UNITED STATES

National Science Foundation
FY 2023 Performance and Financial Highlights

Mission: To promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes.

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

Who We Are and What We Do

- The National Science Foundation (NSF) was established by Congress in 1950 as an independent federal agency to promote American science and engineering (S&E).
- NSF is the only federal agency that invests in fundamental, basic research and education across the full spectrum of science, technology, engineering, and mathematics (STEM) disciplines.
- NSF invests in use-inspired and translational research that gives rise to new industries and innovative technologies.
- NSF supports research and workforce development programs that help drive future economic growth and enhance our nation's security and global competitiveness.
- NSF funds advanced instrumentation and facilities, Arctic and Antarctic research and operations, and cooperative research between universities and industry, and U.S. participation in international scientific efforts.

10 Science Stories from 2023

At A Glance

$9.9 billion	**FY 2023 Appropriations (does not include mandatory accounts)**
1,540	**NSF Employees (Full Time Equivalents in FY 2023)**
1,900	**Colleges, universities, and other institutions receiving NSF funding in FY 2023**
11,100	**Competitive awards funded in FY 2023**
29%	**Funding rate in FY 2023**
353,000	**Estimated number of people NSF supported directly in FY 2023 (researchers, postdoctoral fellows, trainees, teachers, and students)**

From the Director

Credit: NSF/Stephen Voss

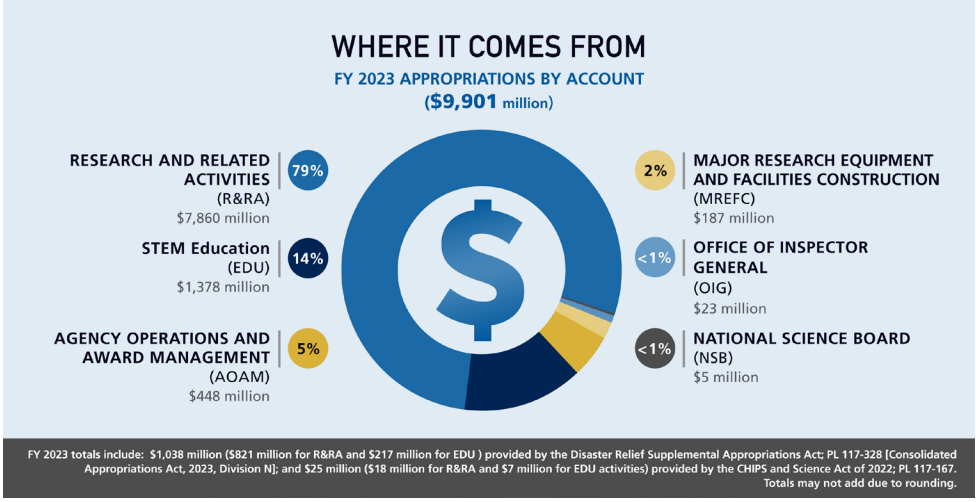
I am pleased to present the National Science Foundation's (NSF's) Fiscal Year (FY) *2023 Performance and Financial Highlights* report, one of our accountability reports that provides key financial and performance information to our stakeholders and the American people.

For 73 years, NSF-funded research programs and initiatives have advanced knowledge that fosters scientific innovation, drives the economy, strengthens national security, and enhances the well-being of Americans. In FY 2023, NSF's research goals were emboldened by the CHIPS and Science Act of 2022, an historic investment by Congress and the Administration that is already sharpening the focus on technology and innovation. In tandem with our continued focus on supporting curiosity-driven research, NSF leadership is positioning the agency to foster knowledge transfer at speed and scale that accelerates the adoption of new technologies, safeguards U.S. investments through enhanced research security, and strengthens the discovery ecosystem. To facilitate these important goals, the Foundation has continued to encourage diversity, equity, inclusion, and accessibility within the NSF workforce, ensure equity in the implementation and execution of NSF programs, and to develop domestic STEM talent across every geographic region and demographic background. Investing in U.S. STEM research and development with complementary investments in the workforce enterprise unleashes opportunities for everyone and innovation everywhere.

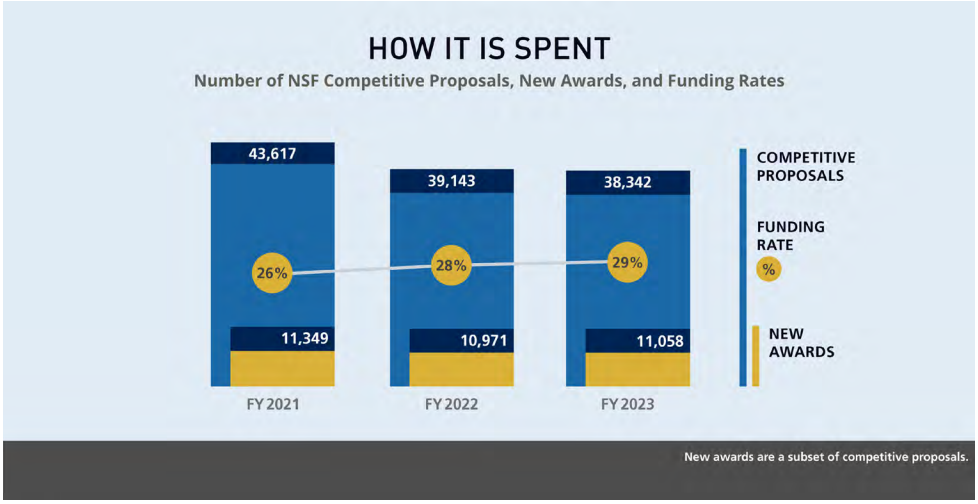
NSF programs are built on the solid foundation of careful stewardship of public funds and reporting of accurate data and information on NSF's fiscal operations. I invite you to review our FY 2023 *Agency Financial Report* and *Annual Performance Report*. Our *NSF website* provides opportunities to learn more about NSF's programs.

Sethuraman Panchanathan
March 11, 2024

NSF by the Numbers



- **$9,901 million total appropriations:** R&RA, EDU, and MREFC fund the agency's programmatic activities. The AOAM appropriation provides funds to administer and manage those programmatic activities. Separate appropriations are provided to support the activities of the OIG and NSB.
- **31,000 members of the S&E community** participated in the merit review process as panelists and proposal reviewers with approximately 180,000 proposal reviews conducted. 38,342 proposals were evaluated, and 11,058 new awards were made.
- **An estimated 353,000 people** were directly involved in NSF programs and activities. Beyond these figures, NSF programs indirectly impact millions of people. These programs reach kindergarten through 12th grade students and teachers, the public, and researchers through activities including workshops; informal science activities such as museums, television, videos, and journals; outreach efforts; and dissemination of innovative curriculum and teaching methods.
- NSF's annual budget represents approximately **23 percent of the total federal budget for basic research** conducted at U.S. colleges and universities. In many S&E fields, NSF is the primary source of federal academic support. In most major fields of science, NSF support of basic research at U.S. institutions is over 50 percent.



Financial Management Performance Results

- NSF upholds its commitment to excellence in financial management by focusing on sound fiscal practices, continuously improving its business processes, increasing data transparency, and emphasizing the responsible stewardship and management of federal funds. In FY 2023 NSF:
  - Earned the 26th consecutive unmodified (clean) audit opinion on its financial statements.
  - Complied with the Payment Integrity Information Act of 2019.
  - Showed effective internal controls over operations, reporting, and compliance.

Complete FY 2023 financial information is in the Agency Financial Report, **Chapter 2**.

Performance

NSF's performance results for FY 2023 are based on 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*. The four strategic goals in this plan reflect four themes—Empower, Discover, Impact, and Excel—that 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 and enable NSF to link its investments to outcomes.

Strategic Goal		Strategic Objective
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 operations and management	**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.

FY 2023 Results

NSF's *FY 2025 Budget Request* includes the agency's Annual Performance Plan for FY 2025 and Annual Performance Report for FY 2023.

In FY 2023, NSF gauged its performance against nine goals, including the Agency Priority Goal (APG) for FY 2022-FY 2023, "Improve Representation in the Scientific Enterprise." In addition to the nine goals, NSF reports FY 2023 results for a number of other indicators that are intended to foster an understanding of agency performance in addition to targeted goals. For example, under Strategic Objective 3.1 (Deliver benefits from research), contextual information includes demographic data on participation in NSF's I-Corps™ and Small Business Innovation Research programs.

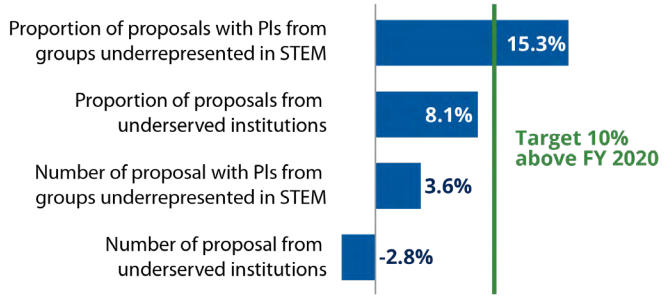
Strategic Objective	Annual Goals	Result
Empower 1.1	Improve representation in the scientific enterprise [Agency Priority Goal]	▢
Empower 1.2	Increase utilization of the Education and Training Application (ETAP)	▢
Discover 2.1	Ensure major facility infrastructure investments are on track	☒
Discover 2.2	Ensure mid-scale Infrastructure Investments are on track	☒
Impact 3.1	Grow Partnerships: Increase Funding Leveraged	—
Excel 4.1	Provide robust and reliable IT services	☑
	Make timely proposal decisions	☑
Excel 4.2	Implement the Human Capital Operating Plan	▢
	Foster a Culture of Inclusion	☑

☑ = Met ▢ = Partially Met ☒ = Not Met — = Baselined

NSF AGENCY PRIORITY GOAL (APG)

Improve Representation in the Scientific Enterprise

Percentage change from FY 2020 to FY 2023



The APG was to increase both the *number* and *proportion* of proposals received 1) with principal investigators from groups underrepresented in STEM and 2) from underserved institutions by 10 percent over FY 2020 baselines. NSF exceeded the target for the percentage of proposals with principal investigators from groups underrepresented in STEM, and increased performance above baseline on two additional targets. NSF will continue this goal in the FY 2024-2025 APG cycle, with key indicators focused on increasing just the *proportion* of proposals with principal investigators from groups underrepresented in STEM and from emerging research institutions, due to decreases in agency-wide proposal numbers.

More information on our performance reporting is **here**.

Management Challenges

For FY 2023, the NSF Office of the Inspector General (OIG) identified eight management and performance challenges facing the agency:

- Increasing diversity in science and engineering education and employment to strengthen the overall STEM workforce.
- Overseeing the U.S. Antarctic Program (USAP), including implementing construction projects in an extreme environment and addressing risks identified under the Sexual Assault and Harassment Prevention and Response initiative.
- Overseeing grants in a changing environment, including proactively adapting to organizational and prospective grant portfolio changes.
- Managing the Intergovernmental Personnel Act (IPA) program with a focus on the process to vet candidates' eligibility to serve as IPAs.
- Overseeing NSF-funded research infrastructure, including NSF's investments in mid-scale projects.
- Mitigating threats to research security by assessing and refining controls and resources in this area.
- Mitigating threats posed by the risk of cyberattacks through zero trust measures.
- Addressing harassment in the academic community by continuing to set expectations through policies and stakeholder engagement.

NSF Management's report on the significant activities undertaken in FY 2023 to address these challenges is in NSF's FY 2023 Agency Financial Report, along with the OIG's memorandum identifying the FY 2024 Management Challenges.

More information about our FY 2023 Progress Report on OIG Management Challenges is in the Agency Financial Report, **Chapter 3/Appendix 2B.**

Research Highlights

NSF Regional Innovation Engines

The NSF Regional Innovation Engines program fosters coalitions between local and regional partners to expand innovation and create collaborative, inclusive, and technology-driven innovation ecosystems across the nation. The NSF Engines program is anticipated to be transformational for the nation, ensuring the U.S. remains globally competitive in key technologies for decades to come. NSF named 16 finalists in August, spanning a range of key technologies as well as national, societal, and geostrategic challenges highlighted in the CHIPS and Science Act of 2022. Over a 10-year period, an NSF Engine recipient is expected to progress through three phases: nascent, emergent, and growth. When successful, an NSF Engine will lead to its region becoming a self-sustaining hub of economic activity for its specialized field.

Credit: NSF


Credit: Di Wang and Dmitri Talapin, University of Chicago

MXenes – An easy way to make atomically thin metal layers for new technology

MXenes, metals first synthesized in 2011, consist of atomically thin layers of transition metals that ions can move between. Unlike other metals, MXenes do not lose their properties (e.g., strong electrical conductivity) when in atomically thin layers, thanks to their strong chemical bonds. MXenes have historically been labor-intensive to make, but researchers at the University of Chicago were able to find a more efficient process with less toxic byproducts. This new process will allow for more metal alloy-MXene mixtures and different ions to flow between the layers. This advancement will lead to new devices that could potentially store energy or block electromagnetic wave interference.

Earthquake tests could help sustainable wooden structures reach new heights

Buildings constructed with mass timber—layers of bonded wood—can be erected more quickly and are more sustainable than those built with traditional construction materials. With building codes in the U.S. revised in the last few years to permit mass timber buildings of up to 18 stories, engineers want to determine the resilience of mass timber in earthquake zones. A team of structural engineering researchers subjected a 10-story mass timber building to a series of simulated earthquakes. The TallWood project took place at the Natural Hazards Engineering Research Infrastructure (NHERI)'s Large High-Performance Outdoor Shake Table at the University of California, San Diego. Both the NHERI TallWood project and the shake table are funded by NSF to advance the Nation's infrastructure resilience.

Credit: Shiling Pei/Colorado School of Mines

Information about NSF's research and education discoveries is **here**.
Information about NSF Senior Management and National Science Board Members is in the Agency Financial Report, **Chapter 3/Appendix 10.**

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We welcome your comments on how we can make this report more informative.
Contact us at Accountability@nsf.gov.

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