financial Report (AFR). NSF management did not provide a standalone, formalized response; however, they concurred with each of the deficiencies that aggregated to the IS significant deficiency.

* * * * *

INDEPENDENT AUDITOR'S REPORT ON COMPLIANCE WITH LAWS, REGULATIONS, CONTRACTS, AND GRANT AGREEMENTS

To the Director and Inspector General of the U.S. National Science Foundation

We have audited, in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States; and Office of Management and Budget (OMB) Bulletin No. 24-02, *Audit Requirements for Federal Financial Statements*, the financial statements, and the related notes to the financial statements of the U.S. National Science Foundation (NSF) as of and for the year ended September 30, 2024, which collectively comprise the NSF's financial statements, and we have issued our report thereon dated November 13, 2024.

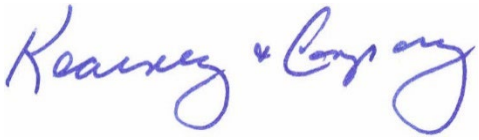
Report on Compliance and Other Matters

As part of obtaining reasonable assurance about whether the NSF's financial statements are free from material misstatement, we performed tests of the NSF's compliance with certain provisions of applicable laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of the financial statement amounts and disclosures, including the provisions referred to in Section 803(a) of the Federal Financial Management Improvement Act of 1996 (FFMIA). However, providing an opinion on compliance with those provisions was not an objective of our audit; accordingly, we do not express such an opinion. The results of our tests, exclusive of those referred to in FFMIA, disclosed no instances of noncompliance that are required to be reported under *Government Auditing Standards* and OMB Bulletin No. 24-02.

The results of our tests of compliance with FFMIA disclosed no instances in which the NSF's financial management systems did not comply substantially with Section 803(a) requirements related to Federal financial management system requirements, applicable Federal accounting standards, or application of the United States Standard General Ledger at the transaction level.

Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of compliance with certain provisions of applicable laws, regulations, contracts, and grant agreements and the results of that testing, and not to provide an opinion on the effectiveness of the NSF's compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* and OMB Bulletin No. 24-02 in considering the NSF's compliance. Accordingly, this report is not suitable for any other purpose.



Alexandria, Virginia
November 13, 2024

Attachment I –
National Science Foundation's Management Response

U.S. National Science Foundation
Office of Budget, Finance & Award Management

M E M O R A N D U M

Date: November 13, 2024

To: Allison Lerner, Inspector General

From: Janis Coughlin-Piester
Office Head and Chief Financial Officer
Office of Budget, Finance, and Award Management

Subject: Management's Response to Independent Auditor's Report for Fiscal Year (FY) 2024

Thank you for the opportunity to comment on the Fiscal Year 2024 Independent Public Auditor's Reports. I am proud that the National Science Foundation received its 27th consecutive unmodified audit opinion on its financial statements and continued its track record of no material weaknesses in internal control over financial reporting. This is a remarkable achievement that showcases our commitment to sustaining excellent financial stewardship and audit outcomes. I also appreciate the cooperation, innovation, and professionalism that your staff and Kearney & Company have demonstrated during the audit.

In the Report on Internal Control over Financial Reporting, the auditors identified a significant deficiency aggregating several information technology findings related to system access controls and user recertification processes. NSF leadership is committed to implementing timely and effective corrective actions to resolve the finding.

We look forward to working with the Office of Inspector General and Kearney in future audits. If you have any questions or require additional information, please contact Jesse Simons, Deputy Chief Financial Officer, and Division Director for Financial Management, at jsimons@nsf.gov.

National Science Foundation

FINANCIAL STATEMENTS

As of and for the Fiscal Years ended
September 30, 2024 and 2023

National Science Foundation
Balance Sheet
As of September 30, 2024 and 2023
(Amounts in Thousands)

Assets	**2024**	**2023**
Intragovernmental Assets		
Fund Balance With Treasury (Note 2)	$ 19,409,622	$ 19,692,930
Accounts Receivable, Net		
Assets for Custodial and Non-Entity Liabilities - Other Than the General Fund of the US Government (Note 7)	9,056	7,692
Accounts Receivable, Net	29,980	6,149
Total Accounts Receivable, Net	39,036	13,841
Advances and Prepayments (Note 8A)	34,705	30,679
Total Intragovernmental Assets	19,483,363	19,737,450
Other Than Intragovernmental Assets		
Cash and Other Monetary Assets	14	92
Accounts Receivable, Net	1,330	1,577
Property, Plant, and Equipment, Net (Note 3)	493,778	488,074
Total Other Than Intragovernmental Assets	495,122	489,743
Total Assets	**$ 19,978,485**	**$ 20,227,193**
Liabilities		
Intragovernmental Liabilities		
Accounts Payable		
Accounts Payable	$ 71,100	$ 56,280
Total Accounts Payable	71,100	56,280
Advances from Others and Deferred Revenue	572	2,215
Other Liabilities		
Other Liabilities (Without Reciprocals)	2,601	2,485
Liability to the General Fund of US Government - for Custodial and Other Non-Entity Assets	1,285	1,545
Other Current Liabilities - Benefit Contributions Payable	1,658	1,337
Other Liabilities - Reimbursable Activities	-	2,271
Total Other Liabilities	5,544	7,638
Total Intragovernmental Liabilities	77,216	66,133
Other Than Intragovernmental Liabilities		
Accounts Payable	89,823	113,285
Federal Employee Salary, Leave, and Benefits Payable	34,742	32,916
Other Post-Employment Liability	1,294	1,389
Environmental and Disposal Liabilities (Note 6)	12,506	12,342
Other Liabilities		
Accrued Grant Liabilities	539,563	533,495
Liability for Non-Fiduciary Deposit Fund and Other Liabilities (Note 2)	50,330	70,836
Total Other Liabilities	589,893	604,331
Total Other Than Intragovernmental Liabilities	728,258	764,263
Total Liabilities	**$ 805,474**	**$ 830,396**

Net Position		
Unexpended Appropriations		
Unexpended Appropriations - Funds from Other Than Dedicated Collections	$ 17,943,822	$ 18,190,172
Total Unexpended Appropriations	17,943,822	18,190,172
Cumulative Results of Operations		
Cumulative Results of Operations - Funds from Dedicated Collections (Note 7)	703,123	703,470
Cumulative Results of Operations - Funds from Other Than Dedicated Collections	526,066	503,155
Total Cumulative Results of Operations	1,229,189	1,206,625
Total Net Position	**$ 19,173,011**	**$ 19,396,797**
Total Liabilities and Net Position	**$ 19,978,485**	**$ 20,227,193**

The accompanying notes are an integral part of these statements.

National Science Foundation
Statement of Net Cost
For the Fiscal Years Ended September 30, 2024 and 2023
(Amounts in Thousands)

Program Costs	**2024 (Note 12)**	**2023**
Research and Related Activities		
Gross Costs	$ 7,886,750	$ 7,728,989
Less: Earned Revenue	(100,368)	(120,476)
Net Research and Related Activities	**$ 7,786,382**	**$ 7,608,513**
STEM Education		
Gross Costs	$ 1,247,789	$ 1,118,744
Less: Earned Revenue	(10,101)	(6,837)
Net STEM Education	**$ 1,237,688**	**$ 1,111,907**
Major Research Equipment and Facilities Construction		
Gross Costs	$ 222,057	$ 147,704
Less: Earned Revenue	-	-
Net Major Research Equipment and Facilities Construction	**$ 222,057**	**$ 147,704**
CHIPS for America Workforce and Education		
Gross Costs	$ 3,446	$ 840
Less: Earned Revenue	-	-
Net CHIPS for America Workforce and Education	**$ 3,446**	**$ 840**
Donations and Dedicated Collections		
Gross Costs	$ 182,922	$ 160,257
Less: Earned Revenue	-	-
Net Donations and Dedicated Collections	**$ 182,922**	**$ 160,257**
Net Cost of Operations (Note 11)	**$ 9,432,495**	**$ 9,029,221**

The accompanying notes are an integral part of these statements.

National Science Foundation
Statement of Changes in Net Position
For the Fiscal Year Ended September 30, 2024
(Amounts in Thousands)

	2024		
	Funds from Dedicated Collections (Notes 7 & 12)	**Funds from Other Than Dedicated Collections (Note 12)**	**Total (Note 12)**
Unexpended Appropriations			
Beginning Balances	$ -	**$ 18,190,172**	**$ 18,190,172**
Appropriations Received	-	9,085,000	9,085,000
Other Adjustments (Canceled Authority)	-	(98,025)	(98,025)
Appropriations Used	-	(9,233,325)	(9,233,325)
Net Change in Unexpended Appropriations	**-**	**(246,350)**	**(246,350)**
Total Unexpended Appropriations, Ending	**$ -**	**$ 17,943,822**	**$ 17,943,822**
Cumulative Results of Operations			
Beginning Balances	**$ 703,470**	**$ 503,155**	**$ 1,206,625**
Adjustments			
Change in Accounting Principle	-	2,271	2,271
Beginning Balances, Adjusted	**703,470**	**505,426**	**1,208,896**
Appropriations Used	-	9,233,325	9,233,325
Non-Exchange Revenue	-	94	94
Donations (Note 11)	-	30,870	30,870
Transfers In / (Out) Without Reimbursement	158,874	(301)	158,573
Imputed Financing (Note 11)	-	28,478	28,478
Other	-	1,448	1,448
Net Cost of Operations (Note 11)	(159,221)	(9,273,274)	(9,432,495)
Net Change in Cumulative Results of Operations	**(347)**	**20,640**	**20,293**
Total Cumulative Results of Operations, Ending	**$ 703,123**	**$ 526,066**	**$ 1,229,189**
Net Position	**$ 703,123**	**$ 18,469,888**	**$ 19,173,011**

The accompanying notes are an integral part of these statements.

National Science Foundation
Statement of Changes in Net Position
For the Fiscal Year Ended September 30, 2023
(Amounts in Thousands)

	2023		
	Funds from Dedicated Collections (Notes 7)	**Funds from Other Than Dedicated Collections**	**Total**
Unexpended Appropriations			
Beginning Balances	**$ -**	**$ 17,249,150**	**$ 17,249,150**
Appropriations Received	-	9,901,511	9,901,511
Other Adjustments (Canceled Authority)	-	(94,626)	(94,626)
Appropriations Used	-	(8,865,863)	(8,865,863)
Net Change in Unexpended Appropriations	**-**	**941,022**	**941,022**
Total Unexpended Appropriations, Ending	**$ -**	**$ 18,190,172**	**$ 18,190,172**
Cumulative Results of Operations			
Beginning Balances	**$ 715,947**	**$ 472,535**	**$ 1,188,482**
Adjustments			
Change in Accounting Principle	-	-	-
Beginning Balances, Adjusted	**715,947**	**472,535**	**1,188,482**
Appropriations Used	-	8,865,863	8,865,863
Non-Exchange Revenue	-	3	3
Donations (Note 11)	-	27,743	27,743
Transfers In / (Out) Without Reimbursement	134,939	-	134,939
Imputed Financing (Note 11)	-	22,099	22,099
Other	-	(3,283)	(3,283)
Net Cost of Operations (Note 11)	(147,416)	(8,881,805)	(9,029,221)
Net Change in Cumulative Results of Operations	**(12,477)**	**30,620**	**18,143**
Total Cumulative Results of Operations, Ending	**$ 703,470**	**$ 503,155**	**$ 1,206,625**
Net Position	**$ 703,470**	**$ 18,693,327**	**$ 19,396,797**

The accompanying notes are an integral part of these statements.

National Science Foundation
Statement of Budgetary Resources
For the Fiscal Years Ended September 30, 2024 and 2023
(Amounts in Thousands)

	2024	2023
Budgetary Resources		
Unobligated Balance from Prior Year Budget Authority, Net	$ 1,378,195	$ 874,793
Appropriations	9,273,379	10,067,328
Spending Authority from Offsetting Collections	100,180	132,585
Total Budgetary Resources (Note 8B)	**$10,751,754**	**$ 11,074,706**
Status of Budgetary Resources		
New Obligations and Upward Adjustments (Note 8B)	$ 9,746,030	$ 9,861,960
Unobligated Balance, End of Year		
Apportioned, Unexpired (Note 2)	518,969	781,785
Unapportioned, Unexpired (Note 2)	242,376	222,712
Unobligated Balance, Unexpired, End of Year	761,345	1,004,497
Unobligated Balance, Expired, End of Year (Note 2)	244,379	208,249
Total Unobligated Balance, End of Year	1,005,724	1,212,746
Total Status of Budgetary Resources	**$10,751,754**	**$ 11,074,706**
Net Outlays (Note 8B and 11)		
Net Outlays	$ 9,438,235	$ 8,982,258
Distributed Offsetting Receipts	(36,722)	(31,489)
Net Agency Outlays	**$ 9,401,513**	**$ 8,950,769**

The accompanying notes are an integral part of these statements.

NOTES TO THE PRINCIPAL FINANCIAL STATEMENTS

Note 1. Summary of Significant Accounting Policies

A. Reporting Entity

The National Science Foundation (NSF or "Foundation") is an independent federal agency created by the National Science Foundation Act of 1950, as amended (42 United States Code (U.S.C.) 1861-75). Its primary mission is to promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense. NSF initiates and supports scientific research and research fundamental to the engineering process and programs to strengthen the Nation's science and engineering potential. NSF also supports critical education programs in science, technology, engineering, and mathematics (STEM) fields, which help prepare future generations of scientists and engineers. NSF funds research and education in science and engineering by awarding grants and contracts to educational and research institutions throughout the United States (U.S.) and its territories. NSF, by law, cannot operate research facilities except in the polar regions. NSF enters into relationships through awards to fund the research operations conducted by grantees. Information on NSF funding by institution can be found at https://fiscal.treasury.gov/files/reports-statements/combined-statement/cs2023/c54.pdf.

NSF is led by a presidentially-appointed, Senate-confirmed Director and a 24-member National Science Board (NSB). As of September 30, 2024, there were 17 members serving on the NSB, including the Director. The NSB members represent a cross section of prominent leaders in science and engineering research and education, and are appointed by the President for 6-year terms. The NSF Director is an ex officio member of the Board. The NSF workforce, including staff in the NSB Office and the Office of the Inspector General, is comprised of approximately 1,500 federal employees and 200 scientists from research institutions in temporary positions. NSF provides the opportunity for scientists, engineers, and educators to join the Foundation as temporary program directors and advisors. These "rotators" provide input during the merit review process of proposals; provide insight for new directions in the fields of science, engineering, and education; and support cutting-edge interdisciplinary research. Rotators can come to NSF under multiple mechanisms. The largest numbers come on Intergovernmental Personnel Act (IPA) assignments and remain employees of their home institutions. NSF facilitates IPA assignments through grants to their institution as a reimbursement in whole or in part for salary and benefits, and that reimbursement is then paid by the institution to their employee. All rotators are subject to criminal conflict of interest statutes as well as the government-wide *Standards of Ethical Conduct of Employees of the Executive Branch*, which prohibit them from participating in NSF proposals and awards affecting themselves and their home organizations.

In accordance with Federal Accounting Standards Advisory Board (FASAB) Statement of Federal Financial Accounting Standard (SFFAS) No. 47, *Reporting Entity*, financial information for the Arctic

Research Commission (ARC), a consolidation entity for which NSF is accountable, is included in the accompanying financial statements and footnotes. ARC is an independent federal agency funded through NSF's appropriation, specifically as an activity in the Research and Related Activities (R&RA) account.

B. Basis of Presentation

These financial statements have been prepared to report the financial position and results of operations of NSF as required by the Chief Financial Officers Act of 1990, the Government Management Reform Act of 1994, the Reports Consolidation Act of 2000, and the Office of Management and Budget (OMB) Circular No. A-136, *Financial Reporting Requirements*, revised May 30, 2024. While the statements have been prepared from the books and records of NSF in accordance with U.S. Generally Accepted Accounting Principles (GAAP) for federal entities and the formats prescribed by OMB, the statements are in addition to the financial reports used to monitor and control budgetary resources, which are prepared from the same books and records. NSF prepares the following financial statements for presentation:

The *Balance Sheet*, and certain accompanying notes to the financial statements, presents agency assets, liabilities, and net position (which equals total assets minus total liabilities) as of the end of the reporting periods.

The *Statement of Net Cost* presents the gross costs of programs, less earned revenue, to arrive at the net cost of operations, for both the programs and NSF overall, for the reporting periods.

The *Statement of Changes in Net Position* reports beginning balances, budgetary and other financing sources, and net cost of operations to arrive at ending net position balances.

The *Statement of Budgetary Resources* provides information about how budgetary resources were made available, as well as the status of budgetary resources at the end of the reporting periods.

A *Statement of Custodial Activity* is not presented as NSF custodial activity is incidental to its primary mission and the amounts collected are immaterial to the financial statements as a whole. NSF custodial activity is presented in Note 10.

C. Basis of Accounting

The accompanying financial statements have been prepared in accordance with U.S. GAAP for federal entities using the accrual method of accounting. Under the accrual method, revenues are recognized when earned, and expenses are recognized when a liability is incurred, without regard to receipt or payment of cash. The accompanying financial statements also include budgetary

accounting transactions that ensure compliance with legal constraints and controls over the use of federal funds.

In FY 2024, NSF implemented a prospective change in accounting principle to discontinue amortizing the lease concession related to the occupancy agreement with the General Services Administration (GSA), presented in Note 5, and removed the associated liability from the Balance Sheet. This change is in accordance with SFFAS No. 54: *Leases* and SFFAS No. 60, Omnibus Amendments 2021: *Leases-Related Topics,* which went into effect this fiscal year, as well as SFFAS No. 21, *Reporting Corrections of Errors and Changes in Accounting Principles.* The change is reflected as an adjustment to the beginning balance of Cumulative Results of Operations on the Statement of Changes in Net Position.

D. Budgetary Terms

The purpose of federal budgetary accounting is to control, monitor, and report on funds made available to federal agencies by law and help ensure compliance with the law. The following Budgetary Terms are commonly used:

Appropriations are a provision of law authorizing the expenditure of funds for a given purpose. Usually, but not always, an appropriation provides budget authority.

Budgetary Resources are amounts available to incur obligations in a given year.

Offsetting Collections are payments to the government that, by law, are credited directly to expenditure accounts and deducted from gross budget authority and outlays of the expenditure account, rather than added to receipts. Usually, offsetting collections are authorized to be spent for the purposes of the account without further action by Congress. Offsetting collections usually result from business-like transactions with the public, including payments from the public in exchange for goods and services, reimbursements for damages, and gifts or donations of money to the government and from intragovernmental transactions with other government accounts.

Offsetting Receipts are payments to the government that are credited to offsetting receipt accounts and deducted from gross budget authority and outlays, rather than added to receipts. They are usually deducted at the level of the agency and subfunction, but in some cases, they are deducted at the level of the government as a whole. Offsetting receipts are not authorized to be credited to expenditure accounts. The legislation that authorizes the offsetting receipts may earmark them for a specific purpose and either appropriate them for expenditure for that purpose or require them to be appropriated in annual appropriations acts before they can be spent. Like offsetting collections, offsetting receipts usually result from business-like transactions with the public, including payments from the public in exchange for goods and services, reimbursements for damages, gifts or donations of money

to the government, and from intragovernmental transactions with other government accounts.

Obligations are binding agreements that will result in outlays, immediately or in the future.

Outlays are payments to liquidate an obligation. Outlays generally are equal to cash disbursements but are also recorded for cash- equivalent transactions, such as the issuance of debentures to pay insurance claims, and in a few cases are recorded on an accrual basis such as interest on public issues of the public debt. Outlays are the measure of government spending.

For further information about *Budgetary Terms* and concepts, please refer to the "Budget Concepts" chapter of the Analytical Perspectives volume of the President's Budget. https://www.whitehouse.gov/omb/analytical-perspectives/

E. Revenues and Other Financing Sources

NSF receives a majority of its funding through appropriations contained in the Commerce, Justice, Science, and Related Agencies Appropriations Act. NSF receives annual, multi-year, and no-year appropriations that may be expended within statutory limits. NSF also receives funding via warrant from a receipt account for dedicated collections reported as Nonimmigrant Petitioner Account (H-1B) funds. Additional amounts are obtained from reimbursements for services performed for other federal agencies, and receipts to the NSF Donations Account. NSF also receives interest earned on overdue receivables, which is included in the amounts returned to the Treasury at the end of each fiscal year.

In FY 2024, the Consolidated Appropriations Act, 2024 under Public Law (P.L. 118-42), provided funding for NSF's appropriations. In addition, the Science Appropriations Act, 2024 provided an administrative provision allowing NSF to transfer up to 5 percent of current year funding between appropriations, but no appropriation may be increased by more than 10 percent. Appropriations are recognized as a financing source at the time the related “funded” program or administrative expenditures are incurred. Donations are recognized as revenues when funds are received. Revenues from reimbursable agreements are recognized when the services are performed and the related expenditures are incurred. Reimbursable agreements are mainly for grant administrative services provided by NSF on behalf of other federal agencies.

In FY 2022, the CHIPS and Science Act, 2022 under Public Law (P.L. 117-167) provided NSF funding for Creating Helpful Incentives to Produce Semiconductors (CHIPS) for America Workforce and Education Fund beginning in FY 2023. The CHIPS appropriation provides funding to support the domestic enhancement, development, and production of microelectronics and its workforce.

In accordance with 42 U.S.C. Section 1862 (a)(3), NSF has authority “to foster the interchange of

scientific and engineering information among scientists and engineers in the United States and foreign countries" and in 42 U.S.C. Section 1870 (f), NSF is authorized to receive and use funds donated by others. These funds must be donated without restriction other than that they must be used in furtherance of one or more of the general purposes of the Foundation and are made available for obligations as necessary to support NSF programs. Donations may be received from private companies, academic institutions, non-profit foundations, and individuals.

NSF accepts contributions from foreign governments in support of various NSF-funded projects and the use of these funds is restricted to the awardee for which it is contributed. NSF does not retain ownership of funds contributed by foreign governments and solely acts as an intermediary to transfer the funds from foreign partners to the awardee. In accordance with OMB Circular No. A-11, *Preparation, Submission, and Execution of the Budget*, funds received by NSF from foreign governments are deposited and held in a deposit fund account at Treasury.

F. Fund Balance With Treasury and Cash and Other Monetary Assets

Fund Balance With Treasury (*FBWT*) is composed of appropriated funds that are available to pay current liabilities and finance authorized purchase commitments, and non-appropriated funding sources from donations and foreign contributions. Foreign contributions are considered non-entity assets and are used to support awardees pursuant to agreements between NSF and foreign governments. *Cash and Other Monetary Assets* consist of undeposited collections, which are funds received by NSF, but not remitted to Treasury by September 30th. *FBWT* is an asset to NSF and a liability of the General Fund. *FBWT* is primarily increased by appropriations and decreased by disbursements. When disbursements are made, Treasury finances those disbursements using a combination of receipts, other inflows, and borrowing from the public (if there is a budget deficit). Cash receipts and disbursements are processed by Treasury.

G. Accounts Receivable, Net

Accounts Receivable, Net consists of amounts due from governmental agencies, private organizations, and individuals. It includes debts related to criminal restitutions adjudicated by the Department of Justice, where NSF is identified as the payee. Additionally, NSF has the right to conduct audits of awardees to verify billed amounts. These audits may result in monies owed back to NSF. Upon resolution of the amount owed by the awardee to NSF, a receivable is recorded.

NSF establishes an allowance for loss on accounts receivable that are deemed uncollectible in accordance with SFFAS 1, *Accounting for Selected Assets and Liabilities* and FASAB Technical Bulletin 2020-1, *Loss for Intragovernmental Receivables*. NSF analyzes each account independently to assess collectability and the need for an offsetting allowance or write-off. NSF writes off delinquent debt from non-federal sources that is more than 2 years old. NSF's intragovernmental receivables are not written off, but rather the allowance is used to present the net realizable value.

Assets for Custodial and Non-Entity Liabilities – Other Than the General Fund of the US Government consist of a receivable of sequestered H-1B funds due from the Department of Homeland Security.

H. Advances and Prepayments

Advances and Prepayments consist of advances to federal agencies which are issued when agencies are operating under working capital funds or are unable to incur costs on a reimbursable basis. Advances are reduced when documentation supporting expenditures is received. Payments are only made within the amount of the recorded obligation.

I. Property, Plant, and Equipment, Net

NSF capitalizes Property, Plant, and Equipment (PP&E) with costs exceeding $25 thousand and useful lives of 2 or more years; items not meeting these criteria are recorded as operating expenses. NSF currently reports capitalized PP&E at original acquisition value; assets acquired from GSA excess property schedules are recorded at the value assigned by the donating agency; and assets transferred in from other agencies are valued at the cost recorded by the transferring entity for the asset net of accumulated depreciation or amortization.

The PP&E balance includes Equipment, Aircraft and Satellites, Buildings and Structures, Leasehold Improvements, Construction in Progress, Internal Use Software, and Software in Development. These balances are comprised of PP&E maintained "in-house" by NSF to support operations and PP&E under the United States Antarctic Program (USAP). The majority of USAP property is under the custodial responsibility of the NSF prime contractor for the program. The USAP is undergoing a multi-year modernization project initiated in FY 2019.

Depreciation expense is calculated using the straight-line method with a half-year convention. The half-year convention recognizes one-half of the annual depreciation expense in both the first and last years of an asset's useful life regardless of when it is placed in service. The economic useful life classifications for capitalized assets are as follows:

Equipment	
5 years	Computers and peripheral equipment, fuel storage tanks, laboratory equipment, and vehicles
7 years	Communications equipment, office furniture and equipment, pumps and compressors
10 or 15 years	Generators, air traffic control, weather forecasting aids, landing systems equipment
20 years	Movable buildings (e.g., trailers)
Aircraft and Satellites	
7 years	Aircraft, aircraft conversions, and satellites

Buildings and Structures

31.5 years	Buildings and structures placed in service prior to 1994
39 years	Buildings and structures placed in service after 1993

Leasehold Improvements

NSF's headquarters is leased through GSA under a non-cancelable occupancy agreement. Leasehold improvements performed by GSA are financed with NSF-appropriated funds. Amortization is calculated using the straight-line half-year convention upon transfer from construction in progress.

Construction in Progress

Costs incurred for construction projects are accumulated and tracked as construction in progress until the asset is placed in service. Beneficial Occupancy is the point in time when the facility is ready for safe occupancy and use by NSF. Items that pertain to the safety and health of any future occupants of the facility must be corrected before a Beneficial Occupancy is granted and the facility occupied. All construction efforts at the construction site may not be completed (e.g., punch list items or other minor construction activities may still be required for construction to be considered complete), but the facility space can be used for its intended purpose. When Beneficial Occupancy is granted, the project is transferred from construction in progress to real property and depreciated over the respective useful life of the asset.

Internal Use Software and Software in Development

NSF controls, values, and reports purchased or developed software as tangible property assets, in accordance with SFFAS No. 10, *Accounting for Internal Use Software*. NSF identifies software investments as capital property for items that, in the aggregate, cost $500 thousand or more to purchase, develop, enhance, or modify a new or existing NSF system, or configure a government-wide system for NSF needs. Software projects that are not completed at year-end and are expected to exceed the capitalization threshold are recorded as software in development. All internal use software meeting the capitalization threshold is amortized over a 5-year period using the straight-line half-year convention.

J. Property, Plant, and Equipment in the Custody of Other Entities

NSF awards grants, cooperative agreements, and contracts to various organizations, including colleges and universities, non-profit organizations, state and local governments, Federally Funded Research and Development Centers (FFRDCs), and private entities. The funds provided may be used in certain cases to purchase or construct PP&E to be used for operations or research on projects or programs sponsored by NSF. In these instances, NSF funds the acquisition of property but transfers custody of the assets to these entities. NSF's authorizing legislation specifically prohibits the Foundation from operating such property directly.

In practice, NSF's ownership interest in such PP&E is similar to a reversionary interest. To address the accounting and reporting of these assets, specific guidance was sought by NSF and provided by the FASAB. This guidance stipulates that NSF should disclose the value of Federally Owned Property (FOP) held by others in its financial statements based on information contained in the audited financial statements of these entities (if available). Entities that separately present net book value (NBV) of NSF-owned property in their audited financial statements are listed in Note 4, *Property, Plant, and Equipment in the Custody of Other Entities*, along with the NBV of the property held. Entities which hold FOP but do not separately present the NBV of NSF-owned property in their audited financial statements are also listed in Note 4, *Property, Plant, and Equipment in the Custody of Other Entities*, with a notation as "Unavailable."

K. Accounts Payable

Accounts Payable consists of liabilities to commercial vendors, contractors, and federal agencies. *Accounts Payable* are expenses for goods and services received but not yet paid for by NSF. At year-end, NSF accrues for the amount of estimated unpaid expenses to vendors and contractors for which invoices have not been received, but goods and services have been delivered and performed.

L. Other Intragovernmental Liabilities

Other Intragovernmental Liabilities consist primarily of the employer portion of payroll taxes and benefits, payroll taxes associated with unfunded leave, unfunded Federal Employees' Compensation Act (FECA), liabilities for non-entity assets, and reimbursable activities. A liability is recorded for payments made for workers' compensation pursuant to the FECA because NSF will reimburse the U.S. Department of Labor (DOL) 2 years after the payment of expenses. Liabilities for custodial non-entity assets are recorded to offset accounts receivable balances associated with canceled appropriations. *Other Liabilities - Reimbursable Activities* consist of a rental credit liability, which was removed as a result of the implementation of SFFAS No. 54: *Leases* effective FY 2024.

M. Federal Employee Salary, Leave, and Benefits Payable

Federal Employee Salary, Leave, and Benefits Payable primarily consists of accrued payroll and unfunded employee leave. Accrued payroll relates to services performed by NSF employees and the Department of Interior's Business Center is NSF's payroll service provider. NSF accrues the amount of salaries earned but not paid as of the end of the reporting period.

Annual leave is accrued as it is earned, and the accrual is reduced as leave is taken. Each quarter, the balance in the accrued annual leave account is adjusted to reflect changes. To the extent current and prior year appropriations are not available to fund annual leave earned but not taken, funding will be obtained from future appropriations. Sick leave and other types of non-vested leave are expensed as taken.

N. Other Post-Employment Liability

Other Post-Employment Liability consists of a liability for actuarial FECA. An actuarial liability is recorded for estimated future payments for workers' compensation pursuant to the FECA. The actuarial FECA liability is the present value of estimated future payments calculated by DOL and is recorded as an unfunded liability. Future appropriations will be used for DOL's estimated reimbursement.

O. Liabilities Not Covered by Budgetary Resources

Liabilities Not Covered by Budgetary Resources may include liabilities associated with future environmental cleanup, legal claims, FECA, unfunded leave, and a rental credit liability which was removed as a result of the implementation of SFFAS 54: *Leases* effective FY 2024.

NSF cannot pay for liabilities unless authorized by law and covered by budgetary resources. Liabilities covered by budgetary resources are those for which appropriated funds are available as of the Balance Sheet date and include new budget authority, unobligated balances of budgetary resources, spending authority from offsetting collections, and recoveries of budget authority through downward adjustments of prior year obligations.

P. Other Liabilities (Other Than Intragovernmental)

Other Liabilities (Other Than Intragovernmental) consist of *Accrued Grant Liabilities* and a *Liability for Non-Fiduciary Deposit Funds and Other Liabilities.*

Accrued Grant Liabilities consist of estimated liabilities to grantees for expenses incurred but not reported (IBNR) by September 30th. For standard grants and cooperative agreements, NSF's grant accrual methodology utilizes a linear regression model based on the statistical correlation between prior year unliquidated obligations and prior year expenses IBNR.

Accrued Grant Liabilities also consist of an accrual specifically for Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) grants. SBIR and STTR awards have unique terms and conditions compared to standard NSF grants and cooperative agreements. This methodology calculates any SBIR and STTR funds approved for payment, but not yet disbursed to the grantee as of September 30th.

Liability for Non-Fiduciary Deposit Funds and Other Liabilities consists primarily of foreign contributions, undeposited collections, and a temporary clearing account balance. NSF does not own or use the funds contributed by its foreign partners. NSF acts solely as an intermediary to transfer the funds from the foreign partner to the awardee which manages the applicable project. The *Liability for Non-Fiduciary Deposit Funds* and the temporary *Clearing Account* balance do not have

budgetary impact. At year end, NSF also records *Undeposited Collections* which are funds received by NSF, but not remitted to Treasury by September 30th.

Q. Net Position

Net Position is the residual difference between assets and liabilities and is composed of Unexpended Appropriations and Cumulative Results of Operations, presented separately by Dedicated Collections and Funds Other Than Dedicated Collections. *Unexpended Appropriations* represent the amount of undelivered orders and unobligated balances of budget authority. Unobligated balances are the amount of appropriations or other authority remaining after deducting the cumulative obligations from the amount available for obligation. *Cumulative Results of Operations* represent the net results of NSF's operations since the Foundation's inception.

R. Retirement Plan

In FY 2024, approximately 1 percent of NSF employees participated in the Civil Service Retirement System (CSRS), to which NSF matches contributions up to 7 percent of pay. The majority of NSF employees are covered by the Federal Employees Retirement System (FERS) and Social Security. A primary feature of FERS is the thrift savings plan to which NSF automatically contributes 1 percent of pay. The maximum NSF matching contribution is 5 percent of employee pay, of which 3 percent is fully matched, and 2 percent is matched at 50 percent. NSF also contributes to the employer's matching share for Social Security for FERS participants.

Although NSF funds a portion of the benefits under FERS and CSRS relating to its employees and withholds the necessary payroll deductions, the Foundation has no liability for future payments to employees under these plans, nor does NSF report CSRS, FERS, Social Security assets, or accumulated plan benefits on its financial statements. Reporting such amounts is the responsibility of the Office of Personnel Management (OPM) and the Federal Retirement Thrift Investment Board.

SFFAS No. 5, *Accounting for Liabilities of the Federal Government*, requires employing agencies to recognize the cost of pensions and other retirement benefits during their employees' active years of service. OPM actuaries determine pension cost factors by calculating the value of pension benefits expected to be paid in the future and provide these factors to the agency for current period expense reporting. Information is also provided by OPM regarding the full cost of health and life insurance benefits on OPM's Benefits Administration website: https://www.opm.gov/retirement-center/publications-forms/benefits-administration-letters/2024/24-304.pdf

S. Contingencies and Possible Future Costs

Contingencies - Claims and Lawsuits: NSF is a party to various legal actions and claims brought against it. In the opinion of NSF management and legal counsel, the ultimate resolution of these actions and claims will not materially affect the financial position or operations of the Foundation. NSF

recognizes the contingency in the financial statements when claims are probable, expected to result in a material loss, and the payment amounts can be reasonably estimated, whether from NSF's appropriations or the Judgment Fund, administered by the Department of Justice under Section 1304 of Title 31 of the U.S.C. There are some cases where the likelihood of loss is deemed reasonably possible. A contingent liability is not required to be recorded but the estimated loss must be disclosed in the footnotes. In addition, there are cases where the likelihood of loss is deemed remote. A contingent liability is not required to be recorded or disclosed for these cases.

Claims and lawsuits can also be made and filed against awardees of the Foundation by third parties. NSF is not a party to these actions and NSF believes there is no possibility that NSF will be legally required to satisfy such claims. Judgments or settlements of the claims against awardees that impose a financial obligation on them may be claimed as costs under the applicable contract, grant, or cooperative agreement and thus may affect the allocation of program funds in future fiscal years. In the event that the claim becomes probable and amounts can be reasonably estimated, the claim will be recognized.

Contingencies – Unasserted Claims: For claims and lawsuits that have not been made and filed against the Foundation, NSF management and legal counsel determine, in their opinion, whether the resolution of the actions and claims they are aware of will materially affect the Foundation's financial position or operations. NSF recognizes a contingency in the financial statements if unasserted claims are probable of assertion, and if asserted, would be probable of an unfavorable outcome and expected to result in a measurable loss, whether from NSF's appropriations or the Judgment Fund. NSF discloses unasserted claims if the loss is more likely than not to occur, but the materiality of a potential loss cannot be determined.

Termination Claims: NSF engages organizations, including FFRDCs, in cooperative agreements and contracts to manage, operate, and maintain research facilities for the benefit of the scientific community. As part of these agreements and contracts, NSF funds on a pay-as-you-go basis certain employee benefit costs (accrued vacation and other employee related liabilities, severance pay and medical insurance), long-term leases, and vessel usage and drilling. In some instances, an award decision is made to continue operation of a facility with a different entity performing operation and management duties. In such an occurrence, NSF does not classify the facility as terminated. Claims submitted by the previous managing entity for expenditures not covered by the indirect cost rate included in the initial award are subject to audit and typically paid with existing program funds.

Agreements with FFRDCs include a clause that commits NSF to seek appropriations for termination expenses, if necessary, in the event a facility is terminated. NSF considers termination of these facilities only remotely possible. Should a facility be terminated, NSF is obligated to seek termination expenses for FFRDCs in excess of the limitation of funds set forth in the agreements, including any Post-Retirement Benefit liabilities, from Congress. Nothing in these agreements can be construed as implying that Congress will appropriate funds to meet the terms of any claims. Termination costs that may be payable to an FFRDC operator cannot be estimated until such time as the facility is

terminated.

Environmental and Disposal Liabilities: NSF assesses the likelihood of required cleanup and establishes its environmental liability estimates in accordance with the requirements of the SFFAS No. 5, *Accounting for Liabilities of the Federal Government* , and as amended by SFFAS No. 12, *Recognition of Contingent Liabilities Arising from Litigation* , and SFFAS No. 6, *Accounting for Property, Plant, and Equipment* , and the Federal Financial Accounting and Auditing Technical Release No. 2, *Determining Probable and Reasonably Estimable for Environmental Liabilities in the Federal Government*.

Special attention is paid to USAP to ensure compliance with the Antarctic Conservation Act requirements for environmental cleanup in Antarctica. NSF continually monitors USAP in regards to environmental issues. While NSF is not legally liable for environmental cleanup costs in the Antarctic, there are occasions when the NSF Office of Polar Programs chooses to accept responsibility and commit funds toward cleanup efforts of various sites as resources permit. Decisions to commit funds are in no way driven by concerns of probable legal liability for failure to engage in such efforts, but rather a commitment to environmental stewardship of Antarctic natural resources. Environmental cleanup projects started and completed during the year are reflected in NSF's financial statements as expenses for the current fiscal year. An estimated cost would be accrued for approved projects that are anticipated to be performed after the fiscal year-end or will take more than one fiscal year to complete.

T. Use of Estimates

Management has made certain estimates and assumptions when reporting assets, liabilities, revenues, expenses, and note disclosures. Estimates underlying the accompanying financial statements can include accounting for grant liabilities, accounts payable, environmental liabilities, payroll, and PP&E. Actual results may differ from these estimates, and the difference will be adjusted for and included in the financial statements of the following quarter.

U. Permanent Indefinite Appropriations

NSF maintains permanent indefinite appropriations for R&RA, STEM Education (STEM EDU), Major Research Equipment and Facilities Construction (MREFC), and CHIPS. The R&RA appropriation is used for polar research and operations support, reimbursements to other federal agencies for operational and science support, and logistical and other related activities for USAP. The STEM EDU appropriation is used to support science and engineering education, and human resources programs and activities. The MREFC appropriation supports the procurement and construction of unique national research platforms, major research equipment, and USAP modernization projects. The CHIPS appropriation is used to support the domestic development and production of microelectronics and to strengthen the domestic microelectronics workforce.

V. Classified Activities

Accounting Standards require all reporting entities to disclose that accounting standards allow certain presentations and disclosures to be modified, if needed, to prevent the disclosure of classified information.

Note 2. Fund Balance With Treasury

Fund Balance With Treasury (FBWT) consists of the following components as of September 30, 2024 and 2023:

(Amounts in Thousands)	2024	2023
Obligated, Not Yet Disbursed	$ 18,353,569	$ 18,409,427
Unobligated Available, Unexpired	518,969	781,785
Unobligated Unavailable, Unexpired	242,376	222,712
Unobligated Unavailable, Expired	244,379	208,249
Add: Non-Budgetary FBWT and Donations Sequestration	50,329	70,757
Total FBWT	$ 19,409,622	$ 19,692,930

Obligated, Note Yet Disbursed balances include obligations for which outlays have not been made. *Unobligated Available* balances include current period amounts available for obligation or commitment. *Unobligated Unavailable* balances include recoveries of prior year obligations, reimbursements and other income, and other unobligated expired funds that are unavailable for new obligations. *Non-Budgetary FBWT and Donations Sequestration* includes a non-fiduciary deposit fund account for foreign contributions and a temporary clearing account balance, which are liabilities to NSF totaling $50 million as of September 30, 2024 and $71 million as of September 30, 2023. *Non-Budgetary FBWT and Donations Sequestration* are considered non-entity assets.

Note 3. Property, Plant, and Equipment, Net

To support the Financial Report of the U.S. Government (FR) compilation process, the Property, Plant, and Equipment, Net reconciliation as of September 30, 2024 and 2023 is below:

(Amounts in Thousands)	2024	2023
	Net PP&E	Net PP&E
Balance Beginning of Fiscal Year	$ 488,074	$ 477,798
Capitalized Acquisitions	51,186	142,595
Dispositions/Revaluations	(3,573)	(101,769)
Depreciation Expense	(41,909)	(30,550)
Balance as of September 30, 2024 and September 30, 2023	$ 493,778	$ 488,074

The components of *Property, Plant, and Equipment, Net* as of September 30, 2024 and 2023 are shown below. As of September 30, 2024, NSF determined that scheduled maintenance or repairs on three items of Antarctic capital equipment in poor or very poor condition was not completed and was deferred or delayed for a future period. Further details on asset impairments and deferred maintenance are included in the Required Supplementary Information.

(Amounts in Thousands)	2024		
	Acquisition Value	Accumulated Depreciation/ Amortization	NBV
Equipment	$ 170,063	$ (147,310)	$ 22,753
Aircraft and Satellites	13,180	(13,180)	-
Buildings and Structures	377,503	(202,786)	174,717
Leasehold Improvements	30,584	(14,919)	15,665
Construction in Progress	177,116	-	177,116
Internal Use Software	195,889	(121,087)	74,802
Software in Development	28,725	-	28,725
Total PP&E	$ 993,060	$ (499,282)	$ 493,778

(Amounts in Thousands)	2023		
	Acquisition Value	Accumulated Depreciation/ Amortization	NBV
Equipment	$ 167,616	$ (143,956)	$ 23,660
Aircraft and Satellites	13,180	(13,180)	-
Buildings and Structures	373,933	(192,612)	181,321
Leasehold Improvements	30,584	(12,832)	17,752
Construction in Progress	147,630	-	147,630
Internal Use Software	194,502	(98,328)	96,174
Software in Development	21,537	-	21,537
Total PP&E	$ 948,982	$ (460,908)	$ 488,074

Note 4. Property, Plant, and Equipment in the Custody of Other Entities

NSF received a ruling from FASAB on accounting for non-USAP PP&E owned by NSF but in the custody of and used by others (see Note 1J. *Property, Plant, and Equipment in the Custody of Other Entities*). The FASAB guidance requires NSF FOP in the custody of others be excluded from NSF PP&E as defined in the SFFAS No. 6, *Accounting for Property, Plant, and Equipment*. NSF is required to disclose the NBV of PP&E held by others for any entity which separately discloses NSF property in the most recently issued audited financial statements of the organization holding the assets.

Major facilities with significant FOP are required to disclose in their audited financial statements the value of FOP in their custody. With the exception of these major facilities, other entities which received NSF funding are not required to report FOP separately in their audited financial statements. For entities that hold FOP but do not disclose the NBV in their audited financial statements, the value of FOP will be listed as unavailable below.

Entities with Audited and Separately Reported NSF Federally Owned Property

(Amounts in Thousands)

	NBV	Fiscal Year Ending
Associated Universities, Inc.	$ 230,157	9/30/2023
Association of Universities for Research in Astronomy, Inc.	$ 1,259,181	9/30/2023
California Institute of Technology	Unavailable	9/30/2023
Dartmouth College	Unavailable	6/30/2023
Earthscope Consortium Inc.	$ 11,081	6/30/2022
Florida State University	Unavailable	6/30/2023
GENCO	Unavailable	Unavailable
Oregon State University	Unavailable	6/30/2023
SRI International	Unavailable	12/29/2023
University Corporation for Atmospheric Research	$ 78,608	9/30/2023
University of Alaska Fairbanks	$ 120,100	6/30/2023
University of California San Diego	Unavailable	6/30/2023
University of Central Florida Board of Trustees, The	Unavailable	6/30/2023
University of Hawaii System	Unavailable	6/30/2023
University of Rhode Island	Unavailable	6/30/2023
University of Washington	Unavailable	6/30/2023
University of Wisconsin System	$ 8,800	6/30/2023
Woods Hole Oceonographic Institution	Unavailable	12/31/2023

Note 5. Leases

NSF currently has an occupancy agreement with GSA for its headquarters in Alexandria, VA. This agreement is non-cancelable and active through FY 2032. In addition, this agreement contains escalation clauses tied to operating expenses and taxes.

NSF also has an occupancy agreement with GSA for warehouse space in Springfield, VA that will expire in FY 2029 that contains an escalation clause tied to operating expenses. While the cancellation clause with the agreement allows NSF to terminate use with 120-day notice, the likelihood of early termination is low. In addition, the Springfield agreement contains a contingent rental based on re-appraised rental rates.

The following is a schedule of total future rental payments for real property leases with GSA:

(Amounts in Thousands)

Fiscal Year	Real Property Leases (Intragovernmental)
2025	$ 25,486
2026	25,620
2027	25,757
2028	25,900
2029	26,006
2030 through 2032	75,755
Total Minimum Lease Payments	$ 204,524

Note 6. Environmental and Disposal Liabilities

Restoration Projects

After an extensive evaluation process, NSF decided to cease scientific observations from the Sondrestrom Research Facility, a geophysical observatory in Kangerlussuaq, Greenland, and to proceed with actions to restore the location. In FY 2019, NSF recorded an initial total estimated liability for the restoration project costs of $2 million to decommission and decontaminate the site. The restoration project was completed in FY 2024 and the estimated liability was $0 as of September 30, 2024 and $182 thousand as of September 30, 2023.

Asbestos

Pursuant to FASAB Technical Bulletin 2006-1, *Recognition and Measurement of Asbestos-Related Cleanup Costs*, federal entities are required to recognize a liability for federal property asbestos cleanup costs. Some NSF-owned buildings and structures used to support USAP have been identified as having, or expecting to have, friable and non-friable asbestos containing material.

As required by SFFAS No. 6, *Accounting for Property, Plant, and Equipment*, NSF works with the current USAP contractor through the Antarctic Support Contract (ASC) to determine the need for asbestos liability adjustments based on actual asbestos costs incurred on an annual basis. Actual asbestos remediation costs are submitted by the ASC and the asbestos liability is adjusted for the impact. Changes to NSF's estimated asbestos liability consisted of the impact of asbestos remediation cost re-estimates. The asbestos liability was $13 million as of September 30, 2024 and $12 million as of September 30, 2023.

Note 7. Funds from Dedicated Collections

In FY 1999, Title IV of the American Competitiveness and Workforce Improvement Act of 1998 (P.L. 105-277) established the H-1B Nonimmigrant Petitioner Account in the General Fund of the U.S. Treasury. Funding is established from fees collected for alien, nonimmigrant status petitions. This law requires that a prescribed percentage of the funds in the account be made available to NSF for the following activities:

- Scholarships in Science, Technology, Engineering, and Mathematics
- Grants for Mathematics, Engineering, or Science Enrichment Courses
- Systemic Reform Activities

The H-1B Nonimmigrant Petitioner fees are available to the Director of NSF until expended. The funds may be used for scholarships to low income students, or to carry out a direct or matching grant program to support private and/or public partnerships in K-12 education. The H-1B fund is set up as a permanent indefinite appropriation by NSF. These funds are described in the Budget of the U.S. Government (President's Budget). *Funds from Dedicated Collections* are accounted for in a separate Treasury Account Symbol (TAS), and the budgetary resources are recorded as *Funds from Dedicated Collections Transferred In / (Out)*. *Funds from Dedicated Collections* are reported in accordance with SFFAS No. 43, *Funds from Dedicated Collections: Amending Statement of Federal Financial Accounting Standards 27, Identifying and Reporting Earmarked Funds*. As of September 30, 2024 and 2023, NSF was subject to H-1B sequestrations of $9 million and $8 million, respectively, for each year.

Balance Sheet as of September 30, 2024 and 2023

(Amounts in Thousands)	2024	2023
Assets		
Intragovernmental Assets		
Fund Balance With Treasury	$ 709,789	$ 713,128
Accounts Receivable, Net		
Asset for Custodial and Non-Entity Liabilities - Other Than the General Fund of the US Government	9,056	7,692
Total Accounts Receivable, Net	9,056	7,692
Total Intragovernmental Assets	718,845	720,820
Total Assets	**$ 718,845**	**$ 720,820**
Liabilities		
Other Than Intragovernmental Liabilities		
Accounts Payable	192	303
Other Liabilities		
Accrued Grant Liabilities	15,530	17,047
Total Other Liabilities	15,530	17,047
Total Other Than Intragovernmental Liabilities	15,722	17,350
Total Liabilities	**$ 15,722**	**$ 17,350**
Net Position		
Cumulative Results of Operations	$ 703,123	$ 703,470
Total Net Position	**$ 703,123**	**$ 703,470**
Total Liabilities and Net Position	**$ 718,845**	**$ 720,820**

Statement of Net Cost for the Fiscal Years Ended September 30, 2024 and 2023

(Amounts in Thousands)	2024	2023
Gross Costs	$ 159,221	$ 147,416
Less: Earned Revenue	-	-
Net Cost of Operations	**$ 159,221**	**$ 147,416**

Statement of Changes in Net Position for the Fiscal Years Ended September 30, 2024 and 2023

(Amounts in Thousands)	2024	2023
Beginning Balances	**$ 703,470**	**$ 715,947**
Transfer In / (Out) Without Reimbursement	158,874	134,939
Net Cost of Operations	(159,221)	(147,416)
Net Change in Cumulative Results of Operations	(347)	(12,477)
Net Position, Ending	**$ 703,123**	**$ 703,470**

Note 8. Notes Related to the Statement of Budgetary Resources

A. Undelivered Orders at the End of the Year

In accordance with SFFAS No. 7, *Accounting for Revenue and Other Financing Sources and Concepts for Reconciling Budgetary and Financial Accounting*, the amount of budgetary resources obligated for undelivered orders was $18 billion for the years ended September 30, 2024 and 2023.

(Amounts in Thousands)	2024	2023
Undelivered Orders, Unpaid - Non-Federal	$ 17,475,299	$ 17,585,754
Undelivered Orders, Paid - Federal	34,705	30,679
Undelivered Orders, Unpaid - Federal	307,362	238,805
Total Undelivered Orders - Federal	342,067	269,484
Total Undelivered Orders	$ 17,817,366	$ 17,855,238

B. Explanation of Differences between the Statement of Budgetary Resources and the Budget of the United States Government

SFFAS No. 7, *Accounting for Revenue and Other Financing Sources and Concepts for Reconciling Budgetary and Financial Accounting*, requires explanations of material differences between amounts reported in the Statement of Budgetary Resources (SBR) and the actual balances published in the President's Budget. The FY 2026 President's Budget will include FY 2024 budget execution information and is scheduled for publication in the spring of 2025 and can be found upon publication on the OMB website at: http://www.whitehouse.gov/omb.

Balances reported in the FY 2023 SBR and the related President's Budget are shown in a table below for Budgetary Resources, New Obligations and Upward Adjustments, Distributed Offsetting Receipt, and Net Outlays, and any related differences. The differences reported are due to differing reporting requirements for expired and unexpired appropriations between the Treasury guidance used to prepare the SBR and the OMB guidance used to prepare the President's Budget. The SBR includes both unexpired and expired appropriations, while the President's Budget presents only unexpired budgetary resources that are available for new obligations. Additionally, the Distributed Offsetting Receipts amount on the SBR includes donations, while the President's Budget does not.

(Amounts in Thousands)	2023			
	Budgetary Resources	New Obligations and Upward Adjustments	Distributed Offsetting Receipts	Net Outlays
Combined Statement of Budgetary Resources	$ 11,074,706	$ 9,861,960	$ 31,489	$ 8,982,258
Expired Accounts	(311,506)	(100,842)	-	-
Budget of the U.S. Government	$ 10,763,200	$ 9,761,118	$ 31,489	$ 8,982,258

Note 9. Awards to Affiliated Institutions

NSB members may be affiliated with institutions that are eligible to receive grants and awards from NSF. NSF made awards totaling $897 million to Board member affiliated institutions as of September 30, 2024. The Board does not review all NSF award actions; however, the following require NSB approval for the NSF Director to take action under delegated authority:

- Proposed awards where the average annual award amount is the greater of 1 percent of the prior year current plan of the awarding directorate/office, or 0.1 percent of the prior year enacted NSF budget level;
- MREFC awards;
- Amendments to awards and procurement actions specifying a dollar amount in the Board resolution, if the amended award exceeds the lesser of $10 million dollars or 20 percent of the amount specified in the Board resolution; and
- In the case of procurements when no amount was specified in the Board resolution, if the amended amount exceeds the lesser of $10 million dollars or 20 percent of the contract ceiling award amount.

The Director will continue to consult with the NSB on programs which represent a significant, long-term investment, particularly those which will be funded as an ongoing NSF-wide activity or which involve substantive policy, interagency, or international issues.

The Director's Review Board (DRB) reviews proposed actions for evaluation adequacy and documentation, and compliance with Foundation policies, procedures, and strategies. Items requiring DRB action include large awards and Requests for Proposal that meet or exceed a threshold of 2.5 percent of the prior year Division or Subactivity Plan. In addition, the DRB reviews all items requiring NSB action as well as NSB information items prior to submission.

NSF may fund awards meeting the above requirements to institutions affiliated with Board members. Federal conflict of interest rules prohibit NSB members from participating in matters

where they have a conflict of interest or there is an impartiality concern without prior authorization from the Designated Agency Ethics Official or delegee. Prior to Board meetings, all NSB action items are screened for conflict of interest/impartiality concerns by the NSB Counsel and a Legal Administrative Specialist in the NSB. Members who have conflicts are either recused from the matter or receive a waiver from the Deputy Ethics Official to participate. NSB did not approve any awards to Board member affiliated institutions in FY 2024.

Note 10. Incidental Custodial Collections

NSF collects custodial non-exchange revenues that are immaterial and incidental to its primary mission; therefore, NSF does not prepare a separate Statement of Custodial Activity. The custodial revenues consist of interest, penalties, and other miscellaneous general fund receipts. At the end of each fiscal year, the custodial collections are transferred to the General Fund of the Treasury. During FY 2024, NSF determined it was acting as custodian for certain receipts that were previously recorded as non-custodial. Therefore, NSF did not report custodial revenues for FY 2023. For the year ended September 30, 2024, NSF collected $6 million in custodial revenues and transferred the collections to Treasury at the end of the fiscal year.

Note 11. Reconciliation of Net Cost to Net Outlays (Budget to Accrual Reconciliation)

The Reconciliation of Net Cost to Net Outlays reconciles the net costs for a federal entity's programs and operations to the net outlays for that entity. The reconciliation validates the relationship between budgetary and proprietary accounting information. Examples of the reconciling items identified are: (1) transactions which resulted in an outlay but did not result in a cost; (2) unpaid expenses included in the net cost in this reporting period but not yet included in outlays; and (3) other temporary timing differences such as special adjustments including prior period adjustments due to correction of errors.

(Amounts in Thousands)	2024		
	Intragovernmental	**With the Public**	**Total**
Net Cost	**$ 232,212**	**9,200,283**	**9,432,495**
Components of Net Cost Not Part of Net Agency Outlays			
Property, Plant, and Equipment Depreciation Expense	-	(41,909)	(41,909)
Applied Overhead / Cost Capitalization Offset	-	47,615	47,615
Increase / (Decrease) in Assets:			
Accounts Receivable, Net	23,832	(1,531)	22,301
Other Assets	4,026	(78)	3,948
(Increase) / Decrease in Liabilities:			
Accounts Payable	(12,871)	17,394	4,523
Environmental and Disposal Liabilities	-	(164)	(164)
Federal Employee and Veteran Benefits Payable	-	(202)	(202)
Other Liabilities	1,526	(1,450)	76
Financing Sources:			
Imputed Costs	(28,478)	-	(28,478)
Total Components of Net Cost Not Part of Net Agency Outlays	**(11,965)**	**19,675**	**7,710**
Components of Net Agency Outlays Not Part of Net Cost			
Financing Sources:			
Donated Revenue	-	(30,870)	(30,870)
Transfers Out (In) Without Reimbursement	301	-	301
Total Components of Net Agency Outlays Not Part of Net Cost	**301**	**(30,870)**	**(30,569)**
Miscellaneous Items			
Custodial / Non-Exchange Revenue	(758)	(5,094)	(5,852)
Other Temporary Timing Differences	-	(2,271)	(2,271)
Total Miscellaneous Items	**(758)**	**(7,365)**	**(8,123)**
Net Agency Outlays	**$ 219,790**	**9,181,723**	**9,401,513**

Related Amounts on the Statement of Budgetary Resources	
Net Outlays	$ 9,438,235
Distributed Offsetting Receipts	(36,722)
Net Agency Outlays	**$ 9,401,513**

(Amounts in Thousands)	2023		
	Intragovernmental	**With the Public**	**Total**
Net Cost	**$ 181,220**	**8,848,001**	**9,029,221**
Components of Net Cost Not Part of Net Agency Outlays			
Property, Plant, and Equipment Depreciation Expense	-	(30,550)	(30,550)
Applied Overhead / Cost Capitalization Offset	-	40,854	40,854
Increase / (Decrease) in Assets:			
Accounts Receivable, Net	(633)	(850)	(1,483)
Other Assets	6,535	67	6,602
(Increase) / Decrease in Liabilities:			
Accounts Payable	5,157	(46,196)	(41,039)
Environmental and Disposal Liabilities	-	796	796
Federal Employee and Veteran Benefits Payable	-	(1,315)	(1,315)
Other Liabilities	(2,272)	(203)	(2,475)
Financing Sources:			
Imputed Costs	(22,099)	-	(22,099)
Total Components of Net Cost Not Part of Net Agency Outlays	**(13,312)**	**(37,397)**	**(50,709)**
Components of Net Agency Outlays Not Part of Net Cost			
Financing Sources:			
Donated Revenue	-	(27,743)	(27,743)
Transfers Out (In) Without Reimbursement	-	-	-
Total Components of Net Agency Outlays Not Part of Net Cost	**-**	**(27,743)**	**(27,743)**
Miscellaneous Items			
Custodial / Non-Exchange Revenue	-	-	-
Other Temporary Timing Differences	-	-	-
Total Miscellaneous Items	**-**	**-**	**-**
Net Agency Outlays	**$ 167,908**	**8,782,861**	**8,950,769**

Related Amounts on the Statement of Budgetary Resources		
Net Outlays	$	8,982,258
Distributed Offsetting Receipts		(31,489)
Net Agency Outlays	**$**	**8,950,769**

Note 12. Reclassification of Financial Statement Line Items for FR Compilation Process

To prepare the FR, the Department of the Treasury requires agencies to submit an adjusted trial balance, which is a listing of amounts by U.S. Standard General Ledger account that appear in the financial statements. Treasury uses the trial balance information reported in the Governmentwide Treasury Account Symbol Adjusted Trial Balance System (GTAS) to develop a Reclassified Statement of Net Cost, and a Reclassified Statement of Changes in Net Position. Treasury eliminates intragovernmental balances from the reclassified statements and aggregates lines with the same title to develop the FR statements. This note shows the NSF's financial statements and the NSF's reclassified statements prior to elimination of intragovernmental balances and prior to aggregation of repeated FR line items. A copy of the 2023 FR can be found on the FR website and a copy of the 2024 FR will be posted to this site as soon as it is released: https://www.fiscal.treasury.gov/reports-statements/

The term "intragovernmental" is used in this note to refer to amounts that result from transactions with other components of the Federal Government. The term "non-federal" is used to refer to transactions with non-federal entities. These include transactions with individuals, businesses, non-profit entities, and State, local, and foreign governments.

Reclassification of Statement of Net Cost (SNC) to Line Items Used for the Government-wide SNC for the Fiscal Year Ending September 30, 2024 (Amounts in Thousands)

FY 2024 National Science Foundation SNC		Line Items Used to Prepare FY 2024 Government-wide SNC			
Financial Statement Line	**Amount**	**Dedicated Collections**	**Other Than Dedicated Collections**	**Total**	**Reclassified Financial Statement Line**
GROSS COSTS					**GROSS COSTS**
Research and Related Activities	$ 7,886,750	$ 159,221	9,039,480	$ 9,198,701	Non-Federal Gross Cost
		159,221	9,039,480	9,198,701	Total Non-Federal Gross Cost
STEM Education	1,247,789	-	58,024	58,024	Benefit Program Costs
Major Research Equipment and Facilities Construction	222,057	-	28,478	28,478	Imputed Costs
CHIPS for America Workforce and Education	3,446	-	240,163	240,163	Buy/Sell Costs
Donations and Dedicated Collections	182,922	-	17,598	17,598	Other Expenses (Without Reciprocals)
		-	344,263	344,263	Total Federal Gross Cost
TOTAL GROSS COSTS	**$ 9,542,964**	**$ 159,221**	**9,383,743**	**$ 9,542,964**	**TOTAL GROSS COSTS**
EARNED REVENUE					**EARNED REVENUE**
Research and Related Activities	$ (100,368)	-	1,545	$ 1,545	Non-Federal Earned Revenue
		-	1,545	1,545	Total Non-Federal Earned Revenue
STEM Education	(10,101)	-	(112,014)	(112,014)	Buy/Sell Revenue (Exchange)
		-	(112,014)	(112,014)	Total Federal Earned Revenue
TOTAL EARNED REVENUE	**$ (110,469)**	**-**	**(110,469)**	**$ (110,469)**	**TOTAL EARNED REVENUE**
NET COST OF OPERATIONS	**$ 9,432,495**	**$ 159,221**	**9,273,274**	**$ 9,432,495**	**NET COST OF OPERATIONS**

Reclassification of Statement of Changes in Net Position (SCNP) to Line Items Used for the Government-wide Statement of Operations and Changes in Net Position for the Fiscal Year Ending September 30, 2024 (Amounts in Thousands)

FY 2024 National Science Foundation SCNP		Line Items Used to Prepare FY 2024 Government-wide SCNP				
Financial Statement Line	**Amount**	**Dedicated Collections**	**Other Than Dedicated Collections**	**Total**	**Reclassified Financial Statement Line**
UNEXPENDED APPROPRIATIONS					
Beginning Balance	**$ 18,190,172**	**-**	**18,190,172**	**$ 19,396,797**	**Net Position, Beginning of Period (Includes Unexpended Appropriations and Cumulative Results of Operations)**
Appropriations Received	9,085,000	-	8,986,975	8,986,975	Appropriations Received as Adjusted
Other Adjustments (Canceled Authority)	(98,025)				
Appropriations Used	(9,233,325)	-	(9,233,325)	(9,233,325)	Appropriations Expended
Net Change in Unexpended Appropriations	**(246,350)**				
TOTAL UNEXPENDED APPROPRIATIONS, ENDING	**$ 17,943,822**				
CUMULATIVE RESULTS OF OPERATIONS					
Beginning Balance	**$ 1,206,625**	**$ 703,470**	**503,155**	**Included Above**	**Net Position, Beginning of Period (Included Above)**
Change in Accounting Principle	2,271	-	2,271	2,271	Change in Accounting Principle
Beginning Balance, Adjusted	**1,208,896**			**19,399,068**	**Net Position, Beginning of Period, Adjusted (Includes Net Position, Beginning of Period (above) and Change in Accounting Principle)**
Appropriations Used	9,233,325	-	9,233,325	9,233,325	Appropriations Used
Non-Exchange Revenue	94	-	38,094	38,094	Other Taxes and Receipts
Donations	30,870				
Other (1 of 2)	7,130				
Total Non-Exchange Revenues	38,094	-	38,094	38,094	Total Non-Federal Non-Exchange Revenues
		1,364	-	1,364	Accruals for Entity Amounts to be Collected in a TAS Other Than the General Fund of the U.S. Government - Non-Exchange (RC 16)
		-	(301)	(301)	Expenditure Transfers-Out of Financing Sources
		166,566	-	166,566	Appropriation of Unavailable Special/Trust Fund Receipts Transfers-In
		(9,056)	-	(9,056)	Appropriation of Unavailable Special/Trust Fund Receipts Transfers-Out
Transfers In / (Out) Without Reimbursement	158,573	158,874	(301)	158,573	Total Appropriation of Unavailable Special/Trust Fund Receipts Transfers-In
Imputed Financing	28,478	-	28,478	28,478	Imputed Financing Sources
		-	(5,942)	(5,942)	Non-Entity Collections Transferred to the General Fund of the U.S. Government
		-	260	260	Accrual for Non-Entity Amounts to be Collected and Transferred to the General Fund of the U.S. Government
Other (2 of 2)	(5,682)	-	(5,682)	(5,682)	Total Non-Entity Collections Transferred and Accrual for Non-Entity Amounts to be Collected and Transferred to the General Fund of the U.S. Government
Net Cost of Operations	(9,432,495)	(159,221)	(9,273,274)	(9,432,495)	Net Cost of Operations
Net Change in Cumulative Results of Operations	**20,293**				
TOTAL CUMULATIVE RESULTS OF OPERATIONS, ENDING	**$ 1,229,189**				
NET POSITION	**$ 19,173,011**	**$ 703,123**	**18,469,888**	**$ 19,173,011**	**NET POSITION**

REQUIRED SUPPLEMENTARY INFORMATION

Deferred Maintenance and Repairs

For the Fiscal Years ended September 30, 2024 and 2023

Deferred Maintenance and Repairs

NSF performs condition assessment surveys in accordance with SFFAS No. 42, *Deferred Maintenance and Repairs*, for capitalized PP&E, including fully depreciated personal property to determine if any maintenance and repairs are needed to keep an asset in an acceptable condition or restore an asset to a specific level of performance. NSF considers deferred maintenance and repairs to be any maintenance and repairs that are not performed on schedule, unless it is determined from the condition of the asset that scheduled maintenance does not have to be performed. Deferred maintenance and repairs also include any other type of maintenance or repair that, if not performed, would render the PP&E non-operational. Circumstances such as non-availability of parts or funding are considered reasons for deferring maintenance and repairs.

NSF considered whether any scheduled maintenance or repair necessary to keep fixed assets of the agency in an acceptable condition was deferred at the fiscal years ended September 30, 2024 and 2023. Assets deemed to be in excellent, good, or fair condition are considered to be in acceptable condition. Assets in poor or very poor condition are in unacceptable condition and the deferred maintenance and repairs required to get them to an acceptable condition are reported. NSF determines the condition of an asset in accordance with standards comparable to those used in the private industry. Due to the environment and remote location of Antarctica, all deferred maintenance and repairs on assets in poor or very poor condition are considered critical in order to maintain operational status.

In accordance with SFFAS No. 42, NSF disclosed the beginning and ending balances for deferred maintenance. For the fiscal year ended September 30, 2024, NSF determined that scheduled maintenance or repairs on three items of Antarctic capital equipment in poor or very poor condition was not completed and was deferred or delayed for a future period, an increase from the one item reported for the fiscal year ended September 30, 2023. The dollar amount of the deferred maintenance for these items was $500 thousand and $300 thousand as of the fiscal years ended September 30, 2024 and 2023, respectively. The items were heavy mobile equipment and were considered critical to NSF operations.

REQUIRED SUPPLEMENTARY INFORMATION

Combining Statement of Budgetary Resources by Major Budget Accounts

In the following tables, NSF budgetary information for the fiscal years ended September 30, 2024 and 2023, as presented in the Statement of Budgetary Resources, is disaggregated for each of NSF's major budget accounts.

Combined Statement of Budgetary Resources

2024

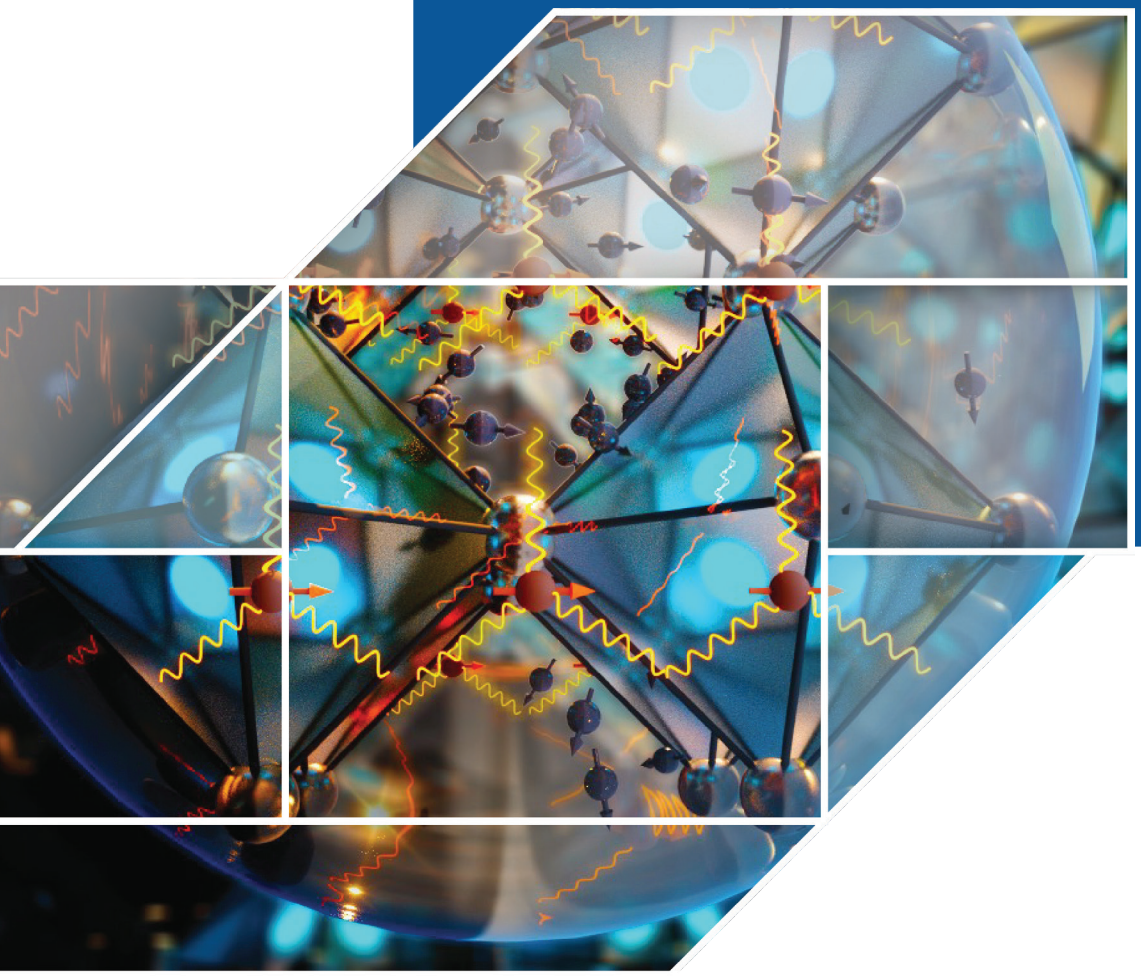
(Amounts in Thousands)

		R&RA	EDU	MREFC	CHIPS	OIG, AOAM, and NSB	Special and Donated	Total
Budgetary Resources								
Unobligated Balance from Prior Year Budget Authority, Net	$	695,200	168,271	361,821	-	36,039	116,864	1,378,195
Appropriations		7,176,500	1,172,000	234,000	25,000	477,500	188,379	9,273,379
Spending Authority from Offsetting Collections		88,299	6,064	-	-	5,817	-	100,180
Total Budgetary Resources	**$**	**7,959,999**	**1,346,335**	**595,821**	**25,000**	**519,356**	**305,243**	**10,751,754**
Status of Budgetary Resources								
New Obligations and Upward Adjustments	$	7,624,663	1,220,517	253,449	-	507,166	140,235	9,746,030
Unobligated Balance, End of Year:								
Apportioned, Unexpired		125,373	70,748	162,733	25,000	1,633	133,482	518,969
Unapportioned, Unexpired		20,684	10,486	179,638	-	42	31,526	242,376
Unobligated Balance, Unexpired, End of Year		146,057	81,234	342,371	25,000	1,675	165,008	761,345
Unobligated Balance, Expired, End of Year		189,279	44,584	1	-	10,515	-	244,379
Total Unobligated Balance, End of Year		335,336	125,818	342,372	25,000	12,190	165,008	1,005,724
Total Status of Budgetary Resources	**$**	**7,959,999**	**1,346,335**	**595,821**	**25,000**	**519,356**	**305,243**	**10,751,754**
Net Outlays								
Net Outlays	$	7,345,983	1,187,468	232,289	3,377	493,447	175,671	9,438,235
Distributed Offsetting Receipts		-	-	-	-	-	(36,722)	(36,722)
Net Agency Outlays	**$**	**7,345,983**	**1,187,468**	**232,289**	**3,377**	**493,447**	**138,949**	**9,401,513**

Combined Statement of Budgetary Resources
2023
(Amounts in Thousands)

		R&RA	EDU	MREFC	CHIPS	OIG, AOAM, and NSB	Special and Donated	Total
Budgetary Resources								
Unobligated Balance from Prior Year Budget Authority, Net	$	375,625	62,157	335,449	-	19,495	82,067	874,793
Appropriations		7,841,799	1,371,000	187,230	25,000	476,483	165,816	10,067,328
Spending Authority from Offsetting Collections		107,375	16,408	-	-	8,802	-	132,585
Total Budgetary Resources	**$**	**8,324,799**	**1,449,565**	**522,679**	**25,000**	**504,780**	**247,883**	**11,074,706**
Status of Budgetary Resources								
New Obligations and Upward Adjustments	$	7,740,435	1,301,054	161,362	25,000	493,766	140,343	9,861,960
Unobligated Balance, End of Year:								
Apportioned, Unexpired		406,843	104,371	186,434	-	664	83,473	781,785
Unapportioned, Unexpired		10,965	9,224	174,882	-	3,574	24,067	222,712
Unobligated Balance, Unexpired, End of Year		417,808	113,595	361,316	-	4,238	107,540	1,004,497
Unobligated Balance, Expired, End of Year		166,556	34,916	1	-	6,776	-	208,249
Total Unobligated Balance, End of Year		584,364	148,511	361,317	-	11,014	107,540	1,212,746
Total Status of Budgetary Resources	**$**	**8,324,799**	**1,449,565**	**522,679**	**25,000**	**504,780**	**247,883**	**11,074,706**
Net Outlays								
Net Outlays	$	7,158,000	1,057,433	157,076	135	455,199	154,415	8,982,258
Distributed Offsetting Receipts		-	-	-	-	-	(31,489)	(31,489)
Net Agency Outlays	**$**	**7,158,000**	**1,057,433**	**157,076**	**135**	**455,199**	**122,926**	**8,950,769**

Chapter 3
Appendices (Other Information)



SUMMARY OF FY 2024 FINANCIAL STATEMENT AUDIT AND MANAGEMENT ASSURANCES

The following tables summarize NSF's FY 2024 Financial Statement Audit and Management Assurances.

Table 3.1 – Summary of Financial Statement Audit

Effectiveness of Internal Control over Financial Reporting (FMFIA § 2)					
Audit Opinion	***Unmodified***				
Restatement	***No***				
Material Weaknesses	**Beginning Balance**	**New**	**Resolved**	**Consolidated**	**Ending Balance**
Total Material Weaknesses	***0***	***-***	***-***	***-***	***0***

Table 3.2 – Summary of Management Assurances

Effectiveness of Internal Control over Financial Reporting (FMFIA § 2)						
Statement of Assurance	***Unmodified***					
Material Weaknesses	**Beginning Balance**	**New**	**Resolved**	**Consolidated**	**Reassessed**	**Ending Balance**
Total Material Weaknesses	***0***	***-***	***-***	***-***	***-***	***0***

Effectiveness of Internal Control over Operations (FMFIA § 2)						
Statement of Assurance	***Unmodified***					
Material Weaknesses	**Beginning Balance**	**New**	**Resolved**	**Consolidated**	**Reassessed**	**Ending Balance**
Total Material Weaknesses	***0***	***-***	***-***	***-***	***-***	***0***

Conformance with Federal Financial Management System Requirements (FMFIA § 4)						
Statement of Assurance	***Systems conform to financial management system requirements***					
Non-Conformances	**Beginning Balance**	**New**	**Resolved**	**Consolidated**	**Reassessed**	**Ending Balance**
Total non-conformances	***0***	***-***	***-***	***-***	***-***	***0***

Compliance with Section 803(a) of the Federal Financial Management Improvement Act (FFMIA)		
	Agency	**Auditor**
Federal Financial Management System Requirements	***No lack of substantial compliance noted***	
Applicable Federal Accounting Standards	***No lack of substantial compliance noted***	
USSGL at Transaction Level	***No lack of substantial compliance noted***	

Management Challenges for the U.S. National Science Foundation in Fiscal Year 2025

U.S. NATIONAL SCIENCE FOUNDATION
Office of Inspector General

October 22, 2024

At a Glance

Management Challenges for the U.S. National Science Foundation in Fiscal Year 2025
October 21, 2024

WHY WE ISSUED THIS REPORT

The *Reports Consolidation Act of 2000* (Pub. L. No. 106-531) requires us annually to update our assessment of the U.S. National Science Foundation's "most serious management and performance challenges facing the agency … and the agency's progress in addressing those challenges."

WHAT WE FOUND

Each year, we identify NSF's most serious challenges based on our audit and investigative work, knowledge of NSF's operations, independent sources such as U.S. Government Accountability Office reports and NSF's advisory committees, and discussions with NSF senior staff and contractors. This year, we identified seven areas representing the most serious management and performance challenges facing NSF:

- Challenge 1: Overseeing and Managing Risks of Sexual Assault/Harassment in Antarctica
- Challenge 2: Addressing Sexual Harassment in the Scientific Enterprise
- Challenge 3: Growing Participation and Capacity in STEM Education and Workforce
  Challenge 4: Overseeing the United States Antarctic Program (USAP)
- Challenge 5: Overseeing NSF's Funding Portfolio
- Challenge 6: Managing Human Capital
- Challenge 7: Mitigating Threats to Research Security

We are encouraged by NSF's progress in its efforts to address critical management and performance challenges. Effective responses to these challenges will promote the integrity of NSF-funded projects, help ensure research funds are spent effectively and efficiently, and help maintain the highest level of accountability over taxpayer dollars.

AGENCY RESPONSE TO *MANAGEMENT CHALLENGES FOR FISCAL YEAR 2024*

Following the issuance of this report, NSF will include its Management Challenges Progress Report and its response to *Management Challenges for the National Science Foundation in Fiscal Year 2024* in its Agency Financial Report.

CONTACT US

For congressional, media, and general inquiries, email OIGPublicAffairs@nsf.gov.

U.S. NATIONAL SCIENCE FOUNDATION
Office of Inspector General

MEMORANDUM

DATE: October 22, 2024

TO: Dr. Darío Gil
Chair
National Science Board

Dr. Sethuraman Panchanathan
Director
U.S. National Science Foundation

FROM: Allison C. Lerner
Inspector General

SUBJECT: Management Challenges for the U.S. National Science Foundation in Fiscal Year 2025

Attached for your information is our report, *Management Challenges for the U.S. National Science Foundation in Fiscal Year 2025*. The *Reports Consolidation Act of 2000* (Pub. L. No. 106-531) requires us annually to update our assessment of the "most serious management and performance challenges facing the agency … and the agency's progress in addressing those challenges." A summary of the report will be included in the U.S. National Science Foundation Agency Financial Report.

We appreciate the courtesies and assistance NSF staff provided during the completion of this report.

If you have questions, please contact me at 703-292-7100.

Attachment

Table of Contents

Introduction

The U.S. National Science Foundation is an independent federal agency created by Congress in 1950 "[t]o promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes."[1] With a budget of approximately $9.06 billion for fiscal year 2024, NSF is the funding source for about 25 percent of all federally supported basic research conducted by America's colleges and universities. Each year, NSF supports more than 300,000 scientists, engineers, educators, and students at universities, laboratories, and field sites.

The *Reports Consolidation Act of 2000* (Pub. L. No. 106-531) requires us annually to update our assessment of NSF's "most serious management and performance challenges … and the agency's progress in addressing those challenges." Each year, we identify these challenges based on our audit, inspection, and investigative work; knowledge of the NSF's operations; independent sources such as U.S. Government Accountability Office reports and NSF's advisory committees; and discussions with NSF senior staff and contractors. We identify management challenges as those that meet at least one of the following criteria:

- The issue involves an operation that is critical to an NSF core mission.
- The issue presents a risk of fraud, waste, or abuse to NSF or other government assets.
- The issue involves strategic alliances with other agencies, the U.S. Office of Management and Budget, the Administration, Congress, or the public.
- The issue is related to key initiatives of the President.

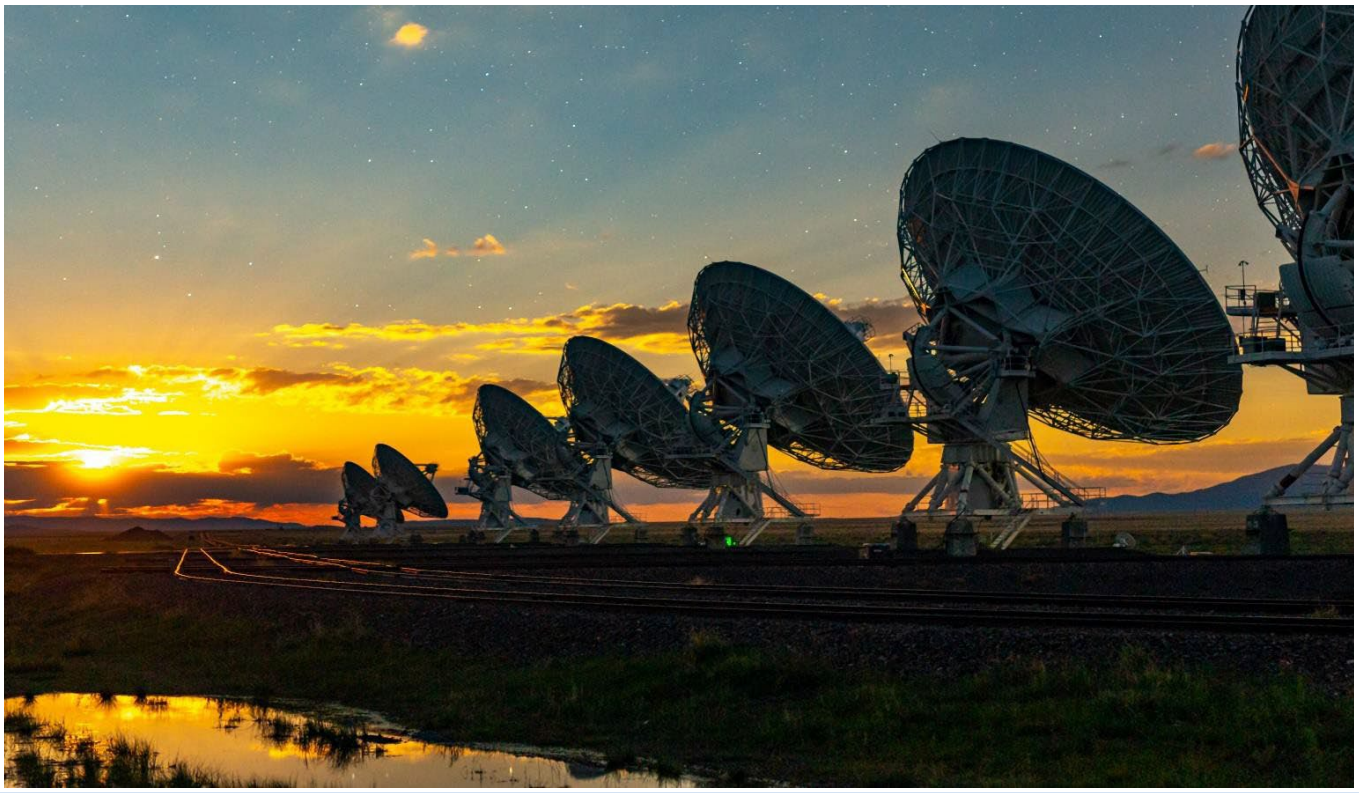
It is important to note that identifying an issue as a "management challenge" does not necessarily mean NSF is having difficulty addressing it; instead, it means we identify the issue as one of the top challenges facing NSF and report on NSF's progress in addressing it, as required by the Act.

This year, we identified seven areas representing the most serious management and performance challenges facing NSF:

- Overseeing and Managing Risks of Sexual Assault/Harassment in Antarctica
- Addressing Sexual Harassment in the Scientific Enterprise
- Growing Participation and Capacity in STEM Education and Workforce
- Overseeing the United States Antarctic Program (USAP)
- Overseeing NSF's Funding Portfolio
- Managing Human Capital
- Mitigating Threats to Research Security

This year, we renamed two prior challenge areas to better reflect the challenges they describe: "Increasing Diversity in Science & Engineering Education and Employment" became "Growing Participation and Capacity in STEM Education and Workforce," and "Overseeing NSF's Funding Portfolio in a Changing Environment" became "Overseeing NSF's Funding Portfolio."

[1] Pub. L. No. 81-507, *National Science Foundation Act of 1950*



NSF's Very Large Array, a facility of NSF's National Radio Astronomy Observatory, at dusk with the moon rising.
Credit: Bettymaya Foott, NRAO/AUI/NSF (available under Creative Commons Attribution 3.0 Unported)

We also removed the prior-year challenge of "Mitigating Threats Posed by the Risk of Cyberattacks." Although cybersecurity will remain an area with inherent risk, NSF's actions have addressed some of the highest-risk areas. For example, NSF continues to implement a Zero Trust Architecture (ZTA), which seeks the vigorous use of modern technology and security practices to defend against the current threat environment. In January 2024, NSF established a new, independent Office of the Chief Information Officer to manage current needs and anticipate future challenges. NSF also completed actions to resolve all remaining weaknesses identified in FY 2019 and FY 2021 *Federal Information Security Modernization Act* (FISMA, Pub. L. No. 113-283) audits.[2] In addition, we confirmed that NSF implemented all corrective actions from our report *External Penetration Testing of National Science Foundation and U.S. Antarctic Program Networks*.[3]

Due to its evolving nature, the cybersecurity area presents potential, unanticipated risks that will continue to test NSF's ability to respond to and mitigate threats. Accordingly, NSF should remain focused on this area, which might again prove to be a management challenge for the agency in the future.

NSF has continued to demonstrate its ability to achieve its mission in an ever-changing environment. As the agency moves into FY 2025 and beyond, it is well positioned to address both familiar and new challenges it may face with acuity, agility, and adaptability.

[2] NSF OIG Report No. 20-2-002, November 22, 2019, and NSF OIG Report No. 22-2-003, November 17, 2021
[3] NSF OIG Report No. 24-6-001, November 15, 2023

Challenge 1: Overseeing and Managing Risks of Sexual Assault/Harassment in Antarctica

NSF is continuing to institutionalize and codify its Sexual Assault/Harassment Prevention and Response (SAHPR) Program to address critical prevention and response elements and enhance its capacity to expand SAHPR functions within United States Antarctic Program (USAP). In August 2022, NSF publicly released the SAHPR Final Report, which it commissioned to examine sexual harassment and sexual assault in the USAP community and identify corrective actions.[4] The report highlighted a concern that NSF lacks adequate reporting and response systems to "ensure that it is appropriately informed of and responsive to incidents of sexual assault and sexual harassment within the USAP community."

Sexual assault cases present law enforcement challenges even under ordinary circumstances; those challenges are compounded by Antarctica's distant and sometimes inaccessible location. In March 2023, our office provided NSF with a white paper detailing considerations for an effective reporting and response capability when presented with allegations of sexual assault and stalking.[5] Since then, NSF has been coordinating with our Office of Investigations, which has been investigating alleged criminal violations covered under the Special Maritime and Territorial Jurisdiction of the United States, including aggravated sexual abuse, sexual abuse, abusive sexual contact, and stalking. OIG special agents began responding, remotely, to concerns raised by individuals in Antarctica in July 2023, and will provide an on-site investigative presence during two 30-day trips to Antarctica in October-November 2024 and January-February 2025. OIG is also working toward having an on-site presence during future austral summer seasons.

KEY FACTS

- This issue involves an operation that is critical to an NSF core mission.
- NSF commissioned a report to examine sexual harassment and sexual assault in the USAP community and identify corrective actions.
- NSF has taken actions, including establishing a SAHPR office within the Office of the Director, stationing an on-ice victim advocate, and establishing a 24/7 NSF Antarctic Helpline.
- NSF made changes to the Antarctic Support Contract to require additional reporting on SAHPR complaints and imposed new requirements on prospective employees.
- NSF has multiple actions planned for the 2024-2025 austral summer season.
- NSF is coordinating with our office, which has been investigating criminal violations covered under the Special Maritime and Territorial Jurisdiction of the United States.

We also initiated a review of NSF's and its contractor's actions to prevent and respond to sexual harassment in the USAP. In September 2024, we reported that before the release of the SAHPR report, NSF primarily relied on the Antarctic Support Contractor to manage its harassment reporting and response efforts. NSF has gradually assumed a greater leadership role and has taken steps to help prevent and respond to sexual assault and sexual harassment, such as establishing a SAHPR

[4] Department of the Interior's Federal Consulting Group, NSF/OPP/USAP Sexual Assault/Harassment Prevention and Response (SAHPR) Final Report, June 22, 2022

[5] NSF OIG, Law Enforcement Perspectives on Sexual Assault and Stalking Issues Pertaining to the United States Antarctic Program, March 7, 2023

office within the Office of the Director, stationing a victim advocate in Antarctica, and establishing a 24/7 NSF Antarctic Helpline. NSF also made changes to the Antarctic Support Contract to require additional reporting on SAHPR complaints and imposed new requirements on prospective employees. We recommended NSF consider additional measures to help prevent and respond to sexual harassment through the next Antarctic Support Contract. NSF has also planned multiple actions for the 2024-2025 season.

NSF's Key Completed Actions

- Delivered bystander intervention training and sexual assault and sexual harassment response trainings to approximately 1,000 USAP deployers.
- On-ice victim advocates traveled to Palmer, South Pole, and McMurdo Stations to conduct outreach and provide training on sexual harassment and sexual assault to the USAP community.
- SAHPR Office held office hours, met with key leaders, and gave informational presentations to the USAP community at Palmer and McMurdo Stations.
- Provided additional satellite communication devices to improve access to the USAP counselor, advocate, and other support systems for individuals working in field camps.
- Continued to improve enhanced screening procedures for contractors.
- Issued an April 2024 memo, signed by the NSF Director, directing the creation of a dedicated SAHPR Program Office within the Office of the Director.
- Continued to collaborate with OIG on the law enforcement response in USAP through a working group including the SAHPR Program Office, Office of Polar Programs, the Division of Acquisition and Cooperative Support, the Office of Equity and Civil Rights, and Office of the General Counsel.
- Developed and launched the USAP Climate Survey in May 2024.
- Met regularly with the Antarctic Support Contractor's Chief Executive Officer, Chief Operating Officer, and Human Resources to ensure transparency, accountability, and direct follow-up on USAP concerns.

NSF's Key Planned and Ongoing Actions

- Continuing to invest resources in SAHPR initiatives and staffing.
- Analyzing and reviewing existing NSF policies and procedures related to sexual assault and sexual harassment to ensure a survivor-centered and trauma-informed approach is consistently included in agency procedures and practices.
- Codifying the agency's official definitions for terms related to sexual assault and sexual harassment and codifying NSF protocols for the confidentiality of reporting and referral of SAHPR reports.
- Developing standard guidelines on how to respond to a report of sexual assault and sexual harassment throughout the NSF enterprise.
- Shifting the oversight of the existing SAHPR support contract from the Office of Polar Programs to the SAHPR Program Office.
- Continuing improvements to living and recreation conditions for USAP participants, including hiring on-site staff dedicated to community engagement, adding recreation equipment, expanding Wi-Fi capacity, and making the counselor available during both winter and summer seasons.

Challenge 2: Addressing Sexual Harassment in the Scientific Enterprise

Sexual harassment is a pervasive issue within the scientific enterprise. According to a 2018 National Academies of Sciences, Engineering, and Medicine (National Academies) report, women in academia are at a higher risk of experiencing sexual harassment due to a male-dominated environment, organizational tolerance for sexually harassing behavior, hierarchical and dependent relationships between faculty and their trainees, and isolating environments. More than 50 percent of women faculty and staff and 20–50 percent of women students encounter or experience sexual harassment in academia.

The *CHIPS and Science Act of 2022* (CHIPS and Science Act) requires NSF to contract with the National Academies to conduct a follow-up study "on the influence of sex-based and sexual harassment in institutions of higher education on the career advancement of individuals in the STEM workforce." The Act also requires NSF to fund research examining "factors contributing to, and consequences of, sexual harassment affecting individuals in the STEM workforce."[6]

KEY FACTS

- This challenge involves an operation that is critical to an NSF core mission.
- Recent research, reports, and legislation indicate harassment is pervasive across the scientific enterprise and jeopardizes diversity and inclusion in STEM.
- The CHIPS and Science Act requires NSF to examine the contributing factors and consequences of harassment. NSF is addressing this challenge by conducting compliance evaluations, introducing a pilot program for safe and inclusive fieldwork plans, and seeking restorative justice-informed approaches.

NSF has taken several steps to address harassment in the scientific enterprise. In October 2018, NSF implemented an award term and condition to foster safe research and learning environments. Also, effective January 2023, for each proposal that includes research off-campus or off-site, the proposing organization must certify that it has a plan to address harassment and other abusive or unwelcome behavior. To help evaluate the effectiveness of its guidelines, NSF established the Safe and Inclusive Fieldwork Plans Pilot, which requires principal investigators to document their plans to nurture an inclusive and harassment-free off-campus or off-site working environment. Additionally, in March 2024, NSF issued a solicitation for a contractor to design restorative justice-informed approaches to repair harm and offer accountability to those affected by sexual and other forms of harassment and discrimination at NSF-funded off-campus or off-site research venues. With this effort, NSF is seeking to learn whether restorative justice approaches can be used at NSF-funded off-campus and off-site venues to encourage proactive compliance with Title IX, Title VI,[7] and similar requirements and to promote safe and inclusive research environments. NSF also maintains a website with frequently asked questions and other resources to help prevent harassment.

[6] Pub. L. No. 117-167, Title V, Subtitle D—Combating Sexual Harassment in Science

[7] Title IX of the Education Amendments of 1972 prohibits sex-based discrimination in any school or education program that receives federal funding. Title VI of the Civil Rights Act of 1964 prohibits discrimination based on race, color, or national origin in programs and activities that receive federal financial assistance.

We are conducting a review to evaluate 100 NSF recipients' compliance with NSF's harassment terms and conditions. This review will provide NSF with insight into the effectiveness of its efforts to combat sexual and other forms of harassment within the scientific enterprise.

NSF's Key Completed Actions

- Employed a contractor to evaluate independently the research, conference, and travel award policies with authorized organizational representatives and Title IX coordinators at institutions of higher education.
- Established the Safe and Inclusive Fieldwork Plans Pilot, which requires principal investigators to summarize their plans to nurture an inclusive and harassment-free working environment.
- Issued a solicitation for a contractor to design a restorative justice-informed project to repair harm and offer accountability to individuals and communities affected by harassment and discrimination at NSF-funded off-campus or off-site research venues.
- Co-chaired the National Science and Technology Council-led Interagency Working Group on Safe and Inclusive STEM Environments to identify federal guidance to prevent and address sex-based and sexual harassment in research.
- Updated the Office of Equity and Civil Rights' complaint filing system to incorporate complainant pronouns and remove unnecessary fields.
- Conducted two on-site Title IX compliance reviews at NSF awardee universities and seven desk audits of NSF awardee Title IX policies, procedures, and practices.

NSF's Key Planned and Ongoing Actions

- Reporting on findings and best practices available by the end of FY 2025 from the on-site Title IX review of a scientific research organization conducted in September 2024.
- Participating in the Interagency Working Group on Safe and Inclusive STEM Environments as a co-chair to tailor NSF's promising practices to the practices and standard guidelines identified by the working group.
- Selecting a contractor with expertise in designing restorative justice approaches to address sexual and other forms of harassment and discrimination at NSF-funded off-campus or off-site research venues.
- Conducting a formal assessment of the Safe and Inclusive Fieldwork Plans Pilot that runs through FY 2024 and into FY 2025.

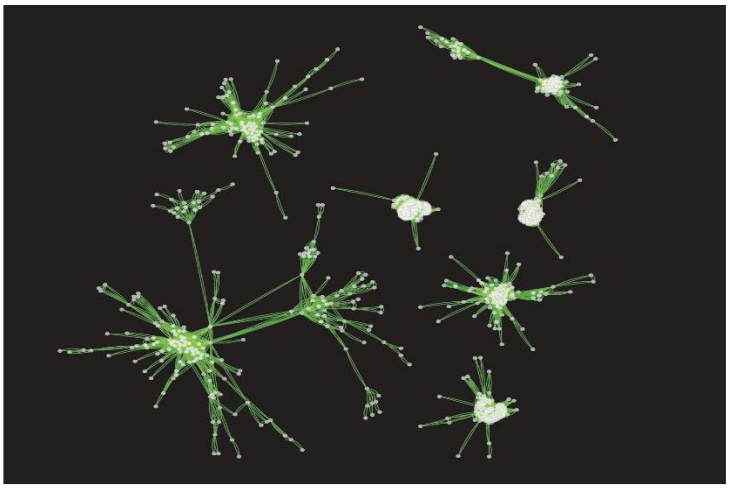
Challenge 3: Growing Participation and Capacity in STEM Education and Workforce

Recent National Science Board (NSB) reports indicate the United States is facing a STEM talent crisis that is putting our economic and national security at risk. Although U.S. investment in research and development remains a tremendous strength, the United States is underperforming in preK-12 education compared to other peer countries and is not producing STEM workers in sufficient numbers or diversity to meet the workforce needs of the 21st century. Instead, to fill STEM jobs, the United States has long relied on foreign-born workers. The NSB concluded that to remain globally competitive, the nation must continue to attract foreign talent but also grow its domestic STEM workforce.[8] In addition, the CHIPS and Science Act requires outreach to underserved populations and broadened participation in major research awards.

According to the NSB, 2024 indicators show the nation is "leaving talent on the bench," including individuals from different cultural backgrounds, communities, geographic regions, and socioeconomic status. The NSB conceptualized underrepresented talent as the "Missing Millions" due to the difference between the demographics of the research community and the demographics of the nation.

KEY FACTS

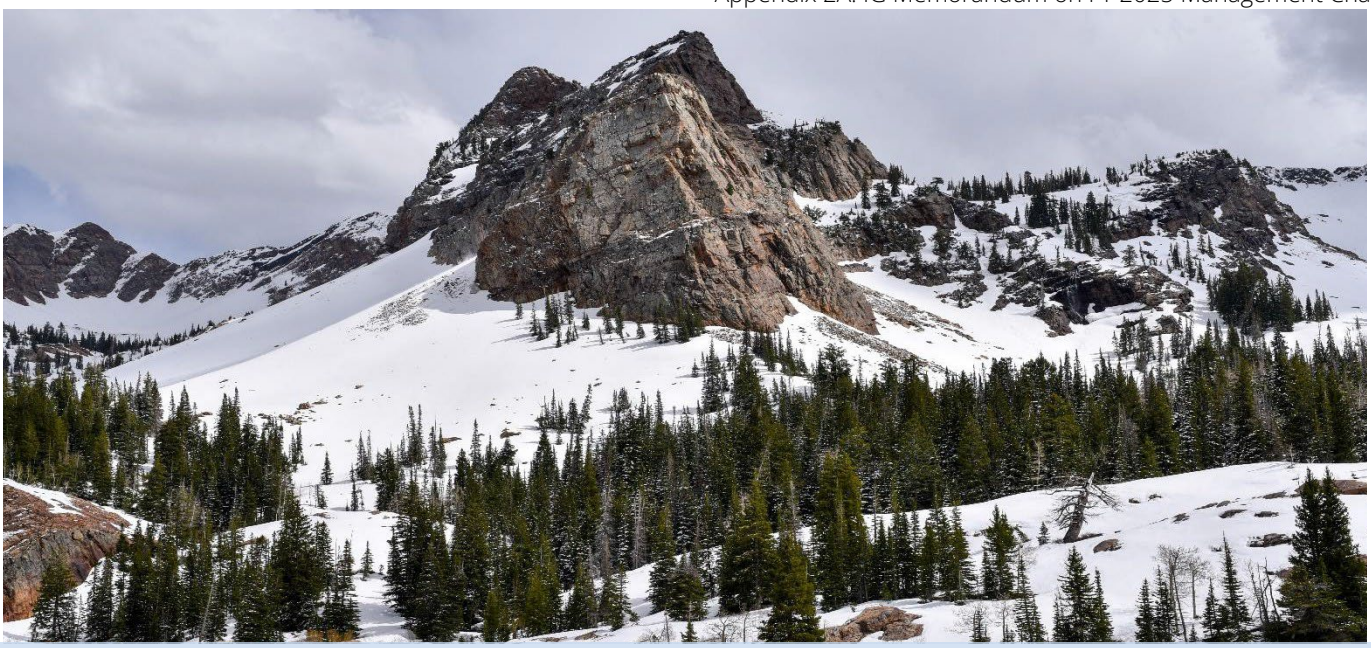
- This challenge involves an operation that is critical to an NSF core mission.
- Greater participation in STEM is key to U.S. economic competitiveness worldwide and to national security.
- Broadening participation in STEM is a top priority of NSF, the NSB, the President, and Congress.
- Women, minorities, and persons with disabilities remain underrepresented in STEM.
- The CHIPS and Science Act requires NSF to address underrepresentation in STEM.
- NSF has created an Equity Ecosystem framework to broaden participation in STEM, ensure equity in NSF program delivery, and promote diversity, equity, inclusion, and access in the NSF workforce.



Through the support of NSF's EPSCoR, researchers use data visualization to compare genomes across species.
Credit: Stephen Smith and Casey Dunn, Brown University

To broaden participation and grow its domestic STEM workforce, NSF has expanded outreach and awards to underrepresented groups and organizations in STEM. NSF established the *Growing Research Access for Nationally Transformative Equity and Diversity* (GRANTED) initiative, which supports the development of the research enterprise, particularly at emerging research and minority-serving institutions. NSF doubled the number of *Established Program to Stimulate Competitive Research* (EPSCoR) fellows and recently awarded six projects, totaling $7.6 million, to advance equitable STEM education and training

[8] *See* Talent is the Treasure: Who Are We Leaving on the Bench, March 2024, and Science & Engineering Indicators 2024, May 30, 2024



Sundial Peak in the Wasatch Mountains, where Utah researchers modeled the year-to-year variability in precipitation and temperature in work partially supported by iUTAH EPSCoR and funded by NSF. *Credit: David White*

opportunities that strengthen the nation's semiconductor workforce. NSF also established its Equity Ecosystem framework, which aims to broaden participation in STEM and ensure equity in NSF program delivery.[9]

NSF's Key Completed Actions

- Published an FY 2024-2025 Agency Priority Goal Action Plan to "Improve Representation in the Scientific Enterprise."
- Increased awards, including investing more than $64 million in GRANTED in FY 2024.
- Doubled the number of EPSCoR Research Fellows.
- Enlarged focus on rural STEM education and workforce development.
- Expanded outreach to emerging research institutions and minority-serving institutions.
- Increased funding opportunities focused on Tribal Colleges and Universities, Hispanic Serving Institutions, Historically Black Colleges and Universities, and persons with disabilities.

NSF's Key Planned and Ongoing Actions

- Advancing efforts to reach agency-wide EPSCoR funding targets.
- Including Broader Impacts experts on all Committees of Visitors for the next 3 years.
- Continuing to study and provide better data to staff on underrepresented groups and organizations in NSF's portfolio.
- Incorporating the Creating Opportunities Everywhere approach into NSF's core research portfolio.

[9] The Equity Ecosystem framework also promotes diversity, equity, inclusion, and accessibility within the NSF workforce.

Challenge 4: Overseeing the United States Antarctic Program (USAP)

NSF, through the USAP, manages U.S. scientific research in Antarctica. Antarctica's remote location, extreme environment, and the short period of time each year during which the continent is accessible present challenges above and beyond those typically encountered for domestic science operations. NSF operates three permanent, year-round stations in Antarctica: McMurdo, Palmer, and Amundsen-Scott South Pole stations, as well as a research vessel and temporary field stations.

KEY FACTS

- This challenge involves an operation that is critical to an NSF core mission.
- Antarctica's environment presents unique operating and contract monitoring challenges.
- The Antarctic Support Contract is NSF's largest and most visible contract, valued at $2.8 billion over nearly 15 years. It will expire in September 2026.
- NSF is currently soliciting for the Antarctic Science and Engineering Support Contract as a replacement to the Antarctic Support Contract. The anticipated contract will run 20 years with a ceiling of $8 billion.
- NSF is undertaking long-range infrastructure modernization projects and planning across the program.
- NSF faces ongoing challenges to vetting Antarctic Support Contract staff on timelines that support operational requirements.

Management of the Antarctic Support Contract

The Antarctic Support Contract is NSF's largest, valued at $2.8 billion over nearly 15 years. The Office of Polar Programs (OPP) monitors contract performance, with several other NSF offices collaborating to manage the USAP more broadly. Managing the contract is complex and requires a strong cost monitoring program, oversight of deliverables and deadline requirements, and appropriate consideration of risks. Because of these complexities, NSF must obtain timely audits of the Antarctic Support Contractor's claimed costs to ensure the costs are allowable, allocable, and reasonable.

Procurement of the Antarctic Science and Engineering Support Contract

The Antarctic Support Contract's period of performance has been extended from March 2025 to September 2026. NSF is procuring the next USAP support contract, to be known as the Antarctic Science and Engineering Support Contract (ASESC), and is award, indefinite delivery, indefinite quantity (IDIQ) hybrid contract. NSF anticipates a 20-year contract with an $8 billion ceiling. NSF will need to closely monitor the transition from the Antarctic Support Contract to the ASESC to ensure the research stations can fully support Antarctic-based science.

Construction Delays and Deferred Science

Long-range infrastructure investment projects at USAP's three permanent stations have faced delays. For example, staffing changes, hiring challenges, and design errors related to the McMurdo-based Antarctic Infrastructure Modernization for Science (AIMS) project have affected the timeline and will push major components of the project beyond September 2026. Further, the COVID-19 pandemic halted on-site construction work in March 2020, and ultimately NSF prioritized two modules: 1) Lodging and 2) the Vehicle Equipment and Operations Center. Construction resumed in

October 2023 and continues on the Lodging module. However, NSF placed the Vehicle Equipment and Operations Center module and the separate Information Technology and Communications primary addition project on hold to prioritize completion of the Lodging module.

NSF is also considering a series of large-scale recapitalization projects at the South Pole Station to address normal wear and tear, environmental challenges, aging infrastructure, and evolving scientific research interests. NSF is also planning to "lift" the Atmospheric Research Observatory and conduct other urgent facility maintenance projects. These projects will temporarily reduce NSF's ability to support new scientific research at the station. For the next two field seasons (August 2024 through March 2026), NSF will prioritize already-funded science projects while limiting support for new projects.

Finally, NSF is soliciting an integrator for the design and build of a new Antarctic Research Vessel to replace the Research Vessel Icebreaker (RVIB) *Nathaniel B. Palmer*, which was commissioned in 1978. In July 2024, NSF also ended its charter for the Antarctic Research and Supply Vessel (ARSV) *Laurence M. Gould*. As a result, only the RVIB *Nathaniel B. Palmer* will be available for the next 10 years or longer.

The RVIB *Nathaniel B. Palmer* at Davis Station anchorage in Antarctica with an aurora australis light show overhead. *Credit: Scott Crabbe (Available under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International)*

Vetting of Contractors

In 2022, we reported that NSF did not ensure all USAP contract employees were onboarded and vetted in accordance with NSF requirements; instead, NSF relied on the contractor's internal vetting processes, which are less rigorous than the minimum level of investigation.[10] OPP has since modified its process to follow federal requirements for vetting and credentialing contractors that require elevated access to USAP systems and data. NSF also modified the Antarctic Support Contract to require the contractor's compliance with NSF vetting process for all contract employees. Though OPP is submitting seasonal contractors to NSF for vetting, challenges remain with timely vetting of U.S. citizens before deployment to Antarctica and obtaining support from other federal agencies to help vet foreign nationals working in the USAP.

Occupational Health and Safety

In 2023, we began an inspection of NSF's oversight of USAP occupational health and safety. As part of our inspection, we are assessing the USAP contractor's safety program and evaluating safety complaints reported to us by USAP participants.

NSF's Key Completed Actions

- Initiated development of the solicitation for the ASESC, which will replace the Antarctic Support Contract.
- Hired a new executive officer to oversee OPP Front Office groups in the areas of environment, communications, outreach and media, policy, budget, and program analysis and management.
- Hired a new OPP deployment specialist to oversee contractor onboarding and separation and monitor the hiring process.
- Used commercial vehicles for on-continent transport, which allowed USAP to leverage additional resources without taking on the future operating cost of expanding the USAP-owned fleet.
- Issued a draft South Pole Station Master Plan for comment.

NSF's Key Planned and Ongoing Actions

- Awarding the ASESC in FY 2025.
- Ongoing construction on the lodging module at McMurdo Station.
- Placing dedicated construction engineering resources at McMurdo Station to increase direct federal oversight of the lodging construction.
- Deploying military C-130s at key times during the upcoming season to alleviate the need to send the ski-equipped LC-130 fleet off-continent, allowing for more on-continent scientific support.
- Continuing efforts to meet NSF vetting requirements for contractors.

[10] NSF OIG Report No. 22-6-004, NSF Vetting of United States Antarctic Program Contractors, March 18, 2022

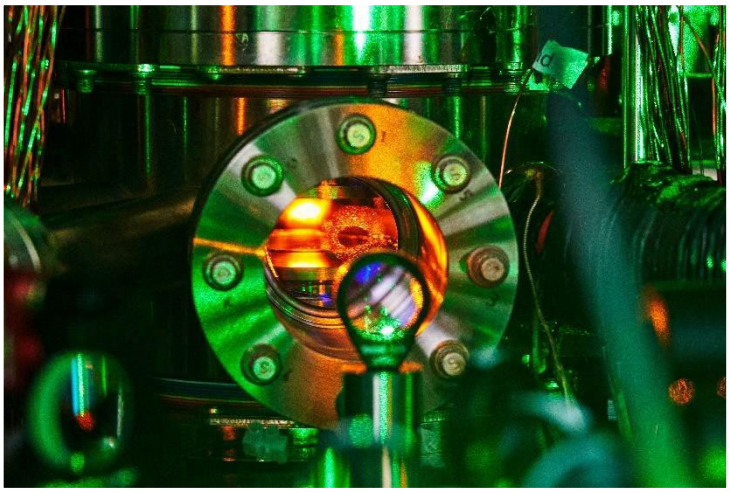
Challenge 5: Overseeing NSF's Funding Portfolio

Making grants to support promising scientific research is a key element of NSF's mission. However, NSF's grant making environment has experienced significant changes over the past several years. The CHIPS and Science Act, enacted August 9, 2022, formally established the Technology, Innovation, and Partnerships (TIP) directorate and created several new requirements for NSF related to research security, broadening participation in the research enterprise, and strengthening STEM education. It also provided NSF's TIP with authority to use new types of award instruments. NSF has responded to this changing environment by strengthening its controls and implementing risk mitigation techniques, but many of the impacts from these changes are still early in their lifecycles.

NSF is continuing to manage the many requirements of the CHIPS and Science Act while facing an uncertain fiscal environment. The Act authorized NSF's budget to more than double within 5 years, to nearly $19 billion. However, actual funding has been constrained, with NSF receiving an overall budget of $9.06 billion in FY 2024 (42 percent less than what was authorized) and requesting an overall budget of $10.1 billion in FY 2025 (40 percent less than what was authorized). If total appropriated funding continues to fall short of authorized amounts, NSF will have to overcome continued uncertainty and fiscal challenges to accomplish the various requirements of the Act.

KEY FACTS

- This challenge involves an operation that is critical to an NSF core mission. It also presents a risk of fraud, waste, or abuse of NSF or other government assets.
- The CHIPS and Science Act of 2022 formally established the TIP Directorate, created several new requirements, and authorized NSF to use new funding instruments.
- Actual NSF funding levels have been significantly more constrained than what was authorized in the CHIPS and Science Act.
- TIP continues to mature as a directorate and has made extensive progress in implementing new programs.
- NSF is taking steps to manage its funding portfolio risks.



NSF-supported researchers created the first-ever Bose-Einstein condensate made from molecules, which was cooled to 5 nanoKelvin. *Credit: Sebastian Will/Will Lab/Columbia University*

Amidst this uncertainty, the TIP directorate continues to grow and mature. In FY 2024, TIP made extensive progress in implementing its flagship program, Regional Innovation Engines (NSF Engines), and several other new programs. The NSF Engines program aims to support multiple regional innovation ecosystems across the United States to spur economic growth. In FY 2024, NSF established the first-ever NSF Regional Innovation Engines by awarding 10 awards worth $15 million each over the first 2 years, with the potential to receive up to $160 million each for up to 10 years. NSF also issued 58 NSF Engines Development awards worth $1 million over 2 years. The

NSF Engines program supports diverse groups, many of which are non-traditional award recipients with little experience managing federal funds. NSF has taken steps to manage these risks; however, new award instruments, new programs, an expanded mission, and an increase — even if less than anticipated — in funding will bring inherent challenges in ensuring proper stewardship and accountability of award funds.

In April 2024, the U.S. Office of Management and Budget updated the "Uniform Guidance" (Title 2 of the Code of Federal Regulations), which consists of administrative requirements, cost principles, and audit requirements for federal awards. The new guidance is effective for all federal awards issued on or after October 1, 2024. On August 28, 2024, NSF issued an update to its Award Terms and Conditions to implement the updated Uniform Guidance. Although NSF has taken appropriate steps to implement the Uniform Guidance, the more than 2,000 institutions that receive NSF funding will have to amend their award management environments to comply with the updated federal and NSF guidelines. This significant change to the regulatory environment may create an increased risk of misspending on federal awards.

NSF's Key Completed Actions

- Established and implemented targeted oversight activities to cover 50 percent of the NSF Engines Development award portfolio.
- Developed and conducted targeted webinar outreach to assist all NSF Engines recipients, with a focus on those unfamiliar with managing federal awards.
- Developed an oversight plan for the NSF Regional Innovation Engines that included a review of all recipients through a combination of site visits, desk reviews, and targeted review assessments.
- Educated NSF leadership on risk management, emphasizing risk areas identified by the U.S. Government Accountability Office and NSF OIG.

NSF's Key Planned and Ongoing Actions

- Conduct NSF Engines oversight and evaluate the results.
- Host webinars on financial stewardship and cost allowability for EPSCoR recipients.
- Conduct triennial improper payment risk assessment, including quantitative testing of financial assistance portfolio payments.
- Expand the distribution of risk management guidance at the program level.
- Create a risk management framework for new types of awards.

Challenge 6: Managing Human Capital

One of the priorities of the President's Management Agenda is strengthening and empowering the federal workforce.[11] NSF has continued to demonstrate its ability to engage its employees. According to the Partnership for Public Service, NSF is a top-ten place to work in the federal government.[12]

A defining characteristic of NSF's human capital management strategy continues to be its use of temporary staff, which includes both those brought on through authority provided by the *Intergovernmental Personnel Act*, and those employed through NSF's own Visiting Scientist, Engineer, and Educator program. These individuals — referred to as IPAs or rotators — bring fresh perspectives from all fields of science and engineering to support NSF's mission. More than 1,500 federal employees and 200 non-federal employees comprise NSF's workforce.[13]

As part of its human capital management strategy, NSF allows IPAs to hold supervisory positions. As of April 2024, NSF's IPAs accounted for 8 percent of all supervisors at NSF and were responsible for directly supervising 10 percent of NSF's workforce. However, according to FY 2022 Office of Personnel Management (OPM) guidance, IPAs do not have authority to serve in supervisory roles. NSF is working with OPM to determine a path forward that is compliant.

KEY FACTS

- This issue is related to key initiatives of the President.
- IPAs continue to play a significant role in NSF's human capital management strategy.
- NSF allows IPAs to hold supervisory positions, which conflicts with guidance from OPM. NSF is aware of OPM's guidance and is working towards a resolution.
- NSF has adjusted its AD pay bands and policies to help prevent future instances of employee pay exceeding statutory limitations.
- NSF continues its implementation of the Workspace Management Policy and workspace realignment.

In addition to using temporary appointments of non-federal staff, NSF employs part of its workforce under an excepted service compensation program authorized by the NSF Act, which includes five administratively determined (AD) pay bands. NSF updated its policy on AD pay bands in September 2023 after confirming with OPM and the U.S. Department of Justice that its pay bands are subject to statutory pay limitations, and that NSF's pay levels exceeded the statutory cap on basic pay with locality. In January 2024, NSF revised its AD pay bands to comply with the federal limitations and waived debt collection of more than $15 million in overpayments. Although NSF has amended its AD pay bands to comply with the statutory limits, we are conducting an audit to determine if NSF has adequate policies and procedures to ensure staff in AD positions are paid in accordance with federal regulations.

NSF continues to evaluate how best to modernize how it works while strengthening relationships and personal interactions. NSF has a hybrid work environment that includes staff who work full-time at Headquarters, telework part-time or full-time, or work remotely full-time. In 2023, NSF introduced

[11] Workforce Priority | President's Management Agenda | Performance.gov

[12] Partnership for Public Service, 2023 Best Places to Work in the Federal Government

[13] National Science Foundation, NSF FY 2025 Budget Request to Congress

NSF Headquarters in Alexandria, VA. Credit: JHVEPhoto

its Workspace Management Policy and Telework and Remote Work Policy to help manage its dispersed workforce and physical footprint. The NSF Workspace Management Policy enables NSF to partner with the Union and enhance NSF workspaces through hoteling, shared workspaces, and other measures, while establishing footprints that account for current needs and address plans to support a hybrid workforce. NSF's implementation of the Workspace Management Policy is ongoing as its space realignment continues.

NSF's Key Completed Actions

- Implemented the AD Pay Setting Policy to set pay within statutory limits.
- Implemented the Workspace Management Policy and Telework and Remote Work Policy.
- Realigned workspace for one office and four directorates.
- As part of IPA vetting, began requiring notification of any finding or determination of sexual harassment, other forms of harassment, or sexual assault made by any institution or professional organization.

NSF's Key Planned and Ongoing Actions

- Conducting research and benchmarking studies of comparable external pay for work similar to the functions of NSF's program directors.
- Conducting oversight and evaluation of the AD pay setting policy.
- Continuing to update internal resources to engage staff on the Workspace Management Policy and Telework and Remote Work Policy.
- Continuing to develop policies and procedures to improve IPA vetting for undue foreign influence.

Challenge 7: Mitigating Threats to Research Security

Safeguarding the U.S. research enterprise from threats of inappropriate foreign influence continues to be of critical importance. Although significant challenges remain, U.S. funding agencies and academia have made progress in combating malign foreign influence, while maintaining an open research environment that fosters collaboration, transparency, and the free exchange of ideas.

NSF, and other agencies that fund research, continue to face challenges from foreign talent recruitment programs. According to the National Science and Technology Council, a foreign government-sponsored talent recruitment program is an effort organized, managed, or funded by a foreign government, or a foreign government instrumentality or entity, to recruit science and technology professionals or students in targeted fields. Although some of these programs are legitimate, many encourage or direct unethical and criminal behaviors, including the deliberate nondisclosure of the recruit's foreign position or employment and associated foreign scientific funding. Nondisclosure of affiliations with any such program may adversely affect NSF decision-making on proposals. Agreements for participation in some programs include language that creates conflicts of commitment and/or conflicts of interest for researchers, such as requirements to attribute U.S.-funded work to a foreign institution; recruit or train other talent recruitment program members; circumvent merit-based processes; and replicate or transfer U.S.-funded work to another country.

KEY FACTS

- This challenge presents a risk of fraud, waste, and abuse of NSF or other government assets.
- Federal agencies and academia have made progress in combating malign foreign influence on the U.S. research enterprise.
- NSF has worked to mitigate these threats by implementing new proposal certifications, strengthening research security-related disclosure requirements, and establishing a new process to assess proposals for potential national security concerns.
- NSF has also expanded research security training available to the research community.

Over the past 5 years, NSF has taken substantive action to mitigate threats posed by these programs. It strengthened disclosure requirements and provided compliance recommendations to U.S. academic institutions to ensure accurate disclosures to U.S. funding agencies. Further, NSF created an Office of the Chief of Research Security Strategy and Policy, which has taken a leading role in federal government efforts to combat this threat. It has expanded research security training and educated the research community through domestic and international outreach. NSF should continue to assess and refine its controls in this area and ensure that it has sufficient staff and resources to address this challenge.

NSF's Key Completed Actions

- Created a Chief of Research Security Strategy and Policy position, later codified in the CHIPS and Science Act.
- Formed the Research Security Liaison Group to develop a culture of research security at NSF and to help coordinate research security issues across the agency.
- Developed and implemented mandatory research security training for staff and rotators in direct communication with recipient organizations and principal investigators.

- Made two awards to establish the Research Security and Integrity Information Sharing Analysis Organization (SECURE Center), as required by the CHIPS and Science Act.
- Released four interactive research security training modules. These modules advise federal research funding recipients of risks and threats to the global research ecosystem and provide tools to protect against such risks.
- Funded a research community-wide workshop to support the development of the "Research on Research Security" program.
- Developed TRUST (Trusted Research Using Safeguards and Transparency), a new process to assess the risks associated with NSF proposals, including those related to potential national security concerns, as directed by the CHIPS and Science Act.
- Developed a reporting process (Foreign Financial Disclosure Report) for institutions of higher education that are direct recipients of NSF funding to disclose gifts and contracts received from a foreign country of concern, as mandated by Section 10339B of the CHIPS and Science Act.
- Educated the research community about research security-related risks and the importance of compliance with NSF's policies and procedures.
- Strengthened disclosure requirements and processes, including implementation of a requirement for senior award personnel to certify during the proposal process that they are not a party in a malign foreign talent recruitment program, and that the information contained in their Biographical Sketch and Current and Pending (Other) Support documents is accurate, current, and complete.
- Launched the Research Security Strategy and Policy Group; developed and implemented a research security data analytics capability that captures nondisclosure of foreign affiliations, sources of funding, and collaborations that present conflicts of commitment or interest.
- Communicated an express prohibition of Foreign Talent Plan membership for all NSF staff, including rotators, thereby improving the process of vetting incoming rotators.
- Increased collaboration with NSF OIG, U.S. government agencies, and other relevant stakeholders.

NSF's Key Planned and Ongoing Actions

- Capturing nondisclosure of foreign affiliations, sources of funding, and collaborations that present conflicts of commitment or interest.
- Continuing to conduct and monitor mandatory research security training for staff and rotators in direct communication with recipient organizations and principal investigators.
- Continuing education of the research community about risks presented by malign foreign talent recruitment programs and the importance of compliance with NSF policies and procedures.
- Continuing to refine and scale up research security-related analytics capabilities and expand a pilot program to share research security-related information with the research community.
- Maintaining collaborative relationships with NSF OIG, U.S. government agencies, and other relevant stakeholders.
- Developing guidelines for strengthening research security, including those required by the CHIPS and Science Act and National Security Presidential Memorandum 33.
- Expanding the Research-on-Research Security Program to include international partners.
- Implementing the TRUST process with the pilot phase focused on quantum-related projects.

National Defense Authorization Act General Notification

Pursuant to Pub. L. No. 117-263 § 5274, business entities and non-governmental organizations specifically identified in this report have 30 days from the date of report publication to review this report and submit a written response to NSF OIG that clarifies or provides additional context for each instance within the report in which the business entity or non-governmental organizations is specifically identified. Responses that conform to the requirements set forth in the statute will be attached to the final, published report.

If you find your business entity or non-governmental organization was specifically identified in this report and wish to submit comments under the above-referenced statute, please send your response within 30 days of the publication date of this report to OIGPL117-263@nsf.gov, no later than December 15, 2024. We request that comments be in .pdf format, be free from any proprietary or otherwise sensitive information, and not exceed two pages. Please note, a response that does not satisfy the purpose set forth by the statute will not be attached to the final report.

About Us

NSF OIG was established in 1989, in compliance with the *Inspector General Act of 1978* (5 USC 401-24). Our mission is to provide independent oversight of NSF to improve the effectiveness, efficiency, and economy of its programs and operations and to prevent and detect fraud, waste, and abuse.

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Report Fraud, Waste, or Abuse

Report violations of laws, rules, or regulations; mismanagement; and research misconduct involving NSF operations or programs via our Hotline:

- File online report: oig.nsf.gov/contact/hotline
- Anonymous Hotline: 1-800-428-2189
- Mail: 2415 Eisenhower Avenue, Alexandria, VA 22314 ATTN: OIG HOTLINE

Have a question about reporting fraud, waste, or abuse? Email OIG@nsf.gov.

Whistleblower Retaliation Information

All NSF employees, contractors, subcontractors, awardees, and subawardees are protected from retaliation for making a protected disclosure. If you believe you have been subject to retaliation for protected whistleblowing, or for additional information on whistleblower protections, please visit oig.nsf.gov/whistleblower.

MEMORANDUM

DATE: October 28, 2024

TO: Ms. Allison Lerner, Inspector General, National Science Foundation

FROM: Dr. Sethuraman Panchanathan, Director, National Science Foundation

SUBJECT: Acknowledgment of the Inspector General's Fiscal Year (FY) 2025 Management Challenges Report and Transmittal of NSF's Progress Report for the FY 2024 Management Challenges

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Thank you for sharing OIG's Fiscal Year (FY) 2025 Management Challenges for NSF. In FY 2025, our agency will celebrate the 75th anniversary of NSF's establishment. Since 1950, NSF has invested across all fields of science and engineering, leading to discoveries that fuel the technologies of the future and inspire the next generation of the STEM workforce. I am honored to lead the agency as we look forward to the next 75 years of discovery, while also elevating the importance of risk management and stewardship of our financial resources.

OIG's annual report on Management Challenges illustrates both the obstacles NSF faces in achieving its mission and vision, such as threats to research security and operations in extreme Antarctic conditions, as well as the strong processes the agency has in place to appropriately manage risk. In particular, the FY 2025 report notes NSF's work to address some of the highest-risk issues associated with cyber security. The attached Progress Report for OIG Management Challenges for FY 2024 outlines many other examples of NSF progress in addressing the OIG-identified challenges, and expresses our continued commitment to address these areas going forward.

In FY 2025, NSF will continue its strong performance in oversight and management of awards, extending this experience to the oversight and management of new award instrument types. Though cyber threats are no longer among OIG's enumerated challenges, we will continue our strong track record of effective

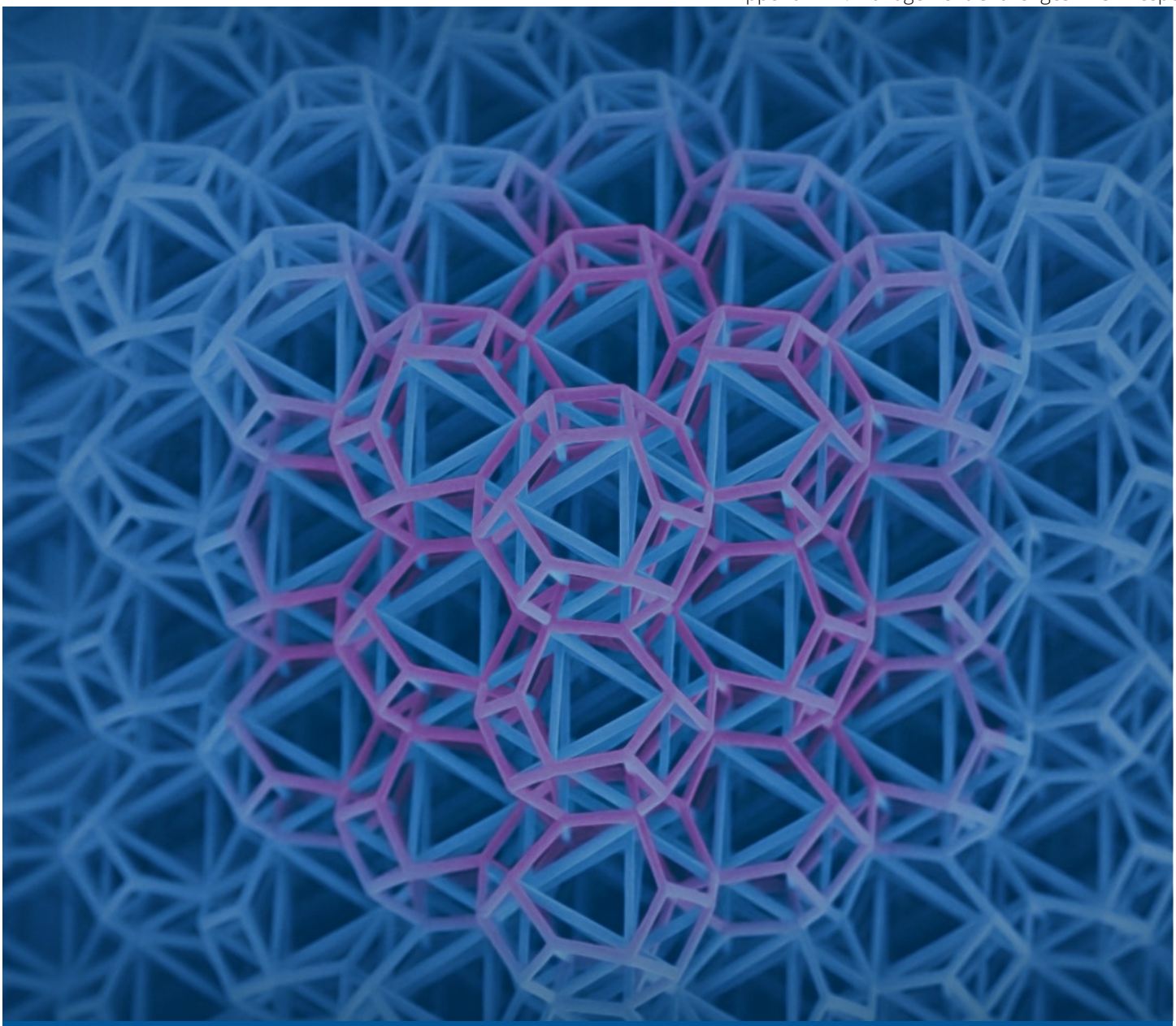
cybersecurity through implementation of measures to protect sensitive data from the threat of cyberattacks, and build upon the solid foundation of actions to promote research security. In addition, NSF will devote intentional focus to continued improvement in areas such as increasing representation in science and preventing sexual assault and harassment. Among my highest priorities for NSF are creating opportunities everywhere, and ensuring a safe, harassment-free workspace and collegial culture in which research can thrive.

As always, NSF remains committed to serving the research community effectively, to continually improving stewardship across the agency, and to safeguarding federal funds awarded by NSF in support of the agency's mission. We look forward to continuing to work with your office to achieve those goals.

Sethuraman Panchanathan

Attachments

cc: Chair, National Science Board
Chair, National Science Board, Committee on Oversight
Chief Financial Officer



National Science Foundation

FY 2024 Response to OIG Management Challenges

Summary of OIG Management Challenge 1: Overseeing and Managing Risks of Sexual Assault/Harassment in Antarctica

- NSF commissioned a report highlighting concerns about providing effective oversight of awardee compliance in the U.S. Antarctic Program (USAP) due to lack of trust and reporting mechanisms.
- Additional actions have been taken to address sexual assault and sexual harassment (SA/SH) in Antarctica, such as stationing an on-ice victim advocate, establishing a 24/7 NSF Antarctic Helpline, and making changes to the Antarctic Support Contract to require additional reporting.
- During the USAP 2023-2024 austral summer season, the Sexual Assault and Harassment Prevention and Response (SAHPR) Program traveled to Palmer, McMurdo, and South Pole stations and engaged with the Antarctic community through office hours and presentations.
- The SAHPR Program is coordinating with the Office of Inspector General (OIG) to address the handling of criminal violations covered under the Special Maritime and Territorial Jurisdiction of the United States.

NSF Management's Overview and Action Plan

NSF Leads: Jean Cottam Allen, Acting Director, Office of Polar Programs; Renée Ferranti, Special Assistant to the Director for Sexual Assault and Harassment Prevention and Response; and Rhonda Davis, Office Head, Office of Equity and Civil Rights.

NSF is continuing to institutionalize and codify the agency's SAHPR Program to address critical prevention and response elements and enhance the agency's capacity to expand SAHPR functions within USAP. The agency is working to accomplish these goals by, 1) cultivating an organizational climate of mutual trust and respect that encourages survivors to report incidents without fear of retaliation, 2) ensuring all USAP partner organizations understand their roles and responsibilities, 3) increasing engagement and training with the community and external partners to help address and prevent SA/SH in USAP, and 4) establishing prevention and response policies with a survivor-centered and trauma-informed approach while monitoring those policies to track the effectiveness of established programs.

NSF's Completed Actions to Address the Challenge

In FY 2023, the SAHPR Program Office established the 24/7 NSF Antarctic Helpline, the saferscience mailbox for USAP participants to contact the SAHPR Program Office staff directly, and a victim advocate was contracted for on-ice presence during the summer season and remote access during the winter season. The victim advocate provides support and advocacy to current and former USAP deployers. Modifications were made to the Antarctic Support Contract (ASC) that required immediate and regular reporting of complaints of harassment or assault to OIG and the SAHPR Program Office, and improved vetting procedures for potential employees. In addition, since NSF publicly released the Sexual Assault and Harassment Prevention and Response Report[1] in August 2022, the Office of Polar Programs (OPP) and the SAHPR Program Office have improved ways to track incidents and analyze what challenges and barriers still exist. A case management system was created to help track and analyze data, the SAHPR Program Office established

[1] NSF Office of Polar Programs Sexual Assault and Harassment Prevention and Response Final Report is available at https://www.nsf.gov/geo/opp/documents/USAP%20SAHPR%20Report.pdf

reoccurring case management meetings with key groups such as OIG, OPP, and the ASC, and the agency formed the joint NSF/NSF OIG working group to coordinate law enforcement response.

Demonstrated Progress Through Agency Actions Taken in FY 2024

- Bystander intervention training and sexual assault and sexual harassment response trainings have been delivered to approximately 1,000 USAP deployers.
- The on-ice victim advocates traveled to Palmer, South Pole, and McMurdo Stations to conduct outreach with the community and provide training on SA/SH awareness and reporting.
- The SAHPR team traveled to Palmer and McMurdo to conduct outreach with the USAP community by offering office hours, meeting with key leaders, and holding informational presentations.
- OPP increased the number of satellite communication devices for all field teams to improve access to the USAP counselor, victim advocate, and other support systems for individuals working in the field camps.
- OPP and the Personnel Security and Suitability Team in the Division of Administrative Services continued to make improvements to enhanced screening procedures for contractors.
- The SAHPR Program Office and OPP continue to collaborate with the OIG on the law enforcement response in USAP with routine working group meetings with SAHPR, OPP, OIG, BFA's Division of Acquisition and Cooperative Support (DACS), the Office of Equity and Civil Rights (OECR), and Office of the General Counsel (OGC).
- On April 4, 2024, the NSF Director signed a memo directing transition of the SAHPR Program functions out of the Office of Equity and Civil Rights (OECR) to a dedicated SAHPR Program Office within the Office of the Director.
- NSF launched the USAP Climate Survey, which collected responses from May through July, 2024.
- Regular meetings with the Chief Executive Officer, Chief Operating Officer, and Human Resources of the ASC to ensure transparency, accountability and direct follow-up on USAP concerns.

NSF's Planned and Ongoing Actions

- Continue to invest resources in SAHPR initiatives and staffing including the establishment of the SAHPR Program Office within the Office of the Director.
- Analyze and review existing NSF policies and procedures related to SA/SH to ensure a survivor-centered and trauma-informed approach is consistently included in agency procedures and practices.
- Codify the agency's official definitions for terms related to SA/SH and codify NSF protocols for the confidentiality of reporting and referral of SAHPR reports.
- Develop standardized guidelines on how to respond to a report of SA/SH throughout the NSF enterprise.
- Shift the oversight of the existing SAHPR support contract from OPP to the SAHPR Program Office.
- Continue improvements to living and recreation conditions for USAP participants, including hiring on-ice staff dedicated to community engagement, adding recreation equipment, expanding Wi-Fi capacity, and making the USAP counselor available during both winter and summer seasons.

Summary of OIG Management Challenge 2: Addressing Sexual Harassment in the Scientific Enterprise

- Recent reports and legislation indicate harassment is pervasive in institutions of higher education and jeopardizes more rapid and sustained progress in closing the gender gap in STEM.
- NSF has taken actions to address the issue, such as implementing an award term and condition that requires institutions to notify the agency of findings of sexual harassment, other forms of harassment, or sexual assault and setting expectations that research organizations must establish and maintain clear and unambiguous standards of behavior.
- Sexual harassment and sexual assault are still prevalent challenges facing the research community, and additional steps to address those challenges remain.
- A contract with OECR is evaluating whether recipient institutions' policies about sexual harassment comply with relevant NSF policies.

NSF Management's Overview and Action Plan

NSF Leads: Renée Ferranti, Special Assistant to the Director for Sexual Assault and Harassment Prevention and Response; Rhonda Davis, Office Head, Office of Equity and Civil Rights; Linnea Avallone, Chief Officer for Research Facilities, Office of the Director

NSF is committed to combatting sexual harassment and sexual assault anywhere science or education is conducted, on academic campuses or off-site, including research stations, vessels, field sites, and NSF-funded programs. NSF has taken, and continues to take, steps to help ensure all NSF-funded research and learning environments are free from sexual and other forms of harassment. Additionally, NSF continually bolsters agency policies, procedures, and communications so that organizations clearly understand expectations and individuals understand their rights. The agency's approach to combatting sexual harassment and sexual assault is guided by the following:

- First, NSF recognizes that to enable scientists, engineers, and students to work at the outermost frontiers of knowledge, the agency must be a role model for teamwork, fairness, and equity.
- Second, a safe environment free of any form of harassment and one that fosters equal opportunities is necessary to advance science, technology, engineering, and education for the Nation's future.
- And finally, NSF is committed to creating safe and inclusive research environments for all.

NSF's Completed Actions to Address the Challenge

Prior to FY 2023, NSF implemented an award term and condition that requires award recipients to notify NSF of any findings or determinations of sexual harassment, other forms of harassment, or sexual assault by an NSF-funded principal investigator or co-principal investigator. Additionally, NSF issued statements to the academic community and in its Proposal & Awards Policies & Procedures Guide (PAPPG) that NSF expects all research organizations to establish and maintain clear and unambiguous standards of behavior to ensure harassment-free workplaces.

Demonstrated Progress Through Agency Actions Taken in FY 2024

During FY 2024, NSF took the following actions to address sexual harassment:

- An independent evaluation of the research, conference, and travel award policies was conducted by a contractor through a survey and interviews with Authorized Organizational Representatives and Title IX Coordinators at Institutions of Higher Education.
- NSF engaged with students, staff, and faculty at institutions of higher education and with conference attendees on current gaps and promising practices in field research. OECR and the Chief Officer for Research Facilities also participated in a research cruise (R/V Atlantis) along with representatives of scientific organizations and scientific research funding agencies to observe the living and working environment onboard a research vessel and a submersible craft.
- NSF is conducting the Safe and Inclusive Fieldwork (SAIF) Plans Pilot, which requires Principal Investigators (PIs) on proposals involving off-campus/off-site research (i.e., fieldwork) to include a two-page Supplementary Document summarizing how the project team would ensure a safe and inclusive working environment for all associated personnel. This plan is reviewed under the Broader Impacts review criterion.
- NSF has issued a solicitation for contractor support to explore restorative approaches to address sexual and other forms of harassment and discrimination at NSF-funded off-campus or off-site research venues.
- NSF is co-chairing the National Science and Technology Council-led Interagency Working Group on Safe and Inclusive STEM Environments (SISE-IWG), established pursuant to the CHIPS and Science Act of 2022, whose goal is to identify federal guidance to prevent and address harassment in research. SISE-IWG is considering adoption of a notification term and condition across research agencies.
- NSF continues to conduct outreach and benchmarking with SISE-IWG, U.S. Department of Justice-led Title IX STEM Interagency group, Interagency Working Group on Sexual Misconduct, and UK Research and Innovation. Some collaborations include a joint funding opportunity with Sweden's Innovation Agency Vinnova and participating in a round table on "Advancing Gender Equality and Representation through AI: Strategies for Positive Change" at the Swedish embassy.
- NSF completed an update to OECR's complaint filing system to include the complainant's pronouns and delete unnecessary fields. These updates were made to improve the filing process for complainants and to improve case management for internal staff.
- NSF has completed two onsite Title IX compliance reviews at NSF awardee universities and completed nine desk audits of NSF awardees' Title IX policies, procedures and practices.
- NSF onboarded a SAHPR Special Assistant to the Director to help guide the agency's development of the SAHPR Program Office.

NSF's Planned and Ongoing Actions

- Conduct an onsite Title IX review in September 2024 of a scientific research organization.
- Continue to serve as IWG-SISE co-chair and identify promising practices and standard guidelines.
- Select a contractor to design restorative approaches to address sexual and other forms of harassment and discrimination at NSF-funded off-campus or off-site research venues.
- Continue the SAIF pilot in FY 2025. Upon its completion, a formal assessment will be conducted.
- In early FY 2025, plan a partnership study with the National Academies for Science, Engineering, and Medicine and InterAcademy to address sexual harassment of women in academia globally.
- Continue to invest in SAHPR initiatives and staffing.

Summary of OIG Management Challenge 3: Increasing Diversity in Science & Engineering Education and Employment

Greater participation in science, technology, engineering, and mathematics (STEM) by underrepresented groups is key to U.S. economic competitiveness worldwide and to national security. Further, increasing diversity in STEM is a top priority of NSF, the National Science Board (NSB), the President, and Congress and addressing underrepresentation is required by the CHIPS and Science Act of 2022.

NSF Management's Overview and Action Plan

NSF Leads: Alicia Knoedler, Office Head, Office of Integrative Activities; James Moore, Assistant Director, Directorate for STEM Education; Charles Barber, NSF Chief Diversity and Inclusion Officer

Innovations in STEM are informed by the experiences, cultural differences, and varying perspectives of the people represented in the STEM workforce. Increasing representation in STEM aligns with the NSF's FY 2022-2026 Strategic Plan, NSB's *Vision 2030,* several Executive Orders (e.g., 13985, 13988, 14091), the CHIPS and Science Act of 2022, and other legislation. These standards affirm that broadening participation throughout the STEM enterprise is critical for U.S. economic competitiveness and national security.

NSF has addressed this Management Challenge through the establishment of its Equity Ecosystem framework. It is organized around broadening participation in STEM, ensuring equity in NSF program delivery, and promoting diversity, equity, inclusion, and accessibility (DEIA) within the NSF workforce. Leveraging this multi-faceted approach based on decades of research and successful organizational policies and practices, NSF operationalized the framework as *Creating Opportunities Everywhere* (COE) as articulated in the FY 2025 Budget Request.[2] COE is an agency-wide commitment with meaningful actions to ensure equity in program delivery and addresses this Management Challenge by expanding access and inclusion in STEM along individual, institutional, and geographic lines.

NSF's Completed Actions to Address the Challenge

Through the efforts of the Chief Diversity and Inclusion Officer (CDIO), executive leadership, and other agency-wide initiatives, NSF holds itself accountable as a Broadening Participation (BP)/DEIA leader in the scientific community. In prior years, NSF appointed a CDIO and established a new funding opportunity entitled, *Growing Research Access for Nationally Transformative Equity and Diversity* (GRANTED) Initiative.[3] In addition, between FY 2020 and FY 2023, NSF increased the proportion of proposals from Principal Investigators (PIs) underrepresented in STEM and from underserved organizations by 15 and 8 percent respectively, partially achieving the FY 2022-2023 Agency Priority Goal (APG) to Improve Representation in the Scientific Enterprise.

Demonstrated Progress Through Agency Actions Taken in FY 2024

- Increased awards, including an over $64 million investment in GRANTED, with potential to transform emerging research institutions and minority-serving institutions, and doubled the number of Established Program to Stimulate Competitive Research (EPSCoR) Research Fellows.[4]

[2] The FY 2025 Budget Request COE narrative is available at https://nsf-gov-resources.nsf.gov/files/29_fy2025.pdf
[3] GRANTED information is available at https://new.nsf.gov/funding/initiatives/broadening-participation/granted
[4] Solicitation is at https://new.nsf.gov/funding/opportunities/epscor-research-infrastructure-improvement-epscor

- Expanded outreach to ERIs and MSIs (e.g., regional workshop for Historically Black Colleges and Universities (HBCUs) from four EPSCoR states).
- Increased funding opportunities focused on Tribal Colleges and Universities, Hispanic Serving Institutions, HBCUs, and persons with disabilities. Examples include the *Tribal Colleges and Universities Program Hub and Topical Interest Groups*, *Hispanic-Serving Institutions: Enriching Learning Programs and Student Experiences*, and *Workplace Equity for Persons with Disabilities in STEM and STEM Education* solicitations.[5]
- Increased focus on rural STEM education and workforce development (e.g., held an Advisory Committee meeting and supported CHIPS and Science Act required reports on rural STEM issues).
- Issued Dear Colleague Letters (DCLs) addressing systemic issues, such as *Piloting Departmental-level Systemic Change for Equity; Social and Behavioral Science of Bias, Prejudice and Discrimination;* and *Strengthening the Evidence Base Related to Broadening the Participation of LGBTQI+ Individuals in STEM*.
- Focused on internal efforts to enhance staff effectiveness in addressing the Management Challenge (e.g., held Equity Ecosystem Expo to connect related initiatives across NSF; devised and implemented NSF-wide strategy to achieve CHIPS and Science EPSCoR goals and directorate targets).
- Added new guidance to external and internal policy documents on seeking and obtaining Tribal Nation approval for proposals that may impact Tribal resources or interests.
- Published an FY 2024-2025 APG Action Plan to "Improve Representation in the Scientific Enterprise."[6]

NSF's Planned and Ongoing Actions

Specific planned and ongoing actions are listed below:

- For the next three years include Broader Impacts experts on all Committees of Visitors following a successful pilot phase; NSF will assess these efforts in FY 2027.
- Update the reviewer training video and establish a central repository of additional training resources to maximize reviewer preparedness relating to BP in the merit review process.
- Continue a study to understand and describe patterns in funding rates across the NSF portfolio and pilot tools, such as the Institutional Fact Sheets,[7] to provide better data to staff on underrepresented groups and organizations in NSF's portfolio of investments.
- Advance efforts to reach agency-wide EPSCoR funding targets.
- Incorporate sexual orientation and gender identity questions in the Survey of Earned Doctorates to better assess characteristics of the doctoral population and trends in doctoral education.
- Launch a "Culture Forward Strategy" to emphasize organizational culture, informing ongoing efforts to update the DEIA Strategic Plan and the Agency Equity Action Plan.
- Continue to apply COE principles as a budget priority to strengthen and scale investments to expand the BP portfolio and the NSF's core research portfolio.
- Engage the Program Officer and PI communities on strategies to navigate NSF activities impacted by state and local DEIA laws across the country.

[5] The named solicitations may be accessed here https://www.nsf.gov/od/broadeningparticipation/bp_portfolio_dynamic.jsp

[6] The Action Plan may be accessed at https://www.performance.gov/agencies/nsf/apg/fy-24-25/goal-1/

[7] Fact Sheets are available at https://tableau.external.nsf.gov/#/views/InstitutionFactsheet/InstitutionSnapshot?:iid=1

Summary of OIG Management Challenge 4: Overseeing the United States Antarctic Program

NSF, through the USAP, manages U.S. scientific research in Antarctica. Antarctica's remote location, extreme environment, and the short period of time each year during which the continent is accessible present challenges above and beyond those typically encountered for domestic science operations.

NSF Management's Overview and Action Plan

NSF Lead: Jean Cottam Allen, Acting Director, Office of Polar Programs

Closeout and Recompete of the Antarctic Support Contract: NSF's largest and most visible contract is the Antarctic Support Contract (ASC), which is valued at $2.3 billion over 13 years. The current contract for logistical support is being extended to cover operations through September 2026. Through this and other contracting vehicles, NSF is also conducting a long-range infrastructure investment program across USAP, including the three U.S. Antarctic stations (McMurdo, Palmer, and South Pole). The Office of Polar Programs (OPP) monitors performance of the ASC, collaborating with several other NSF offices to manage the USAP more broadly. Managing the ASC is complex and requires a strong cost monitoring program, oversight of deliverables and deadline requirements, and appropriate consideration of risks.

Construction Delays and Deferred Science: NSF paused on-site construction work for the AIMS project at McMurdo in March 2020 due to the COVID-19 pandemic, and construction personnel were not deployed to McMurdo for the 2020–2021 and 2021–2022 seasons. Construction of the Lodging Building, Vehicle Equipment and Operations Center (VEOC), and the Information Technology and Communications (IT&C) primary addition resumed in McMurdo during the 2022-2023 season. On-ice construction in the 2024-2025 season will focus solely on completing the Lodging Building. Incomplete elements of AIMS will be considered for incorporation into the longer-term Antarctic Infrastructure Recapitalization (AIR) program portfolio of USAP infrastructure projects.

For the 2023-2024 season, delays in early-season cargo and passenger movements as well as COVID management protocols affected OPP's ability to support as many of the already-deferred projects as anticipated. For the next several field seasons, NSF will prioritize already-funded science projects to the greatest extent possible to address the backlog that developed because of the pandemic.

Information Security and Vetting of Contractors: NSF also continues to address USAP information security audit findings first identified in FY 2019. OPP is working to address audit recommendations related to incident logging and monitoring, as well as implementation of Personal Identity Verification (PIV) and multifactor authentication (MFA) for USAP contractors. However, work to implement these recommendations will continue into FY 2025 due to the challenges of operating in this remote environment and the time necessary to implement improvements.

In prior years NSF relied on the contractor's internal vetting processes, which are less rigorous than the minimum level of Federal investigation. OPP has since modified its process to follow federal requirements for vetting and credentialing contractors that require elevated access to USAP systems and data. NSF also issued ASC contract modifications to ensure compliance with NSF vetting process. Though OPP is submitting seasonal contractors to NSF for vetting, efforts to ensure all seasonal employees are appropriately vetted prior to deployment are ongoing.

Occupational Health and Safety: Antarctica's extreme environment and relative isolation challenge human health and wellness. In August 2023, NSF-OIG began an inspection of USAP occupational health and safety, and a review of policies and procedures related to food safety, fire safety, and waste management.

NSF's Completed Actions to Address the Challenge

In prior years, NSF determined the award type (contract) for the ASC replacement award and aligned NSF resources to support the increased vetting workload. NSF made improvements to information security through implementation of a Security Information and Event Monitoring capability for USAP. Multi-Factor Authentication (MFA) has also been implemented with PIV credentials and enforcement for ASC full-time contractors, and MFA log-in cards for all others.

Demonstrated Progress Through Agency Actions Taken in FY 2024

- Closeout and Recompete of the Antarctic Support Contract – In order to permit time for the recompete of the Antarctic Support Contract, NSF prepared a justification and approval to extend the current contract through September 2026.[8] The modification executing the extension will coincide with the contract modification to fund the annual program plan for FY 2025.
- Construction Delays and Deferred Science - The COVID-induced science backlog is diminishing through focus on completion of existing grants. Additional logistics resources to support the backlog of science activities are also being brought to bear on this challenge. This past season, commercial vehicles were used for on-continent transport of a small field team which allowed USAP to leverage additional fleet resources without taking on the future operating cost of expanding the USAP-owned fleet.
- Information Security and Vetting of Contractors – Multi-factor authentication has been implemented across USAP stations and vessels. In cases where a PIV credential is not implementable, an alternate multi-factor authentication credential is used to increase access control.
- Contractor vetting processes have improved but remain challenging due to the seasonal hiring spikes inherent in USAP and inability of NSF to vet foreign nationals. Initial collection of information from prospective contractor employees has been delegated to the prime contractor in an effort to streamline the front-end collection of data and improve its timeliness and quality.

NSF's Planned and Ongoing Actions

- Award a new Antarctic Support Contract in FY 2025.
- In the upcoming season, military C-130s will be deployed at key times in the season to alleviate the need to send the ski-equipped fleet off-continent for lengthy inter-continental missions.
- NSF is planning for work on the lodging building at McMurdo Station to resume as the primary focus of construction activities. In addition, OPP is placing its own dedicated construction engineering resource on station to increase direct federal oversight of the remainder of this work.

[8] The Justification and Approval for Antarctic Support Contract Extension at https://sam.gov/opp/2d81976ca1b94320b28e619179def3c1/view

Summary of OIG Management Challenge 5: Overseeing NSF's Funding Portfolio in a Changing Environment

- The CHIPS and Science Act formally established the TIP Directorate, created new requirements for increasing diversity in STEM, and authorized NSF to use new funding instruments, such as Other Transactions.
- The Act authorized NSF's budget to more than double within five years, to nearly $19 billion, but to date, the actual funding environment has been more constrained.
- TIP expands NSF's emphasis on applied and use-inspired research.
- NSF's Enterprise Risk Management allows NSF to monitor expanded risks associated with these changes.

NSF Management's Overview and Action Plan

NSF Lead: Janis Coughlin-Piester, Office Head and CFO, Office of Budget, Finance, and Award Management

The CHIPS and Science Act of 2022 (CHIPS) authorizes NSF's budget to more than double over five years to nearly $19 billion to support and further enable NSF's three pillars of inspiring the missing millions, strengthening the established NSF and accelerating technology and innovation. CHIPS formally codifies into law the Directorate for Technology, Innovation and Partnerships (TIP) to advance research and development, technology development, and related solutions to address national, societal, and geostrategic challenges. The CHIPS and Science Act included a new type of funding authority – Other Transactions – to facilitate the types of awards that would fulfill the aims of TIP. CHIPS and Science also encourages NSF to continue ongoing efforts to increase the level and diversity of participation in STEM education and increase the diversity of NSF grant recipients, including increased targets for the EPSCoR program.

NSF must continue to adapt to effectively manage this complex and changing environment over the next several years. The agency will do so through a strategic and methodical assessment of the current award oversight and control environment. This work demonstrates NSF's commitment to providing exceptional stewardship over its federal grant funds while keeping pace with anticipated growth.

NSF's Enterprise Risk Management (ERM) and internal control activities aim to balance coverage of enterprise-level and internal control risks to continuously improve risk monitoring effectiveness. These activities and monitoring award programs provide a solid foundation for the agency to address emerging risks. In FY 2024, NSF adjusted its risk posture to account for funding activities by the TIP Directorate, adjusting its risk appetite for awards with a higher number of non-traditional awardees. An example is the NSF Engines program which provides significant funding to teams from businesses and non-profits in addition to academic researchers to foster regional innovation ecosystems. Changes in the risk posture will inform the FY 2025 oversight strategy, which will include a proactive and increased presence of business assistance for organizations unfamiliar with managing NSF awards, site visits, desk reviews, and other targeted oversight activities. Additionally, NSF's robust ERM foundation enables NSF to promptly monitor potential changes to its portfolio composition to mitigate the risk of fraud or mismanagement of federal funds. NSF also conducts separate and independent fraud risk management efforts, such as a fraud risk assessment process, supported by the Office of Management and Budget Controller Alert from 2022.

NSF continues to monitor its investments in EPSCoR states, emerging research institutions, minority-serving institutions, and STEM education to optimize the use of its existing resources for meeting participation

goals. For example, in FY 2024, NSF conducted targeted outreach and business assistance activities to help ensure these organizations were informed about programmatic and business requirements when proposing and managing NSF funding.

NSF's Completed Actions to Address the Challenge

In prior years, NSF established the Strategy, Engagement, and Consultation Group to help meet increased funding targets for EPSCoR jurisdictions. The agency also implemented new Selection of Award Instrument Standard Operating Guidance (SOG) to facilitate the proper selection of award instruments based on guiding authorities.

Demonstrated Progress Through Agency Actions Taken in FY 2024

- In addition to NSF's routine advanced monitoring activities, NSF established and implemented targeted oversight activities to cover 50 percent of the NSF Engines Type-1 award recipient portfolio. This coverage included all organizations new to NSF funding. This targeted oversight was primarily implemented to assess and mitigate any risk associated with organizations unfamiliar with managing Federal awards.
- Developed and scheduled targeted webinar outreach to assist all NSF Engines recipients with a focus on those unfamiliar with managing Federal awards.
- Updated NSF's annual risk assessment factors for awards made by the TIP Directorate to account for risks associated with funding non-traditional NSF recipients.
- Developed an oversight plan for NSF Engines Type-2 program that included review of all recipients through a combination of site visits, desk reviews, and targeted review assessments emphasizing business assistance.
- Conducted outreach activities for emerging research institutions, minority-serving institutions, and non-traditional NSF recipients.
- Educated NSF leadership on risk management with emphasis on risk areas identified by the Government Accountability Office (GAO) and the Office of the Inspector General. Additionally, NSF leadership discussed strengthening the lower levels of ERM's governance structure and completed a pilot with the Division of Graduate Education on program-level risk management.

NSF's Planned and Ongoing Actions

- Evaluate results from the targeted NSF Engines Type-1 oversight to inform NSF's risk posture on similar programs and initiatives moving forward.
- Conduct NSF Engines Type-2 oversight and evaluate results.
- Expand business assistance function through increased outreach informed by a holistic approach to risk via factors such as observed risks from monitoring and/or emerging issues (e.g., audits, changes in regulations).
- Host webinars on financial stewardship and cost allowability for EPSCoR recipients.
- Conduct triennial improper payment risk assessment to include quantitative testing of financial assistance portfolio payments.
- Incorporate an agile approach to risk management, including both a traditional annual assessment and a real-time strategy (using immediate data on hand).
- Expand the distribution of risk management guidance at the program level.
- Create a risk management framework for new types of awards.
- Enhance analytical capabilities to gain more insights into risks at the enterprise level.

Summary of OIG Management Challenge 6: Managing Human Capital

- NSF's New Hybrid Work Model, including the *Workspace Management Policy and Telework* and *Remote Work Policy* in September 2023, expressed a joint commitment with AFGE Local 3403 to learning and continuing dialogue as the work of implementing the new hybrid work model continues.
- NSF updated its policy on administratively determined (AD) pay bands in September 2023 after confirming with the U.S. Office of Personnel Management and the U.S. Department of Justice that NSF's AD pay bands are subject to the pay limitations contained in 5 U.S.C. § 5373.
- NSF has strengthened its management of rotators, but risks such as the vetting of rotators remain given the IPA program's size and complexity.
- Growth in staffing levels may challenge NSF's ability to hire, vet, and onboard staff.

NSF Management's Overview and Action Plan

NSF Lead: Wonzie Gardner, Office Head and Chief Human Capital Officer, Office of Information and Resource Management

Managing human capital at NSF is complex due to the way in which the agency recruits, hires, and retains staff. Since the pandemic, NSF has evolved a new framework with the development of a hybrid workforce; new pay policies; vetting of our temporary staff, which includes both those brought on through authority provided by the Intergovernmental Personnel Act, known as IPAs, and the Visiting Scientist, Engineer and Educator (VSEE) program; and the increase of funded positions. Below is an overview and NSF's action plan for each of these topics.

The NSF Workspace Management Policy enables NSF to partner with the Union and enhance NSF workspaces through hoteling, shared workspaces, and other measures, while also establishing revised footprints that account for current needs and address plans to support a hybrid workforce. Throughout the last two years, NSF focused on seating new staff and accommodating growth throughout the agency. While the goal of seating all new staff has been met, work continues to collocate new staff within their directorates and divisions. The policy mitigates NSF's inherent business risk, though possible external Federal policy changes on telework and remote work could require changes to NSF's workspace footprint.

NSF established the AD Pay Policy to align with the statutory pay limitations contained in 5 U.S.C. § 5373, which applies to positions in AD pay bands. HRM provided resources to employees to help understand the changes that took place during the January 2024 pay adjustments to include the waiver of overpayment from the timeframe of 2017 to the policy implementation at the beginning of 2024 and how staff pay will be affected in upcoming years. The new policy and oversight of pay band establishment mitigates NSF's risk in this area and there is no foreseeable risk in the future.

NSF has taken steps to ensure the IPA program supports the mission of the agency. NSF has addressed areas identified by the OIG as well as other agency-identified risks by actively engaging with stakeholders to implement the agency's action plan on re-entry of the IPA workforce, cost controls, turnover lifecycles, security concerns related to Malign Foreign Talent Programs, and overall vetting process improvements for IPAs in line with the OIG's 2023 audit of IPA vetting. NSF is continuously improving its management of the IPA program and participation in the Independent Research and Development (IR/D) program, including fully implementing responsive actions to the recommendations arising from the OIG's IPA vetting audit.

With the increase in federal and IPA staff positions in FY 2023, NSF has continuously reviewed its hiring and retention policies to maintain its ability to hire, vet, and onboard staff in an effective and efficient manner.

NSF maintains high rankings in the areas of employee engagement and employee satisfaction as indicated by its Federal Employee Viewpoint Survey (FEVS) results.

NSF's Completed Actions to Address the Challenge

In FY 2023, NSF launched the new telework policy supported by a comprehensive communications plan. NSF has also taken actions to better verify IPA home institution salaries and consistently document IPA assignment salaries. These actions respond to OIG recommendations on IPA vetting.

Demonstrated Progress Through Agency Actions Taken in FY 2024

- Initial implementation of the new telework and space alignment policy has been completed including space realignment for one office and four directorates.
- NSF has developed its Hybrid Evaluation Dashboard to help leadership and staff assess current and trending climate factors at NSF and use data to drive decision and planning activities.
- NSF's new AD Pay Setting Policy was implemented in September 2023 for new hires and in January 2024 for current AD employees, setting pay to the statutory limits in 5 U.S.C. § 5373. NSF Leadership approved an overpayment waiver for all AD staff employed from 2017 to 2023.
- NSF implemented a "Sexual Harassment, Other Forms of Harassment, and Sexual Assault Certification" form as part of IPA vetting to require notification of any finding or determination of sexual harassment, other form of harassment, or sexual assault made by any institution or professional organization.
- NSF implemented a new electronic recruitment system which enables use of proven assessment strategies and additional hiring authorities. NSF provides resources to hiring managers for networking and standardizing interview processes, and is refining time to hire metrics.

NSF's Planned and Ongoing Actions

- NSF will continue to update internal intranet pages and collaboration spaces to educate and facilitate communication with the staff regarding the *Workspace Management Policy and Telework and Remote Work Policy*. Office realignments will continue through early calendar year 2025.
- HRM is conducting compensation research and benchmarking studies of comparable external market pay by collecting pay setting policy data from agencies utilizing the AD pay system, similar pay banding systems, federal pay authorities, and private sector (academia) work similar to the functions of NSF's Program Directors. Oversight of the AD pay setting policy is ongoing and will continue routinely and annually at the time of pay adjustments.
- NSF continues to develop policies and procedures to improve IPA vetting for undue foreign influence, in alignment with research security strategies discussed under Management Challenge 7. NSF will respond to remaining recommendations from the OIG's IPA vetting audit in FY 2025.
- NSF continues to review government and industry standards on recruitment, hiring and onboarding to maximize our efforts through the ongoing assessment and partnerships with OPM. Ongoing work standardizing administrative and business operation positions and competency modeling will ensure the evolution of NSF's position management and recruitment activities. In addition, NSF will implement additional networking and recruitment activities to increase awareness of NSF. The agency is exploring how artificial intelligence will help rethink and reframe business processes.

Summary of OIG Management Challenge 7: Mitigating Threats to Research Security

Federal agencies and academia have made progress in addressing malign foreign influence on the U.S. research enterprise. NSF has worked to mitigate these threats by creating an Office of the Chief of Research Security Strategy and Policy, releasing guidelines to strengthen research security, expanding research security training, and educating the research community.

NSF Management's Overview and Action Plan

NSF Lead: Rebecca Keiser, Chief of Research Security Strategy and Policy

To maintain a vibrant science and engineering community for the benefit of the Nation and the integrity of international scientific collaborations, NSF seeks to safeguard the U.S. research enterprise from threats of inappropriate foreign influence. Participation in this community relies on individuals to uphold core principles such as openness, transparency, reciprocity, collaboration, and integrity. However, open scientific exchange and research face a challenge from some foreign governments through the use of talent recruitment programs. Some of these programs deliberately disregard these core principles and incentivize participants to misappropriate U.S.-funded scientific research prior to its open publication. NSF focuses on 1) conflicts of interest that need to be recognized and mitigated by the U.S.-funded members of the research community; 2) undisclosed research duplication and researcher commitments to research entities outside their U.S.-funded scientific research; 3) compromises to the merit review system; and 4) unauthorized use of pre-publication data and information.

Over the past five years, NSF has taken a number of steps to improve research security. Actions this past year have focused on strengthening disclosure requirements, releasing four research security training modules to the research community, establishing the SECURE Center (officially called the Research Security and Integrity Information Sharing Analysis Organization in the CHIPS and Science Act of 2022), and developing a system to collect information under the foreign financial disclosure reporting requirement. NSF has served as a co-chair on the National Science and Technology Council (NSTC), Research Security Subcommittee to coordinate research security across the U.S. government and to implement the requirements set out in the National Security Presidential Memorandum 33 (NSPM-33) Implementation Guidance. NSF also continues to conduct domestic and international outreach. NSF works closely with the rest of the U.S. government to develop policy that enhances the security and integrity of the science and technology research enterprise.

NSF's Completed Actions to Address the Challenge

In prior fiscal years, NSF completed various actions to safeguard the integrity of federally funded research, including revising disclosure requirements to align with NSPM-33 Implementation Guidance, regularly revising the NSF Proposal & Award Policies & Procedures Guide, and engaging with the U.S.-funded research community to identify research security-related training needs.

Demonstrated Progress Through Agency Actions Taken in FY 2024

- Made two awards for the congressionally mandated SECURE Center. The SECURE Center is a centralized resource for the research community providing up-to-date information about the risk landscape, best practices, tools, guidance, and other resources to empower individuals and institutions to identify and mitigate risks. SECURE Analytics will support the analytics needs of the SECURE Center and the broader research community while protecting user privacy.

- Released four interactive research security training modules available to the public to facilitate principled international collaboration in an open, transparent and secure environment that safeguards the nation's research ecosystem.
- Formed the Research Security Liaison Group to develop a culture of research security at NSF and to help coordinate research security issues across the agency.
- Funded a workshop to support the development of the "Research on Research Security" (RoRS) program. A report on the workshop findings will inform the funding opportunity for RoRS.[9]
- Developed TRUST (Trusted Research Using Safeguards and Transparency),[10] a framework to assess risks associated with NSF proposals, including those related to potential national security concerns.
- Commissioned the Safeguarding the Research Enterprise (JSR 23-12) report[11] to help NSF identify sensitive areas of research and the processes NSF might use to address security in those research areas of concern. This report informed the development of the TRUST framework.
- Co-chaired the NSTC Subcommittee on Research Security, working closely with the White House, other federal science agencies, and the intelligence and law enforcement community to create, publish, and implement common disclosure formats and research security program standards.
- Developed a reporting process (Foreign Financial Disclosure Report) for institutions of higher education that are direct recipients of NSF funding to disclose gifts and contracts received from a foreign country of concern, as mandated under Section 10339B of the CHIPS and Science Act.
- Updated internal NSF training on research integrity and research security to reflect changes in U.S. research security policy and requirements.

NSF's Planned and Ongoing Actions

- Implement the TRUST policy in FY 2025 through a pilot program limited to quantum information science related projects. The pilot program will be evaluated after the first year, and if successful, OCRSSP will assess whether the TRUST framework should be expanded to review NSF proposals in other key technology areas.
- Capture nondisclosure of foreign affiliations, sources of funding, and collaborations that present conflicts of commitment or interest.
- Conduct and monitor mandatory research security training for applicable staff and rotators.
- Educate the research community about risks presented by malign foreign talent recruitment programs and the importance of compliance with NSF policies and procedures.
- Collaborate with NSF OIG, U.S. government agencies, and other stakeholders.
- Develop research security guidelines, as required by the CHIPS and Science Act and NSPM-33.
- Develop the Research on Research Security Program with international partners.
- Continue to refine and scale-up research security-related analytics capabilities, including the expansion of a pilot sharing research security-related information with the research community.
- Analyze data collected through the new Foreign Financial Disclosure Report.

[9] Responsible Collaboration Through Appropriate Research Security: https://www.bakerinstitute.org/research/responsible-collaboration-through-appropriate-research-security
[10] TRUST Framework Policy Memo: https://nsf-gov-resources.nsf.gov/files/NSF%20OCRSSP%20TRUST%20Policy%20Memo.pdf
[11] Safeguarding the Research Enterprise: https://nsf-gov-resources.nsf.gov/files/JSR-23-12-Safeguarding-the-Research-Enterprise-Final.pdf?VersionId=ZVhvRaTIrxMsdZql6E_yz5pN6Ssw0fSl

Summary of OIG Management Challenge 8: Mitigating Threats Posed by the Risk of Cyberattacks

- NSF continues to make progress on improving IT security and implementing a zero-trust architecture, but new cybersecurity risks remain.
- Growing use of personal devices that connect to the NSF network may increase security risks.

NSF Management's Overview and Action Plan

NSF Lead: Terry Carpenter, Chief Information Officer

NSF recognizes the rapid technological advancements and cybersecurity challenges of a digital federal government. NSF is transforming the way information technology and mission critical data are managed. NSF's cybersecurity risk strategy is adaptive and provides resilience to emerging cybersecurity threats.

NSF continues to implement a Zero Trust Architecture (ZTA) focusing on priority tasks to address the five pillars of the Zero Trust Maturity Model. NSF maintains strong access controls and a robust capability to quickly detect and respond to incidents, including state-of-the-art network and security protections. NSF is evaluating data security platform tools to identify data sensitivity and establish permissions. NSF completed an initial data evaluation and risk analysis for its Microsoft 365 and Amazon Web Services (AWS) environment.

NSF made progress in the implementation of enterprise identity management and multifactor authentication (MFA). NSF evaluated and selected an approach to MFA for employee and contractor access to agency systems and has continued prioritization of PIV card issuance and use. NSF is focused on ensuring all eligible staff members have a PIV card issued and use PIV to log in to agency systems, and are provided an alternative phishing-resistant MFA approach if PIV is not viable.

In compliance with Executive Order 14028, NSF selected an internally accessible FISMA Moderate application as the proof of concept for application access by authorized users external to the NSF network. To support this effort, NSF is piloting a strong phishing-resistant authentication to establish the security groundwork for other internet-accessible applications.

NSF is evaluating improvements to its remote access capabilities (e.g., Virtual Private Network (VPN) and Virtual Desktop Infrastructure (VDI)) to improve security and access controls. With the increased number of staff accessing NSF resources, NSF is moving to a new cloud environment to increase resiliency for additional users and devices. Enhancements to remote access methods will improve overall security. To modernize remote network access NSF is evaluating secure access service edge (SASE) solutions to maximize security across users, devices, and applications. SASE will modernize remote access and replace the current NSF managed VPN devices to reduce risk and improve scalability.

As NSF moves to a zero-trust architecture it relies on the ubiquitous use of strong encryption. The threat posed by the prospect of a cryptanalytically relevant quantum computer (CRQC) requires that NSF prepare to implement post-quantum cryptography to prevent exposure of sensitive data. NSF monitors the Federal government's strategy and cryptographic analysis solutions to assess cryptographic health and will implement post-quantum cryptography guidance when it is issued.

NSF has matured its security information and event management (SIEM) platform and logging capabilities to meet OMB M-21-31 Event Logging (EL) 3 requirements. By reaching EL3 NSF has achieved comprehensive

logging, strengthened information-sharing capabilities, and expanded log elements and retention periods to enhance event correlation and incident management. NSF has implemented a process to ensure the protection of sensitive data by only allowing approved removeable media on NSF endpoints.

NSF recertifies user and service accounts annually, including accounts related to its Merit Review system. NSF confirms the completeness of the data used in the process to mitigate the risk that unnecessary service accounts remain in the environment and to ensure new accounts are recorded properly.

In January 2024, NSF established a new independent Office of the Chief Information Officer (OCIO). This strategic realignment will ensure that IT applications and data management are supported by a centralized structure that can better manage resources to address current needs and anticipate future challenges.

NSF's Completed Actions to Address the Challenge

In prior years, NSF completed an inventory of quantum susceptible high value assets and systems that use cryptographic algorithms. The agency also added login.gov to customer-facing systems to allow users an MFA option, completed a multi-year project to implement SIEM tool capability for the USAP network, and implemented removable media solutions to actively block all removable media. Authorized media is allowed after a security review and confirmed mission need.

Demonstrated Progress Through Agency Actions Taken in FY 2024

- NSF evaluated a data sensitivity and permissions solution using a data security platform to assess data exposure and detect threats. NSF completed a data evaluation and risk analysis for Microsoft 365 and data on the Amazon Web Service (AWS) environment.
- NSF uses multiple comprehensive queries for its annual recertification to ensure any new sources are included in its recertification of service accounts.
- NSF implemented Windows Hello for Business as a phishing-resistant MFA option for NSF staff.
- NSF and USAP screen USAP's full-time and seasonal staff and follow the NSF process to adjudicate staff before access is granted to the USAP network.
- USAP deployed resources to fully implement MFA authentication for USAP staff prior to accessing the USAP network with either PIV cards or smart cards.

NSF's Planned and Ongoing Actions

- NSF is updating its password monitoring capability to align with ZTA by implementing enterprise tools that check passwords against known breached data and dictionary words.
- NSF is implementing MFA for an internally accessible grants application required as a model for future applications being made externally accessible.
- NSF is investigating MFA solutions for Mac users and situations where a PIV card is not feasible.
- NSF is consulting with industry to evaluate cryptographic technologies to assist with transition to post-quantum resistant cryptography.
- NSF plans to procure and begin deploying a data security platform to identify sensitive data permissions and misconfigurations.
- For exceptions to MFA enforcement, both NSF and USAP have develop a process for documenting and monitoring MFA exemptions. NSF and USAP will continue to monitor and reasonably reduce MFA exemptions.
- In response to OMB M-21-31. USAP is proceeding with implementation activities to achieve the required Event Logging maturity levels.

PAYMENT INTEGRITY INFORMATION ACT REPORTING

The Payment Integrity Information Act of 2019 (PIIA; Pub. L. 116-117) require agencies to annually report information on improper payments to the President and Congress. NSF does not have any high-priority programs as defined by OMB Circular A-123 Appendix C (programs with estimates of improper payments resulting in monetary loss that exceeds $100 million annually). More detailed information on NSF's payment integrity program can be found at https://paymentaccuracy.gov/.

Actions Taken to Address Auditor Recovery Recommendations

Using OMB Circular A-123, Appendix C, Part V.B.2 guidance, NSF determined that it would not be cost effective to conduct recapture audits of its single grants program and other activities (contracts, charge cards, and payments to employees).

NSF has leveraged the results of the work performed under PIIA, audits, grant monitoring programs, and internal control reviews. All activities consistently demonstrated that there is not a significant risk of unallowable costs or improper payments within NSF's single grant program and other mission support activities. No circumstances have changed within NSF's grant program or its mission support activities requiring NSF to reassess its payment recapture cost-effectiveness analysis.

CIVIL MONETARY PENALTY ADJUSTMENT FOR INFLATION

The Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015 (the 2015 Act; Sec. 701 of Public Law [P.L.] 114–74) further amended the Federal Civil Penalties Inflation Adjustment Act of 1990 (P.L. 104–410) to improve the effectiveness of civil monetary penalties and to maintain their deterrent effect. The 2015 Act requires agencies to (1) adjust the level of civil monetary penalties with an initial "catch-up" adjustment through an interim final rulemaking and (2) make subsequent annual adjustments for inflation. Inflation adjustments are to be based on the percent change in the Consumer Price Index for all Urban Consumers (CPI-U) for the month of October preceding the date of the adjustment, relative to the October CPI-U in the year of the previous adjustment.

The civil monetary penalties within NSF's jurisdiction are those authorized by the Antarctic Conservation Act of 1978, 16 U.S.C. 2401, et seq., and the Program Fraud Civil Remedies Act of 1986, 31 U.S.C. 3801, et seq.

The following table identifies NSF's FY 2024 inflation adjustments to civil monetary penalties.

Table 3.3 – FY 2024 Civil Monetary Penalty Adjustment for Inflation

Statutory Authority	Penalty (Name and Description)	Year Enacted	Latest Year of Adjustment (via Statute or Regulation)	Current Penalty Level ($ Amount or Range)	Location for Penalty Update Details
Antarctic Conservation Act of 1978, 16 U.S.C., 2401 *et seq.,* as amended	Antarctic Conservation Act, Knowing violations	1978	2024	$35,574	88 FR 89479 December 27, 2023
Antarctic Conservation Act of 1978, 16 U.S.C., 2401 *et seq.,* as amended	Antarctic Conservation Act, Not knowing violations	1978	2024	$21,022	88 FR 89479 December 27, 2023
Program Fraud Civil Remedies Act of 1986, 31 U.S.C., 3801, *et seq.*	Program Fraud violations	1986	2024	$13,946	88 FR 89479 December 27, 2023

GRANTS PROGRAM REPORTING

OMB Circular A-136, Financial Reporting Requirements requires agencies with Federal grants programs to submit a high-level summary of expired, but not closed, Federal grants and cooperative agreements (awards). Table 3.4, below, shows the total number of awards and balances for which closeout has not yet occurred, but for which the period of performance has elapsed by two years or more prior to September 30, 2024.

Table 3.4 – Age and Balances for Expired Awards not Closed

CATEGORY	2 – 3 Years	>3-5 years	>5 years
Number of Grants/ Cooperative Agreements With Zero Dollar Balances	461	187	86
Number of Grants/ Cooperative Agreements With Undisbursed Balances	0	0	0
Total Amount of Undisbursed Balances	$0	$0	$0

Information shown above is as of 09/30/2024.

As indicated in the table above, NSF's 734 financial assistance awards (grants, cooperative agreements, and fellowships) that are expired but not closed have zero-dollar balances in NSF's financial accounting system. The majority of the awards (96.2%) that are still not fully closed have overdue final project reports and/or project outcome reports and cannot be completely closed. There are 28 awards that have not yet been closed for administrative reasons such as reconciliation of final cost sharing requirements for which NSF is still awaiting final documentation. The number of awards still open has increased slightly from last year (668, +9.9%).

Based in part on NSF business practice, the unclosed awards continue to have $0 balances as they are financially close even though they are not completely closed. NSF continuously reviews operating policies and accounting practices to close all awards on the same schedule, thereby, ensuring the number is $0.

NSF works to close out all awards as quickly as possible. Typically, awards are financially closed 120-days after the end-date of the award and are administratively closed automatically once the awards are financially closed. To close awards more quickly, NSF now administratively closes awards nightly instead of monthly and runs the automated closeout routines daily instead of just on weekdays.

NSF has made progress in decreasing the number of overdue final project reports and/or project outcome reports by implementing policies and procedures to track and enforce the submission of required project reports. This is evidenced by the decrease in awards remaining open in the 3-5 year and greater than 5-year categories.

Overdue report information will be provided by NSF to the Federal Awardee Performance and Integrity Information System (FAPIIS), as prescribed in the revised 2 CFR § 200 published in the Federal Register on August 13, 2020,[1] among other possible changes. NSF has started reviewing awards that may be eligible for FAPIIS but has not yet reported any awards/Awardees. A working group has been created to set policy and procedures.

[1] https://www.federalregister.gov/documents/2020/08/13/2020-17468/guidance-for-grants-and-agreements

UNDISBURSED BALANCES IN EXPIRED GRANT ACCOUNTS

In FY 2024, NSF funded research and education in science and engineering through grants, cooperative agreements, and other financial assistance award instruments to approximately 1,850 colleges, universities, and other institutions. For all NSF financial assistance award instruments, awardees must include all costs during the period of performance of the award. Per NSF policy in the Proposal and Award Policies and Procedures Guide (PAPPG), awardees typically have 120 days after the grant expires to complete final drawdowns and expenditures.

The information provided here pertains to the agency's two main grant making appropriation accounts: Research and Related Activities and STEM Education. The data reported are based on the following definitions:

- An **expired grant** is a grant award that has reached the grant end date and is eligible for closeout. For NSF, this means grants with expired periods of performance.
- **Undisbursed balances on expired grants** refers to amounts that remain available for expenditures before financial closeout.
- **Undisbursed balances for expired grant awards that may be returned to the Treasury** refers to funding that was previously obligated on a grant award and was subsequently de-obligated, and never re-obligated prior to the cancellation of the source appropriation.
- **Amounts that have not been obligated to a specific grant or project** refers to unobligated amounts for grant related funding in expired appropriation accounts.

NSF has developed leading practices for monitoring and de-obligating balances on expired grant awards through automated processes. Once a grant has expired, NSF executes actions to close out the grant both administratively and financially. The financial closeout action occurs 120 days after the award expiration date, and de-obligates the remaining undisbursed balances from the award. Administrative closeout is initiated after financial closeout is completed. The data reported here reflects the amount of undisbursed balances in grant accounts that have reached their end date and are eligible for closeout and is provided in accordance with OMB Circular A-136, Section II.4.9.2 *Reporting Related to Commerce, Justice, Science, and Related Agencies Appropriation Act*.

1. **Information about future action NSF will take to resolve undisbursed balances for grant awards for which the period of performance has expired**
   NSF continually monitors its grant awards throughout their lifecycle following a comprehensive post-award monitoring process. NSF utilizes automated, system-based processes to close grants based on their period of performance end date. This process de-obligates all undisbursed award balances 120 days after the grant period has expired. Having small undisbursed balances at the end of the grant period is a routine occurrence, as not all awardees fully spend the funds obligated throughout the course of their research.

2. **The method that NSF uses to track undisbursed balances in expired grant awards**
   NSF completes timely financial closeout of expired grant awards daily through an automated process. Eligibility for NSF grant award closeout begins 120 days after the award expiration date. The NSF closeout process automatically de-obligates any undisbursed award balance, generates an award closeout transaction to flag the award as financially closed, and records the financial closeout date to NSF's award management system to initiate final administrative closeout procedures.

Awardees and NSF personnel can view the expected award closeout date through the Award Cash Management Service (ACM$). ACM$ requires awardees to submit payment amounts and expenditures at the individual award level each time funds are requested by awardees, allowing NSF to conduct post-award monitoring activities on individual awards.

3. **The identification of undisbursed balances for expired grant awards that may be returned to the Department of Treasury (Treasury)**
   When NSF closes out a grant award, it de-obligates the undisbursed balances. The de-obligated grant balances are treated one of three ways:
   - If the source appropriation is unexpired, the balances are recovered by NSF and remain available for valid new obligations until the source appropriation's expiration date.
   - If the source appropriation has expired but funds have not yet been canceled, the grant balances are recovered by NSF and remain available for upward adjustments on other existing obligations within the source appropriation.
   - If the source appropriation is canceling in the current fiscal year, NSF de-obligates all undisbursed grant balances prior to September 30 as part of its year-end close process, and subsequently returns the funding to Treasury.

   For FY 2024, the amount of undisbursed funding previously obligated on grant awards that NSF returned to Treasury was $86.4 million.

4. **The number of expired grant awards, the undisbursed balances on these expired grants, and the amounts that have not been obligated to a specific grant or project remaining in the appropriations accounts as of September 30, 2024; September 30, 2023; and September 30, 2022.**
   The number of expired grants with undisbursed balances for the preceding three fiscal years is provided in Table 3.5. The numbers and balances reflect a point-in-time on September 30 before NSF executes its regular closeout processes described above. For FY 2024, there were 4,807 expired grants with undisbursed balances of $146,229,768. Table 3.5 also presents amounts that have not been obligated to a specific grant or project as of September 30.

Table 3.5 – Status of Undisbursed Balances in Expired Grants

	FY 2024 (as of 9/30/2024)	**FY 2023** (as of 9/30/2023)	**FY 2022** (as of 9/30/2022)
Number of expired grants with undisbursed balances	4,807	4,988	5,127
Undisbursed balances prior to closeout	$146,229,768	$129,860,154	$123,876,877
Amounts that have not been obligated to a grant or project remaining in the appropriations accounts[1]	$292,815,523	$257,151,673	$226,104,413

[1] NSF updated this table to align with updates to OMB Circular A-136, Section II.4.9.2 *Reporting Related to Commerce, Justice, Science, and Related Agencies Appropriation Act*. This figure includes data from NSF's Research and Related Activities and STEM Education appropriation accounts.

AWARDS TO AFFILIATED INSTITUTIONS

The following table lists institutions affiliated with members of the NSB in FY 2024.[1]

Table 3.6 – FY 2024 Awards to AD IPAs' Home Institutions

Affiliated Institution	Awards Obligated in FY 2024 (Dollars in thousands)
Arizona State University	108,566
Auburn University	24,251
Catholic University of America	2,932
Iowa State University	43,425
Ohio State University	55,128
Southwest Research Institute	789
University of California, Los Angeles	67,472
University of Illinois	147,879
University of Massachusetts	50,586
University of Michigan	144,616
University of Tennessee	39,325
University of Texas at El Paso	20,130
University of the District of Columbia	2,544
University of Utah	51,428
University of Vermont	16,338
Vanderbilt University	30,679
Virginia Tech University	61,330
Washington University	29,849
TOTAL	**$897,267**

[1] This information is provided solely in the interest of openness and transparency. The table lists the dollar value of the awards made to institutions affiliated with NSB members during their time on the NSB in fiscal year ended September 30, 2024. NSB establishes the policies of NSF within the framework of applicable national policies set forth by the President and Congress. Federal conflict of interest rules prohibits NSB members from participating in matters where they have a conflict of interest or there is an impartiality concern without prior authorization from the designated agency Ethics Official. Individual NSF grant awards are made pursuant to a peer-review based process and most are not reviewed by the NSB. With regard to matters that are brought to the Board, NSB members are not involved in the review or approval of grant awards to their affiliated institutions. The table displaying Awards to Affiliated Institutions applicable to the previous fiscal year is available in the Appendices at https://www.nsf.gov/pubs/2024/nsf24002/pdf/nsf24002.pdf. Because of the regular turnover among NSB membership, the information in these tables is not directly comparable across years.

Awards to Assistant Director IPAs' Home Institutions by NSF Directorates

The following tables identify the awards made by directorates to the home institutions of Assistant Directors serving under the Intergovernmental Personnel Act (AD IPAs) during their time at NSF for the fiscal years ended September 30, 2024 and 2023. AD IPAs led six directorates during the fiscal year ended September 30, 2024 and four directorates during the fiscal year ended September 30, 2023. NSF executive staff formulate directorate or office scientific goals, objectives, and priorities. Federal conflict of interest rules prohibit executives, including IPA detailees, who serve in AD positions, from participating in matters where they have a conflict of interest or an impartiality concern. NSF grant awards are made pursuant to a merit-review based process and are not routinely reviewed by IPAs serving in executive positions. If matters are brought to such IPAs, they do not participate in the review or approval of awards to their home institutions. The following tables are provided in the interest of openness and transparency.

Table 3.7 – FY 2024 Awards to AD IPAs' Home Institutions

(Dollars in Thousands)

Directorate	Total Dollars and Awards Made by Directorate in FY 2024	Home Institution of IPA Assistant Director	Total Dollars and Awards to Home Institution by Directorate in FY 2024	Total Dollars and Awards to Home Institution by NSF in FY 2024
Biological Sciences	$838,845 (1,758 awards)	University of California	$12,408 (23 awards)	$91,209 (164 awards)
Computer & Information Science & Engineering	$1,034,446 (3,242 awards)	Johns Hopkins University	$2,369 (13 awards)	$30,945 (70 awards)
		Princeton University	$0 (0 awards)	$69 (1 awards)
Engineering	$768,713 (2,510 awards)	Emory University	$513 (4 awards)	$12,862 (48 awards)
		Georgia Institute of Technology	$0 (0 awards)	$0 (0 awards)
Mathematical & Physical Sciences	$1,614,185 (4,016 awards)	University of Nebraska	$215 (2 awards)	$2,515 (4 awards)
Social, Behavioral & Economic Sciences	$227,907 (1,056 awards)	Georgia Institute of Technology	$0 (0 awards)	$0 (0 awards)
STEM Education	$1,290,957 (2,208 awards)	Ohio State University	$2,480 (6 awards)	$54,857 (126 awards)
TOTAL	**$5,775,053 (14,790 awards)**		**$17,985 (48 awards)**	**$192,457 (413 awards)**

Table 3.8 – FY 2023 Awards to AD IPAs' Home Institutions

(Dollars in Thousands)

Directorate	Total Dollars and Awards Made by Directorate in FY 2023	Home Institution of IPA Assistant Director	Total Dollars and Awards to Home Institution by Directorate in FY 2023	Total Dollars and Awards to Home Institution by NSF in FY 2023
Biological Sciences	$852,468 (1,868 awards)	University of California	$7,063 (17 awards)	$74,676 (166 awards)
Computer & Information Science & Engineering	$1,070,614 (3,352 awards)	Princeton University	$12,333 (38 awards)	$66,293 (154 awards)
Engineering	$777,047 (2,629 awards)	Emory University	$1,189 (4 awards)	$27,057 (47 awards)
STEM Education	$1,362,115 (2,164 awards)	Ohio State University	$6,734 (9 awards)	$83,503 (161 awards)
TOTAL	**$4,062,244 (10,013 awards)**		**$27,319 (68 awards)**	**$251,529 (528 awards)**

NSF SENIOR MANAGEMENT AND NATIONAL SCIENCE BOARD

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(as of September 30, 2024)

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Vacant, *Deputy Director*
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Micah Cheatham, Chief Management Officer
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(during FY 2024)

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Alan Stern
Southwest Research Institute

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NRx Pharmaceuticals

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Terms expire May 10, 2026

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PATENTS AND INVENTIONS RESULTING FROM NSF SUPPORT

The following information about inventions and patents is being reported in compliance with Section 3(f) of the National Science Foundation Act of 1950, as amended [42 U.S.C. 1862(f)].

The number of inventions and patents reported to NSF through the National Institute of Standards & Technology (NIST) iEdison database during FY 2024:

- 1855 Subject Inventions Reported;
- 3375 Patent Applications Filed; and
- 201 Patents Issued

Rights to these inventions were allocated in accordance with Chapter 18 of Title 35 of the United States Code, commonly called the "Bayh-Dole Act."

Acronyms

AAMS	Automated Acquisition Management Solution
ACM	Association for Computing Machinery
ACM$	Award Cash Management Service
AFR	Agency Financial Report
AI	Artificial Intelligence
APG	Agency Priority Goal
AOAM	Agency Operations and Award Management
ART	Accelerating Research Translation
ASPIRE	Advancing Sustainability through Powered Infrastructure for Roadway Electrification
AWS	Amazon Web Service
CBIKS	Center for Braiding Indigenous Knowledge and Science
CMO	Chief Management Officer
COE	Creating Opportunities Everywhere
COSO	Committee of Sponsoring Organizations of the Treadway Commission
CRISES	Centers for Research and Innovation in Science, the Environment and Society
CSO	Chief Science Officer
CWS	contract writing system
DAAP	Data Analytics and Assurance Program
DOE	US Department of Energy
EDU	STEM Education
EPSCoR	Established Program to Stimulate Competitive Research
ERC	NSF Engineering Research Center
ERG	Employee Resource Groups
ERM	Enterprise Risk Management
ERIs	emerging research institutions
ETAP	Education and Training Application
FBWT	Fund Balance with Treasury

FFMIA	Federal Financial Management Improvement Act of 1996
FMFIA	Federal Managers' Financial Integrity Act of 1982
FPPS	Federal Personnel Payroll System
FTEs	full-time equivalent employees
GAAP	generally accepted accounting principles
G-Invoicing	NSF's interagency agreement (IAA) management system
GNAP	Grants with no ACM$ Payments
GPRA	Government Performance and Results Act
GRFP	Graduate Research Fellowship Program
H-1B	H-1B Nonimmigrant Petitioner Account
HR	Human Resources
IAA	interagency agreement
IPA	Intergovernmental Personnel Act
IT	Information Technology
iTRAK	NSF's financial management system
LearnNSF	NSF's training system
LSST	Legacy Survey of Space and Time
MFA	multi-factor authentication
MREFC	Major Research Equipment and Facilities Construction
MSIs	minority-serving institutions
NAIRR	National Artificial Intelligence Research Resource
NSB	National Science Board
NSF	National Science Foundation
OCIO	Office of the Chief Information Officer
OCRSSP	Office of the Chief of Research Security Strategy and Policy
OIG	Office of Inspector General
OMB	Office of Management and Budget
PIs	principal investigators
R&D	Research and Development

R&RA	Research and Related Activities
RET	Research Experience for Teachers
REU	Research Experience for Undergraduate
SAHPR	Sexual Assault and Harassment Prevention and Response
SAIF	Safe and Inclusive Fieldwork
SBIR	Small Business Innovation Research
SSAE 18	Statement of Standards for Attestation Engagements 18
STEM	Science, Technology, Engineering, and Mathematics
TIP	Technology, Innovation and Partnerships
USAP	US Antarctic Program
QCB	Science and Technology Center for Quantitative Cell Biology
ZTA	Zero Trust Architecture

To provide suggestions on how to make this report more informative, please contact NSF at accountability@nsf.gov.

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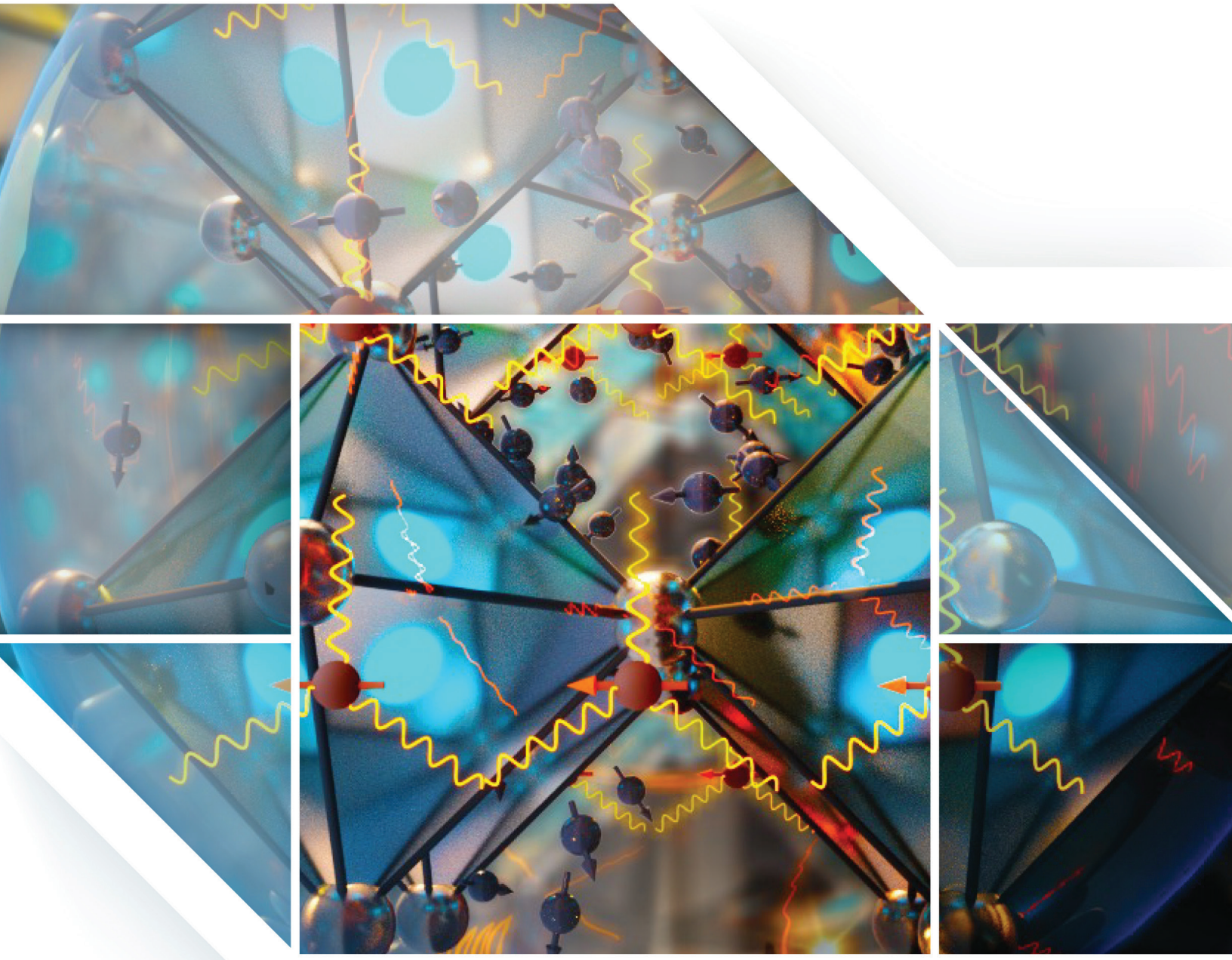

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