



National Science Foundation FY 2021 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.

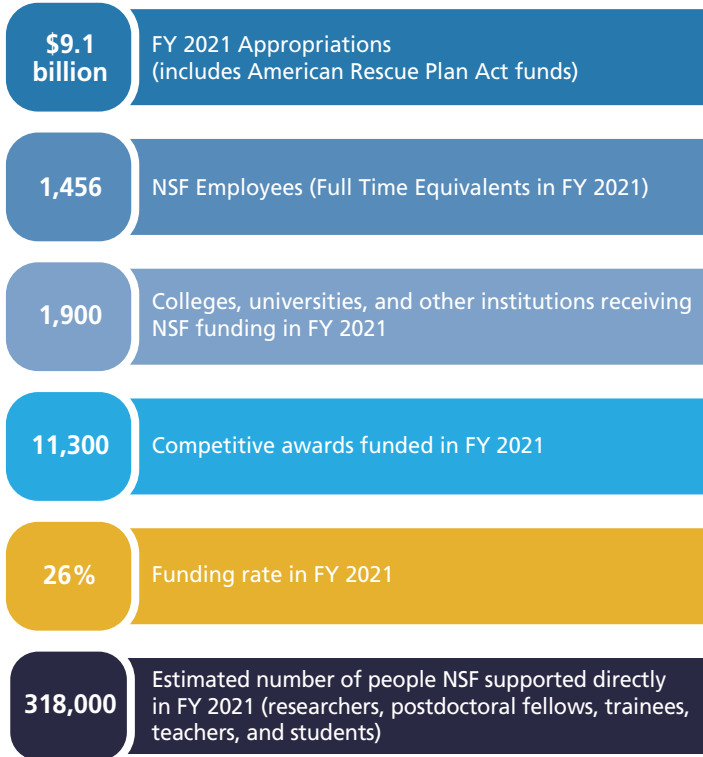
Vision: A Nation that is the global leader in research and innovation.

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 programs support scientists and engineers in translating their NSF-funded S&E discoveries into innovative technologies and solutions.
- 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.



At A Glance



From the Director

Credit: NSF/Stephen Voss



I am pleased to present the National Science Foundation's fiscal year (FY) 2021 *Performance and Financial Highlights*, one of three accountability reports that provides key financial and performance information to our stakeholders and the American people. In addition to this report, I encourage you to review NSF's FY 2021 Agency Financial Report and Annual Performance Report. The information in these reports highlights NSF's

longstanding commitment to upholding the highest standards of accountability and transparency.

In FY 2021, funding provided by Congress through the American Rescue Plan Act enabled NSF to invest in a dynamic research portfolio that focused on the people and institutions in the research community that have been most affected by the COVID-19 pandemic. In tandem with these critical investments, NSF continued its long-standing mission of expanding the frontiers of scientific knowledge and enhancing the well-being of millions of Americans through investments in basic research.

These are strategic investments that span the whole spectrum of S&E disciplines, strengthen education at every level, and enhance industries from transportation and computing to manufacturing and agriculture. Also in FY 2021, NSF continued to promote STEM education and career opportunities for all Americans. In addition to strengthening the STEM workforce, NSF cultivates partnerships to accelerate discovery and the translation of research results into products and services. NSF programs flourish when the Foundation partners with other U.S. federal agencies, industry groups, private foundations, non-governmental organizations, and international organizations.

I invite you to visit our [NSF website](#). NSF's workforce has shown tremendous dedication to advancing the frontiers of research and innovation, to ensuring accessibility and inclusivity, and to sustaining the Nation's global leadership in science and engineering. Our Nation is on a path toward a brighter future, and NSF is proud to be part of that journey.

Sethuraman Panchanathan
March 28, 2022

NSF by the Numbers

WHERE IT COMES FROM

FY 2021 APPROPRIATIONS BY ACCOUNT
(\$9,087 million)

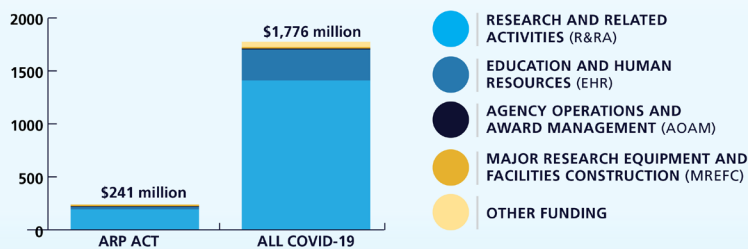


\$29 million of annual appropriated funding was transferred from R&RA to AOAM. Totals include \$600 million in American Rescue Plan Act (P.L. 117-2) funding: \$467 million to R&RA, \$61 million to EHR, \$60 million to MREFC and \$12 million to AOAM.

Totals may not add due to rounding.

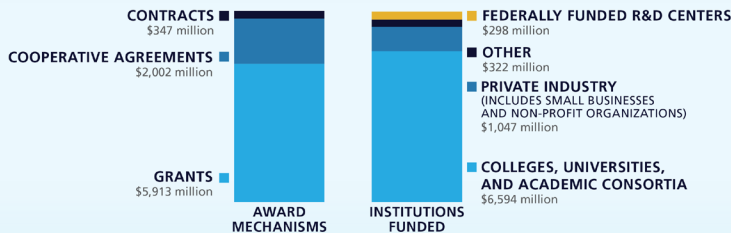
COVID-19 ACTIVITIES SPENDING

FY 2021 COVID-19 Obligations



WHERE IT GOES AND HOW IT GETS THERE

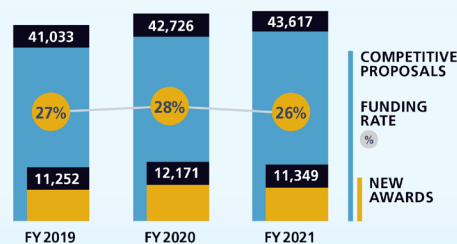
FY 2021 Obligations for Research and Education Programs
(\$7,917 million)



Notes: NSF Research and Education programs include R&RA, EHR, and MREFC appropriations. Other institutions funded include government entities (federal, state, local) and international organizations. Totals may not add due to rounding.

HOW IT IS SPENT

Number of NSF Competitive Proposals, New Awards, and Funding Rates



Note: New awards are a subset of competitive proposals.

- **\$9,087 million total appropriations:** R&RA, EHR, 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. In FY 2021, the American Rescue Plan (ARP) Act supplemental appropriations were provided as indicated below. NSF's FY 2021 appropriation was approximately 9 percent higher than the FY 2020 appropriation total of \$8,354 million.
- **\$600 million supplemental appropriations:** NSF received funding under ARP to "fund or extend new and existing research grants, cooperative agreements, scholarships, fellowships, and apprenticeships, and related administrative expenses to prevent, prepare for, and respond to coronavirus." NSF obligated approximately \$241 million of this funding in FY 2021, with remaining funds available for use in FY 2022. In addition, NSF drew from its FY 2021 base appropriations and other available funds to support research related to COVID-19.
- **Over 33,000 members of the S&E community** participated in the merit review process as panelists and proposal reviewers with over 200,000 proposal reviews conducted. More than 43,600 proposals were evaluated, and approximately 11,300 new awards were made.
- **An estimated 318,000 people** were directly involved in NSF programs and activities. Beyond these figures, NSF programs indirectly impact millions of people. These programs reach K-12 students and teachers, the public, and researchers; informal science activities such as museums, television, videos, and journals; outreach efforts; and dissemination of innovative instructional resources and teaching methods.
- NSF supports **24 percent of all federally sponsored basic scientific research** conducted by America's colleges and universities. NSF's support increases to 57 percent when medical research supported by the National Institutes of Health is excluded.

Financial Audit

FY 2021 marked the 25th anniversary of CFO Act Audits at NSF. In FY 2021, NSF:

- Earned its 24th consecutive unmodified (clean) audit opinion on its financial statements.
- Complied with the Improper Payment Elimination and Recovery Act.
- Showed effective internal controls over operations, reporting, and compliance.

Complete FY 2021 financial information is in the Agency Financial Report, *Chapter 2*.

How We Are Doing: Performance Results

NSF's Strategic Plan for FYs 2018-2022, *Building the Future: Investing in Discovery and Innovation*, established three strategic goals for the agency. Two goals embody the dual nature of NSF's mission of promoting the progress of science while benefitting the Nation: *Expand knowledge in science, engineering, and learning* and *Advance the capability of the Nation to meet current and future challenges*. The third goal, *Enhance NSF's performance of its mission*, directs NSF to hold itself accountable for achieving excellence in carrying out its mission. Goals in this Strategic Plan each contain two Strategic Objectives, which are comprehensive of all agency program activities. This goal structure enables NSF to link its investments to longer-term outcomes.

Strategic Goal		Strategic Objective
1	Expand knowledge in science, engineering, and learning.	1.1 Knowledge Advance knowledge through investments in ideas, people, and infrastructure.
		1.2 Practice Advance the practice of research.
2	Advance the capability of the Nation to meet current and future challenges.	2.1 Societal Impacts Support research and promote partnerships to accelerate innovation and to provide new capabilities to meet pressing societal needs.
		2.2 STEM Workforce Foster the growth of a more capable and diverse research workforce and advance the scientific and innovation skills of the Nation.
3	Enhance NSF's performance of its mission.	3.1 Human Capital Attract, retain, and empower a talented and diverse workforce.
		3.2 Processes and Operations Continually improve agency operations.

In FY 2021, eight performance goals were tracked. The two-year Agency Priority Goal (APG) successfully concluded its activities and achieved its 14-milestone target. Overall, seven of the eight performance goals achieved all or some of their targets. As shown on the table below, NSF partially achieved two goals.

NSF's *FY 2021 Annual Performance Report* provides additional details on these results and provides a full description of the agency's performance framework, including descriptions of the strategic reviews and the performance metrics, methodologies, results and explanations of unmet targets, and trends, along with a list of relevant external reviews. Performance data have been independently verified and validated.

FY 2020-2021 Priority Goal	Status
Strategically engage in public and private partnerships to enhance the impact of NSF's investments and contribute to American economic competitiveness and security. To benefit the U.S. scientific and engineering research and education enterprise, by September 30, 2021, NSF will develop and pursue an agency-wide partnerships strategy, components of which include targeted outreach, implementation of process improvements, and improvement of internal and external communications.	Achieved. Over FY 2020 and FY 2021, This APG established and accomplished 14 milestones in the development of NSF's agency-wide partnership strategy. This effort focused agency-wide attention on identifying the intellectual foundations of partnerships, standardizing, and streamlining the business processes for partnership activities, and creating tools for agency-wide communications. More information about this APG is at: Performance.gov .

FY 2021 PERFORMANCE GOAL	RESULT
1. <i>Agency Priority Goal</i> : Developing an Agency-Wide Partnerships Strategy.	Achieved
2. Ensure that key NSF-wide program investments are implemented and on track.	Achieved
3. Ensure program integrity and responsible stewardship of major research facilities and infrastructure.	Partially Achieved
4. Inform applicants whether their proposals have been declined or recommended for funding in a timely manner.	Not Achieved
5. Improve the quality of written reviews of NSF proposals.	Achieved
6. Foster a culture of inclusion through change management efforts resulting in change leadership and accountability.	Achieved
7. Ensure that employee job requirements are aligned with competencies and skills needed for the future.	Achieved
8. Streamline and simplify user interactions with IT systems and functions that support the merit review process, reducing non-value-added steps and reducing the time spent managing the proposal and award lifecycle.	Partially Achieved

More information on our performance reporting is [here](#).

Management Challenges

For FY 2021, the NSF Office of the Inspector General (OIG) identified six management and performance challenges facing the agency:

- Providing oversight of major multi-user research facilities to manage inherent risk, and address issues related to the COVID-19 pandemic.
- Providing oversight of grants during the COVID-19 pandemic.
- Managing the Intergovernmental Personnel Act program that brings external researchers and educators to work temporarily at NSF.
- Providing oversight of the Antarctic Infrastructure Modernization for Science project, which operates in a remote, harsh climate and with the added uncertainty of the COVID-19 pandemic.
- Increasing diversity in science & engineering education and employment while also taking into the consideration the impacts of the pandemic on these efforts.
- Mitigating threats posed by foreign government talent recruitment programs designed to obtain information and technology from abroad, which have the potential to exploit the openness of American universities and threaten the integrity of U.S. research initiatives.

NSF Management's report on the significant activities undertaken in FY 2021 to address these challenges is in NSF's *FY 2021 Agency Financial Report*, along with the OIG's memorandum identifying the FY 2022 Management Challenges.

More information about our FY 2021 Progress Report on OIG Management Challenges is in the Agency Financial Report, *Chapter 3/Appendix 2B*.

Research and Education Highlights

Sitting Bull College's Native American Prairie Ecosystems Research Center (PERC). NSF's Tribal Colleges and Universities Program (TCUP) is a critical STEM pathway for broadening participation, strengthening science and engineering capabilities, and increasing STEM opportunities in tribal communities. At Sitting Bull College (SBC) in Fort Yates, North Dakota, PERC is leveraging diverse research expertise and local indigenous ecological knowledge to study challenges in prairie ecosystems and help design new solutions and approaches in soil science, water quality, wildlife and plant ecology, microbiology, molecular ecology, and engineering. SBC and PERC are leading the way in North Dakota as the primary center for tribal knowledge about the Great Plains region.



Dark Energy Survey releases the most precise look at the universe's evolution. Results from the Dark Energy Survey (DES) are giving researchers new insights into some of the universe's most mysterious phenomena. While we can't see dark energy or dark matter directly, we can watch as it shapes the structure and motion of galaxies through gravitational effects. The DES mapped more than 226 million galaxies over seven years—creating the largest and most precise map of the universe ever made—which is allowing astronomers to see the influence of dark energy and dark matter on a massive scale and with new precision. The DES is part of a new era of astronomy powered by massive surveys of the sky, and with the help of supercomputers (and even artificial intelligence), DES and similar projects are enabling huge leaps forward in our understanding of the structure of the universe.



Wireless research for universal and affordable rural broadband. Iowa State University and the areas surrounding Ames, Iowa are the latest testbed for largescale wireless technology research that is extending the reach of broadband and other communications platforms. Known as the Wireless Living Lab for Smart and Connected Rural Communities, it is an \$8 million public-private partnership funded by NSF, the U.S. Department of Agriculture, and an industry consortium that is exploring how cutting-edge communications technology can be deployed to enable highspeed, universal, and affordable rural broadband connectivity. With a special emphasis on agricultural applications in crop and livestock farms, the wireless research platform will be an extensive collaboration between researchers, students, communities, industry partners, and state and local governments, working together to connect the unconnected.



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 9*.



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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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