

UNITED STATES
National Science Foundation



NSF

FY 2015

Agency Financial Report

THE NSF STATUTORY 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)



THE NSF VISION

**A Nation that creates and exploits new concepts in science and engineering
and provides global leadership in research and education.**

*—From “Investing in Science, Engineering, and Education for the Nation’s Future”
NSF Strategic Plan for 2014-2018*



About This Report

For fiscal year (FY) 2015, the National Science Foundation (NSF) is producing three reports to provide financial management and program performance information to demonstrate accountability to our stakeholders and the American public. These reports are produced in accordance with the Office of Management and Budget (OMB) Circular A-136, *Financial Reporting Requirements*, and meet the requirements of the CFO Act, as amended by the Government Management Reform Act of 1994 (GMRA), the Federal Managers Financial Integrity Act of 1982 (FMFIA), the Reports Consolidation Act of 2000, and the GPRA Modernization Act of 2010. All three reports are available on NSF’s website at www.nsf.gov/about/performance.

- This report, the **Agency Financial Report (AFR)**, focuses on financial management and accountability. It includes the results of NSF’s annual financial statement audit, management’s assurance statement, the NSF Inspector General’s (IG) memorandum on the agency’s FY 2016 management challenges, as well as management’s report on the progress made on the management challenges identified by the IG for FY 2015. The AFR also includes a brief discussion of the agency’s performance management framework.
- The **Annual Performance Report (APR)** will provide 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** will be included in NSF’s *FY 2017 Budget Request to Congress*.
- NSF’s **Performance and Financial Highlights** report summarizes key financial and performance information from the **AFR** and **APR**.

For copies of these reports, please send a request to accounta@nsf.gov. We welcome your suggestions on how we can make these reports more informative.

NSF by the Numbers	
\$7.3 billion	FY 2015 Appropriations (does not include mandatory accounts)
1,859	Colleges, universities, and other institutions receiving NSF funding in FY 2015
49,600	Proposals evaluated in FY 2015 through a competitive merit review process
12,000	Competitive awards funded in FY 2015
231,000	Proposal reviews conducted in FY 2015
350,000	Estimated number of people NSF supported directly in FY 2015 (researchers, postdoctoral fellows, trainees, teachers, and students)
51,800	Students supported by NSF Graduate Research Fellowships since 1952

NATIONAL SCIENCE FOUNDATION FY 2015 Agency Financial Report

www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf16002

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A MESSAGE FROM THE DIRECTOR



Credit: Sandv Schaeffer

The National Science Foundation (NSF) is pleased to issue its Agency Financial Report for Fiscal Year (FY) 2015. NSF's mission is to promote the progress of science, to advance the national health, prosperity, and welfare, and to secure the national defense. For 65 years, NSF has pursued this mission by supporting basic research and education across a broad range of science and engineering disciplines.

NSF's investments in basic research have enabled breakthrough discoveries and transformative technologies that address key national and scientific priorities. NSF's investments combine research and educational resources to support the development of a world-class scientific workforce which has made profound contributions to the global science and engineering enterprise. The scientific discoveries made possible by NSF support today become the foundation of our shared future – driving our Nation's economy and enhancing its security while inspiring the next generation of Americans to push the frontiers of science to unprecedented heights.

NSF directly supported an estimated 350,000 researchers, graduate and undergraduate students, postdoctoral fellows, trainees, and teachers in FY 2015. NSF-supported discoveries position U.S. researchers and research institutions at the leading edge of scientific advancement in an increasingly competitive global marketplace of innovation and ideas. Over the years, 217 Nobel Prize winners have received NSF support during some point in their careers, including three laureates in 2015: Paul Modrich and Aziz Sancar in chemistry, and Angus Deaton in economics.

In FY 2015, NSF's support fostered discoveries across a broad spectrum of scientific disciplines. An NSF-funded research team with CERN's Large Hadron Collider discovered a class of particles known as pentaquarks. Physicists have long speculated about the existence of pentaquarks, and their discovery could reshape our understanding of the basic properties of matter. In Antarctica, an NSF-funded drilling team gathered sediment samples from hundreds of meters below the surface of the ice, and these samples will provide clues about ice-sheet mechanics and their potential effects on increases in sea levels. Another team of NSF-funded researchers sequenced the first octopus genome, enabling new studies on brain function and development. NSF-funded researchers also advanced 3-D printing technology, developed next-generation robots that learn from human behavior, and detected high-energy neutrinos that likely originated far away in our galaxy or beyond. Physicists used large-scale computer simulations to explore the possibility that galaxies much like our own Milky Way existed in the early universe, and scientists continued to shed light on critical ecological challenges such as the global decline of honeybees and other pollinators.

NSF posted another year of strong organizational performance in FY 2015, reviewing 49,600 proposals and funding 12,000 new awards to 1,859 institutions in 50 states, the District of Columbia, and 4 U.S. territories. The full report on NSF's performance management process and the complete results of our FY

2015 annual goals under the GPRA Modernization Act of 2010 will be included in NSF's *Annual Performance Report* as part of NSF's *FY 2017 Budget Request to Congress*. In keeping with government-wide requirements, NSF's GPRA data are subject to a rigorous verification and validation review by an independent, external management consultant based on guidance from the U.S. Government Accountability Office.

I am pleased to report that NSF received its 18th consecutive unmodified opinion from an independent audit of its financial statements. The Independent Auditors' Report identified no material weaknesses. In addition, NSF can provide reasonable assurance that the agency is in substantial compliance with the Federal Managers Financial Integrity Act of 1982 and the Federal Financial Management Improvement Act of 1996, and that internal control over financial reporting is operating effectively to produce reliable financial reporting.

Thank you for your interest in the National Science Foundation.

/s/

FRANCE A. CORDOVA

November 16, 2015

The logo for the National Securities Exchange (NSE) is centered in the upper half of the page. It features the letters "NSE" in a large, bold, serif font. The letters are white and are set against a dark blue circular background. This circle is surrounded by a larger, lighter blue gear-like pattern that fills the upper portion of the page. The overall design is clean and professional, with a color palette of blues and greens.

NSE

Chapter 1

**Management's Discussion
and Analysis**

Agency Overview

Mission and Vision

The mission of the National Science Foundation (NSF) is, “To promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes.”¹ In a report widely credited as establishing the basis for NSF, the prominent American scientist and advisor to then-President Franklin D. Roosevelt, Vannevar Bush, said that: “It is in keeping with the American tradition—one which has made the United States great—that new frontiers shall be made accessible for development by all American citizens. Moreover, since health, well-being, and security are proper concerns of Government, scientific progress is, and must be, of vital interest to Government.”² Over the course of NSF’s 65-year history, NSF investments have promoted scientific progress and advanced exciting new frontiers in science by supporting basic research and education in every science and engineering (S&E) discipline. Discoveries made possible by NSF ensure the Nation’s future prosperity, and NSF’s investments in the development of an S&E-literate workforce inspire the next generation of innovators and entrepreneurs while keeping U.S. researchers and research institutions at the leading edge of scientific discovery in an increasingly interdisciplinary and global marketplace of innovation and ideas.

Many discoveries made possible by NSF support have transformed the frontiers of science and engineering, enabling a broad array of new innovations and technologies that address important societal challenges and improve quality of life. These discoveries include the Global Positioning System (GPS), the Internet and Web Browsers, Doppler Radar, Magnetic Resonance Imaging (MRI), and Three-Dimensional (3-D) Printing. In 2015, NSF-supported scientists used renewable feedstock chemicals to transform the way plastics are made; explored the potential impacts of hydraulic fracturing on local ecology, human health, and energy sustainability; and developed smart bandages capable of monitoring and communicating to health professionals all of the vital signs of a patient’s healing process. NSF-supported researchers also developed next generation robots that learn from, and are more responsive to, human behavior. Not all scientific discoveries have an obvious, near-term technological application. However, sustained NSF investment in basic research provides a steady pipeline of new ideas and techniques that, together with a highly trained S&E workforce,³ contribute to the health of the Nation’s “innovation

Supercomputer Cybersecurity: Computer networks at national labs, scientific computing facilities, universities, and large companies identify and block hundreds of thousands of hostile intrusions every month, thanks to a freely available cybersecurity software advanced by NSF-funded computer scientists at the University of California, Berkeley. The programmable “Bro” code analyzes a network’s unique data traffic patterns and tailors its defenses as needed, depending on the anomalies detected. The code played a critical role in identifying hackers trying to sell access to federal supercomputers. The NSF-funded Bro Center of Expertise provides resources for users to protect their cyberinfrastructure.

line	addr	port	string	severity
0.560999	65.55.184.16	443	CN=www.update.microsoft.com	443
2.752904	65.235.128.158	443	CN=sjremetrics.java.com,OU=Class	443
7.852421	65.55.184.155	443	CN=www.update.microsoft.com,OU=M	443
7.944802	208.97.132.223	995	emailAddress=support@dreamhost.c	995
807540	63.245.209.105	443	CN=*.mozilla.org,OU=Secure Web S	443
129663	63.245.209.91	443	CN=addons.mozilla.org,OU=Terms o	443
352337	192.168.1.1	25	C=US,CN=domex.local C=US,CN=domex.l	25
835433	65.55.16.121	443	CN=signup.live.com,OU=Windows L	443
208697	65.54.186.79	443	CN=login.live.com,OU=Passport,OU	443
165785	96.6.248.124	443	CN=secure.wlxrs.com,ST=Washington	443
448361	96.6.245.186	443	CN=secure.shared.live.com,ST=Was	443
195723	66.235.139.152	443	CN=*.112.207.net,OU=Network Ope	443
284420	65.54.234.75	443	CN=hipservice.live.com,OU=Passpo	443
17084	65.242.27.35	443	CN=switch.atdmt.com,OU=Microsof	443
64064	65.54.186.107	443	CN=login.live.com,OU=Passport,OU	443
11338	207.46.120.170	443	emailAddress=storeops@microsoft	443
55903	65.55.194.249	443	emailAddress=storeops@microsoft	443
49792	12.41.118.177	443	CN=	443

The Bro Network Security Monitor protects many scientific computing networks. Credit: Bro Center of Expertise.

¹ National Science Foundation Act of 1950 (P.L. 81–507).

² *Science: The Endless Frontier*; see www.nsf.gov/od/lpa/nsf50/vbush1945.htm.

³ For more information on the state of the Nation’s S&E workforce, see *Revisiting the STEM Workforce: A Companion to Science and Engineering Indicators 2014* at www.nsf.gov/pubs/2015/nsb201510/nsb201510.pdf.

ecosystem.”⁴ NSF’s mission affirms our commitment, through investment in these discoveries, to advancing the frontiers of science and engineering, ensuring the sustained vigor of both fundamental research and the Nation’s innovation ecosystem as a means to maintaining global leadership in the 21st century.⁵

NSF’s vision is of a Nation that capitalizes on new concepts in science and engineering and provides global leadership in advancing research and education.⁶ NSF’s core values articulate the essential qualities that staff are encouraged to embody in support of the agency’s mission. Among these core values are a dedication to scientific excellence, learning, stewardship, inclusiveness, and stakeholder accountability.⁷ NSF strives to excel as a federal agency by investing in priorities that address important national challenges while promoting economic growth, innovation, and new scientific advancements. NSF’s current Strategic Plan, *Investing in Science, Engineering, and Education for the Nation’s Future*, identifies three interrelated strategic goals to achieving the agency’s mission: (1) transform the frontiers of science and engineering, (2) stimulate innovation and address societal needs through research and education, and (3) excel as a federal science agency. These strategic goals represent a roadmap for NSF’s success. A detailed discussion of NSF’s Strategic Plan can be found in the Performance section, beginning on page I-10.

NSF promotes scientific progress and advances scientific frontiers by making awards and managing award portfolios of the highest quality. NSF awards reflect national priorities, keep U.S. researchers and research institutions at the forefront of innovation, and distinguish the United States as a leader in the rapidly changing global landscape of scientific research and discovery. In doing so, NSF pursues transformational work, new fields of scientific inquiry, and new theoretical paradigms. Increasingly, NSF awards are made where scientific disciplines converge, which reflects the increasingly interdisciplinary nature of modern science and engineering.

PBS Series Engages Latino Children in Math and Science:

Peep and the Big Wide World, an Emmy award-winning Public Broadcasting Service (PBS) series, developed an outreach campaign to encourage greater family involvement, particularly among Latino families, in children’s exploration of math and science. A Spanish-speaking character, “Splendid Bird from Paradise,” was added to the animated cast, and parents, including Spanish speakers, are now featured in the live-action videos. A multipronged study found that Spanish-speaking parents who used Peep resources with their preschool-age children were better equipped to facilitate science and math exploration. The parents reported feeling more inclined to do math and science activities with their preschoolers and said the resources are easy to understand, fun, and help them learn science alongside their children.



Animation still from Peep and the Big Wide World. Credit: WGBH Education Foundation.

⁴ *National Science Foundation Strategic Plan for 2014–2018: Investing in Science, Engineering, and Education for the Nation’s Future*, page 3; see www.nsf.gov/pubs/2014/nsf14043/nsf14043.pdf.

⁵ *Ibid.*

⁶ *Ibid.*

⁷ *Ibid.*, page 4.

NSF is the funding source for 24 percent of all the federally supported basic scientific research conducted by America's colleges and universities, and this share increases to nearly 60 percent when medical research supported by the National Institutes of Health is excluded.⁸ A cornerstone of NSF investment in the development of a world-class workforce is the Graduate Research Fellowship Program, which has funded nearly 51,800 Graduate Research Fellows since 1952. The ranks of NSF Fellows include numerous individuals who have made transformative breakthroughs in science and engineering research. Many of them have become leaders in their chosen careers—over 450 have become members of the National Academies of Sciences or Engineering, and 43 have been honored as Nobel laureates. In fact, 217 Nobel Prize winners have received NSF support at some point in their careers. These investments are a critical means by which NSF identifies, nurtures, and invests in scientific potential.

For 65 years, NSF has supported basic research and education across all fields of science and engineering. NSF's investments seamlessly connect research and education to support the development of a world-class scientific workforce that can engage fully and contribute imaginatively in the 21st century, when leaders increasingly rely on technology to meet challenges, identify possibilities, and leverage opportunities. The legacy of NSF's long history of support is an innovation ecosystem that cultivates scientists and engineers who are able to extend their focus beyond the laboratory and make contributions to the 21st century S&E enterprise at the very leading edge of scientific discovery. The scientific discoveries of today, in turn, become the foundation of our Nation's future—contributing to the Nation's health, prosperity, and well-being while inspiring new and more diverse generations of Americans to push the scientific frontiers of tomorrow to new and unprecedented heights.

Hunting for Gravitational Waves: NSF in May 2015 helped dedicate the Advanced Laser Interferometer Gravitational-Wave Observatories (LIGO) in Washington State. Researchers using the facilities seek to observe and record gravitational waves for the first time. Those discoveries would allow us to learn more about the phenomena that generate the waves, such as supernovae and colliding black holes. The Advanced LIGO project represents a major upgrade expected to enhance the sensitivity of LIGO's instruments by a factor of at least 10 and can see a volume of space more than 1,000 times greater than the initial LIGO. The existence of gravitational waves is a crucial prediction of the General Theory of Relativity, so far unverified by direct observation.



Image of the LIGO Observatory in Hanford, Washington, where astronomers completed a major upgrade in a quest to understand the extraordinary mysteries of our universe. Credit: Cfoellmi via Wikimedia Commons.

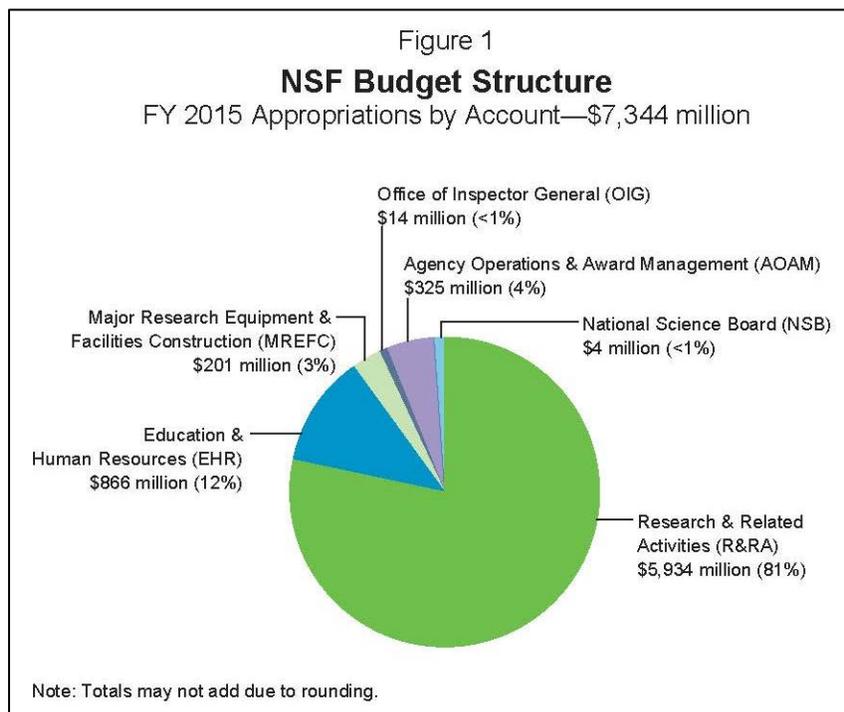
Following the Money

NSF is funded primarily through six congressional appropriations, which totaled \$7,344 million in FY 2015 (Figure 1).⁹ Budget authority in FY 2015 was 2.4 percent above the prior year FY 2014 budget authority of \$7,172 million. Research and Related Activities (R&RA), Education and Human Resources

⁸ NSF, National Center for Science and Engineering Statistics. 2014. *Federal Funds for Research and Development: Fiscal Years 2012–14*; see www.nsf.gov/statistics/nsf14316/content.cfm?pub_id=4418&id=2.

⁹ In Figure 1, FY 2015 Appropriations by Account of \$7,344 million plus Donations (\$35 million) and H1-B Nonimmigrant Petitioner Receipts (\$143 million) equal Appropriations (Discretionary and Mandatory) of \$7,522 million as shown in the Statement of Budgetary Resources.

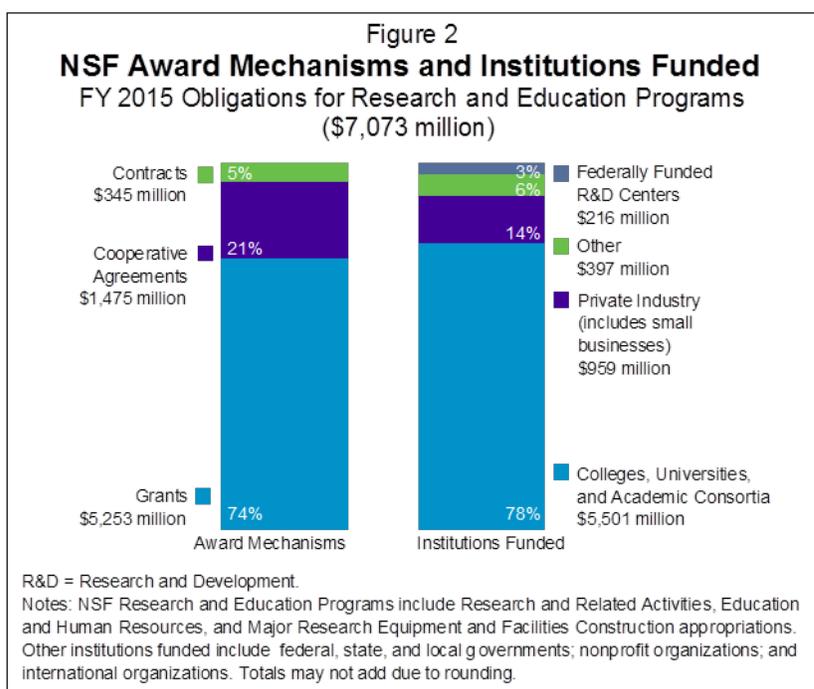
(EHR), and Major Research Equipment and Facilities Construction (MREFC) fund the agency's programmatic activities and accounted for 95 percent of NSF's total appropriations in FY 2015.



- R&RA, which supports basic research and education activities at the frontiers of science and engineering, including high-risk and transformative research, accounted for 81 percent of FY 2015 funding. The FY 2015 R&RA appropriation of \$5,934 million was \$132 million, or 2.3 percent above its prior year FY 2014 level of \$5,802 million.
- EHR, which supports activities that ensure a diverse, competitive, and globally engaged U.S. science, technology, engineering, and mathematics (STEM) workforce and a scientifically literate citizenry is NSF's second largest appropriation, accounting for 12 percent of the agency's budget. The FY 2015 appropriation of \$866.0 million was \$20.6 million, or 2.4 percent above its prior year FY 2014 level of \$845.4 million.
- The MREFC appropriation, which supports the construction of unique national research platforms and major research equipment that enable cutting-edge research, accounted for 3 percent of the agency's total appropriations. The FY 2015 funding of \$200.8 million is a \$0.8 million, or 0.4 percent increase from its prior year FY 2014 level of \$200.0 million.
- The Agency Operations and Award Management (AOAM) appropriation of \$325.0 million supports NSF's administrative and management activities and accounted for about 4 percent of the agency's FY 2015 funding. This level is a 6.1 percent (\$18.7 million) increase from its FY 2014 level of \$306.3 million.
- Separate appropriations support the activities of the Office of Inspector General (OIG) and National Science Board (NSB); each accounts for less than 1 percent of NSF's FY 2015 budget. The FY 2015 OIG appropriation of \$14.4 million is a \$0.2 million, or 1.4 percent, increase from its prior year FY 2014 appropriation of \$14.2 million. The NSB appropriation of \$4.4 million in FY 2015 is a \$0.1 million, or 2.3 percent, increase from its prior year FY 2014 funding of \$4.3 million.

- In FY 2015, 89 percent of research funding was allocated based on competitive merit review.¹⁰ Over 35,000 members of the science and engineering community participated in the merit review process as panelists and proposal reviewers.¹¹ Awards were made to 1,859 institutions in 50 states, the District of Columbia, and 4 U.S. territories. These institutions employ America's leading scientists, engineers, and educators, and they train the leading innovators of tomorrow. In FY 2015, an estimated 350,000 people were directly involved in NSF programs and activities, receiving salaries, stipends, or participant support. Beyond these figures, NSF programs indirectly impact millions of people. These programs reach 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 the dissemination of improved curricula and teaching methods.

In FY 2015, NSF funded 12,016 new awards, mostly to academic institutions. As shown in Figure 2, 78 percent of support for research and education programs (\$5,501 million) was to colleges, universities, and academic consortia. Private industry, including small businesses, accounted for 14 percent (\$959 million), and support to Federally Funded Research and Development Centers (FFRDCs) accounted for 3 percent (\$216 million). Other recipients included federal, state, and local governments; nonprofit organizations; and international organizations. A small number of awards fund research in collaboration with other countries, which adds value to the U.S. scientific enterprise and maintains U.S. leadership in the global scientific enterprise.



Most NSF awards (95 percent) were funded through grants or cooperative agreements (Figure 2). Grants can be funded either as standard awards, in which funding for the full duration of the project is provided in a single fiscal year, or as continuing awards, in which funding for a multiyear project is provided in

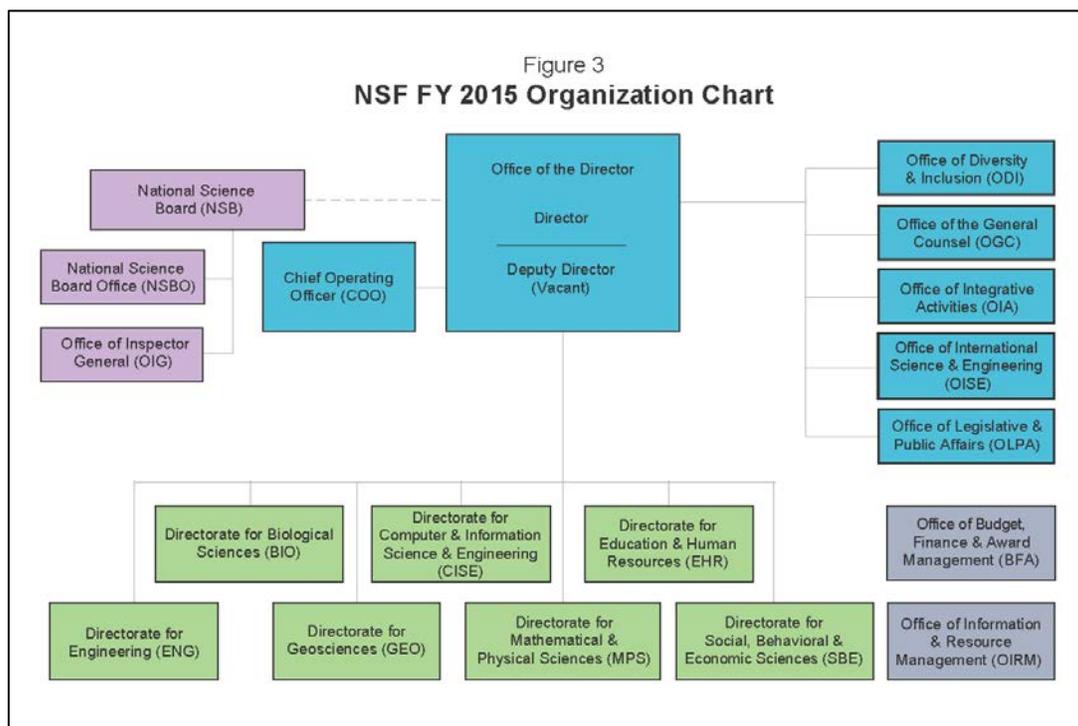
¹⁰ NSF does not require merit review for certain kinds of proposals, including proposals for international travel grants and some conferences, symposia, and workshops.

¹¹ For more information about NSF's merit review process, see www.nsf.gov/bfa/dias/policy/merit_review and *Report to the National Science Board on the National Science Foundation's Merit Review Process, Fiscal Year 2014* (NSB-2015-14) at <http://www.nsf.gov/nsb/publications/2015/nsb201514.pdf>.

increments. Cooperative agreements are used when the project requires substantial agency technical involvement during the project performance period (e.g., research centers, multi-use facilities). Contracts (procurement instruments) are used to acquire products, services, and studies (e.g., program evaluations) required primarily for NSF or other government use.

Organizational Structure

NSF is an independent federal agency headed by a Director appointed by the President and confirmed by the U.S. Senate.¹² The 25-member NSB meets five times a year to establish the overall policies of the agency. NSB members are appointed by the President and are prominent contributors to the S&E research and education community.¹³ The NSF Director is a member *ex officio* of the Board. The Director and the other NSB members serve 6-year terms. NSF is also served by a Deputy Director, a position that is appointed by the President and Senate confirmed.¹⁴ The NSF workforce includes nearly 1,374 permanent staff.¹⁵ NSF also regularly recruits visiting scientists, engineers, and educators as rotators who work at NSF for up to four years.¹⁶ The blend of permanent staff and rotators who infuse new talent and expertise into the agency is reflective of our core values and integral to effectuating NSF's mission to support the entire spectrum of science and engineering research and education at the frontier. As shown in Figure 3, NSF's organizational structure aligns with the major fields of science and engineering (www.nsf.gov/staff/organizational_chart.pdf).



¹² The Director's biography is available at www.nsf.gov/news/speeches/cordova/cordova_bio.jsp.

¹³ A list of NSB members is available at www.nsf.gov/nsb/members.

¹⁴ The Deputy Director position remained vacant through FY 2015. The Chief Operating Officer, appointed by the Director, has been nominated to fill the Deputy Director position.

¹⁵ Full-time equivalents.

¹⁶ As of September 30, 2015, temporary appointments included 171 under the Intergovernmental Personnel Act.

In addition to the agency's headquarters located in Arlington, Virginia, NSF maintains offices in Brussels¹⁷, Tokyo, and Beijing to facilitate its international activities, and an office in Christchurch, New Zealand, to support the U.S. Antarctic Program (USAP). NSF is scheduled to relocate its headquarters from Arlington to Alexandria, Virginia, in 2017.

Management Challenges

For FY 2015, the OIG identified six major management and performance challenges facing the agency: (1) establishing accountability over large cooperative agreements, (2) improving grant administration, (3) managing the U.S. Antarctic Program, (4) moving NSF headquarters to a new building, (5) managing programs and resources in times of budget austerity, and (6) encouraging the ethical conduct of research.¹⁸

Management's report on the significant activities undertaken in FY 2015 to address these challenges is included in this report as Appendix 3B. The report also discusses activities planned for FY 2016 and beyond. Some of the significant actions the agency took in FY 2015 to address the challenges are highlighted below:

- **To establish accountability over large cooperative agreements:** NSF has focused on implementing enhancements to its pre-award and post-award budget and cost review processes for large research facility cooperative agreements to include additional analyses of awardee cost proposal budget information and the utilization of incurred cost audits, to the extent appropriate based on risk. These strengthened procedures include requirements for an independent assessment of the recipient's cost proposal. The agency has also published policy and guidance on the planning and use of budget contingency in large facility cooperative agreements in the most recent revision of the Large Facilities Manual. Also in that manual, NSF published policy on management fee in large facility cooperative agreements and implemented the new policy on seven such agreements. The agency's work in FY 2015 notably included a detailed contingency review for the Large Synoptic Survey Telescope (LSST) project following the newly developed NSF requirements on contingency.

Control of Soot Formation in Flames: Environmental soot, which is associated with respiratory illness and cancer, is a deadly pollutant and a leading man-made contributor to global warming. A ternary flame system developed to study soot oxidation could save thousands of lives and contribute to a cleaner environment. This novel flame system, developed by researchers at the University of Maryland, College Park, allows complicated flame processes to be separated and controlled. In ordinary flames, soot formation and oxidation regions overlap, preventing either process from being studied independently. The ternary system will allow soot oxidation to be studied in a region without soot formation, which could lead to more accurate computer models used in the design of engines and other combustors.



Soot oxidation will be studied in the yellow flame at the top of the ternary flame system seen in this image. Credit: Haiqing Guo and Peter B. Sunderland, University of Maryland, College Park.

¹⁷ The NSF Europe Office was relocated from Paris to Brussels effective October 1, 2015.

¹⁸ The NSF Inspector General's memorandum on Management Challenges for NSF in FY 2015 can be found in NSF's FY 2014 Agency Financial Report (www.nsf.gov/pubs/2015/nsf15002/pdf/nsf15002.pdf), Appendix 3A.

- **To improve grant administration:** NSF has leveraged its investments in technology designed to strengthen its business infrastructure. iTRAK, NSF's new financial system, went live in FY 2015, providing increased transparency and capacity for processing and reporting data needed for decision-making and oversight. iTRAK built on the success of the Award Cash Management Service (ACMS), the agency's redesigned awardee payment process that has enabled NSF to obtain more timely, award-specific expenditure data. Also in FY 2015, the agency began to specify requirements for an updated award management system that will be implemented incrementally over the next several years. To strengthen transparency and accountability in connection with the merit review process over the past fiscal year, NSF convened the Transparency and Accountability Working Group (TAWG 2) to address the recommendation from an FY 2014 working group to clarify the roles and responsibilities of the Division Director. The agency also implemented the TAWG 2 recommendations by way of NSF's internal policies and procedures guide, the Proposal & Award Manual (PAM). Additionally, in FY 2015, NSF met the schedule for full implementation of the *Uniform Guidance: Cost Principles, Audit, and Administrative Requirements for Federal Awards* and has continued to support the Office of Management and Budget (OMB) Council on Financial Assistance Reform (COFAR) in its government-wide implementation. The agency also recruited for two additional cost analysts to join the Cost Analysis and Audit Resolution (CAAR) Branch to support oversight priorities and timely audit resolution.
- **To manage the U.S. Antarctic Program:** NSF continued progress on activities in accordance with the agency's official initial response (March 2013) to the Blue Ribbon Panel (BRP) report. The agency also continued development of the Antarctic Infrastructure Modernization for Science (AIMS), a potential MREFC project to address major infrastructure upgrades recommended by the BRP report for McMurdo and Palmer Stations. To control program costs, NSF improved review and oversight of invoices from its subcontractors. The agency also conducted its annual multitier evaluation of the contractor's performance, which included an assessment of overall technical, cost, and business performance. NSF also established a coordination group to work with executive management from the USAP prime contractor regarding the potential sale or spinoff of the business unit of the prime contractor currently supporting USAP.
- **To move NSF headquarters to a new building:** NSF continued to work collaboratively with the U.S. General Services Administration (GSA) to formulate schedule strategies that address NSF's relocation objectives. The agency and the American Federation of Government Employees (AFGE) Local 3403 underwent formal negotiations,

Cosmic Confirmation: Researchers using a massive, NSF-funded instrument buried deep in the ice at the South Pole observed high-energy neutrinos from beyond our solar system—and beyond our galaxy. Billions of the subatomic particles known as *neutrinos* pass through Earth every day but are difficult to detect. The IceCube Neutrino Observatory, a cubic-kilometer-sized detector sunk into the South Pole ice sheet, allows researchers to see byproducts of neutrino interaction with ice. A 2015 observation confirmed the discovery of high-energy neutrinos IceCube made in 2013. “Cosmic neutrinos are the key to yet unexplored parts of our universe and might be able to finally reveal the origins of the highest energy cosmic rays, including the rare ‘Oh-My-God’ particles,” said IceCube Collaboration spokesperson Olga Botner.

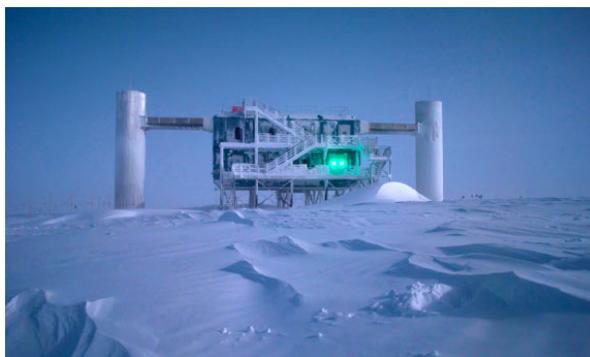


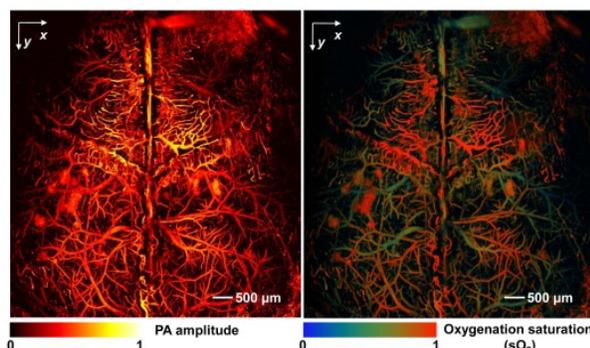
Photo of IceCube, a neutrino observatory whose detectors are buried more than 1 mile below the surface of the South Pole. Credit: Emanuel Jacobi, National Science Foundation.

which resulted in obtaining a decision from the Federal Service Impasses Panel (FSIP). NSF implemented the FSIP decision relating to office and workstation sizes. The agency also negotiated the financial impact of the FSIP order with the new building owner, reducing NSF's liability from an estimated \$54 million down to \$14.5 million, which included a revised negotiated project schedule that reduced project delay by 8 months. The agency also completed the collection of FY 2017 panel meeting projections in order to discuss and propose a final relocation and move operations approach, determining that panel meetings can continue throughout the move at either location or both.

- **To manage programs and resources in times of budget austerity:**

NSF continued to reduce certain administrative costs by identifying and implementing efficiencies, by prioritizing work, by eliminating or scaling back the scope of some activities, and by exploring new ways of getting the job done. The agency expanded training for panel moderators, providing increased support resulting in larger scale use of virtual meeting technology. Virtual panels reviewed 27 percent of proposals competitively reviewed in FY 2015. In the travel arena, NSF increased its use of nonrefundable airline tickets for Federal Advisory Committee Act meetings, resulting in almost \$750,000 in savings. The agency also realized savings in other areas—including conferences, printing, and telecommunications—through such measures as continuing to utilize Blanket Purchase Agreements for light refreshments; developing a comprehensive Managed Print Services Strategy that will centralize the approval, acquisition, and maintenance of all NSF printing devices; and expanding the use of Telecommunications Expense

Imaging the Brain in Real Time: Overcoming the light-scattering effects of tissue, NSF-funded researchers at Washington University in St. Louis (WUSTL) use laser light to peer into the brain to unprecedented depths (nearly 3 inches). The approach they pioneered, termed photoacoustic imaging, combines laser light and sound waves. The technique allows the study of biological material, from cells to tissues and organs, in its natural environment, free of imaging agents. It detects single red blood cells as well as fats and proteins. The researchers are integrating the technique into a system to capture images every 1/1,000th of a second—fast enough to image action potentials (changes in electrical potential along a nerve fiber when a nerve impulse is transmitted).



This mouse brain was visualized using label-free photoacoustic microscopy. Credit: Junjie Yao and Lihong Wang, WUSTL.

Management Services to 100 percent agency participation. NSF is also continuing to monitor Intergovernmental Personnel Act (IPA) costs, and in FY 2015 developed a document for institutions outlining the benefits to institutions of allowing their staff to come to NSF as IPAs. NSF also reached the highest percentage of IPA awards with cost sharing ever achieved. More than 40 percent of all active agreements have cost sharing, which is double the rate in previous years.

- **To encourage the ethical conduct of research:** NSF continued to manage the Cultivating Cultures for Ethical STEM (CCE STEM) program. CCE STEM focuses on cultivating climates that expect and encourage academic and research integrity at all levels. The agency oversaw year 1 of the 5-year cooperative agreement with the National Academies to develop their Online Ethics Center to include material relevant to all fields that NSF supports. The agency also established a global presence in this area by organizing collaborative workshops with the Japan Society for the Promotion of Science (JSPS) and with the American Association for the Advancement of Science (AAAS) on research integrity.

Performance

This discussion of NSF's FY 2015 performance management activities focuses on the agency's efforts related to the Government Performance and Results Act of 1993 (GPRA) and the GPRA Modernization Act of 2010¹⁹ and on the agency's workload and management metrics.

FY 2015 Strategic Framework

NSF is subject to GPRA and the GPRA Modernization Act of 2010, as well as related performance reporting guidance issued by OMB.²⁰ NSF's Strategic Plan, *Investing in Science, Engineering, and Education for the Nation's Future*,²¹ lays out the following strategic goals:

- The first mission-focused goal, *Transform the Frontiers of Science and Engineering*, derives from the first part of NSF's mission, "to promote the progress of science" in order to expand and explore the frontiers of human knowledge; to enhance the ability of the Nation to meet the challenges it faces; and to create new paradigms and capabilities for scientific, technological, and (consequently) economic leadership in an increasingly fast-paced, competitive world.
- The second mission-focused goal, *Stimulate Innovation and Address Societal Needs through Research and Education*, flows from the latter part of the NSF mission statement—"to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes." Through targeted solicitations and core programs, NSF is able to focus the attention of the broader science and engineering community on fundamental aspects of high-priority national challenges.
- The management-focused goal, *Excel as a Federal Science Agency*, directs that NSF will integrate mission, vision, and core values to efficiently and effectively execute its activities and provide the flexibility and agility required to meet the quickly evolving challenges associated with the first two strategic goals.

These three strategic goals are associated with seven specific objectives (Figure 4). Objectives are intended to be comprehensive of agency program activities. Progress toward these objectives is monitored in several ways—through annual performance goals (seven goals in FY 2015), Agency Priority Goals (three goals in FY 2014–FY 2015), and Strategic Reviews (see next section).

In addition to these strategic goals and objectives, which are intended to monitor agency performance against its entire mission, NSF set three Agency Priority Goals for FY 2014–FY 2015 to monitor progress in specific areas in which near-term focus on agency execution can have the most impact. In FY 2015, NSF continued its practice of having agency leaders conduct quarterly data-driven performance reviews for each of the three Agency Priority Goals. NSF also participates actively in Cross-Agency Priority (CAP) Goals relevant to its mission and execution of that mission. Figure 4 shows NSF's FY 2015 Annual Priority Goals and CAP Goals.

¹⁹ See www.whitehouse.gov/omb/mgmt-gpra/index-gpra.

²⁰ OMB Circular A-11, *Preparation, Submission, and Execution of the Budget*, Part 6; see www.whitehouse.gov/omb/circulars_all_current_year_all_toc.

²¹ www.nsf.gov/about/performance/strategic_plan.jsp.

Figure 4

NSF Performance Framework

NSF 2014–2018 Strategic Goals	
Strategic Goal	Strategic Objectives
G1: Transform the Frontiers of Science and Engineering	O1: Invest in fundamental research to ensure significant continuing advances across science, engineering, and education.
	O2: Integrate education and research to support development of a diverse STEM workforce with cutting-edge capabilities.
	O3: Provide world-class research infrastructure to enable major scientific advances.
G2: Stimulate Innovation and Address Societal Needs through Research and Education	O1: Strengthen the links between fundamental research and societal needs through investments and partnerships.
	O2: Build the capacity of the Nation to address societal challenges using a suite of formal, informal, and broadly available STEM educational mechanisms.
G3: Excel as a Federal Science Agency	O1: Build an increasingly diverse, engaged, and high-performing workforce by fostering excellence in recruitment, training, leadership, and management of human capital.
	O2: Use effective methods and innovative solutions to achieve excellence in accomplishing the agency's mission.

NSF FY 2014–FY 2015 Priority Goals		
Type of Goal	Goal Header	Goal Statement
Agency Priority Goal	Ensure Public Access to Publications	Increase public access to NSF-funded peer-reviewed publications. By September 30, 2015, NSF-funded investigators will be able to deposit versions of their peer-reviewed articles in a repository that will make them available to the public.
	Increase the Nation's Data Science Capacity	Improve the Nation's capacity in data science by investing in the development of human capital and infrastructure. By September 30, 2015, implement mechanisms to support the training and workforce development of future data scientists; increase the number of multi-stakeholder partnerships to address the Nation's big-data challenges; and increase investments in current and future data infrastructure, extending data-intensive science into more research communities.
	Optimize the Award Process to Level Workload	Improve agency and awardee efficiency by leveling award of grants across the fiscal year. By September 30, 2015, NSF will meet targets to level distribution of awards across the fiscal year and subsequently improve awardee capacity to effectively manage research funding.
Cross-Agency Priority (CAP) Goal	STEM Education	Improve science, technology, engineering and mathematics (STEM) education by implementing the federal STEM Education 5-Year Strategic Plan, announced in May 2013, specifically: <ul style="list-style-type: none"> • Improve STEM instruction. • Increase and sustain youth and public engagement in STEM. • Enhance STEM experience of undergraduate students. • Better serve groups historically under-represented in STEM fields. • Design graduate education for tomorrow's STEM workforce. • Build new models for leveraging assets and expertise. • Build and use evidence-based approaches.
	Lab-to-Market	Increase the economic impact of federally funded research and development by accelerating and improving the transfer of new technologies from the laboratory to the commercial marketplace.

The following discussion of NSF's performance goals and results summarizes information available to date. NSF's *FY 2015 Annual Performance Report* (APR) will provide a fuller discussion of all the agency's performance measures, including descriptions of the metrics, methodologies, results, and trends, along with a list of relevant external reviews. All of NSF's FY 2015 performance goals have undergone an independent verification and validation review by an external consultant using U.S. Government Accountability Office (GAO) guidance.²² More detailed information about NSF's GPRA verification and validation review will be part of the APR. NSF's FY 2015 APR will be included in the agency's *FY 2017 Budget Request to Congress*, which will be available at www.nsf.gov/about/performance.

Strategic Objectives and Strategic Reviews

In the spring of 2015, NSF conducted its second Strategic Review process in response to the requirement of the GPRA Modernization Act of 2010, Section 1116(f). OMB Circular A-11 (Section 270.2) specifies that: "Annually, agency leaders should review progress on each of the agency's strategic objectives established by the agency Strategic Plans and updated annually in the Annual Performance Plan. These reviews should inform strategic decision-making, budget formulation, and near-term agency actions, as well as preparation of the Annual Performance Plan and Annual Performance Report." NSF's approach was to conduct a strategic and focused crosscutting analysis using the results of existing assessment processes, evaluations, and reports as well as other sources of evidence. The following provides information on the focus of the Strategic Reviews for each of the strategic objectives in the Strategic Plan.

- ***G1/O1: Invest in fundamental research to ensure significant continuing advances across science, engineering, and education.*** The Strategic Review examined mechanisms that NSF can use to overcome the barriers of our traditional discipline-based organizational structure to advance science at the intersections of disciplines.
- ***G1/O2: Integrate education and research to support development of a diverse STEM workforce with cutting-edge capabilities.*** The Strategic Review examined the strengths and weaknesses of NSF's three primary graduate support mechanisms—research assistantships, fellowships, and traineeships.
- ***G1/O3: Provide world-class research infrastructure to enable major scientific advances.*** The Strategic Review examined NSF investments in networks, cyberinfrastructure, and distributed human capital infrastructure to identify barriers to supporting "Next Generation Research Infrastructure" (NGRI).
- ***G2/O1: Strengthen the links between fundamental research and societal needs through investments and partnerships.*** The Strategic Review considered how access to large-scale, NSF-funded data repositories advances national health, prosperity, and welfare, and the critical barriers to making NSF-funded scientific data more broadly available and enduring.
- ***G2/O2: Build the capacity of the Nation to address societal challenges using a suite of formal, informal, and broadly available STEM educational mechanisms.*** The Strategic Review examined the role that Public Participation in STEM Research (PPSR) can play in advancing science and engineering and in increasing the participation of the U.S. population in science and engineering broadly.
- ***G3/O1: Build an increasingly diverse, engaged, and high-performing workforce by fostering excellence in recruitment, training, leadership, and management of human capital.*** The Strategic Review considered the changes in the Project Director (PD) job and workforce over the last 15 years and examined factors impacting recruitment, selection, and retention of PDs. Workload was identified as a significant challenge affecting PD retention.

²² U.S. Government Accountability Office. 1998. *The Results Act: An Evaluator's Guide to Assessing Agency Annual Performance Plans* (GAO/GGD-10.1.20); see www.gao.gov/special_pubs/gg10120.pdf.

- **G3/O2: Use effective methods and innovative solutions to achieve excellence in accomplishing the agency's mission.** The Strategic Review examined what customer service means to NSF, with particular attention paid to the use of NSF's dwell time goal (of processing 75 percent of proposals within 6 months) as a metric of customer service.

More information, including information about the specific "Opportunities for Action or Improvement" recommended by the Strategic Reviews, will be published with NSF's *FY 2017 Budget Request to Congress*.

FY 2015 Progress Toward Goals

In FY 2015, NSF tracked progress toward its three strategic goals through seven annual performance goals and three Agency Priority Goals. All program activities within the agency were covered by the goals. Results will be published in the Annual Performance Report of the FY 2017 Budget Request.

Mission-Oriented Strategic Goals

Three performance goals supported all objectives under both mission-oriented goals, *Transform the Frontiers of Science and Engineering* and *Stimulate Innovation and Address Societal Needs through Research and Education*. The FY 2015 performance goals in this area were:

- Meet critical targets for key program investments.
- Ensure program integrity and responsible stewardship of major research facilities and infrastructure.
- Enable consistent evaluation of the impact of NSF investments with a high degree of rigor and independence.

Management Strategic Goals

In FY 2015, NSF had four performance goals to support the management-oriented strategic goal, *Excel as a Federal Science Agency*, focused on customer service and human resources development. The FY 2015 goals in this area were:

- Foster an environment of diversity and inclusion while ensuring compliance with the agency's EEO and civil rights programs.
- Use evidence-based reviews to guide management investments.
- Inform applicants whether their proposals have been declined or recommended for funding within 182 days, or six months, of deadline, target, or receipt date, whichever is later.
- Identify new approaches to keep NSF's world-renowned merit review process innovative, effective, and efficient.

Agency Priority Goals and Cross-Agency Priority Goals

In FY 2015, NSF tracked progress toward three Agency Priority Goals:

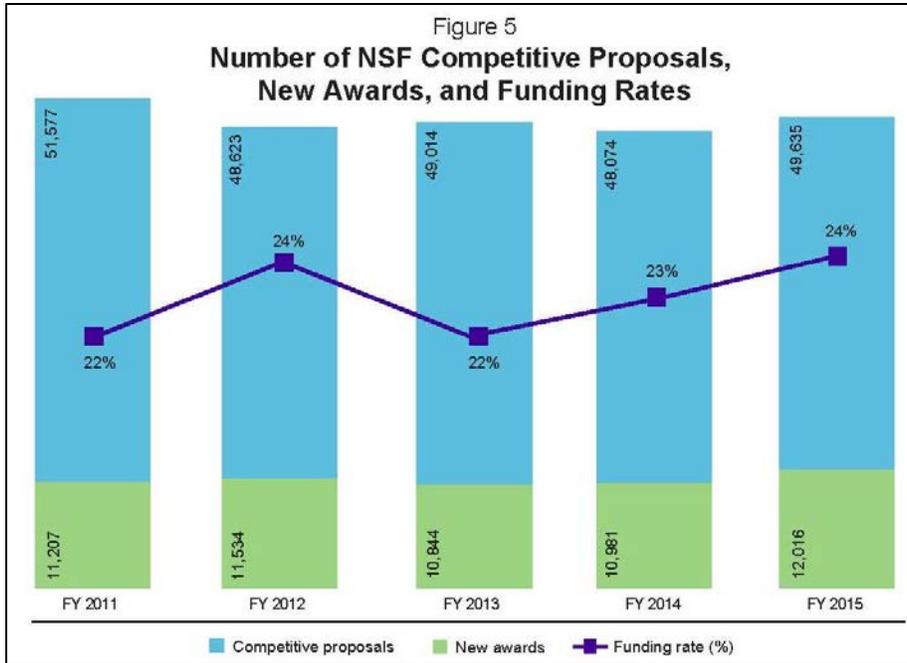
- Increase the Nation's Data Science Capacity
- Ensure Public Access to Publications
- Optimize the Award Process to Level Workload

For current information about Agency and Cross-Agency Priority Goals, please see www.performance.gov.

Workload and Management Trends

NSF continuously monitors key portfolio, 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 *Report to the National Science Board on the National Science Foundation's Merit Review Process, Fiscal Year 2014* (NSB-2015-14) at www.nsf.gov/nsb/publications/2015/nsb201514.pdf.

- In FY 2015, the number of competitive proposals reviewed by NSF rose 3.2 percent—an increase of 1,561, to 49,635 (Figure 5).



- The number of new awards increased in FY 2015 by 9.4 percent (1,035), to 12,016. That, accompanied by an 8.9 percent reduction to the average annual award size in FY 2015, resulted in NSF making 7.8 percent more awards in FY 2015 than the 11,142 average annual number of awards made between FY 2011 and FY 2014.
- The 9.4 percent increase in new award actions, along with the 8.9 percent reduction to the average annual award size offset against a 3.2 percent increase in the number of competitive proposals, resulted in a 1-percentage-point increase in the funding rate, to 24 percent. This is higher than the 23 percent average funding rate that prevailed in the previous 4-year period, from FY 2011 to FY 2014.
- As shown in Figure 6, the average annual award size of competitive awards decreased 8.9 percent, from \$180,507 in FY 2014 to \$164,526 in FY 2015. This decrease in average award size is driven by NSF issuing relatively fewer large awards in FY 2015 rather than an overall decrease in award size. As noted in the FY 2014 Merit Review Process report, “Adequate award size and duration are important for enabling science of the highest quality and ensuring that the proposed work can be accomplished as planned. Larger award size and longer award duration may also permit the

participation of more students and allow investigators to devote a greater portion of their time to conducting research.”²³

Figure 6

Workload and Management Trends

Measure		FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Percent Change (FY 2015–FY 2014)	Average (FY 2011–FY 2014)
Portfolio	Competitive proposal actions	51,577	48,623	49,014	48,074	49,635	3.2%	49,322
	Competitive award actions	11,207	11,534	10,844	10,981	12,016	9.4%	11,142
	Average annual award size (competitive awards)	\$172,533	\$169,217	\$169,107	\$180,507	\$164,526	-8.9%	\$172,841
	Funding rate	22%	24%	22%	23%	24%	1- percentage point	23%
Workload	Number of employees (FTE, usage)	1,415	1,415	1,414	1,390	1,374	-1.2%	1,409
	Number of active awards*	56,414	56,432	55,542	53,546	53,967	0.8%	55,484
	Proposal reviews conducted	262,005	235,654	233,116	225,847	231,450	2.5%	239,156
Financial	Number of grant payments	29,214	28,016	27,649	27,978	22,860	-18.3%	28,214
	Award expenses incurred but not reported at 9/30 (\$ in millions)**	\$1,679	\$1,769	\$344	\$250	\$398	59.2%	\$1,011

FTE = full-time equivalents. FY = fiscal year.
 * Active awards include all active awards regardless of whether funds were received during the fiscal year.
 ** FY 2015 number reflects an accrual, and all other years reflect actuals.

- In FY 2015, NSF’s workforce in terms of full-time equivalents (FTE) was at 1,374, a decrease of 16 from the prior year and the lowest over the last 5 years. The drop in FTEs was primarily due to a lag time in hiring replacements after a high number of retirements during FY 2014. The situation is now improving.
- The number of active awards increased 0.8 percent (by 421) in FY 2015, from 53,546 in FY 2014 to 53,967 in FY 2015. This increase reflects a combination of factors including the 8.9 percent decrease in the average annual award size and the 9.4 percent increase in the number of FY 2015 competitive award actions made offset by the expiration of the remaining 300 grants funded through the American Recovery and Reinvestment Act of 2009 (ARRA)—and the fact that the number of new awards made in the years following ARRA has dropped back to levels observed in pre-ARRA years.

²³ Report to the National Science Board on the National Science Foundation’s Merit Review Process, Fiscal Year 2014, page 19.

- During FY 2015, NSF completed its second full year with grantees using ACM\$ for all payment activity. In the ACM\$ environment, all NSF awardee institutions are required to submit payment requests at the award level. Award expenses are posted to the NSF financial system at the time of the payment request. In FY 2015, NSF awardees submitted approximately 556,000 award level disbursement and expense transactions.
- Implementation of NSF's new financial system has enabled next-day deposit of grantee payments, reduced the number of staff resources required for the payment process, and provided opportunities to include more NSF grant activities in standard payment functions. Additionally, new payment processes introduced with the financial system have reduced the number of grant payments from 27,978 in FY 2014 to 22,860 in FY 2015. When grantees submit multiple ACM\$ payment requests in a day, those payment requests are now combined into a single deposit to the grantee's bank account. In past years, multiple payments requests in a day generated multiple grantee deposits.
- ACM\$ has significantly improved the timeliness of grant financial data. In prior years, as of September 30th, NSF awardee institutions using quarterly expense reporting processes had approximately \$1.7 billion in award expenses that they had incurred but not yet reported to NSF. Under ACM\$, the amount of incurred but not yet reported award expenses has decreased to under \$400 million each of the last 3 years.

Geometry Playground: A 4,500-square-foot traveling exhibition for science museums combines novel playground climbing with tabletop hands-on exhibits to engage boys, girls, and adults in spatial reasoning about geometric shapes. The exhibit—designed, built, and evaluated by the Exploratorium in San Francisco—promotes spatial reasoning (the ability to think about objects in three dimensions, visualize objects from different angles, etc.). Spatial reasoning is critically important for learning math, science, and engineering. Playground design firm Landscape Structures Inc., the Science Museum of Minnesota, and artists in residence participated in the project.



Museum visitors explore the Geometry Playground. *Credit: Thomas Rockwell, Exploratorium.*

Financial Discussion and Analysis

In FY 2015, NSF continued its commitment to an aggressive set of initiatives designed to increase the efficiency of its financial operations. By focusing on improving how the agency manages its finances, NSF made substantive progress in increasing the accuracy of the agency's financial information and modernizing its systems and processes.

On September 30, 2015, NSF completed its first full year of operations with its new financial management system, iTRAK. As with any new system, the agency overcame many challenges to accomplish the integration of users, data, and reporting, while maintaining compliance with government-wide requirements for federal financial systems. The iTRAK system has improved internal controls over financial information. iTRAK's goals are to enable the seamless flow of financial information for relevant and timely decision making; to improve the effectiveness and efficiency of financial and business processes; and to enhance financial and business accountability and integrity.

In accordance with the Chief Financial Officers Act of 1990 and the Government Management Reform Act of 1994, NSF prepares financial statements in conformity with U.S. generally accepted accounting principles (GAAP) for U.S. federal entities. The financial statements present NSF's detailed financial information relative to its mission and the stewardship of those resources entrusted to the agency. It also provides readers with an understanding of the resources that NSF has available, the cost of our programs, and the status of resources at the end of the fiscal year. NSF subjects its financial statements to an independent audit to ensure that they are free from material misstatement and can be used to assess NSF's financial status and related financial activity for the years ending September 30, 2015 and September 30, 2014.

For FY 2015, NSF received its 18th consecutive unmodified audit opinion. The audit report noted no material weaknesses but included one significant deficiency. The prior year significant deficiency related to the monitoring of construction type cooperative agreements was repeated. NSF made progress in this area in FY 2015, and the agency will continue to work to strengthen its controls for awarding and overseeing these agreements in FY 2016. The Independent Auditors' Report can be found on page II-3. Management's response to the Independent Auditors' Report can be found on page II-19.

In FY 2015, NSF undertook a number of significant activities to address the FY 2014 significant deficiencies related to the agency's grant accrual accounting estimation process and its monitoring of construction type cooperative agreements. Also in FY 2015, NSF commenced a set of activities to support the agency's implementation of the Digital Accountability and Transparency Act (DATA Act) and worked with the OIG to improve the agency's management of its Government Travel Charge Card program. These advancements, which are detailed in the following subsections, have served to strengthen agency controls on the use of federal funds and to ensure NSF's continued sound stewardship of the public trust.

Grant Accrual Accounting Estimation Process

NSF worked with its auditors to complete extensive analyses over the past two fiscal years. As a result, the grant accrual process is no longer a significant deficiency. In FY 2015, NSF made great advances in obtaining more consistent and reliable historical grantee spending pattern data, which led to the development of a new linear regression methodology (LRM) based on historical Federal Financial Report (FFR) data. NSF used the new LRM to estimate the "incurred but not reported" (IBNR) portion of its annual grant cost at June 30th. During July, the estimated amount of IBNR grant expenses for June 30th was validated to be within 6.9 percent of the grant expense amount. As the year progressed, NSF continued to refine the IBNR estimation process by incorporating the last three IBNR statistical validation results (FY 2013 Quarter 4, FY 2014 Quarter 4, and FY 2015 Quarter 3) into the LRM model for the FY 2015 Quarter 4 IBNR estimate. The updated LRM produced an estimated amount of IBNR grant expenses of \$398 million. NSF plans to validate the IBNR liability as necessary to continue to refine its

methodology and estimation process. For future years, NSF is considering using only the most recent 20 quarters of data as inputs for the LRM, which will place more emphasis on more recent grantee drawdown activity and IBNR validations than on IBNR reported on the FFR.

Monitoring of Construction Type Cooperative Agreements

During FY 2015, NSF made substantial enhancements to its policies and procedures related to the monitoring and oversight of construction type cooperative agreements. The agency published a revised Large Facilities Manual (LFM) in June 2015. The manual includes strengthened standards for the planning and use of budget contingency for the construction stage, an NSF cost analysis at each stage-gate review during design, and a more robust policy for management fee. The revised LFM also codified the use of an agency-wide Integrated Project Team approach to oversight and assurance. Furthermore, NSF strengthened and standardized its monthly reporting format for projects in construction for improved consistency and clarity across its Large Facilities portfolio.

Another area of improvement was revised internal guidance for NSF's documentation of its analysis of recipient proposal cost estimates. NSF also developed additional guidance on pre- and post-award cost monitoring procedures for large facilities projects that addresses the use of auditing in cooperative agreement oversight and closeout. The annual review to determine which facilities will undergo Business System Reviews has fully adopted a risk-based approach. Finally, the agency is expanding its policy on audits of awardees' accounting systems and practices prior to entering into large facility construction cooperative agreements.

NSF has been employing the majority of these policies and procedures as part of its end-to-end cost surveillance efforts and applying them to cooperative agreements for both existing and new construction projects, as appropriate. Effective September 15th, additional cost monitoring policies were also applied to large facility operations awards. These enhancements, coupled with the agency's continued dialogue with its OIG concerning monitoring and oversight of construction type cooperative agreements, have strengthened NSF's controls over awarded funds.

Digital Accountability and Transparency (DATA) Act

In FY 2015, NSF commenced implementation activities relating to the DATA Act. An amendment to the Federal Funding Accountability and Transparency Act of 2006 (FFATA), the DATA Act directed federal agencies to standardize and publish a wide variety of reports and data compilations related to spending: financial management, payments, budget actions, procurement, and assistance. Implementation of the DATA Act is a major government-wide initiative led by the U.S. Department of the Treasury and OMB, and the Act authorized them to establish government-wide financial data standards for any federal funds made available to or expended by federal agencies and entities receiving federal funds. Building on NSF's government-wide leadership in federal financial assistance management, NSF will implement the DATA Act by May 2017. The existing linkage between NSF's financial assistance award system and iTRAK places the agency in a strong position for implementation success.

Travel Charge Card Program

NSF worked with its OIG during FY 2015 to strengthen its Travel Charge Card Program. The agency implemented tracking mechanisms in its training system to remind cardholders that they must re-take the travel card training every three years. The new mechanisms also identify individuals who fail to complete the training, which alerts the agency to take appropriate action. Furthermore, NSF developed new tracking mechanisms to document card misuse and temporary account changes, such as credit limit changes.

Going forward, NSF will execute a plan to better track the mandatory use of the travel cards for frequent travelers. Included in this process will be a plan to track travelers and work with program officials to comply with travel card policy. Additionally, NSF will continue to improve monitoring procedures to prevent misuse and ensure travel transportation charges are incurred against the correct accounts.

Understanding the Financial Statements

The following discussion of our financial condition and results of operations should be read together with the financial statements and the accompanying notes.

NSF's FY 2015 financial statements and notes are presented in accordance with OMB Circular A-136, *Financial Reporting Requirements*. NSF's current year financial statements and notes are presented in a comparative format. The Stewardship Investment schedule presents information over the last five years. Figure 7 summarizes the changes in NSF's financial position in FY 2015.

Figure 7

Changes in NSF's Financial Position in FY 2015 (dollars in thousands)

Net Financial Condition	FY 2015	FY 2014	Increase/(Decrease)	% Change
Assets	\$12,724,668	\$12,131,850	\$592,818	4.9%
Liabilities	\$518,809	\$380,259	\$138,550	36.4%
Net Position	\$12,205,859	\$11,751,591	\$454,268	3.9%
Net Cost	\$6,980,344	\$7,256,651	(\$276,307)	-3.8%

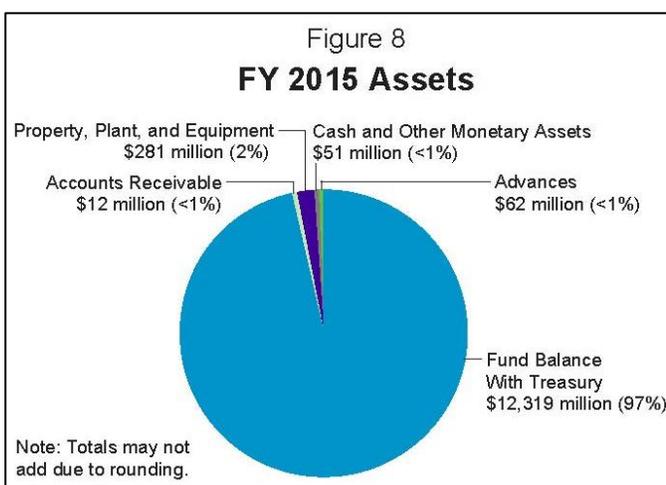
Balance Sheet

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). NSF's total assets are largely composed of *Fund Balance with Treasury*. A significant balance also exists in the *General Property, Plant, and Equipment* account.

In FY2015, Total Assets (Figure 8) increased 4.9 percent from FY 2014. The bulk of the change occurred in the *Fund Balance with Treasury* account, which increased by \$538.3 million in FY 2015. *Fund Balance with Treasury* is funding available from which NSF is authorized to make expenditures and

pay amounts due through the disbursement authority of the Department of Treasury. It is increased through appropriations and collections and decreased by expenditures and rescissions.

In FY 2015, Total Liabilities (Figure 9) increased 36.4 percent from FY 2014. This change is primarily related to a \$90.5 million increase in *Accrued Liabilities—Grants* in FY 2015. *Accrued Liabilities – Grants* is estimated utilizing a linear regression model based on the statistical correlation of NSF grantee's historical unliquidated obligation balances and expenses incurred but not yet reported. In FY 2015 the unliquidated obligations balance for grantees increased by \$565.3 million, resulting in a higher *Accrued Liabilities – Grants* as compared to FY 2014.



Statement of Net Cost

The Statement of Net Cost presents the annual cost of operating NSF programs. The net cost of each specific NSF program operation equals the program's gross cost less any offsetting 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 Operation*.

Approximately 95 percent of all current year NSF Net Costs of Operations incurred were directly related to the support of the Research and Related Activities (R&RA), Education and Human Resources (EHR), Major Research Equipment and Facilities Constructions (MREFC) programs; 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 R&RA, EHR, MREFC, and Donations and Dedicated Collections and account for 5 percent of the total current year Net Cost of Operations (Figure 10). These administrative and management activities are focused on supporting the agency's program goals.

Statement of Changes in Net Position

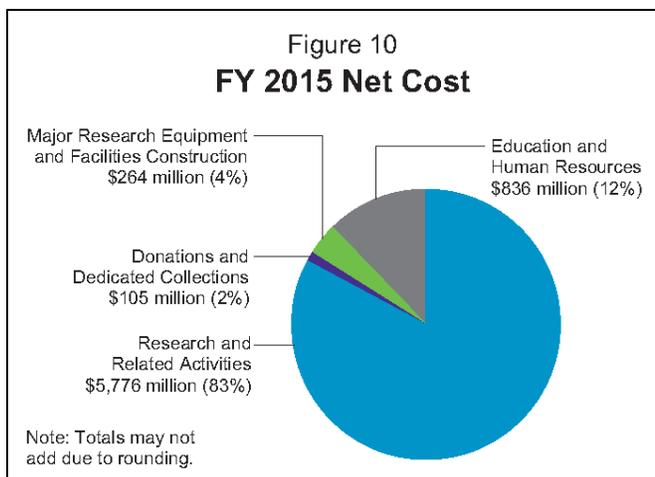
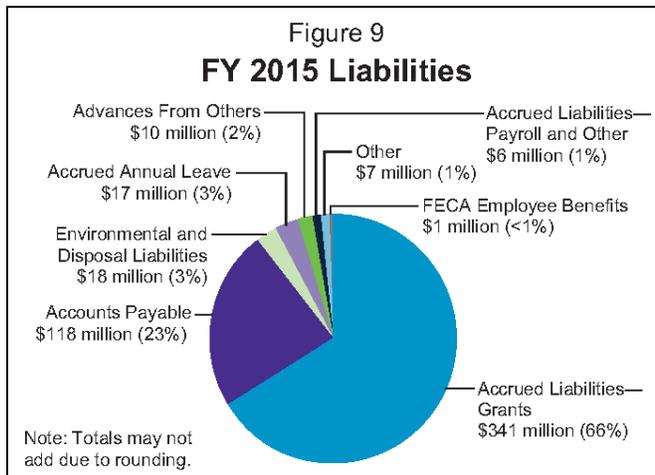
The Statement of Changes in Net Position presents the agency's cumulative net results of operation and unexpended appropriations for the fiscal year. NSF's Net Position increased by 3.9 percent, or \$454.3 million, in FY 2015.

Statement of Budgetary Resources

This statement 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 2015, *Total Budgetary Resources* increased by \$343.5 million. *Budgetary Resources—Appropriations* for the R&RA, EHR, and MREFC accounts were \$5,933.6 million, \$866.0 million, and \$200.8 million, respectively. The combined *Budgetary Resources—Appropriations* in FY 2015 for the NSB, OIG, and AOAM accounts totaled \$343.8 million. NSF also received funding via warrant from the H-1B Non-immigrant Petitioner Fees Accounts (H-1B) in the amount of \$143.0 million, and via donations from foreign governments, private companies, academic institutions, nonprofit foundations, and individuals in the amount of \$34.8 million. In FY 2015, the *Budgetary Resources—Appropriations* line was also affected by H-1B sequestration in the amount of \$7.3 million.

Stewardship Investments

NSF-funded investments yield long-term benefits to the general public. NSF investments in research and education produce quantifiable outputs, including the number of awards made and the number of researchers, students, and teachers supported or involved in the pursuit of science and engineering research and education. NSF incurs stewardship costs to empower the nation through discovery and



innovation. In FYs 2015 and 2014, these costs amounted to \$329.7 million and \$309.8 million, respectively.

Limitations of the Financial Statements

In accordance with the guidance provided in OMB Circular A-136, NSF discloses the following limitations of the agency's FY 2015 financial statements, which appear in Chapter 2 of this report: The principal financial statements have been prepared to report the financial position and results of operations of NSF, pursuant to the requirements of 31 U.S.C. 3515(b). While the statements have been prepared from NSF books and records in accordance with GAAP for federal entities and the format 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. The statements should be read with the realization that they are for a component of the U.S. Government, a sovereign entity.

Other Financial Reporting Information

Debt Collection Improvement Act of 1996

Net Accounts Receivable totaled \$11.6 million at September 30, 2015. Of that amount, \$9.7 million is due from other federal agencies. The remaining \$1.9 million is due from the public. NSF fully participates in the Department of the Treasury Cross-Servicing Program. In accordance with the Debt Collection Improvement Act, this program allows NSF to refer debts that are delinquent more than 120 days to the Department of the Treasury for appropriate action to collect those accounts. In FY 2004, OMB issued M-04-10, *Memorandum on Debt Collection Improvement Act Requirements*, which reminded agencies of their responsibility to comply with the policies for writing off and closing out debt. In accordance with this guidance, NSF has now incorporated the policy of writing off delinquent debt more than two years old. Additionally, NSF seeks Department of Justice concurrence for action items over \$100.0 thousand.

Cash Management Improvement Act of 1990

In FY 2015, NSF had no awards covered under Cash Management Improvement Act Treasury-State Agreements. The timeliness of NSF's payments to grantees through its payment systems makes the timeliness of payment issue under the Act essentially not applicable to the agency. No interest payments were made in FY 2015.

Federal Civil Penalties Inflation Adjustment Act of 1990

In FY 2015, NSF had no civil monetary penalties covered under the Federal Civil Penalties Inflation Adjustment Act of 1990.

Systems, Controls, and Legal Compliance



National Science Foundation FY 2015 Statement of Assurance

The National Science Foundation (NSF) management is responsible for improving the accountability and effectiveness of its program and operations by establishing, assessing, correcting, and reporting on internal controls to meet the objectives of the Federal Managers Financial Integrity Act of 1982 (FMFIA) and the Federal Financial Management Improvement Act of 1996 (FFMIA). The agency head is required to provide a statement on whether there is reasonable assurance the agency's controls are achieving their intended objectives and report any material weaknesses in the controls, as required by Section 2 and whether the agency's financial systems conform to government-wide requirements, as required by Section 4 of the FMFIA. Management is required to provide a separate assessment of the effectiveness of internal controls over financial reporting.

NSF's internal control program is designed to ensure full compliance with applicable laws and regulations: OMB Circular A-123, *Management's Responsibility for Internal Control*, including Appendix A—*Internal Control over Financial Reporting*, Appendix B—*Improving the Management of Government Charge Cards*, Appendix C—*Requirements for Effective Measurement and Remediation of Improper Payments*, Appendix D—*Compliance with the Federal Financial Management Improvement Act; Conducting Acquisition Assessments* under OMB Circular A-123; and OMB Circular No. A-130, *Management of Federal Information Resources*.

NSF completed its evaluations and carefully considered the appropriate balance between controls and risk in operations and the financial management system. Based on the results of these evaluations, NSF provides reasonable assurance that as of September 30, 2015, its internal control over operations and the financial management system were operating effectively to ensure compliance with applicable laws and regulations. No material weaknesses were identified in the design or operation of internal control under Section 2 of the FMFIA, and Section 4 of the FMFIA, and no system non-conformances were identified for compliance with the FFMIA.

In addition, NSF conducted its assessment of the effectiveness of internal control over financial reporting, which included the safeguarding of assets and compliance with applicable laws and regulations. Based on the results of this assessment for the period ending June 30, 2015, NSF provides reasonable assurance that internal control over financial reporting was operating effectively and no material weaknesses were identified in the design or operation of internal control over financial reporting.

For FY 2015, NSF is providing an unqualified statement of assurance that its internal control and the financial management system meet the objectives of the FMFIA, FFMIA, and financial reporting, as well as related laws and guidance.

/s/

FRANCE A. CORDOVA
Director

November 16, 2015

Management Assurances

NSF continues to improve transparency and accountability within the internal control system to enhance the achievement of its mission. Integral to NSF's continued improvements are the modernization efforts for implementing the Federal Managers Financial Integrity Act of 1982 (FMFIA)²⁴ based on the revised GAO *Standards for Internal Control in the Federal Government* (Green Book, September 2014),²⁵ and the OMB Circular A-123, *Management's Responsibility for Internal Control* and appendices.²⁶ The internal control system supports running operations effectively and efficiently, reporting reliable information about NSF's operations, and complying with applicable laws and regulations. NSF is also responsible for improving the accountability and effectiveness of its programs and operations by meeting the requirements of the Federal Financial Management Improvement Act of 1996 (FFMIA).

The internal control review process supports one of NSF's three strategic goals, to *Excel as a Federal Science Agency*. Excelling as a federal science agency is essential to achieving and carrying out NSF's mission and accomplishing its other strategic goals: (1) transforming the frontiers of science and engineering; and (2) stimulating innovation and addressing societal needs through research and education. The Statement of Assurance is management's assessment of the effectiveness of NSF's internal control. For FY 2015, NSF's internal control assessment provides reasonable assurance that the objectives of the FMFIA and FFMIA were achieved and also concludes that the internal controls over financial reporting are effective. NSF is submitting an unqualified Statement of Assurance for FY 2015.

Highlights from NSF's FY 2015 Internal Control Quality Assurance Program

The FY 2015 unqualified Statement of Assurance represents the continued efforts of NSF management for assessing the design, implementation, and operating effectiveness of internal control utilizing the Committee of Sponsoring Organizations of the Treadway Commission's (COSO) Internal Control—Integrated Framework to assure an effective internal control system.

Internal Control over Financial Reporting—OMB Circular A-123, Appendix A

To achieve an unqualified Statement of Assurance, NSF's FY 2015 Internal Control Quality Assurance (ICQA) Program review consisted of evaluating seven business processes for the period July 1, 2014, through June 30, 2015, to assess internal control over financial reporting. These process areas included Awards Management; Budget; Charge Card; External Property, Plant and Equipment (PP&E); Inter-Agency Agreements; Procure to Pay; and Travel Systems.

The FY 2015 internal control assessment consisted of assuring efficiency and effectiveness of operations, reliability of financial reporting, and compliance with laws and regulations. The NSF risk-based integrated internal control system supports the organization to adapt to new or revised federal mandates, resource constraints, and emerging priorities. In FY 2015, the ICQA team performed the following:

1. Updated process documentation (narratives and flow diagrams) for each key business process. For FY 2015, process documentation updates heavily focused on the new procedures related to the implementation of the new Oracle System (iTRAK).
2. Selected samples based on the frequency of performance of control from the universe of NSF controls performed during FY 2015, using a methodology that is risk based, statistically valid, and compliant with current OMB guidelines.

²⁴ For more information about FMFIA, see www.whitehouse.gov/omb/financial_fmfi1982.

²⁵ For more information about GAO *Standards for Internal Control in the Federal Government*, see www.gao.gov/products/GAO-14-704G.

²⁶ For more information about OMB Circular A-123, see www.whitehouse.gov/omb/circulars_a123_rev.

3. Conducted tests of all transactions selected in the samples and determined if the controls were designed adequately and operating effectively.
4. Conducted an entity-level review to assess both the design and operating effectiveness of key controls. The review focused on the establishment of entity-level and activity-level objectives, risk identification and analysis, and related control activities.
5. Prepared a final report that details the results of testing and assisted NSF in meeting the reporting requirements for its FY 2015 Statement of Assurance.

This approach leveraged various data collection techniques, including conducting interviews, administering surveys, and facilitating working sessions to “widen the lens,” thus helping to ensure that mission-critical areas—that may not have a financial impact—are given adequate attention and consideration. In addition, the ICQA team noted the following improvements in FY 2015:

1. iTRAK: A commercial-off-the-shelf system that is hosted in a shared service (Accounting Federal Services) cloud environment. iTRAK handles transaction processing, account maintenance, transaction history, and rules processing. The new system includes extensive reporting capabilities and supports transaction input through iTRAK as well as from other systems that interface with iTRAK. iTRAK is NSF’s primary business event driven accounting system.
2. External PP&E: IBM® Maximo® asset management system. Maximo is currently replacing the legacy databases and applications for USAP. Multiple phases of development are expected to integrate Maximo into Antarctic Support Contracts (ASC’s) processes and procedures. As a result of the Phase 1 implementation in FY 2015, ASC is currently utilizing Maximo for the asset procurement process.

Based on the results of the assessment, NSF provides reasonable assurance that its internal control over financial reporting is operating effectively and no material weaknesses were identified.

Improving the Management of Government Charge Card Programs—OMB Circular A-123, Appendix B

In FY 2015, NSF conducted a review of the travel, purchase, and vehicle programs for compliance with OMB Circular A-123, Appendix B requirements in reducing risk of fraud, waste, and abuse of Government Charge Card Programs. Consistent with the application of the annual internal control methodology with Appendix A, the same process was applied to the NSF Government Charge Card Program.

Due to the implementation of NSF’s new core financial system, iTRAK, many improvements and controls were implemented in FY 2015. These improvements allowed NSF to put controls in place beyond what the legacy system was capable of doing, including:

1. Separation of duties for approving employee transactions on purchase and vehicle cards.
2. Daily payment of charge card transactions: JPMorgan Chase, NSF’s GSA SmartPay 2 program provider, submits a nightly batch of processed transactions via a query that is generated in iTRAK. iTRAK validates the transactions, which are then made available to the cardholder to verify the transactions, allowing NSF to pay the validated transactions on a daily basis.

In addition, the first year of implementation has led to many lessons learned. NSF is currently working on implementing additional edits that will secure these processes, to include the following:

1. Purchase and vehicle card supporting documentation: In order for purchase and vehicle card transactions to be submitted for approval by the approving official, supporting documentation must be uploaded into the system.

2. Budget Object Class (BOC) Code: A dropdown feature will allow the user to choose the appropriate BOC code for purchase card and vehicle card transactions, ensuring that NSF can accurately track expenses and prevent inefficient budget spending.

Based on the results of the assessment, NSF provides reasonable assurance that internal controls related to the Government Charge Card Program are operating effectively, and no material weaknesses were identified.

Improper Payment Initiative—OMB Circular A-123, Appendix C

NSF is currently working with OMB and the OIG to complete a qualitative risk assessment of improper payments for FY 2015. NSF completed an IPERA risk assessment during FY 2014 covering grants, contracts, and payroll payments. The risk assessment employed both a qualitative and quantitative approach in determining NSF's level of susceptibility to improper payments. The risk assessment did not indicate significant susceptibility to improper payments for NSF grants, contracts or payroll payments. During June 2015, the NSF OIG audit contractor completed an audit of NSF's compliance with IPERA. The auditors found that NSF did not comply with the reporting requirements of IPERA in the FY 2014 AFR. In response, NSF performed additional work in FY 2015. The agency updated its 2014 IPERA risk assessment report and completed follow-up activities for cooperative support agreements and graduate research fellowship grants. NSF also changed its reporting processes for recapture audits in FY 2015. The agency reached consensus with the NSF-OIG on how to move forward to address all audit report findings.

Compliance with the Federal Financial Management Improvement Act of 1996—OMB Circular A-123, Appendix D

NSF has established a comprehensive information technology (IT) security program that is consistent with the Federal Information Security Management Act (FISMA) of 2002 (as amended by the Federal Information Security Modernization Act of 2014) and industry best practices. NSF's IT controls are effective in maintaining a secure IT environment at NSF. NSF's IT environment is supported by a suite of comprehensive policies and procedures that incorporate federal mandates and guidance in all domains. Numerous controls have been implemented to protect agency financial information and information resources. Continuous monitoring verifies throughout the year that effective IT security controls are in place.

The new core financial system for NSF became operational in October 2014. iTRAK is NSF's implementation of Oracle U.S. Federal Financials Release 12. The commercial off-the-shelf (COTS) system, iTRAK, comes with established business processes and system controls. NSF established and documented user access controls, security documentation, and disaster recovery procedures. iTRAK is cloud-based and hosted by a commercial shared-service provider (SSP). Training is required to access iTRAK's business functions, and access is granted based on roles as appropriate. Online training and user guides have been developed for processes within iTRAK. The first year of operation included a number of transition activities to facilitate the change management process. Beginning in the second year, as operations normalize, the various NSF iTRAK and SSP documents will be compiled and updated to create an iTRAK system user manual.

Acquisition Assessment—OMB Circular A-123

The FY 2015 acquisition review consisted of addressing the four cornerstones and questions related to the GAO acquisition assessment framework standards to include: (1) Organizational Alignment and Leadership, (2) Policies and Processes, (3) Human Capital, and (4) Knowledge and Information Management.

Overall, NSF demonstrates the attributes of a strong acquisition organization and has many practices that are characteristic of a highly effective acquisition organization.

1. *Organizational Alignment and Leadership*—NSF's acquisition function is assigned the appropriate degree of responsibility and authority for strategic planning and management oversight of the agency's purchases of goods and services. NSF has robust acquisition processes and tools in place to complement the acquisition workforce. Acquisition roles and responsibilities are clearly defined and senior leadership provides direction and vision, facilitates the development of common processes and approaches, and is involved in identifying and assessing risk associated with meeting acquisition objectives.
2. *Policies and Processes*—NSF promotes coordination among stakeholders through the establishment of acquisition teams. NSF systematically identifies and analyzes agency-wide acquisitions with an automated tool, Advance Acquisition Planning, to ensure that contracting staff is informed of upcoming acquisitions early in the process. Cross-functional teams and integrated project teams are formed to promote coordination during the acquisition process and help drive success across the acquisition function.
3. *Human Capital*—NSF's human capital management strategies and activities engage all components within the agency, including acquisition officials. The agency develops a full suite of recurring reports and ad hoc reports to support the acquisition workforce. The agency also undertakes an annual workforce planning effort to partner with all parts of the agency to explore and address acquisition workforce issues. To ensure developing plans for the acquisition workforce consist of all stakeholders, NSF created an agency-wide group composed of senior executive officers and stakeholders across NSF to formulate and deliver an integrated, updated human capital strategy.
4. *Information Management and Stewardship*—NSF collects information on contract savings, strategic sourcing, reducing high-risk contracting, strengthening the acquisition workforce, attaining the best balance of contractors and federal employees, and increasing opportunities for small business. Controls are present within the contract management cycle to track the contracts from initiation through the closeout of the contract. NSF also maintains a SharePoint site, which serves as a repository for manuals and policies and procedures pertaining to the acquisition process.

Other Federal Reporting and Disclosures—GAO Financial Audit Manual Volume 3

Anti-Deficiency Act—There is no material loss of contingencies over \$7 million or that in the aggregate exceed \$11 million for NSF to report.

Federal Credit Reform Act of 1990, Pub. b. No. 101-508, 104 Stat. 1388-610—Not applicable.

Pay and Allowance System for Civilian Employees, provided primarily in Chapters 31–50 of Title 5, U.S.C.—NSF uses the Department of the Interior, Interior Business Center (IBC) as an SSP to perform many of its payroll functions. IBC's internal control over its shared-service offering is annually reviewed by auditors under the Statement on Standards for Attestation Engagements (SSAE). Annually, IBC's controls are found to be suitably designed and operating effectively. This conclusion is based partly on transactional testing.

Internally, NSF performs testing over its pay and benefit internal controls during the annual internal control review to identify any deficiencies that could result in a material misstatement on the agency's financial statements. There are no significant deficiencies noted.

Prompt Payment Act—NSF continues to inform its top 25 contractors of OMB Memorandum 12-16, *Providing Prompt Payment to Small Business Subcontractors*, and OMB Memorandum 14-10, *Extension of Policy to Provide Accelerated Payment to Small Business Subcontractors* requirements. The prompt pay requires temporarily acceleration of payments to all prime contractors—with a goal of paying them within 15 days of receipt of proper invoices—in order to allow them to provide prompt payments to small business subcontractors. NSF has accelerated all contract payments after approval, actively works to

improve invoice approval timeliness, and has seen marked improvement in payment processing times. The acceleration rate for NSF, as of June 30, 2015, was 97.11 percent.

Provisions Governing Claims of the U.S. Government (31 U.S.C. 3711–3720E) (Including the Debt Collection Improvement Act of 1996)—The Debt Collection Improvement Act of 1996 is addressed in “The Other Financial Reporting Information” section of this report.

Federal Information Security Management Act of 2002—FISMA is addressed in a previous section of the Management's Discussion and Analysis.

Single Audit Act of 1984, Pub L. No. 98-502, and the Single Audit Act Amendments of 1996, P.L. 104-156. (A-136, section II.2.8)—The Single Audit Act requires financial statement audits of non-federal entities receiving or administering grant awards of federal monies. Federal agency internal controls determine whether award expenditures are in compliance with laws and regulations. NSF, as are other federal agencies, is required to review the audit reports of recipients of its funding to determine whether corrective actions are adequate and implemented in response to audit report findings and recommendations. NSF utilizes guidance from the *OMB Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (Uniform Guidance)* and *Audit Follow-up* (OMB Circular A-50) as a basis for its audit resolution and follow-up activities.²⁷

During the period from July 1, 2014, through June 30, 2015, NSF resolved 245 single audit reports. The internal control review team assessed a random sample of 30 of these reports, reviewing supporting documentation, NSF management decision letters, and evidence of grantee-implemented corrective actions. During this performance period, at the invitation of the OMB COFAR, NSF continued as an active member of the interagency Uniform Guidance Working Group to develop Frequently Asked Questions (FAQs) needed to clarify federal requirements set forth in the *Uniform Guidance*.

NSF completed timely implementation of the *Uniform Guidance*, fully upgrading all relevant policies, procedures, and award terms and conditions. In June 2015, NSF allocated two additional staff whose recruitment will strengthen agency support for audit resolution. NSF also piloted conversion of audit and other work products to eRecords to strengthen information sharing and archiving. Also, NSF's internal tracking system includes a module that highlights issues and concerns identified through audit and other oversight activities to inform future interactions with awardees. These considerations affect weighting factors used in NSF's annual portfolio-based risk assessment.

Financial System Strategy and Framework

Financial System Strategy

iTRAK, NSF's new financial system, became operational in October 2014 and completed its first fiscal year on September 30, 2015. The implementation of iTRAK was one of the most complex and critical system implementations undergone by NSF in years. As with any new system implementation, NSF experienced its share of challenges in the first year of operations. Key challenges included integration with a new federal government travel system, Concur; steep learning curves for users working in the new iTRAK environment after performing their work in a 25 year old, custom built financial system; and users learning how to access data in the new system and interpret financial results. We are making great progress in overcoming these challenges through aggressive change management, communications, and training strategies. NSF has trained over 500 users in more than 100 classroom sessions; stood up the iTRAK command center to provide hands on assistance to users as they processed their work in the new

²⁷ For more information on single audits, see *OMB Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards*, Subpart F, December 26, 2014, www.ecfr.gov/cgi-bin/text-idx?SID=a1865f427fe12905196bcd34b074f672&mc=true&node=sp2.1.200.f&rgn=div6 and *Audit Follow-up* (OMB Circular A-50), www.whitehouse.gov/omb/circulars_a050/.

system; and developed a cadre of skilled users from each directorate to become change champions and subject matter experts to help grow the iTRAK capability throughout NSF. We continue to build upon iTRAK's strong foundation by standardizing and increasing the automation of business processes; improving system performance; further streamlining transaction processing; and improving access to more detailed financial information.

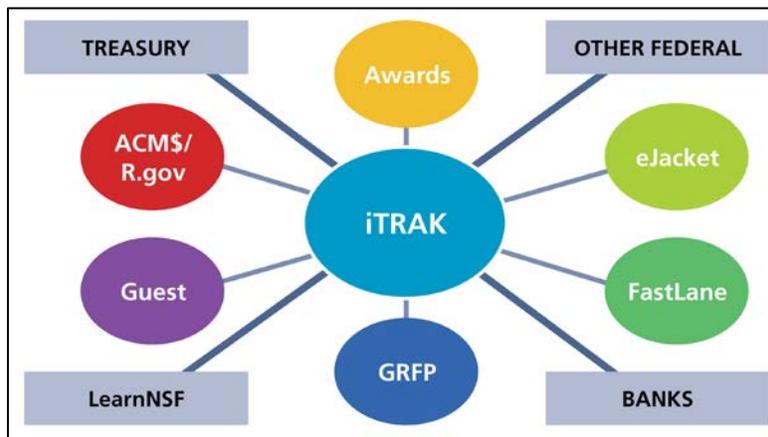
iTRAK was developed to align with the NSF's strategic goals to further scientific and organizational excellence and accountability for the public benefit and to comply with federal mandates. Specifically, iTRAK complies with OMB Memorandum M-10-26, *Immediate Review of Financial Systems IT Projects*, OMB Memorandum M-13-08, *Improving Financial Systems through Shared Services*, and OMB Circular A-123, Appendix D. iTRAK ensures that transactions are posted in accordance with the U.S. Standard General Ledger (USSGL) at the transaction level; maintains accounting data to permit reporting in accordance with Generally Accepted Accounting Principles (GAAP) as prescribed by the Federal Accounting Standards Advisory Board (FASAB) for federal reporting entities; enforces strict funds control to prevent anti-deficiencies across the budgeting and spending functions; and enables strong access control and definition of "responsibilities" to support segregation of duties control. As iTRAK continues to mature, NSF will expand its analytical capabilities towards a more mature and performance driven system to better support NSF's mission.

Financial Management System Framework

NSF's Financial Management System Framework focuses on the agency's financial management systems, standard business processes, data, and information architecture to ensure reliable, timely, and consistent financial information that enables effective management of NSF resources and delivery of mission critical products and services. NSF's new core financial system, iTRAK, interfaces with NSF's existing awards and grants management systems including eJacket, NSF's internal awards processing system; FastLane, NSF's online website through which the agency conducts its relationship with the proposal community, reviewers, and research administrators and their organizations; the Award Management and Award Letter System ("Awards"); the Award Cash Management Service (ACM\$); the Graduate Research Fellowship Program (GRFP); and the Guest Travel and Reimbursement System. As shown in Figure 12 below, iTRAK also interfaces with LearnNSF, the agency's staff training module; other federal systems such as the Federal Personnel Payroll System (FPPS), eTravel/Concur, and GSA's System for Award Management (SAM); and the U.S. Treasury as well as with J.P. Morgan Chase Bank. Future iTRAK phases include electronic invoicing, compliance with the Digital Accountability and Transparency Act (DATA Act) and IRS Audit; and integration of an Acquisition Module, a Fixed Asset Module, and a Budget Formulation Module.

Figure 11

The iTRAK Framework



The logo for NIFTY (National Financial Index) is centered in the upper half of the page. It features the word "NIFTY" in a bold, serif font, with the letters "N", "S", and "F" being significantly larger than "I", "T", and "Y". The text is white and set against a dark blue circular background. This circle is surrounded by a larger, lighter blue gear-like pattern that fills the upper portion of the page. The background of the entire page is a gradient of blue and purple, with a horizontal band of teal and a vertical band of green on the left side.

NIFTY

Chapter 2

Financials



A MESSAGE FROM THE CHIEF FINANCIAL OFFICER



Credit: Sandy Schaeffer

Fiscal year (FY) 2015 was another year of extraordinary challenges. FY 2015 was also our first full operating year under iTRAK, the agency's new financial management system. iTRAK implementation was only one of many significant accomplishments achieved in FY 2015 as we continue to develop new strategies, share best practices, and deploy new technologies to enhance our monitoring and federal funds management capabilities in support of NSF's core mission.

I am pleased to report that the National Science Foundation received its 18th consecutive unmodified audit opinion for FY 2015, affirming that the agency's financial statements for the year ended September 30, 2015, were presented fairly in all material respects and in conformity with U.S. generally accepted accounting principles. The Independent Auditors' Report noted no material weaknesses, and the prior-year significant deficiency related to NSF's grant accrual accounting estimation process has been removed. I appreciate my staff's hard work and dedication in making this significant positive impact. The prior-year significant deficiency related to the monitoring of construction type cooperative agreements was repeated for FY 2015. NSF will continue to work to strengthen controls for awarding and overseeing construction type cooperative agreements in response to Office of Inspector General concerns. In FY 2015, NSF made substantial progress in this area, as described below.

Several important management accomplishments in FY 2015 highlight NSF's continued government-wide leadership in stewardship and federal financial management.

- NSF continues to take substantive steps to further strengthen controls over the management of large facility projects. In June of 2015, NSF finalized a new policy on the use of management fee by large facility awardees. The policy places strict controls on awardees to govern the use of fees to cover legitimate business expenses necessary for the construction and operation of facilities while also instituting a process for on-going review of fee use. By the end of FY 2015, NSF had negotiated management fee agreements under the new policy for the majority of large facility awards, and OMB had recognized the new policy as a government-wide best practice. Besides strengthening policies related to management fee, the June 2015 release of NSF's *Large Facilities Manual* included the codification of the NSF Integrated Project Team that provides internal guidance in planning, review, and oversight; stronger policies on the development and use of contingency; and a new requirement that NSF conduct a cost assessment at each stage-gate design review. NSF is also putting into place mechanisms to support independent cost estimate reviews and incurred cost audits. An incurred cost audit will now be conducted at the end of each large facility project, and potentially during construction based on an annual risk assessment. Additionally, NSF further increased controls on large facility awards in FY 2015 by extending the use of its strengthened procedures to large facility operations awards.
- NSF successfully completed its first full year operating with iTRAK. NSF's ability to maintain its unmodified audit opinion in FY 2015 is a testament to the high level of agency-wide communication, collaboration, and change management that was required to replace NSF's 25-year-old, custom-built legacy financial management system with a cloud-based commercial off the shelf product. Recording, sharing, and incorporating best practices developed during the years leading up to iTRAK implementation eased NSF's transition to the new system; and while we still faced some challenges in FY 2015, we also have many accomplishments to report. iTRAK

implementation has improved internal controls, reduced transaction cycle time, minimized redundancies in workload, and improved overall agency financial reporting capabilities. These accomplishments, in addition to those planned for FY 2016, lay a firm foundation for NSF to maintain its government-wide leadership position in financial management and accountability.

- NSF continued its key government-wide leadership role with respect to the *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance). NSF was proud to be the first agency to implement the Uniform Guidance (2 CFR § 200) via our *Proposal & Award Policies & Procedures Guide*, as well as the first to publish terms and conditions that incorporated 2 CFR § 200 and therefore made the Uniform Guidance effective for NSF awards. NSF also leads the effort to revise the *Research Terms and Conditions*, so that all research agencies use a common set of terms and conditions, which are consistent with the Uniform Guidance requirements. The Office of Management and Budget (OMB) continued to rely on NSF's policy expertise in FY 2015. NSF staff participated as subject-matter experts in a nationally broadcasted OMB webinar and served on a working group that developed technical corrections to the Uniform Guidance and the latest set of Frequently Asked Questions. All of these efforts improve the clarity and accessibility of government-wide grants policy, ease the administrative burden associated with federal awards, and strengthen government oversight of federal funds to reduce the risk of fraud, waste, and abuse.
- In the spring of 2015, NSF conducted its second annual round of Strategic Reviews, a process by which federal agencies assess performance on the strategic objectives in their Strategic Plans. Strategic Reviews have quickly become the cornerstone of NSF's performance framework because we deliberately focus the process on topics that require attention in the near term. Senior NSF leaders choose a small number of key analytical questions intended to inform strategy and budget and to identify opportunities for improvements. A broad array of evidence is then synthesized to answer the key questions and to formulate recommendations to improve agency performance. In FY 2015, focus areas included: potential barriers to the support of Next Generation Research Infrastructure; mechanisms that NSF uses to support graduate students; the use of NSF-funded data repositories; and Public Participation in Scientific Research. The Strategic Reviews recommended numerous opportunities for improvement, including NSF's two new Agency Priority Goals to improve STEM graduate student preparedness and to invest strategically in public participation in STEM research.

Financial accountability and effective business processes underpin NSF's programmatic activities and are critical to the achievement of the agency's mission. Consequently, NSF is committed to accountable reporting, transparency, and good government. As always, I welcome your feedback on how we can make this report more informative to our stakeholders and our readers.

/s/

MARTHA A. RUBENSTEIN

November 16, 2015



National Science Foundation • Office of Inspector General
4201 Wilson Boulevard, Suite I-1135, Arlington, Virginia 22230

TO: Dr. France Córdova
Director, National Science Foundation

Dr. Dan E. Arvizu
Chair, National Science Board

FROM: Allison Lerner *Allison Lerner*
Inspector General, National Science Foundation

DATE: November 13, 2015

SUBJECT: Audit of the National Science Foundation's
Fiscal Years 2015 and 2014 Financial Statements

This memorandum transmits CliftonLarsonAllen LLP's financial statement audit report of the National Science Foundation (NSF) for Fiscal Years 2015 and 2014.

Results of Independent Audit

The Chief Financial Officer's (CFO) Act of 1990 (P.L. 101-576), as amended, requires NSF's Inspector General or an independent external auditor, as determined by the Inspector General, to audit NSF's financial statements. Under a contract monitored by the Office of Inspector General (OIG), CliftonLarsonAllen LLP (CliftonLarsonAllen), an independent public accounting firm, performed audits of NSF's Fiscal Years 2015 and 2014 financial statements. The contract required that the audits be performed in accordance with the *Government Auditing Standards* issued by the Comptroller General of the United States and the United States Office of Management and Budget (OMB) Bulletin 15-02, *Audit Requirements for Federal Financial Statements*.

CliftonLarsonAllen issued an unmodified opinion on NSF's financial statements. In its Report on Internal Control over Financial Reporting, CliftonLarsonAllen did not report any material weaknesses in internal control; however, it did report one significant deficiency in internal control. This significant deficiency, initially identified in 2011, relates to NSF's monitoring of construction type cooperative agreements. CliftonLarsonAllen also reported one instance of noncompliance with the Improper Payments Elimination and Recovery Act (IPERA) that is required to be reported in accordance with Government Auditing Standards and OMB Bulletin 15-02. These issues are described in detail in the exhibits to the Independent Auditors' Report. With the exception of IPERA, CliftonLarsonAllen reported that there were no other instances of noncompliance with certain provisions of laws, regulations, contracts and grant agreements it tested, including those relating to the financial management systems requirements of the Federal Financial Management Improvement Act of 1996 (FFMIA).

NSF management's response, dated November 13, 2015, follows CliftonLarsonAllen's report.

Evaluation of CliftonLarsonAllen's Audit Performance

To fulfill our responsibilities under the CFO Act of 1990, as amended, and other related federal financial management requirements, the OIG:

- Reviewed CliftonLarsonAllen's approach and planning of the audit;
- Evaluated the qualifications and independence of CliftonLarsonAllen and its staff;
- Monitored the progress of the audit at key points;
- Coordinated periodic meetings with NSF management to discuss audit progress, findings, and recommendations;
- Reviewed CliftonLarsonAllen's audit report to ensure compliance with *Government Auditing Standards* and OMB Bulletin No. 15-02; and
- Coordinated issuance of the audit report.

CliftonLarsonAllen is responsible for the attached Independent Auditors' Report dated November 13, 2015, which includes the following reports:

- Report on the Financial Statements, including an opinion of the Financial Statements;
- Report on Internal Control over Financial Reporting; and
- Report on Compliance and Other Matters

The OIG does not express any opinion on NSF's financial statements, or conclusions on the effectiveness of internal control, or on compliance with laws, regulations, contracts and grant agreements.

CliftonLarsenAllen's Independent Auditor's Report, is meant only to be distributed and read as part of the Agency Financial Report (AFR) document. Also, CliftonLarsenAllen's Independent Auditor's Report is not a stand-alone document because of the references made in it to the AFR contents and should not be circulated to anyone other than those receiving this OIG transmittal.

In accordance with Office of Management and Budget Circular A-50, *Audit Followup*, please provide a written corrective action plan within 60 days for the recommendations in the Audit Report. This corrective action plan should detail specific actions and milestone dates. We are available to work with your staff during the next 60 days to ensure the submission of a mutually agreeable corrective action plan.

The OIG appreciates the courtesies and cooperation NSF extended to CliftonLarsonAllen and the OIG staff during the audit. If you or your staff has any questions, please contact me or Dr. Brett M. Baker, Assistant Inspector General for Audit on 703-292-2985.

Attachment

cc: Dr. Ruth David, Chair, Audit and Oversight Committee
Dr. Richard Buckius, Chief Operating Officer
Marty Rubenstein, Chief Financial Officer

INDEPENDENT AUDITORS' REPORT

National Science Foundation:
Inspector General
Director

Chair of National Science Board

Report on the Financial Statements

We have audited the accompanying financial statements of the National Science Foundation (NSF), which comprise the balance sheets as of September 30, 2015 and 2014, and the related statements of net cost and changes in net position, and the combined statements of budgetary resources for the years then ended, and the related notes to the financial statements (financial statements).

Management's Responsibility for the Financial Statements

NSF management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America (U.S.) and this includes 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.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the U.S.; 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. 15-02, *Audit Requirements for Federal Financial Statements* (OMB Bulletin 15-02). Those standards and OMB Bulletin 15-02 require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements 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 entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of

INDEPENDENT AUDITORS' REPORT (Continued)

significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion on the Financial Statements

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the National Science Foundation as of September 30, 2015 and 2014, and its net costs, changes in net position, and budgetary resources for the years then ended, in accordance with accounting principles generally accepted in the U.S.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the U.S. issued by the Federal Accounting Standards Advisory Board (FASAB) require that NSF's Management Discussion and Analysis (MD&A), Required Supplementary Information (RSI) and Required Supplementary Stewardship Information (RSSI) in section II of the Agency Financial Report (AFR), be presented to supplement the financial statements. Such information, although not a part of the financial statements, is required by FASAB, which considers 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 MD&A and other RSI in accordance with auditing standards generally accepted in the U.S., 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 audit of the financial statements. We do not express an opinion or provide any assurance on the MD&A, RSI, and RSSI because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Information

Our audit was conducted for the purpose of forming an opinion on the financial statements as a whole. All other sections referred to in the AFR table of contents, exclusive of the Independent Auditors' Report, Financial Statements and Notes, MD&A, RSI, and RSSI, is presented for purposes of additional analysis and is not a required part of the financial statements. This information has not been subjected to the auditing procedures applied in the audit of the financial statements, and accordingly, we do not express an opinion or provide any assurance on it.

Report on Internal Control over Financial Reporting and on Compliance Based on an Audit of Financial Statements Performed in Accordance with Government Auditing Standards

Report on Internal Control over Financial Reporting

In planning and performing our audit of the financial statements, we considered NSF's internal control over financial reporting (internal control) to determine the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinion on the financial

INDEPENDENT AUDITORS' REPORT (Continued)

statements, but not for the purpose of expressing an opinion on the effectiveness of NSF's internal control. Accordingly, we do not express an opinion on the effectiveness of NSF's internal control. We did not test all internal controls relevant to operating objectives as broadly defined by the Federal Managers' Financial Integrity Act of 1982.

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 a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of NSF'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 and therefore, material weaknesses or significant deficiencies may exist that were not identified. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, we did identify one deficiency in internal control, listed below and described in **Exhibit A**, which we consider a significant deficiency:

- Monitoring of Construction Type Cooperative Agreements

Report on Compliance and Other Matters

As part of obtaining reasonable assurance about whether NSF's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements noncompliance with which could have a material effect on the financial statements. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion.

The results of our tests disclosed one instance of noncompliance with the Improper Payment Elimination and Recovery Act (IPERA) that is required to be reported in accordance with *Government Auditing Standards* and OMB Bulletin 15-02. This noncompliance matter is listed below, and described in **Exhibit B**:

- Non-Compliance with the Improper Payments Elimination and Recovery Act (IPERA) Reporting Requirements in Fiscal Year 2014 Agency Financial Report

Compliance with FFMIA Requirements

Under the Federal Financial Management Improvement Act (FFMIA), we are required to report whether the financial management systems used by NSF comply substantially with the FFMIA Section 803(a) requirements. To meet this requirement, we performed tests of compliance with the (1) Federal financial management systems requirements, (2) applicable Federal accounting standards, and (3) the United States Standard General Ledger (USSGL) at the transaction level. However, providing an opinion on compliance with FFMIA was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests of FFMIA Section 803(a) requirements disclosed no instances in which NSF's financial management systems did not substantially comply with (1) Federal financial management systems requirements, (2) applicable Federal accounting standards, or (3) the USSGL at the transaction level.

INDEPENDENT AUDITORS' REPORT (Continued)

Management's Responsibility for Internal Control and Compliance

Management is responsible for (1) evaluating the effectiveness of internal control over financial reporting based on criteria established under the Federal Managers Financial Integrity Act (FMFIA), (2) providing a statement of assurance on the overall effectiveness on internal control over financial reporting, (3) ensuring NSF's financial management systems are in substantial compliance with FFMIA requirements, and (4) complying with other applicable laws, regulations, contracts, and grant agreements.

Auditors' Responsibilities

We are responsible for: (1) obtaining a sufficient understanding of internal control over financial reporting to plan the audit, (2) testing whether NSF's financial management systems comply substantially with the FFMIA requirements referred to above, and (3) testing compliance with certain provisions of laws, regulations, contracts, and grant agreements which could have a material effect on the financial statements.

We did not evaluate all internal controls relevant to operating objectives as broadly established by the FMFIA, such as those controls relevant to preparing statistical reports and ensuring efficient operations. We limited our internal control testing to testing controls over financial reporting. Because of inherent limitations in internal control, misstatements due to error or fraud, losses, or noncompliance may nevertheless occur and not be detected. We also caution that projecting our audit results to future periods is subject to risk that controls may become inadequate because of changes in conditions or that the degree of compliance with controls may deteriorate. In addition, we caution that our internal control testing may not be sufficient for other purposes.

We did not test compliance with all laws, regulations, contracts, and grant agreements applicable to NSF. We limited our tests of compliance to certain provisions of laws, regulations, contracts and grant agreements which could have a material effect on the financial statements. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. We caution that noncompliance may occur and not be detected by these tests and that such testing may not be sufficient for other purposes. Also, our work on FFMIA would not necessarily disclose all instances of noncompliance with FFMIA requirements.

Status of Prior Year's Control Deficiencies

Our FY 2014 Independent Auditors' Report dated December 13, 2014, included two significant deficiencies in internal control. Even though some progress has been made in FY 2015 relating to NSF's *Monitoring of Construction Type Cooperative Agreements*, certain conditions previously noted continue to exist and are discussed in **Exhibit A**. The other FY 2014 significant deficiency conditions relating to NSF's *Grant Accrual Accounting Estimation Process* have been rectified in FY 2015 as explained in **Exhibit C**, and therefore are no longer considered a significant deficiency.

Purpose of the Report on Internal Control over Financial Reporting and the Report on Compliance and Other Matters

The purpose of the Report on Internal Control over Financial Reporting and the Report on Compliance and Other Matters sections of this report is solely to describe the scope of our

INDEPENDENT AUDITORS' REPORT (Continued)

testing of internal control and compliance and the result of that testing, and not to provide an opinion on the effectiveness of NSF's internal control or on compliance and other matters. These reports are an integral part of an audit performed in accordance with *Government Auditing Standards* in considering NSF's internal control and compliance. Accordingly, these reports are not suitable for any other purpose.

Management's Response to Findings

Management's response to the findings identified in our report is presented in **Exhibit D**. We did not audit NSF's response and, accordingly, we express no opinion on it.

A handwritten signature in cursive script that reads "CliftonLarsonAllen LLP".

CliftonLarsonAllen LLP

Calverton, Maryland
November 13, 2015

INDEPENDENT AUDITORS' REPORT (Continued)

EXHIBIT A

Significant Deficiency

September 30, 2015

Monitoring of Construction Type Cooperative Agreements

Background and Control Deficiency Criteria:

As of September 30, 2015, NSF had thirteen open construction type cooperative agreements (CA) aggregating approximately \$2 billion in projected award funding (\$1.4 billion obligated), which includes approximately \$343 million in contingency budgets representing approximately 17.5 percent of the total projected award funding for those projects.

Beginning with our fiscal year (FY) 2010 Independent Auditors' Report (Auditors' Report), we noted a variety of deficiencies in NSF's internal controls relating to the monitoring of construction type CAs, substantially comprised of deficiencies detailed in the NSF Office of Inspector General (OIG) and Defense Contract Audit Agency (DCAA) audit reports. The OIG issued an Alert Memo Report No. 12-6-001, *NSF's Management of Cooperative Agreements*, dated September 2012, reiterating concerns about the adequacy of NSF's review of proposed costs, the proposer's financial management capabilities, and NSF's post-award monitoring. These report matters were escalated to the Audit Follow-up Official (AFO) pursuant to the OIG's May 2014 Escalation Memorandum. The Memorandum focused on recommendations relating to pre-award and post-award cost surveillance measures as follows:

- 1) Obtain updated cost estimates and audits of awardee's proposed budget and cost accounting system/practices prior to award for CAs valued at over \$50 million.
- 2) Remove unallowable contingency amounts from proposed budgets and ensure that internal contingency policies and procedures reflect OMB cost principles.
- 3) Require annual incurred cost submissions and incurred cost audits for CAs in excess of \$50 million.
- 4) Require awardees to properly account for contingency funds consistent with their estimates, separately track budgeted versus actual contingency costs, retain control over funds budgeted for unforeseeable events, and release funds only when the awardee demonstrates a bona fide need supported by verifiable cost data.
- 5) NSF management, using a risk-based approach, should develop end-to-end cost surveillance policies and procedures for its CAs to ensure adequate stewardship over federal funds. At a minimum, NSF should implement such increased monitoring for its largest CAs valued at more than \$50 million.

The Audit Follow-up Official (AFO) decisions issued in October 2014 and January 2015 resolved, as defined by OMB Circular A-50 (OMB A-50), the recommendations in the Escalation Memorandum. Pursuant to provisions set forth in OMB A-50, the decisions were therefore considered accepted by the OIG. Notwithstanding this acceptance and the fact that progress has been made, the OIG did not agree with the entirety of the AFO's decision. In addition, there are several issues over which we have differences of opinion with the decisions that were accepted and which we consider important to our evaluation of internal control performed in connection with the audit of NSF's financial statements, and continue to require management's attention:

INDEPENDENT AUDITORS' REPORT (Continued)

EXHIBIT A

Significant Deficiency

September 30, 2015

- 1) The AFO did not specifically address unsupported contingency costs that were identified in the context of the prior proposal audits. As a result, NSF may have awarded funds in excess of what was needed to complete the projects and which could have been used to support other projects.
- 2) The decision not to require awardees to track contingency funds within their accounting system, nor for NSF to track that funding within its accounting system, results in NSF being unable to track the expenditure of contingency funds to ensure that they are in line with the awarded budget amounts, and not used for unallowable purposes. It is important to note that the Uniform Guidance (2 CFR 200) allows Federal awarding agencies to submit exceptions to the Uniform Guidance provisions. Such an exception must be approved by OMB. However, NSF has not requested an exception to require awardees to track contingency funds.

Even though progress had been made through September 30, 2015, complete agreement on a final plan of action to close these matters has not been achieved. In addition, OIG audit reports and other information obtained during our FY 2015 audit indicate that these matters need further attention by NSF management before the matters are closed.

In FY 2015, NSF made significant progress in designing procedures to rectify certain specific other weaknesses noted in our prior year Audit Report pertaining to future awards of CAs. However, some of those procedures were implemented late in the fiscal year, and we were unable to validate the effectiveness of such procedures. Additionally, as confirmed by both our tests and additional CA audits completed by the OIG and DCAA (on behalf of the OIG) in FY 2015, progress has continued to be slow in addressing the issues concerning older, still active, CAs with contingency funding.

Accordingly, some of the control deficiency conditions identified in our FY 2014 Audit Report have been repeated in our FY 2015 Audit Report.

Conditions:

A. The conditions identified in our prior year report that continue to exist are as follows:

- 1) DCAA and OIG issued 9 reports from 2010 through 2014 covering proposal costs of \$1.5 Billion in which proposed contingency costs of \$256 Million were questioned as unsupported. In addition, proposed costs for two of these pre-FY 2015 proposal cost audits, of approximately \$778 million, were determined to be not acceptable as a basis for negotiating a fair and reasonable price.

In some of these reports, DCAA also noted the following additional deficiencies, which continued to exist into FY 2015:

- a) Awardees could draw down contingency funds without advance approval by NSF, and
- b) Awardees' accounting systems and estimating practices were not sufficient to adequately track specific project costs.

INDEPENDENT AUDITORS' REPORT (Continued)

EXHIBIT A

Significant Deficiency

September 30, 2015

- 2) OIG issued Alert Memos in FY 2012 & 2014 that:
 - a) Reiterated concerns about the adequacy of NSF's review of proposed costs, the proposer's financial management capabilities, and NSF's post-award monitoring.
 - b) Concluded that NSF approved an award for a project projected to cost \$468 million without sufficient information to determine the reasonableness of the proposed costs. The OIG also indicated that the non-profit organization managing this project did not have an effective process for preparing adequate cost proposals

- 3) A DCAA incurred cost audit completed in FY 2013 noted that contingency costs were not separately accumulated and tracked in the awardees accounting records. Accordingly, the specific use of \$44 million in budgeted contingency costs expended could not be identified.

B. The following sections describe conditions, identified by both us and the OIG in FY 2015, that continue to demonstrate that the CA control deficiencies reported in prior years continue to exist.

DCAA and OIG Audits of Construction Type CAs with Contingency Funds

- 1) OIG Audit Report No. 15-3-001, dated September 15, 2015 – Beginning in FY 2011, an award was made and amendments were issued to one awardee with aggregate projected funding of \$433 million, of which approximately \$74 million was set aside for contingencies. The OIG performed previous audits on the cumulative award in FYs 2011, 2012 and early FY 2015. The audit identified significant problems with the awardee's cost proposal, which warranted enhanced monitoring of the project's expenditures. This enhanced monitoring did not occur.

The award required NSF's approval before the awardee used any contingency funds; however, the awardee was executing against a revised project plan that incorporated \$35 million of budget contingency into the performance measurement baseline without prior formal NSF approval.

The audit report also noted that during an NSF site visit in June 2015, the awardee informed NSF that, based on the stage of completion of the project, a cost overrun of \$27 million was likely. However, after further inquiries by NSF the awardee revised its cost overrun estimate to \$80 million.

Accordingly, due to the potential cost overrun, the awardee was required to de-scope the project, which included decreasing the number of re-locatable and experimental sites from 106 to 82, decreasing instrumentation and removing an experimental component of the project. As a result, taxpayers will not receive all the originally planned scientific benefits of the project.

Finally, the OIG also concluded that NSF had yet to determine if the awardee actually spent any of the \$35 million contingency budget allocation in advance of NSF approval, of the aforementioned total \$74 million that was budgeted for contingency.

INDEPENDENT AUDITORS' REPORT (Continued)

EXHIBIT A

Significant Deficiency

September 30, 2015

- 2) The NSF OIG issued four other reports in FY 2015 (audits performed directly by the OIG or on its behalf by DCAA) relating to CAs with Contingency Funds. These reports individually or collectively noted that:
- a) The auditor was unable to determine if an awardee's accounting system was in compliance with terms of the grant agreement due to a scope limitation. The auditor was unable to determine the amount of contingency funds from August 2011 to March 2013 that may have been used for unapproved scope changes.
 - b) NSF needs to improve safeguards and accountability over significant contingency funds. Also, NSF lacked a sound basis to determine the appropriate level of contingency funding that should be included in the award budgets, which could lead to significant overfunding of the grant project.
 - c) Grant agreement terms did not require the awardee to track the actual use of contingency expenditures.
 - d) There was no accountability over the contingency funds, either at the expenditure phase or at the estimating phase. Thus comparing contingency estimates to actual expenditures is not possible.
 - e) Actual use of budgeted contingency differed significantly from what was requested and from what NSF approved in six of the seven cases reviewed. Accordingly, the auditor concluded that NSF would have been unable to determine if an awardee was properly accounting for contingency or if contingency funds were used without approval for unauthorized purposes such as cost overruns, scope increases, or other unauthorized use.

C. Internal Controls for Monitoring Use of Contingency Funds

In addition to the DCAA and OIG audits discussed above, our specific internal control testing procedures performed in FY 2015, which included the examination of several CAs with contingency funds, noted the following exceptions:

- 1) Awardees can draw on the contingency funds budget without prior NSF approval, if the amount is below an established threshold. Above this established threshold, advance approval is required. However, systematic barriers to prevent an awardee from drawing an amount in excess of the threshold without advance approval were not in place at September 30, 2015.
- 2) NSF's accounting system shows the CA award amount in total without separate identification of the contingency funding portion of such award. NSF relies on information provided by the awardees to track the allocation of the contingency funds to budgeted line items in the award. However, NSF does not require the awardee to track its contingency expenditures within its accounting system and, accordingly, it cannot track the expenditure of contingency funds to ensure that they are in line with the awarded budget amounts and are not used for unallowable purposes.
- 3) In four of five CAs reviewed, NSF could not provide award documentation, or proposal documentation referred to in the award document, identifying the total approved contingency budget. This could become a liability issue if both parties have not formally agreed upon the contingency funding amount for the project.

INDEPENDENT AUDITORS' REPORT (Continued)

EXHIBIT A

Significant Deficiency

September 30, 2015

- 4) In three of five change orders reviewed, the Risk ID was not indicated on the change request, or the Risk ID was not supported by the Risk Register. The Risk ID is a unique identifier applied to each risk identified as important to achieving project success. The Risk Register is used to track and monitor those project risks. The Risk ID is used to indicate what risk is being addressed with the allocated contingency funds. The absence of a valid Risk ID could result in contingency funding being used to address cost overruns that were not identified as part of the contingency budget process.
- 5) In two of the five change orders reviewed, contingency usage by award was not being tracked within the change order. As a result, funding restrictions may not be adhered to by the awardee (i.e., ARRA funding) and contingency may not be applied appropriately between funding sources.
- 6) In two of the five change orders reviewed, there was no NSF approval of the change order which exceeded the threshold amount requiring NSF approval. As a result, contingency funding could have been used to address cost overruns that had not been identified in the contingency budget process.
- 7) In one of the five change orders reviewed, we determined that NSF was documenting scope changes between awards supporting the project using the change request process for contingency instead of a formal amendment to the awards. As a result, the ARRA funding from one of the awards could have been used for work that may not have been appropriate under the ARRA requirements.

In summary, the causes of the remaining prior year conditions described in Section A of this Significant Deficiency continue to exist through September 30, 2015, because NSF's corrective actions were not adequate, not fully implemented, or will be implemented only for new CAs. The ongoing weaknesses identified by the OIG and DCAA, and the results of our internal control testing in FY 2015, continue to indicate that there are significant risks relating to contingency funds in all CAs, and NSF's controls over monitoring these CAs in general need improvement.

Recommendations:

Even though progress continues to be made in the monitoring of its Cooperative Agreements, we recommend that NSF take the following actions to rectify the remaining CA audit findings:

- 1) NSF's Office of the Director should continue to work closely with the OIG to ensure that corrective action plans addressing the OIG's May 2014 Escalation Memorandum have been completed and fully implemented.
- 2) NSF Office of the Director should formally address the issue regarding the unsupported contingency costs that were identified within the prior year audits through the audit follow-up process required by OMB Circular A-50, *Audit Follow-up*.
- 3) NSF should submit a formal request to OMB to deviate from the basic principles in 2 CFR Part 200, to allow NSF to require awardees to track the use of contingency funds within their own accounting systems, and for NSF to identify contingency funding

INDEPENDENT AUDITORS' REPORT (Continued)

EXHIBIT A

Significant Deficiency

September 30, 2015

awarded within its accounting system. This deviation would have to receive formal approval from OMB before being implemented within 2 CFR Chapter XXV-National Science Foundation Part 2500.100 Adoption of 2 CFR Part 200. This tracking process, along with implementing recommendation number 4 below, would allow NSF to better monitor awardee's spending of contingency funds.

- 4) If approval from OMB regarding the third recommendation is received, NSF should take appropriate steps to ensure that contingency funding for all awards is accounted for separately within NSF's accounting system and that system edits are established to ensure that NSF approval for the use of contingency funding in excess of the established dollar threshold indicated within the CA is obtained.
- 5) NSF should establish procedures to ensure that all current awardees are following change order request requirements as indicated in NSF's Large Facility Manual.
- 6) NSF should revise its internal control guidance to require that WBS elements of the project are identified in the award document for restrictive funds, such as ARRA, so that such funds are used pursuant to the terms of the grant award.
- 7) NSF should revise its Large Facility Manual to require awardees to separately track and account for the allocation of contingency funds from each award that supports the project through the change order request process.
- 8) NSF should review the ARRA change requests for the project in question to determine if ARRA funds were used for appropriate costs for that project, and issue an appropriate amendment for the award with the ARRA funding to ensure that the WBS elements are clearly identified.
- 9) NSF should review all current CAs with contingency funding to identify those in which the contingency funding is not specifically identified within the award document. Such CAs should be amended to indicate approved contingency funding for that project.
- 10) The NSF's Office of the Director should work closely with the OIG to quickly address recommendations in the FY 2014 and FY 2015 OIG Audit Reports No. 14-3-002, 15-6-001, 15-1-002, 15-3-001 and 15-6-004 through the audit follow-up process required under OMB Circular A-50 *Audit Follow-up*.

INDEPENDENT AUDITORS' REPORT (Continued)

EXHIBIT B

Noncompliance With Laws & Regulations

September 30, 2015

Non-Compliance with the Improper Payments Elimination and Recovery Act (IPERA) Reporting Requirements in Fiscal Year 2014 Agency Financial Report

Background

NSF's Office of Inspector General (OIG) contracted with an external audit firm to conduct an audit to review the improper payment reporting in NSF's FY 2014 Agency Financial Report (AFR) and accompanying materials to determine whether the agency met the Office of Management and Budget (OMB)'s criteria for compliance with the Improper Payments Elimination and Recovery Act of 2010 (IPERA), Public Law 111-204. As part of the auditor's compliance review of NSF's improper payment reporting, they evaluated the accuracy and completeness of agency reporting and efforts performed in reducing and recapturing improper payments.

OMB Memorandum M-15-02, *Appendix C to Circular No. A-123, Requirements for Effective Estimation and Remediation of Improper Payments*, states that compliance under IPERA means that the agency has:

- 1) Published an AFR or Performance and Accountability Report (PAR) for the most recent fiscal year and posted that report and any accompanying materials required by OMB on the agency website.
- 2) Conducted a program-specific risk assessment for each program or activity that conforms with Section 3321 of Title 31 U.S.C. (if required).
- 3) Published improper payment estimates for all programs and activities identified as susceptible to significant improper payments under its risk assessment (if required).
- 4) Published programmatic corrective action plans in the AFR or PAR (if required).
- 5) Published, and is meeting, annual reduction targets for each program assessed to be at risk and estimated for improper payments (if required and applicable).
- 6) Reported a gross improper payment rate of less than 10 percent for each program and activity for which an improper payment estimate was obtained and published in the AFR or PAR.

Conditions

The auditors noted that NSF did not comply with two of the applicable OMB criteria. Specifically, the auditors found that NSF's AFR for FY 2014 was not complete and reported in accordance with OMB A-136, *Financial Reporting Requirements*, Section II.5.8, *V. Recapture of Improper Payments Reporting*, paragraph d., which states, "As applicable, agencies should also report on improper payments identified and recovered through sources other than payment recapture audits." NSF did not report on improper payments identified and recovered through sources other than payment recapture audits.

The auditor's also found that NSF had conducted a program-specific risk assessment; however, the risk assessment did not use a systematic method and did not evaluate all required risk factors. NSF did not maintain evidence of the evaluation and conclusions

INDEPENDENT AUDITORS' REPORT (Continued)
EXHIBIT B
Non-Compliance with Laws & Regulations
September 30, 2015

reached for all of the required risk factors and failed to follow a systematic approach in executing its qualitative and quantitative risk assessment.

Because NSF did not implement a complete, accurate, and systematic method to identify programs that are susceptible to significant improper payments, the auditors were unable to conclude whether NSF met the remaining four IPERA compliance requirements.

For the two requirements where the auditors determined NSF was not compliant, they recommended that NSF take appropriate action to: (1) improve compliance with IPERA by executing a full, statistically valid estimate of improper payments to adequately assess the risk of improper payments as defined by the OMB, and (2) report additional improper payment identification and recapture details in future AFRs.

In FY 2015, NSF updated its 2014 IPERA risk assessment report and indicated that it completed follow-up activities for cooperative agreements and graduate research fellowship grants. We noted that for FY 2015, NSF did report on overpayments recaptured outside of payment recapture audits in the AFR to address the second recommendation. Based on a consensus reached with the OMB and the OIG on an alternative action to the first recommendation, NSF agreed to complete a qualitative IPERA risk assessment for FY 2015 to determine its susceptibility to significant improper payments in FY 2016.

Recommendation:

We recommend that NSF's Office of Budget, Finance, and Award Management complete the qualitative risk assessment required by IPERA for FY 2015.

INDEPENDENT AUDITORS' REPORT (Continued)
EXHIBIT C
Status of Prior Year Significant Deficiencies
September 30, 2015

Even though progress has been made in FY 2015 relating to the FY 2014 significant deficiency *Monitoring of Construction Type Cooperative Agreements*, certain conditions previously noted continue to exist and are discussed in **Exhibit A**.

Significant progress was made in FY 2015 by NSF in addressing the FY2014 significant deficiency condition relating to NSF's *Grant Accrual Accounting Estimation Process*. Accordingly, this matter is no longer considered a significant deficiency. Our assessment of each specific control recommendation relating to that control deficiency is presented below:

<i>FY 2014 Recommendation</i>	<i>Fiscal Year 2015 Status</i>
1) Provide grantees with additional training/ communication/ enforcement of the ACM\$ program's "real time" draw of funds features, so that more consistent and reliable grantee spending pattern data can be obtained from the grantees over a period of several years.	Throughout the fiscal year, NSF held grantee outreach programs that included training and communication on ACM\$'s drawdown features, webinars on cash management, and the NSF Grants Conference.
2) Using the historical grantee spending pattern data, establish a new methodology to estimate the IBNR liability portion of NSF's annual grant cost, for use at June 30 th and September 30 th of the fiscal year.	NSF developed a new grant accrual methodology utilizing a linear regression model (LRM) that uses historical data and current grant activity.
3) Prior to developing sufficient reliable historical grantee spending pattern data, develop a plan to use statistically based analyses, and confirmation procedures with its grantees, to calculate an IBNR liability at some point during the fiscal year.	NSF completed a statistically based analysis of NSF's IBNR liability estimation process (LRM) with its grantees at June 30, 2015, the results of which substantially validated the reasonableness of NSF's new process. NSF plans to continue to fine tune its LRM estimation tool using current grantee spending data, and validate its results periodically in future periods.
4) Develop procedures to validate the final determined IBNR liability estimate at June 30 th and/or September 30 th , as necessary to comply with TR 12, to ensure that assumptions used in the methodology to estimate the IBNR liability are reasonable. This could be accomplished by periodically comparing the IBNR liability estimates with subsequent grantee reporting in ACM\$, surveys, or some other communication with its grantees.	

INDEPENDENT AUDITORS' REPORT (Continued)

EXHIBIT D

Management's Response

September 30, 2015



OFFICE OF BUDGET, FINANCE & AWARD MANAGEMENT

MEMORANDUM

Date: NOV 12 2015

To: Allison Lerner, Inspector General

From: Martha A. Rubenstein *Marty*, Chief Financial Officer

Subject: Management's Response to Independent Auditor's Report for Fiscal Year (FY) 2015

We reviewed the draft Independent Auditor's Report on the NSF's fiscal year (FY) 2015 financial statements. I am proud that NSF received its 18th consecutive unmodified audit opinion on its financial statements. The Agency had no material weaknesses and the auditors closed a prior year significant deficiency related to our grant accrual accounting estimation process.

I appreciate the NSF's staff strong contributions and commitment to continuously improving the operations and internal control environment of the Agency. I also want to thank your staff and your audit contractor for their cooperation and professionalism during the course of the audit.

During FY 2015 NSF reached a major milestone in the resolution process of the longstanding significant deficiency on monitoring of construction-type cooperative agreements. Specifically, we believe that NSF reached agreement with its Office of Inspector General (OIG) on several of the FY 2014 recommendations in a combination of audit reports and memoranda that the OIG and its audit contractors have prepared, which make-up the significant deficiency.

The NSF Audit Follow-up Official (AFO) reached a decision on how to address recommendations that the OIG escalated related to the significant deficiency in the FY 2014 financial statement audit report. NSF management and OIG accepted the decision. This acceptance is the basis for the many enhancements that NSF has made to its policies and procedures.

INDEPENDENT AUDITORS' REPORT (Continued)

EXHIBIT D

Management's Response

September 30, 2015

NSF is dedicated to strengthening its controls for awarding and managing construction type cooperative agreements and we look forward to the FY 2016 audit of our implementation of these corrective actions.

The AFO's decision resolved (in accordance with the Office of Management and Budget Circular A-50 "Audit Follow-up") the matters repeated in Recommendations 2 through 4 in the FY 2015 financial statement audit report related to unsupported contingency costs and the tracking of contingency funds. With respect to Recommendations 5, 6 and 8, NSF has improved its policies and procedures to address these recommendations and the OIG is in process of examining our actions. As to the remaining recommendations, the Agency is working on taking steps to address them as well. Regarding Recommendation 10, three of the five audit reports cited were issued in September 2015 and NSF could not address them during this audit period.

NSF has taken numerous actions and is following steps to address all the recommendations in the FY 2015 financial statement audit report. We also reached consensus with the OIG on how to address compliance with the reporting requirements of the Improper Payments Elimination and Recovery Act, as amended, for FY 2015. We will be undertaking a qualitative risk assessment of improper payments for FY 2015.

We expect that management and the OIG will continue to work cooperatively through the audit resolution process and the resulting decisions. If you have any questions concerning our response, please contact me at (703) 292-8200 or John Lyskey, Acting Deputy Chief Financial Officer at (703) 292-8280.



National Science Foundation

FINANCIAL STATEMENTS

As of and for the Years Ended
September 30, 2015 and 2014

National Science Foundation
Balance Sheet
As of September 30, 2015 and 2014
(Amounts in Thousands)

Assets	<u>2015</u>	<u>2014</u>
Intragovernmental Assets		
Fund Balance With Treasury (Note 2)	\$ 12,318,849	\$ 11,780,549
Accounts Receivable	9,667	2,222
Advances	62,273	36,987
Total Intragovernmental Assets	<u>12,390,789</u>	<u>11,819,758</u>
Cash and Other Monetary Assets (Note 2)	50,520	35,562
Accounts Receivable, Net	1,909	2,184
Advances	-	514
General Property, Plant and Equipment, Net (Notes 3 and 4)	281,450	273,832
Total Assets	<u>\$ 12,724,668</u>	<u>\$ 12,131,850</u>
Liabilities		
Intragovernmental Liabilities		
Advances From Others	\$ 10,096	\$ 16,594
Other Intragovernmental Liabilities	6,707	8,282
Total Intragovernmental Liabilities	<u>16,803</u>	<u>24,876</u>
Accounts Payable	118,198	62,443
FECA Employee Benefits	1,215	1,330
Environmental and Disposal Liabilities (Note 6)	18,247	18,247
Accrued Liabilities - Grants (Note 7)	340,877	250,333
Accrued Liabilities - Payroll and Other	6,087	5,454
Accrued Annual Leave	17,382	17,576
Total Liabilities	<u>\$ 518,809</u>	<u>\$ 380,259</u>
Net Position		
Unexpended Appropriations - Other Funds	\$ 11,427,234	\$ 11,057,969
Cumulative Results of Operations - Other Funds	308,703	289,423
Cumulative Results of Operations - Dedicated Collections (Note 8)	469,922	404,199
Total Net Position	<u>12,205,859</u>	<u>11,751,591</u>
Total Liabilities and Net Position	<u>\$ 12,724,668</u>	<u>\$ 12,131,850</u>

The accompanying notes are an integral part of these statements.

National Science Foundation
Statement of Net Cost
For the Years Ended September 30, 2015 and 2014
(Amounts in Thousands)

Program Costs (Note 9)	<u>2015</u>	<u>2014</u>
Research and Related Activities		
Gross Costs	\$ 5,905,726	\$ 6,050,953
Less: Earned Revenues	<u>(129,829)</u>	<u>(100,782)</u>
Net Research and Related Activities	<u>5,775,897</u>	<u>5,950,171</u>
 Education and Human Resources		
Gross Costs	\$ 842,079	\$ 877,314
Less: Earned Revenues	<u>(6,320)</u>	<u>(3,616)</u>
Net Education and Human Resources	<u>835,759</u>	<u>873,698</u>
 Major Research Equipment and Facilities Construction		
Gross Costs	\$ 264,161	\$ 292,661
Less: Earned Revenues	<u>-</u>	<u>-</u>
Net Major Research Equipment and Facilities Construction	<u>264,161</u>	<u>292,661</u>
 Donations and Dedicated Collections		
Gross Costs	\$ 104,527	\$ 140,121
Less: Earned Revenues	<u>-</u>	<u>-</u>
Net Donations and Dedicated Collections	<u>104,527</u>	<u>140,121</u>
 Net Cost of Operations (Notes 9 and 15)	<u>\$ 6,980,344</u>	<u>\$ 7,256,651</u>

The accompanying notes are an integral part of these statements.

Financial Statements
September 30, 2015 and 2014

National Science Foundation
Statement of Changes in Net Position
For the Year Ended September 30, 2015
(Amounts in Thousands)

	<u>2015</u>		
	Funds From Dedicated Collections	All Other	Total
Cumulative Results of Operations			
Beginning Balances (Note 8)	\$ 404,199	289,423	693,622
Budgetary Financing Sources			
Appropriations Used	-	6,880,952	6,880,952
Non-exchange Revenue	-	78	78
Donations	-	34,787	34,787
Appropriated Funds from Dedicated Collections Transferred In / (Out) (Note 8)	142,999	-	142,999
Other Financing Sources			
Imputed Financing From Costs Absorbed By Others	-	9,133	9,133
Other	-	(2,602)	(2,602)
Total Financing Sources	142,999	6,922,348	7,065,347
Net Cost of Operations (Notes 8 and 9)	(77,276)	(6,903,068)	(6,980,344)
Cumulative Results of Operations (Note 8)	\$ 469,922	308,703	778,625
 Unexpended Appropriations			
Beginning Balances	\$ -	11,057,969	11,057,969
Budgetary Financing Sources			
Appropriations Received	-	7,344,205	7,344,205
Cancelled Authority Adjustments	-	(93,988)	(93,988)
Appropriations Used	-	(6,880,952)	(6,880,952)
Total Budgetary Financing Sources	-	369,265	369,265
Total Unexpended Appropriations	-	11,427,234	11,427,234
 Net Position	\$ 469,922	11,735,937	12,205,859

The accompanying notes are an integral part of these statements.

Financial Statements
September 30, 2015 and 2014

National Science Foundation
Statement of Changes in Net Position
For the Year Ended September 30, 2014
(Amounts in Thousands)

	2014		
	Funds From	All Other	Total
	Dedicated Collections	All Other	Total
Cumulative Results of Operations			
Beginning Balance (Note 8)	\$ 368,680	294,224	662,904
Budgetary Financing Sources			
Appropriations Used	-	7,115,793	7,115,793
Non-exchange Revenue	-	1,455	1,455
Donations	-	32,453	32,453
Appropriated Funds from Dedicated Collections Transferred In / (Out) (Note 8)	128,053	-	128,053
Other Financing Sources			
Imputed Financing From Costs Absorbed By Others	-	11,172	11,172
Other	-	(1,557)	(1,557)
Total Financing Sources	128,053	7,159,316	7,287,369
Net Cost of Operations (Notes 8 and 9)	(92,534)	(7,164,117)	(7,256,651)
Cumulative Results of Operations (Note 8)	\$ 404,199	289,423	693,622
 Unexpended Appropriations			
Beginning Balances	\$ -	11,047,853	11,047,853
Budgetary Financing Sources			
Appropriations Received	-	7,171,918	7,171,918
Cancelled Authority Adjustments	-	(46,009)	(46,009)
Appropriations Used	-	(7,115,793)	(7,115,793)
Total Budgetary Financing Sources	-	10,116	10,116
Total Unexpended Appropriations	-	11,057,969	11,057,969
 Net Position	\$ 404,199	11,347,392	11,751,591

The accompanying notes are an integral part of these statements.

Financial Statements
September 30, 2015 and 2014

National Science Foundation
Statement of Budgetary Resources
For the Years Ended September 30, 2015 and 2014
(Amounts in Thousands)

	<u>2015</u>	<u>2014</u>
Budgetary Resources		
Unobligated Balance - Brought Forward, October 1	\$ 393,733	\$ 293,444
Recoveries of Prior Year Unpaid Obligations	218,337	119,284
Other Changes in Unobligated Balance	(93,989)	(46,009)
Unobligated Balance from Prior Year Budget Authority, Net	<u>518,081</u>	<u>366,719</u>
Appropriations	7,522,070	7,332,495
Spending Authority from Offsetting Collections	104,266	101,721
Total Budgetary Resources (Note 12)	\$ <u>8,144,417</u>	\$ <u>7,800,935</u>
Status of Budgetary Resources		
Obligations Incurred (Notes 11 & 12)	\$ 7,749,890	\$ 7,407,202
Unobligated Balance, End of Year		
Apportioned (Note 2)	223,723	195,670
Unapportioned (Notes 2 & 12)	<u>170,804</u>	<u>198,063</u>
Total Unobligated Balance, End of Year	<u>394,527</u>	<u>393,733</u>
Total Status of Budgetary Resources	\$ <u>8,144,417</u>	\$ <u>7,800,935</u>
Change in Obligated Balance		
Unpaid Obligations		
Unpaid Obligations - Brought Forward, October 1	\$ 11,544,639	\$ 11,471,269
Obligations Incurred	7,749,890	7,407,202
Gross Outlays	(6,997,643)	(7,214,548)
Recoveries of Prior Year Unpaid Obligations	<u>(218,337)</u>	<u>(119,284)</u>
Unpaid Obligations, End of Year	12,078,549	11,544,639
Uncollected Payments		
Uncollected Payments from Federal Sources - Brought Forward, October 1	\$ (122,935)	\$ (146,502)
Change in Uncollected Payments from Federal Sources	<u>18,979</u>	<u>23,567</u>
Uncollected Payments from Federal Sources, End of Year	(103,956)	(122,935)
Memorandum (non-add) Entries		
Obligated Balance, Start of Year	\$ 11,421,704	\$ 11,324,767
Obligated Balance, End of Year (Note 2)	\$ 11,974,593	\$ 11,421,704
Budget Authority and Outlays, Net		
Budget Authority, Gross	\$ 7,626,336	\$ 7,434,216
Actual Offsetting Collections	(123,245)	(125,288)
Change in Uncollected Customer Payments from Federal Sources	18,979	23,567
Budget Authority, Net	\$ <u>7,522,070</u>	\$ <u>7,332,495</u>
Gross Outlays	\$ 6,997,643	\$ 7,214,548
Actual Offsetting Collections	<u>(123,245)</u>	<u>(125,288)</u>
Net Outlays	6,874,398	7,089,260
Distributed Offsetting Receipts (Note 12)	<u>(37,834)</u>	<u>(35,105)</u>
Net Agency Outlays	\$ <u>6,836,564</u>	\$ <u>7,054,155</u>

The accompanying notes are an integral part of these statements.

Notes to the 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 U.S.C. 1861-75). Its mission is to promote and advance scientific progress in the United States. 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 education programs at all levels in all fields of science and engineering. NSF funds research and education in science and engineering by awarding grants and contracts to educational and research institutions in all parts of the United States. 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.

NSF is led by a presidentially-appointed Director and the policy-making National Science Board (NSB). The NSB, currently composed of 25 members, represents a cross section of American leaders in science and engineering research and education, who are appointed by the President for six-year terms. The NSF Director is an *ex officio* member of the Board.

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*. While the statements have been prepared from the books and records of NSF in accordance with United States Generally Accepted Accounting Principles (U.S. 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.

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.

D. Revenues and Other Financing Sources

NSF traditionally receives the 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 that is reported as H-1B Non-immigrant Petitioner Fees Account (H-1B) funds. Additional amounts are obtained from reimbursements for services provided to other federal agencies as well as from receipts to the NSF *Donations Account*. Also, NSF receives interest earned on overdue receivables and excess cash advances to grantees. The interest earned on overdue receivables and excess cash advances to grantees is returned to Treasury at the end of each fiscal year.

In FY 2015, The Science Appropriation Act, 2015 under Public Law 113-235 provided funding for each of NSF's appropriations. In addition, the Act provided an administrative provision allowing NSF to transfer up to five percent of current year funding between appropriations. Appropriations are recognized as a financing source at the time the related "funded" program or administrative expenditures are incurred. Appropriations are also recognized when used to purchase property, plant and equipment. "Unfunded" liabilities result from liabilities not covered by budgetary resources and will be paid when future appropriations are made available for these purposes. Donations are recognized as revenues when funds are received. Revenues from reimbursable agreements are recognized when the services are provided and the related expenditures are incurred. Reimbursable agreements are mainly for grant administrative services provided by NSF on behalf of other federal agencies.

Under the general authority of the Foundation, NSF is authorized to accept and use both U.S. and foreign funds into the NSF *Donations Account*. In accordance with 42 U.S.C. 1862 Section 3 (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. 1870 Section 11 (f), NSF is authorized to receive and use funds donated by others. Donations may be received from foreign governments, private companies, academic institutions, non-profit foundations, and individuals. These funds must be donated without restriction other than that they be used in furtherance of one or more of the general purposes of the Foundation. Funds are made available for obligations as necessary to support NSF programs.

E. Fund Balance with Treasury and Cash and Other Monetary Assets

Cash receipts and disbursements are processed by Treasury. *Fund Balance with Treasury* is composed primarily of appropriated funds that are available to pay current liabilities and finance authorized purchase commitments. *Cash and Other Monetary Assets* primarily include non-appropriated funding sources from donations and undeposited collections.

F. Accounts Receivable, Net

Accounts Receivable consist of amounts due from governmental agencies, private organizations, and individuals. Additionally, NSF has the right to conduct audits on 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 from non-federal sources that are deemed uncollectible but regards amounts due from other federal agencies as fully collectible. 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 two years old.

G. Advances

Advances 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 and recorded. Additionally, some NSF grantees receive advanced funds prior to incurring expenses. Payments are only made within the amount of the recorded grant obligation and are intended to cover immediate cash needs. Grant advances are presented net of grant liabilities on NSF's Balance Sheet.

H. General Property, Plant and Equipment

NSF capitalizes PP&E with costs exceeding \$25.0 thousand and useful lives of two or more years; items not meeting these criteria are recorded as operating expenses. NSF currently reports capitalized PP&E at original acquisition cost; assets acquired from the General Services Administration (GSA) excess property schedules are recorded at the value assigned by the donating agency; 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 consists of Equipment, Aircrafts 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 U.S. Antarctic Program (USAP). The majority of USAP property is currently under the custodial responsibility of the prime NSF contractor for the program.

Costs incurred to construct buildings and structures are accumulated and tracked as construction in progress. At 75 percent completion of construction, an on-site Conditional Occupancy inspection is performed to inspect for compliance to the approved plans, design, specifications, and changes. Items that pertain to the safety and health of any future occupants of the facility must be corrected before a Conditional Occupancy is granted and the facility occupied. When Conditional Occupancy is granted, the completed project is transferred from construction in progress to real property or capital equipment and depreciated over the respective useful life of the asset.

Depreciation expense is calculated using the straight-line half-year convention. 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, Department of Defense equipment
20 years	Movable buildings (e.g. trailers)

Aircraft and Satellites

7 years	Aircraft, aircraft conversions, and satellites
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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

Leases and Leasehold Improvements

The NSF Headquarter buildings are leased through GSA under an occupancy agreement. The cancellation clause within the agreement allows NSF to terminate use with a 120-day notice. NSF is billed by GSA for the leased space as rent based upon estimated lease payments made by GSA plus an administrative fee. Therefore, the cost of the Headquarter buildings is not capitalized by NSF. All NSF leases are cancellable and/or in effect for a period of no more than one year. The cost of leasehold improvements performed by GSA is financed with NSF appropriated funds.

Amortization is calculated using the straight-line half-year convention upon transfer from construction in progress.

Internal Use Software

NSF controls, values, and reports purchased or developed software as tangible property assets, in accordance with the Statement of Federal Financial Accounting Standards (SFFAS) No. 10, *Accounting for Internal Use Software*. NSF identifies software investments as capital property for items that, in the aggregate, cost \$500.0 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 five-year period using the straight-line half-year convention.

Assets Owned by NSF 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 control 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 Federal Accounting Standards Advisory Board (FASAB). This guidance stipulates that NSF should: (i) disclose the value of such PP&E held by others in its financial statements based on information contained in the audited financial statements of these entities (if available); and (ii) report information on costs incurred to acquire the research facilities, equipment, and platforms in the Research and Human Capital Activity costs as required by the SFFAS No. 8, *Supplementary Stewardship Reporting*. Very few entities disclose information on NSF titled property in their audited financial statements. Therefore, NSF has elected to disclose only the number of entities in possession of NSF owned property. Entities that separately present the book value of NSF titled property in their audited financial statements and all FFRDCs are listed in Note 4, *General Property, Plant and Equipment in the Custody of Other Entities*, along with the book value of the property held.

I. Advances From Others

Advances From Others consist of amounts obligated and advanced by other federal entities to NSF for grant administration and other services to be furnished under reimbursable agreements.

J. Accounts Payable

Accounts Payable consist of liabilities to federal agencies, commercial vendors, contractors, and disbursements in transit. *Accounts Payable* to federal agencies, commercial vendors, and contractors are expenses for goods and services received but not yet paid for by NSF at the end of the fiscal year. At year end, NSF accrues for the amount of estimated unpaid expenditures to vendors for which invoices have not been received, but goods and services have been delivered and rendered. *Accounts Payable* also consist of disbursements in transit recorded by NSF but not paid by Treasury.

K. Accrued Liabilities – Grants

NSF utilizes the Award Cash Management Service (ACM\$), a grantee cash request and expenditure reporting system. The implementation of ACM\$ required a modification of NSF's grant accrual methodology. NSF continued to update its grant accrual methodology as new ACM\$ and grantee financial information became available in FY 2015. Note 7, *Accrued Liabilities - Grants* provides additional information on the grant accrual amounts at September 30th.

L. Accrued Liabilities – Payroll and Other

Accrued Liabilities – Payroll and Other consist of accrued payroll and undeposited collections. NSF's payroll services are provided by the Department of the Interior's Interior Business Center. Accrued payroll relates to services rendered by NSF employees, for which they have not yet been paid. At year end, NSF accrues the amount of wages earned, but not yet paid. Undeposited collections are funds received by NSF, but not remitted to Treasury prior to September 30.

M. Employee Benefits

A liability is recorded for estimated and actual future payments to be made for workers' compensation pursuant to the Federal Employees' Compensation Act (FECA). The liability consists of the net present value of estimated future payments calculated by the U.S. Department of Labor (DOL) and the actual unreimbursed cost paid by DOL for compensation paid to recipients under FECA. The actual costs incurred are reflected as a liability because NSF will reimburse DOL two years after the actual payment of expenses. Future NSF Agency Operations and Award Management (AOAM) appropriations will be used for DOL's estimated reimbursement.

Annual leave is accrued as it is earned, and the accrual is reduced as leave is taken. Each year, 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 AOAM appropriations. Sick leave and other types of non-vested leave are expensed as taken.

N. Net Position

Net position is the residual difference between assets and liabilities and is composed of unexpended appropriations and cumulative results of operations. *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. The *Cumulative Results of Operations* represent the net results of NSF's operations since the Foundation's inception.

O. Retirement Plan

In FY 2015, approximately 8 percent of NSF employees participated in the Civil Service Retirement System (CSRS), to which NSF matches contributions equal 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 a thrift savings plan to which NSF automatically contributes 1 percent of pay and matches employee contributions up to an additional 4 percent of pay. NSF also contributes 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 the OPM Benefit Administration Website: <https://www.opm.gov/retirement-services/publications-forms/benefits-administration-letters/2015/15-101.pdf>

P. 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 the 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 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 United States Code.

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 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 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 when 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 materiality or measurability of a potential loss cannot be determined or the loss is more likely than not to occur.

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 pay termination expenses for FFRDCs in excess of the limitation of funds set forth in the agreements, including any Post Retirement

Benefit liabilities, only if funds are appropriated for this specific purpose. 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 Liabilities: NSF manages the U.S. Antarctic Program (USAP). The Antarctic Conservation Act and its implementing regulations identify the requirements for environmental clean-up in Antarctica. NSF continually monitors the U.S. Antarctic Program in regards to environmental issues. NSF 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 the Federal Financial Accounting and Auditing Technical Release No. 2, *Determining Probable and Reasonably Estimable for Environmental Liabilities in the Federal Government*

While NSF is not legally liable for environmental clean-up costs in the Antarctic, there are occasions when the NSF Division of Polar Programs (PLR) chooses to accept responsibility and commit funds toward clean-up 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 clean-up 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.

Separate from environmental clean-up costs related to the Antarctic Conservation Act, NSF discloses NSF-owned buildings in the Antarctic that have been identified as having, or expected to have, friable and non-friable asbestos containing material. NSF's estimated cost for asbestos related clean-up is shown on the Balance Sheet as a liability. Additional detail on the estimate methodology is included in Note 6, *Environmental and Disposal Liability*.

Q. Use of Estimates

Management has made certain estimates and assumptions when reporting assets, liabilities, revenues, and expenses, and also in the note disclosures. Estimates underlying the accompanying financial statements include accounting for grants, contracts, accounts payable, payroll, and property, plant and equipment. Actual results may differ from these estimates, and the difference will be adjusted for and included in the financial statements of the following fiscal year.

Note 2. Fund Balance With Treasury

Fund Balance with Treasury (FBWT) consisted of the following components as of September 30, 2015 and 2014:

(Amounts in Thousands)	2015			
	Appropriated Funds	Donated Funds	Funds from Dedicated Collections	Total
Obligated	\$ 11,571,214	\$ 35,655	\$ 367,724	\$ 11,974,593
Unobligated Available	85,694	27,561	110,468	223,723
Unobligated Unavailable	163,696	1,557	5,551	170,804
				-
Less: Cash and Other Monetary Assets	(249)	(50,271)	-	(50,520)
Add: Undeposited Collections	249	-	-	249
Total FBWT	\$ 11,820,604	\$ 14,502	\$ 483,743	\$ 12,318,849

(Amounts in Thousands)	2014			
	Appropriated Funds	Donated Funds	Funds from Dedicated Collections	Total
Obligated	\$ 11,093,691	\$ 25,070	\$ 302,943	\$ 11,421,704
Unobligated Available	73,827	27,632	94,211	195,670
Unobligated Unavailable	183,707	217	14,139	198,063
				-
Less: Cash and Other Monetary Assets	(674)	(34,888)	-	(35,562)
Add: Undeposited Collections	674	-	-	674
Total FBWT	\$ 11,351,225	\$ 18,031	\$ 411,293	\$ 11,780,549

The NSF *Donations Account* includes amounts donated to NSF from all sources. Funds in the NSF *Donations Account* may be used to further one or more of the general purposes of the Foundation. The donated funds are reported as FBWT or as *Cash and Other Monetary Assets*. Donations reported as *Cash and Other Monetary Assets* represent cash held outside of Treasury at commercial banks in interest bearing accounts. These funds are collateralized up to \$49.0 million by the bank, through the Federal Reserve Bank of St. Louis, in accordance with Treasury Financial Manual Volume 1, Chapter 6-9000. Undeposited collections are funds received by NSF, but not remitted to Treasury prior to September 30. *Unobligated Unavailable* balances include recoveries of prior year obligations and other unobligated expired funds that are unavailable for new obligations.

In FY 1999, in accordance with P.L. 105-277, a special fund named H-1B was established in the General Fund of the U.S. Treasury. These funds are considered Funds from Dedicated Collections and are not included in Appropriated Funds. The funds represent fees collected for each petition for non-immigrant status. Under the law, NSF was prescribed a percentage of these fees for specific programs.

Note 3. General Property, Plant and Equipment, Net

The components of *General Property, Plant, and Equipment* as of September 30, 2015 and 2014 were:

(Amounts in Thousands)	2015		
	Acquisition	Accumulated	Net Book Value
	Cost	Depreciation	
Equipment	\$ 155,764	\$ (133,030)	\$ 22,734
Aircraft and Satellites	138,487	(138,487)	-
Buildings and Structures	319,207	(132,426)	186,781
Leasehold Improvements	11,705	(11,162)	543
Construction in Progress	1,186	-	1,186
Internal Use Software	76,900	(31,372)	45,528
Software in Development	24,678	-	24,678
Total PP&E	\$ 727,927	\$ (446,477)	\$ 281,450

(Amounts in Thousands)	2014		
	Acquisition	Accumulated	Net Book Value
	Cost	Depreciation	
Equipment	\$ 146,602	\$ (129,402)	\$ 17,200
Aircraft and Satellites	138,487	(138,487)	-
Buildings and Structures	305,768	(122,467)	183,301
Leasehold Improvements	10,981	(10,981)	-
Construction in Progress	13,755	-	13,755
Internal Use Software	48,274	(20,273)	28,001
Software in Development	31,575	-	31,575
Total PP&E	\$ 695,442	\$ (421,610)	\$ 273,832

NSF's new core financial system, iTRAK, was placed into service in October 2014.

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

NSF received a ruling from FASAB on accounting for PP&E owned by NSF but in the custody of and used by others (see Note 1H. *General Property, Plant, and Equipment (PP&E)*). The FASAB guidance requires PP&E 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 dollar amount of NSF PP&E held by others in the footnotes based on information contained in the most recently issued audited financial statements of the organization holding the assets.

As of September 30, 2015, there were 42 colleges or universities, and 39 commercial entities that held property titled to NSF. With the exception of the FFRDCs listed below, none of the colleges, universities or commercial entities reported NSF titled property separately.

The amount of PP&E owned by NSF but in the custody of an FFRDC is identified in the table below. In some cases FFRDCs operate on a fiscal year end basis other than September 30th. If NSF PP&E is not separately stated on the FFRDC's audited financial statements, the FFRDC is not audited, or the FFRDC's disclosed PP&E balances are not audited, the related amounts are annotated as Not Available (N/A) in the table.

(Amounts in Thousands)

<i>Federally Funded Research and Development Centers</i>	Amount	Fiscal Year Ending
University Corporation for Atmospheric Research - UCAR	\$206,631	9/30
Association of Universities for Research in Astronomy, Inc. - AURA	N/A	9/30
National Radio Astronomy Observatory - AUI	\$561,339	9/30

Note 5. Leases

NSF leases its Headquarter building under an operating lease with GSA. The cancellation clause within the agreement allows NSF to terminate use with a 120-day notice. In FY 2015, NSF signed a lease, beginning in FY 2017, for the new Headquarter building in Alexandria, VA. The future payments for the new Headquarter building total \$372.3 million over the 15 year lease term. Additional information regarding the new lease can be found on NSF's website: http://www.nsf.gov/news/news_summ.jsp?cntn_id=128219.

The following is a schedule of future minimum lease payments for the current and future Headquarter buildings, warehouses, and office space in Denver, Colorado. The current leases are active through FY 2032.

(Amounts in Thousands)

Fiscal Year	Building Operating Lease Amount
2016	30,638
2017	31,585
2018	29,735
2019	24,750
2020	24,733
2021 and After	300,941
Total Minimum Lease Payments	\$ 442,382

In addition to the Headquarter buildings, NSF occupies common spaces with other federal agencies overseas through the State Department's International Cooperative Administrative Support Services (ICASS) system. NSF uses ICASS in Beijing, Paris, and Tokyo for residential and non-residential space. ICASS is a voluntary cost distribution system and the agreement to receive ICASS services is through an annual Memorandum of Understanding (MOU) between the NSF and the State Department. Additionally, NSF occupies residential space in Tokyo; the lease to occupy the space is a cancellable and/or for a period not more than a year.

Note 6. Environmental and Disposal Liability

Pursuant to Federal Accounting Standards Advisory Board (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 the USAP have been identified as having, or expected to have, friable and non-friable asbestos containing material (ACM). Upon the effective date in FY 2013, NSF recognized the entire asbestos liability of \$18.2 million. The balance was recorded as a prior period adjustment due to a change in accounting principle since the majority of the real property has been in service for a significant portion of their estimated useful life. NSF based the asbestos liability on information supplied by the

Antarctic Support Contractor (ASC). The ASC supplied information was based on asbestos surveys conducted in 2006 and included updates for all abatements and encapsulations performed since that time. The liability incorporates the following estimates:

- Waste handling in Antarctica to include miscellaneous supplies
- Transportation and disposal costs once the waste arrives in the United States
- Subcontract pricing information for asbestos abatement based on FY 2013 rates

As required by SFFAS No. 6, *Accounting for Property, Plant and Equipment*, NSF works with the current 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 quarterly by the ASC and the asbestos liability is reduced by the reported amount. No asbestos remediation costs were incurred as of September 30, 2015 and the balance remains \$18.2 million.

Note 7. Accrued Liabilities – Grants

Effective June 30, 2013 NSF fully implemented a grantee cash request and expenditure reporting system, ACM\$. ACM\$ enables all grantee institutions to request funds at the award level and on a more timely, project needs basis, thereby requiring NSF to modify its previous grant accrual estimation methodology. Since 2013, NSF has been actively collecting information from its grantees and in ACM\$ to develop a reliable approach for estimating grant expenses incurred but not reported (IBNR) to NSF.

In FY 2014, NSF requested a statistically based sample of grantees to report their cash on hand balances as of September 30, 2014. This approach was used to determine the amount of grantee expenses IBNR at September 30, 2014. In FY 2015, NSF developed a new grant accrual methodology utilizing a linear regression model based on the statistical correlation between prior year unliquidated obligations and prior year expenses IBNR.

At September 30, 2015 and 2014, the IBNR grant accrual was reported net of grant advances and amounted to \$340.9 million and \$250.3 million, respectively. The net liability reported in the FY 2015 and 2014 Balance Sheets was impacted by NSF's authorizations of grantees to draw beyond normal advance activity. In FY 2014 this authorization was provided to the entire ACM\$ grantee population; however, in FY 2015 select grantees were permitted to draw supplementary advances.

Note 8. Funds from Dedicated Collections

In FY 1999, Title IV of the American Competitiveness and Workforce Improvement Act of 1998 (P.L. 105-277) established an 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:

- Computer Science, Engineering, and Mathematics Scholarship (CSEMS)
- 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 included in the President's budget. The funds from dedicated collections are accounted for in a separate Treasury Account Symbol (TAS), and the budgetary resources are recorded as *Appropriated Funds from Dedicated Collections Transferred In / Out*. Funds

Notes to the Financial Statements
September 30, 2015 and 2014

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*. For the years ended September 30, 2015 and September 30, 2014, NSF was subject to H-1B sequestrations in the amount of \$7.3 million and \$9.5 million, respectively.

(Amounts in Thousands)	2015	2014
Balance Sheet as of September 30, 2015 and 2014		
Fund Balance With Treasury	\$ 483,743	\$ 411,293
Intragovernmental Advances	375	-
Total Assets	<u>484,118</u>	<u>411,293</u>
Other Intragovernmental Liabilities	137	-
Accounts Payable	3,241	176
Accrued Liabilities - Grants	10,818	6,918
Total Liabilities	<u>14,196</u>	<u>7,094</u>
Cumulative Results of Operations	469,922	404,199
Total Liabilities and Net Position	<u>\$ 484,118</u>	<u>\$ 411,293</u>

Statement of Net Cost for the Periods Ended September 30, 2015 and 2014

Program Costs	\$ 77,276	\$ 92,534
Net Cost of Operations	<u>\$ 77,276</u>	<u>\$ 92,534</u>

Statement of Changes in Net Position For the Periods Ended September 30, 2015 and 2014

Net Position Beginning of Period	\$ 404,199	\$ 368,680
Appropriated Dedicated Collection Transferred In / Out	142,999	128,053
Net Cost of Operation	<u>(77,276)</u>	<u>(92,534)</u>
Change in Net Position	65,723	35,519
Net Position End of Period	<u>\$ 469,922</u>	<u>\$ 404,199</u>

Note 9. Statement of Net Cost

NSF has a singular program for supporting research and education awards. The net costs for this program are presented for the three primary appropriations that fund NSF's programmatic activities (Research and Related Activities (R&RA), Education and Human Resources (EHR), and Major Research Equipment and Facilities Construction (MREFC)). Donations and Funds from Dedicated Collections are separately presented in the Statement of Net Cost and in the tables below.

In pursuit of its mission, NSF incurs costs related to the Foundation's strategic plan for FY 2014-2018: *Investing in Science, Engineering, and Education for the Nation's Future*. The strategic goals outlined in this plan are: "Transform the Frontiers of Science and Engineering", "Stimulate Innovation and Address Societal Needs through Research and Education", and "Excel as a Federal Science Agency". "Transform the Frontiers of Science and Engineering" emphasizes the seamless integration of research and education as well as the close coupling of research infrastructure and discovery. "Stimulate Innovation and Address Societal Needs through Research and Education" points to the tight linkage between NSF programs and societal needs, and highlights the role that new knowledge and creativity play in economic prosperity and

society's general welfare. "Excel as a Federal Science Agency" emphasizes the importance to NSF of attaining excellence and inclusion in all operational aspects.

Stewardship costs directly reflect the third strategic goal, "Excel as a Federal Science Agency", and are prorated among the Net Cost programs. Stewardship costs include expenditures incurred from the AOAM, NSB, and Office of Inspector General (OIG) appropriations. These appropriations support salaries and benefits of persons employed at NSF; general operating expenses, including support of NSF's information systems technology; staff training, audit and OIG activities; and OPM and DOL benefits costs paid on behalf of NSF.

At September 30, 2015 approximately 95 percent of NSF's expenses amounting to \$6.8 billion were directly related to the "Transform the Frontiers of Science and Engineering" and "Stimulate Innovation and Address Societal Needs through Research and Education" strategic outcome goals. At September 30, 2014 approximately 96 percent of NSF's expenses amounting to \$7.1 billion were directly related to the "Transform the Frontiers of Science and Engineering" and "Stimulate Innovation and Address Societal Needs through Research and Education" strategic outcome goals. At September 30, 2015 and 2014, costs related to the stewardship activities totaled \$329.7 million and \$309.8 million, respectively.

In accordance with OMB Circular No. A-136, costs incurred for services provided by other federal entities are reported in the full costs of NSF programs and are separately identified in this note as "Federal." All earned revenues are offsetting collections provided through reimbursable agreements with other federal entities and are retained by NSF. Earned revenues are recognized when the related program or administrative expenses are incurred and are deducted from the full cost of the programs to arrive at the net cost of operating NSF's programs. NSF applies a cost recovery fee on other federal entities consistent with applicable legislation and U.S. Government Accountability Office decisions. NSF recovers the costs incurred in the management, administration, and oversight of activities authorized and/or funded by interagency agreements where NSF is the performing agency.

Notes to the Financial Statements
September 30, 2015 and 2014

Intragovernmental and Public Costs and Earned Revenue by Program

(Amounts in Thousands)	2015		
	Federal	Public	Total
Research and Related Activities			
Gross Costs	\$ 209,657	\$ 5,696,069	\$ 5,905,726
Less: Earned Revenue	(127,447)	(2,382)	(129,829)
Net Research and Related Activities	82,210	5,693,687	5,775,897
Education and Human Resources			
Gross Costs	\$ 6,741	\$ 835,338	\$ 842,079
Less: Earned Revenue	(6,204)	(116)	(6,320)
Net Education and Human Resources	537	835,222	835,759
Major Research Equipment and Facilities Construction			
Gross Costs	\$ -	\$ 264,161	\$ 264,161
Less: Earned Revenue	-	-	-
Net Major Research Equipment and Facilities Construction	-	264,161	264,161
Donations and Dedicated Collections			
Gross Costs	\$ -	\$ 104,527	\$ 104,527
Less: Earned Revenue	-	-	-
Net Donations and Dedicated Collections	-	104,527	104,527
Net Cost of Operations	\$ 82,747	\$ 6,897,597	\$ 6,980,344

(Amounts in Thousands)	2014		
	Federal	Public	Total
Research and Related Activities			
Gross Costs	\$ 245,202	\$ 5,805,751	\$ 6,050,953
Less: Earned Revenue	(100,782)	-	(100,782)
Net Research and Related Activities	144,420	5,805,751	5,950,171
Education and Human Resources			
Gross Costs	\$ 6,824	\$ 870,490	\$ 877,314
Less: Earned Revenue	(3,616)	-	(3,616)
Net Education and Human Resources	3,208	870,490	873,698
Major Research Equipment and Facilities Construction			
Gross Costs	\$ 45	\$ 292,616	\$ 292,661
Less: Earned Revenue	-	-	-
Net Major Research Equipment and Facilities Construction	45	292,616	292,661
Donations and Dedicated Collections			
Gross Costs	\$ 525	\$ 139,596	\$ 140,121
Less: Earned Revenue	-	-	-
Net Donations and Dedicated Collections	525	139,596	140,121
Net Cost of Operations	\$ 148,198	\$ 7,108,453	\$ 7,256,651

Note 10. Permanent Indefinite Appropriations

NSF maintains permanent indefinite appropriations for R&RA, MREFC, EHR, and AOAM. The R&RA appropriation is used for polar research and operations support, and for reimbursement to other federal agencies for operational and science support and logistical and other related activities for the USAP. In FYs 2015 and 2014 the permanent indefinite appropriations for R&RA were \$437.8 million and \$435.9 million, respectively, and are reported as current year transfers from the annual R&RA appropriation.

The MREFC appropriation supports the procurement and construction of unique national research platforms and major research equipment. In FYs 2015 and 2014 the permanent indefinite appropriations for MREFC were \$200.8 million and \$200.0 million, respectively.

The EHR appropriation is used to support science and engineering education, and human resources programs and activities. In FY 2015 there were no permanent indefinite appropriations for EHR; however, in FY 2014, the permanent indefinite appropriation for EHR was \$60.9 million, and was reported as current year transfers from the annual EHR appropriation.

The AOAM appropriation is used to support Future NSF, a multi-year effort associated with NSF's upcoming Headquarter relocation. The permanent indefinite appropriation for AOAM was new in FY 2015 and amounted to \$18.1 million. It is reported as current year transfers from the annual AOAM appropriation.

Note 11. Apportionment Categories of Obligations Incurred: Direct vs. Reimbursable Obligations

OMB Circular No. A-11, *Preparation, Submission, and Execution of the Budget*, requires direct and reimbursable obligations be reported as Category A, Category B, or Exempt from Apportionment. In FYs 2015 and 2014, NSF's SF-133, *Report on Budget Execution and Budgetary Resources*, reported all obligations incurred under Category B which is by activity, project, or object. As of September 30, 2015 and 2014, direct obligations amounted to \$7.6 billion and \$7.3 billion, respectively, and reimbursable obligations amounted to \$126.0 million and \$103.6 million, respectively.

Note 12. 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*, calls for explanations of material differences between amounts reported in the Statement of Budgetary Resources (SBR) and the actual balances published in the Budget of the United States Government (President's Budget). However, the President's Budget that will include FY 2015 actual budgetary execution information has not yet been published. The President's Budget is scheduled for publication in the spring of FY 2016 and can be found on the OMB website: <http://www.whitehouse.gov/omb>.

Balances reported in the FY 2014 SBR and the related President's Budget are shown in a table below for Budgetary Resources, Obligations Incurred, Unobligated Balance - Unavailable, Distributed Offsetting Receipts, 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 discloses 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)	2014			
	Budgetary Resources	Obligations Incurred	Unobligated Balance - Unavailable	Distributed Offsetting Receipts
Combined Statement of Budgetary Resources	\$ 7,800,935	\$ 7,407,202	\$ 198,063	\$ 35,105
Budget of the U.S. Government	\$ 7,611,259	\$ 7,396,257	\$ 19,332	\$ 3,000
Difference	\$ 189,676	\$ 10,945	\$ 178,731	\$ 32,105

Note 13. Undelivered Orders at the End of the Period

In accordance with SFFAS No. 7, *Accounting for Revenue and Other Financing Sources*, the amount of budgetary resources obligated for undelivered orders for the periods ended September 30, 2015 and 2014 amounted to \$11.7 billion and \$11.3 billion, respectively.

Note 14. 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 \$1.1 billion to board member affiliated institutions in FY 2015. 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, requests for proposals (RFPs), and solicitations that meet or exceed a threshold where the average annual award amount is the greater of one percent or more of the awarding Directorate's or Office's prior year plan or 0.1 percent or more of the prior year total NSF budget (enacted level);
- New programs where the total annualized awards exceed three percent of the awarding Directorate's or Office's prior year current plan, involve sensitive political or policy issues, or will be funded as an ongoing NSF-wide activity;
- Major construction projects.

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 RFPs 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 (DAEO). Prior to Board meetings, all NSB action items are screened for conflict-of-interest/impartiality concerns by the Office of the General Counsel. Members who have conflicts are either recused from the matter or receive a waiver from the DAEO to participate. In FY 2015, NSB did not approve any awards to board member affiliated institutions.

Note 15. Reconciliation of Net Cost of Operations to Budget

(Amounts in Thousands)	2015	2014
Resources Used To Finance Activities		
Budgetary Resources Obligated		
Obligations Incurred	\$ 7,749,890	\$ 7,407,202
Less: Spending Authority from Offsetting Collections and Recoveries	(322,603)	(221,005)
Obligations Net of Offsetting Collections and Recoveries	7,427,287	7,186,197
Less: Offsetting Receipts	(37,834)	(35,105)
Net Obligations	7,389,453	7,151,092
Other Resources		
Imputed Financing	9,133	11,172
Other Resources	(2,602)	(1,557)
Net Other Resources Used to Finance Activities	6,531	9,615
Total Resources Used to Finance Activities	7,395,984	7,160,707
Resources Used to Finance Items Not Part of the Net Cost of Operations		
Change in Budgetary Resources Obligated for Goods, Services and Benefits Ordered but Not Yet Provided	(445,362)	65,203
Resources that Fund Expenses Recognized in Prior Periods	(15)	323
Budgetary Offsetting Collections and Receipts that Do Not Affect Net Cost of Operations	37,834	35,105
Resources that Finance the Acquisition of Assets	(35,835)	(24,549)
Total Resources Used to Finance Items Not Part of the Net Cost of Operations	(443,378)	76,082
Total Resources Used to Finance Net Cost of Operations	6,952,606	7,236,789
Components of the Net Cost of Operations that will not Require or Generate Resources in the Current Period		
Components Requiring or Generating Resources in Future Periods		
Other	11	-
Total Components of Net Cost of Operations that will Require or Generate Resources in Future Periods	11	-
Components Not Requiring or Generating Resources		
Depreciation and Amortization	28,326	19,098
Other	(599)	764
Total Components of Net Cost of Operations that will not Require or Generate Resources	27,727	19,862
Total Components of Net Cost of Operations that Will Not Require or Generate Resources in the Current Period	27,738	19,862
Net Cost of Operations	\$ 6,980,344	\$ 7,256,651

Required Supplementary Stewardship Information

Stewardship Investments

For the Years Ended September 30, 2015 and 2014

Required Supplementary Stewardship Information
September 30, 2015 and 2014

Stewardship Investments
Research and Human Capital
(Dollar Amounts in Thousands)

Research and Human Capital Activities

	<u>2015</u>	<u>2014</u>	<u>2013</u>	<u>2012</u>	<u>2011</u>
Basic Research	\$ 5,202,144	\$ 5,383,795	\$ 5,446,790	\$ 5,590,843	\$ 5,401,356
Applied Research	782,986	726,087	588,261	532,729	404,596
Education and Training	801,678	941,330	861,871	991,543	1,115,680
Non-Investing Activities	329,685	309,837	327,357	333,712	337,170
Total Research & Human Capital Activities	<u>\$ 7,116,493</u>	<u>\$ 7,361,049</u>	<u>\$ 7,224,279</u>	<u>\$ 7,448,827</u>	<u>\$ 7,258,802</u>

Inputs, Outputs and/or Outcomes

Research and Human Capital Activities

Investments In:

Universities	\$ 5,201,477	\$ 5,407,717	\$ 5,025,068	\$ 5,445,926	\$ 5,192,332
Industry	365,221	286,916	337,818	280,452	350,115
Federal Agencies	167,018	252,596	208,806	264,846	195,652
Small Business	225,958	224,931	249,443	239,866	254,215
Federally Funded R&D Centers	231,813	234,515	280,032	229,474	231,234
Non-Profit Organizations	451,232	529,482	605,059	523,772	522,958
Other	473,774	424,892	518,053	464,491	512,296
	<u>\$ 7,116,493</u>	<u>\$ 7,361,049</u>	<u>\$ 7,224,279</u>	<u>\$ 7,448,827</u>	<u>\$ 7,258,802</u>

Support To:

Scientists	\$ 584,865	\$ 550,800	\$ 539,713	\$ 544,452	\$ 540,865
Postdoctoral Programs	203,128	190,188	190,564	192,863	196,071
Graduate Students	629,922	586,443	568,548	574,557	564,021
	<u>\$ 1,417,915</u>	<u>\$ 1,327,431</u>	<u>\$ 1,298,825</u>	<u>\$ 1,311,872</u>	<u>\$ 1,300,957</u>

Outputs & Outcomes:

Number of:

Award Actions	21,000	20,000	20,000	23,000	22,000
Senior Researchers	42,000	41,000	44,000	56,000	53,000
Other Professionals	14,000	17,000	14,000	14,000	14,000
Postdoctoral Associates	6,000	6,000	6,000	6,000	7,000
Graduate Students	42,000	40,000	42,000	42,000	40,000
Undergraduate Students	36,000	34,000	29,000	31,000	27,000
K-12 Students	172,000	130,000	124,000	125,000	86,000
K-12 Teachers	41,000	40,000	40,000	45,000	48,000

NSF's mission is to support basic scientific research and research fundamental to the engineering process as well as science and engineering education programs. NSF's Stewardship Investments fall principally into the categories of Research and Human Capital. For expenses incurred under the Research category, the majority of NSF funding is devoted to basic research, with a relatively small share going to applied research. This funding supports both the conduct of research and the necessary supporting infrastructure, including state-of-the-art instrumentation, equipment, computing resources, and multi-user facilities such as digital libraries, observatories, and research vessels and aircraft. Basic and applied research and education and training expenses are determined by prorating the program costs of NSF's R&RA, EHR, and MREFC appropriations, donations, and funds from dedicated collections reported on the Statement of Net Cost. The proration uses the basic and applied research and education and training percentages of total estimated research and development obligations reported in the FY 2016 Budget Request to Congress. The actual numbers are not available until later in the following fiscal year. Non-Investing activities reflect stewardship costs incurred from the AOAM, NSB and OIG appropriations.

The data provided for scientists, postdoctoral associates, and graduate students are obtained from NSF's award budget information as recorded at the time the award is made. The number of award actions are actual values from NSF's Enterprise Information System (EIS). The remaining outputs and outcomes are estimates provided annually by the NSF Directorates. These estimates are reported in the NSF annual Budget Request to Congress.

NSF's Human Capital investments focus principally on education and training, toward a goal of creating a diverse, internationally competitive and globally engaged workforce of scientists, engineers and well-prepared citizens. NSF supports activities to improve formal and informal science, mathematics, engineering and technology education at all levels, as well as public science literacy projects that engage people of all ages in life-long learning. The number of K-12 students involved in NSF activities is based on a robust data collection and analysis process. The reported number of K-12 students and teachers in FY 2015 is an estimate and excludes data from the jurisdictions of Hawaii, Kansas, and West Virginia. Reporting from these jurisdictions is expected to be final by December 2015 and will be reflected in the FY 2017 Budget Request.

Required Supplementary Information

Deferred Maintenance and Repairs For the Years Ended September 30, 2015 and 2014

Deferred Maintenance and Repairs

NSF performs condition assessment surveys in accordance with SFFAS No. 42 for capitalized general property, plant and equipment (PP&E) 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 years ended September 30, 2015 and 2014. Assets deemed to be in excellent, good, or fair condition are considered to be in acceptable condition. Assets in 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 condition is considered critical in order to maintain operational status.

In accordance with SFFAS No. 42, NSF is disclosing the beginning and ending balances for the period ending September 30, 2015. At September 30, 2015, NSF determined that scheduled maintenance on one item of Antarctic capital equipment in very poor condition was not completed and was deferred or delayed for a future period. The dollar amount of deferred maintenance for this item was \$2.6 thousand. The item is light, mobile equipment and is considered critical to NSF operations.

At September 30, 2014, NSF determined that there was no scheduled maintenance or repairs on Antarctic capital equipment in poor condition that was not completed and was deferred or delayed for a future period.

Required Supplementary Information

Budgetary Resources by Major Budget Accounts

In the following tables, NSF budgetary information for the years ended September 30, 2015 and 2014 as presented in the Statement of Budgetary Resources, is disaggregated for each of NSF's major budget accounts.

Required Supplementary Information
September 30, 2015 and 2014

The Science Appropriations Act, 2015

2015

(Amounts in Thousands)

	<u>Research and Related Activities</u>	<u>Education and Human Resources</u>	<u>Major Research Equipment</u>	<u>OIG, AOAM, and NSB</u>	<u>Special and Donated</u>	<u>Total</u>
Budgetary Resources						
Unobligated Balance - Brought Forward, October 1	\$ 202,480	48,507	390	6,157	136,199	\$ 393,733
Recoveries of Prior Year Unpaid Obligations	174,987	29,285	-	9,197	4,868	218,337
Other Changes in Unobligated Balance	<u>(73,245)</u>	<u>(17,361)</u>	<u>-</u>	<u>(3,383)</u>	<u>-</u>	<u>(93,989)</u>
Unobligated Balance from Prior Year Budget Authority, Net	304,222	60,431	390	11,971	141,067	518,081
Appropriations	5,933,645	866,000	200,760	343,800	177,865	7,522,070
Spending Authority from Offsetting Collections	91,476	4,926	1,668	6,012	184	104,266
Total Budgetary Resources	\$ 6,329,343	931,357	202,818	361,783	319,116	\$ 8,144,417
Status of Budgetary Resources						
Obligations Incurred	\$ 6,198,748	894,365	144,760	338,038	173,979	\$ 7,749,890
Unobligated Balance, End of Year						
Apportioned	6,836	3,577	56,390	18,891	138,029	223,723
Unapportioned	<u>123,759</u>	<u>33,415</u>	<u>1,668</u>	<u>4,854</u>	<u>7,108</u>	<u>170,804</u>
Total Unobligated Balance, End of Year	<u>130,595</u>	<u>36,992</u>	<u>58,058</u>	<u>23,745</u>	<u>145,137</u>	<u>394,527</u>
Total Status of Budgetary Resources	\$ 6,329,343	931,357	202,818	361,783	319,116	\$ 8,144,417
Change in Obligated Balance						
Unpaid Obligations						
Unpaid Obligations - Brought Forward, October 1, Gross	\$ 9,173,916	1,667,606	287,357	87,747	328,013	\$ 11,544,639
Obligations Incurred	6,198,748	894,365	144,760	338,038	173,979	7,749,890
Gross Outlays	(5,525,888)	(796,135)	(257,709)	(324,166)	(93,745)	(6,997,643)
Recoveries of Prior Year Unpaid Obligations	<u>(174,987)</u>	<u>(29,285)</u>	<u>-</u>	<u>(9,197)</u>	<u>(4,868)</u>	<u>(218,337)</u>
Unpaid Obligations - End of Year, Gross	9,671,789	1,736,551	174,408	92,422	403,379	12,078,549
Uncollected Payments						
Uncollected Payments from Federal Sources - Brought Forward, October 1	\$ (116,508)	(6,195)	-	(232)	-	\$ (122,935)
Change in Uncollected Payments from Federal Sources	18,614	1,004	-	(639)	-	18,979
Uncollected Payments from Federal Sources, End of Year	<u>(97,894)</u>	<u>(5,191)</u>	<u>-</u>	<u>(871)</u>	<u>-</u>	<u>(103,956)</u>
Memorandum (non-add) Entries						
Obligated Balance - Start of Year	\$ 9,057,408	1,661,411	287,357	87,515	328,013	\$ 11,421,704
Obligated Balance - End of Year	\$ 9,573,895	1,731,360	174,408	91,551	403,379	\$ 11,974,593
Budget Authority, Gross						
Budget Authority, Gross	\$ 6,025,121	870,926	202,428	349,812	178,049	\$ 7,626,336
Actual Offsetting Collections	(110,090)	(5,930)	(1,668)	(5,373)	(184)	(123,245)
Change in Uncollected Customer Payments from Federal Sources	18,614	1,004	-	(639)	-	18,979
Budget Authority, Net	\$ 5,933,645	866,000	200,760	343,800	177,865	\$ 7,522,070
Gross Outlays						
Gross Outlays	\$ 5,525,888	796,135	257,709	324,166	93,745	\$ 6,997,643
Actual Offsetting Collections	(110,090)	(5,930)	(1,668)	(5,373)	(184)	(123,245)
Net Outlays	5,415,798	790,205	256,041	318,793	93,561	6,874,398
Distributed Offsetting Receipts	-	-	-	-	(37,834)	(37,834)
Net Agency Outlays	\$ 5,415,798	790,205	256,041	318,793	55,727	\$ 6,836,564

Required Supplementary Information
September 30, 2015 and 2014

The Science Appropriations Act, 2014

2014
(Amounts in Thousands)

	<u>Research and Related Activities</u>	<u>Education and Human Resources</u>	<u>Major Research Equipment</u>	<u>OIG, AOAM, and NSB</u>	<u>Special and Donated</u>	<u>Total</u>
Budgetary Resources						
Unobligated Balance - Brought Forward, October 1	\$ 117,327	32,548	380	5,876	137,313	\$ 293,444
Recoveries of Prior Year Unpaid Obligations	88,389	21,294	10	4,042	5,549	119,284
Other Changes in Unobligated Balance	(29,322)	(13,540)	-	(3,147)	-	(46,009)
Unobligated Balance from Prior Year Budget Authority, Net	176,394	40,302	390	6,771	142,862	366,719
Appropriations	5,801,634	845,438	200,000	324,847	160,576	7,332,495
Spending Authority from Offsetting Collections	90,760	5,100	-	5,861	-	101,721
Total Budgetary Resources	\$ 6,068,788	890,840	200,390	337,479	303,438	\$ 7,800,935
Status of Budgetary Resources						
Obligations Incurred	\$ 5,866,308	842,333	200,000	331,322	167,239	\$ 7,407,202
Unobligated Balance, End of Year						
Apportioned	56,976	15,672	380	799	121,843	195,670
Unapportioned	145,504	32,835	10	5,358	14,356	198,063
Total Unobligated Balance, End of Year	202,480	48,507	390	6,157	136,199	393,733
Total Status of Budgetary Resources	\$ 6,068,788	890,840	200,390	337,479	303,438	\$ 7,800,935
Change in Obligated Balance						
Unpaid Obligations						
Unpaid Obligations - Brought Forward, October 1, Gross	\$ 9,058,656	1,670,649	366,884	75,961	299,119	\$ 11,471,269
Obligations Incurred	5,866,308	842,333	200,000	331,322	167,239	7,407,202
Gross Outlays	(5,662,659)	(824,082)	(279,517)	(315,494)	(132,796)	(7,214,548)
Recoveries of Prior Year Unpaid Obligations	(88,389)	(21,294)	(10)	(4,042)	(5,549)	(119,284)
Unpaid Obligations - End of Year, Gross	9,173,916	1,667,606	287,357	87,747	328,013	11,544,639
Uncollected Payments						
Uncollected Payments from Federal Sources - Brought Forward, October 1	\$ (138,018)	(4,905)	-	(3,579)	-	\$ (146,502)
Change in Uncollected Payments from Federal Sources	21,510	(1,290)	-	3,347	-	23,567
Uncollected Payments from Federal Sources, End of Year	(116,508)	(6,195)	-	(232)	-	(122,935)
Memorandum (non-add) Entries						
Obligated Balance - Start of Year	\$ 8,920,638	1,665,744	366,884	72,382	299,119	\$ 11,324,767
Obligated Balance - End of Year	\$ 9,057,408	1,661,411	287,357	87,515	328,013	\$ 11,421,704
Budget Authority, Gross						
Budget Authority, Gross	\$ 5,892,394	850,538	200,000	330,708	160,576	\$ 7,434,216
Actual Offsetting Collections	(112,269)	(3,811)	-	(9,208)	-	(125,288)
Change in Uncollected Customer Payments from Federal Sources	21,510	(1,290)	-	3,347	-	23,567
Budget Authority, Net	\$ 5,801,635	845,437	200,000	324,847	160,576	\$ 7,332,495
Gross Outlays						
Gross Outlays	\$ 5,662,659	824,082	279,517	315,494	132,796	\$ 7,214,548
Actual Offsetting Collections	(112,269)	(3,811)	-	(9,208)	-	(125,288)
Net Outlays	5,550,390	820,271	279,517	306,286	132,796	7,089,260
Distributed Offsetting Receipts	-	-	-	-	(35,105)	(35,105)
Net Agency Outlays	\$ 5,550,390	820,271	279,517	306,286	97,691	\$ 7,054,155

Other Information

Combined Schedule of Spending

For the Years Ended September 30, 2015 and 2014

The Combined Schedule of Spending (SOS) was developed to make information about government spending more accessible and transparent to the public. To help achieve this goal, specific line items found in the Statement of Budgetary Resources (SBR), which relate to government spending, have been simplified and reorganized to help readers better understand accounting terminology. The focus of the SOS is to provide a user-friendly report that answers the following questions:

- 1) **What money is available to spend?** This section ties directly to the SBR and indicates the total resources available less funds that were unobligated or unavailable for spending.
- 2) **How was the money spent/issued?** This section presents total obligations incurred and shows the most significant goods or services purchased, as well as payment types, by appropriation category. The Other line is comprised of miscellaneous management expenses.
- 3) **Who did the money go to?** This section presents total obligations incurred by the type of entity the funds were awarded to. The presentation is similar to the RSSI Investments in Research and Human Capital Activities section, however the SOS presents performance organization data for new obligations incurred and the RSSI presents performance organization data for expenditures incurred.
- 4) **How does the SOS compare to the SBR and USASpending.gov?** This section describes the similarities and differences between the SOS, SBR and the USASpending.gov website.

National Science Foundation
Combined Schedule of Spending
For the Year Ended September 30, 2015
(Amounts in Thousands)

What Money is Available to Spend?

Total Resources	\$ 8,144,417
Less Amount Available but Not Agreed to be Spent	223,723
Less Amount Not Available to be Spent	170,804
Total Amounts Agreed to be Spent	\$ 7,749,890

How Was the Money Spent/Issued?

	<u>Research and</u> <u>Related Activities</u>	<u>Education and</u> <u>Human</u> <u>Resources</u>	<u>Major</u> <u>Research</u> <u>Equipment</u>	<u>OIG, AOAM</u> <u>and NSB</u>	<u>Special and</u> <u>Donated</u>	<u>Total</u>
Compensation and Benefits	\$ 823	129	-	224,928	19	225,899
Travel and Transportation of Persons	15,694	1,685	-	6,167	314	23,860
Contracts	505,151	26,829	-	70,380	528	602,888
Rent, Communications, and Utilities	723	109	-	36,237	5	37,074
Grants, Subsidies and Contributions	5,676,275	865,598	144,760	159	173,095	6,859,887
Other	82	15	-	167	18	282
Total Amounts Agreed to be Spent	\$ 6,198,748	894,365	144,760	338,038	173,979	7,749,890

Who did the Money go to?

Universities	\$ 5,841,501
Industry	306,008
Federal Agencies	189,499
Small Business	254,382
FFRDC	260,766
Non- Profit	433,577
Other	464,157
Total Amounts Agreed to be Spent	\$ 7,749,890

National Science Foundation
Combined Schedule of Spending
For the Year Ended September 30, 2014
(Amounts in Thousands)

What Money is Available to Spend?

Total Resources	\$ 7,800,935
Less Amount Available but Not Agreed to be Spent	195,670
Less Amount Not Available to be Spent	198,063
Total Amounts Agreed to be Spent	\$ 7,407,202

How Was the Money Spent/Issued?

	<u>Research and Related Activities</u>	<u>Education and Human Resources</u>	<u>Major Research Equipment</u>	<u>OIG, AOAM and NSB</u>	<u>Special and Donated</u>	<u>Total</u>
Compensation and Benefits	\$ 969	134	-	216,645	10	217,758
Travel and Transportation of Persons	13,996	1,819	-	5,346	246	21,407
Contracts	522,133	24,576	125	74,393	5,180	626,407
Rent, Communications, and Utilities	118	76	-	34,907	13	35,114
Grants, Subsidies and Contributions	5,329,092	815,728	199,875	30	161,789	6,506,514
Other	-	-	-	1	1	2
Total Amounts Agreed to be Spent	\$ 5,866,308	842,333	200,000	331,322	167,239	7,407,202

Who did the Money go to?

Universities	\$ 5,472,779
Industry	313,999
Federal Agencies	224,664
Small Business	225,609
FFRDC	218,481
Non- Profit	523,650
Other	428,020
Total Amounts Agreed to be Spent	\$ 7,407,202

How Does the SOS Compare to the SBR and USASpending.gov?

The SOS, SBR and the USASpending.gov website all serve a purpose to provide transparency to the general public regarding how federal agencies obtain funding and where those funds are spent. These reports display NSF spending information at various levels of detail to provide a wide range of information to the readers. The SBR is prepared using the United States Standard General Ledger (USSGL) trial balance and provides information about how budgetary resources were made available as well as their status at the end of the period. Data reported on the SBR is ultimately reconcilable with data reported in the Budget of the United States Government. The SOS presents total budgetary resources and the total amounts agreed to be spent which equates to fiscal year-to-date obligations reported on the SBR. This schedule provides the reader with detailed agency information that describes the types of activities NSF's resources will be used for and who these resources will be given to. Like the SOS, USASpending.gov also provides agency obligation information on awards and contracts that have been obligated over the past ten fiscal years. Variances between USASpending.gov and SOS data can be attributed to the following:

- USASpending.gov includes obligation information for contracts and grants, only. The SOS includes additional obligation information to include travel, employee salaries and benefits, and rent.
- USASpending.gov includes grant and contract data associated with specific Budget Object Classes. The SOS classifies a larger population of Budget Object Classes as a grant or contract.
- USASpending.gov excludes contracts where the total amount funded does not exceed \$25.0 thousand. The SOS includes all contracts, regardless of dollar value.
- USASpending.gov does not include awards made to other Federal agencies via Outgoing Interagency Agreements (IAA); whereas, the SOS includes these awards.
- The SOS includes accruals and other financial information applicable to, but posted subsequent to September 30, 2015 and 2014. USASpending.gov data is based on financial information that is included in the financial system on September 30.

A large, stylized gear graphic in shades of blue and teal. The letters 'INSE' are prominently displayed in a serif font across the center of the gear. The background is a solid teal color.

INSE

Chapter 3

Appendices

Summary of FY 2015 Financial Statements Audit and Management Assurances

Table 1. Summary of Financial Statement Audit

Audit Opinion	<i>Unmodified</i>				
Restatement	<i>No</i>				
Material Weakness	Beginning Balance	New	Resolved	Consolidated	Ending Balance
Total Material Weaknesses	0	-	-	-	0

Table 2. Summary of Management Assurances

Effectiveness of Internal Control over Financial Reporting (FMFIA § 2)					
Statement of Assurance	<i>Unqualified</i>				
	Beginning Balance	New	Resolved	Consolidated	Ending Balance
Total Material Weaknesses	0	-	-	-	0
Effectiveness of Internal Control over Operations (FMFIA § 2)					
Statement of Assurance	<i>Unqualified</i>				
	Beginning Balance	New	Resolved	Consolidated	Ending Balance
Total Material Weaknesses	0	-	-	-	0
Conformance with Financial Management System Requirements (FMFIA § 4)					
Statement of Assurance	<i>Systems conform to financial management system requirements</i>				
	Beginning Balance	New	Resolved	Consolidated	Ending Balance
Total Non-Conformances	0	-	-	-	0
Compliance with Section 803(a) of the Federal Financial Management Improvement Act (FFMIA)					
	Agency		Auditor		
1. System Requirements	<i>No lack of substantial compliance noted</i>				
2. Accounting Standards	<i>No lack of substantial compliance noted</i>				
3. U.S. Standard General Ledger at Transaction level	<i>No lack of substantial compliance noted</i>				

National Science Foundation

FY 2015 Improper Payments Elimination and Recovery Act (IPERA) Reporting Details

The Improper Payments Information Act of 2002 (IPIA; Pub. L. 107-300), as amended by the Improper Payments Elimination and Recovery Act of 2010 (IPERA; Pub. L. 111-204), and the Improper Payments Elimination and Recovery Improvement Act of 2012 (IPERIA; Pub. L. 112-248), require agencies to annually report information on improper payments to the President and Congress through their annual Performance Accountability Reports (PARs) or AFRs.

I. Risk Assessment

NSF reached an agreement with the Office of the Inspector General (OIG) to do a qualitative risk assessment of improper payments for FY 2015. Additionally, NSF has updated its 2013-2014 IPERA risk assessment report and completed follow-up activities for cooperative support agreements and graduate research fellowship grants.

NSF completed an IPERA risk assessment during FY 2014. The FY 2013-2014 risk assessment covered grants, contracts, and payroll payments. The risk assessment followed OMB criteria as contained in Appendix C, *Management's Responsibility for Internal Control* of OMB Circular No. A-123 and employed both a qualitative and quantitative approach in determining NSF's level of susceptibility to improper payments. It also considered NSF's financial processing and internal controls, monitoring and assessment, human capital, operations and management, volume of payments, and materiality. The risk assessment did not indicate significant susceptibility to improper payments for NSF grants, contracts or payroll payments.

During June 2015, the OIG audit contractor completed an audit of NSF's compliance with IPERA. The audit objective was to review the improper payment reporting in NSF's FY 2014 Agency Financial Report (AFR), and accompanying materials, to determine whether the agency met the OMB criteria for compliance with IPERA (Public Law 111-204). The auditors found that NSF did not comply with the IPERA reporting requirements in the FY 2014 AFR.

In order to address the audit findings, NSF reached consensus with the NSF-OIG on how to move forward to address the results of the audit report. As noted above, NSF is in the process of completing a qualitative risk assessment of improper payments for FY 2015. Additionally, NSF updated its FY 2013-2014 risk assessment report to include the 9 risk factors and completed financial award monitoring testing of its fellowship and cooperative agreement award instruments. The financial monitoring testing was an outcome of the FY 2013-2014 risk assessment, which identified fellowship and cooperative support agreement award instruments as grant program activities for further review. NSF included the results for the financial award monitoring testing in its 2015 update of the risk assessment report, which will also consider the 9 risk factors contained in OMB Circular A-123 Appendix C. The testing found a very low rate of unallowable costs for fellowships and cooperative support agreements. It was significantly below the criteria for a significant risk of improper payments as contained in Appendix C, *Management's Responsibility for Internal Control* of OMB Circular No. A-123. The testing report was included as supplemental information for the updated risk assessment.

II. Statistical Sampling

Not applicable.

III. Improper Payment Reporting

Not applicable.

a. Not applicable.

b. Not applicable.

c. Not applicable.

Table 1

Improper Payment Reduction Outlook

Not applicable.

d. Not applicable.

e. Not applicable.

f. High-Priority Programs

Not applicable.

IV. Improper Payment Root Cause Categories

Not applicable.

Table 2

Improper Payment Root Cause Category Matrix

Not applicable.

V. Corrective Actions

Not applicable.

a. High-Priority Programs

Not applicable.

VI. Internal Control Over Payments

Not applicable.

Table 3

Example of the Status of Internal Controls

Not applicable.

VII. Accountability

Not applicable.

VIII. Agency Information Systems and Other Infrastructure

Not applicable.

IX. Barriers

Not applicable.

X. Agency Recapture of Improper Payments Reporting

a. Payment Recapture Audits Narrative

NSF did not conduct payment recapture audits during FY 2015. In September 2015, NSF notified OMB that it would not be cost effective for the agency to conduct a recapture audit program.

b. Programs Excluded from the Payment Recapture Audit Program

NSF determined that it would not be cost effective to conduct recapture audits of its single grants program and other activities (i.e., contracts, travel, purchase cards, and payroll). In accordance with Circular A-123 “Management’s Responsibilities for Internal Controls,” on September 28, 2015, NSF notified OMB and its Inspector General of this decision and included supporting analysis. The results of grant testing, audits, internal control reviews, and monitoring programs have consistently demonstrated that there is no significant risk of unallowable costs/improper payments within NSF’s single grant program and other activities. The analysis used to determine that a payment recapture audit program was not cost effective leveraged the work performed under the Improper Payments Elimination and Recovery Act (IPERA), the Single Audit Act, and the Uniform Grant Guidance. NSF also considered cost incurred audits of its high risk contracts and cost incurred audits of the agency’s cooperative agreements.

The 2013-2014 IPERA risk assessment which used quantitative and qualitative factors to assess NSF’s singular grant program and other activities did not indicate susceptibility to a high risk of improper payments. This was consistent with the agency’s history of low improper payments. NSF tested grant payments as part of its 2013-2014 risk assessment and the FY 2015 payment testing for fellowship and cooperative support agreement award instruments. The results from two years of testing on over 1,500 expense entries identified under \$50,000 in unallowable costs. The FY 2014 payment testing found that the error rate for grant expenses was considerably below the significant improper payment criteria of 1.5 percent of program outlays and \$10 million of all program activity payments. NSF will complete a qualitative risk assessment of improper payments for FY 2015.

In FY 2015, the NSF OIG issued audits and reviews that had questioned costs of \$5,438,611. These questioned costs were limited to four grantee institutions. In the case of audits of grantees for which NSF is the cognizant agency, questioned costs totaled \$17,362. Total recoveries to date related to audit resolution and disallowed expenses are \$239,152. This includes \$140,000 recovered through a long term repayment plan related to one grantee institution.

NSF has invested significant resources in its grant monitoring program. As a key component of the agency's grant monitoring program NSF completes advanced monitoring activities, which include desk reviews, site visits, and Business Systems Reviews of NSF's large facilities construction and operation. These provide reasonable assurance to the agency that grant recipient institutions managing higher-risk awards possess adequate policies, processes, and systems to properly manage federal awards.

NSF reviewed the susceptibility of contract payments to significant improper payments as part of its 2013-2014 risk assessment and deemed them low risk. Of the \$600 million in payments, under \$518 million went to non-governmental entities, making them within the scope of IPERA regulations, as amended. Of the less than \$518 million in scope, over 41% was paid to NSF's two largest contractors in support of its Arctic and Antarctic operations. While payments to these contractors totaled almost \$216 million of the \$518 million in contracts payments, they only made up 0.4% of the recorded payment transactions for FY 2013. The NSF Internal Controls Program also performs an annual review of the agency's procure-to-pay process. The procure-to-pay review followed payments from invoice receipt through Contracting Officer Representative approval to verify that the payment was made in agreement with contractual requirements and examined the design, operating efficiency and effectiveness of several key controls throughout the process.

NSF uses the Department of the Interior, Interior Business Center (IBC) as a Shared Service Provider to perform many of its payroll functions. The IBC's internal control over its shared service offering is audited annually under the Statement on Standards for Attestation Engagements No. 16, Reporting on Controls at a Service Organization. In FY 2015, the IBC's controls were found to be suitably designed and operating effectively.

c. Payment Recapture Audit Reporting

NSF did not conduct payment recapture audits during FY 2015.

d. Overpayments Recaptured Outside of Payment Recapture Audits

NSF collected remittances outside of payment recapture audits related to the following: payment reviews or audits; OIG reviews; Single Audit reports; and self-reported overpayments. These are reflected in Table 4 "Overpayments Recaptured Outside of Payment Recapture Audits."

e. Payment Recapture Audit Program Targets

Not Applicable.

Table 4
**Improper Payment Recaptures with and without Audit Programs
 (\$ in Millions)**

Overpayments Recaptured outside of Payment Recapture Audits		
Program or Activity	Amount Identified	Amount Recaptured
Grants	\$8.472	\$6.867
Contracts	\$0.061	\$0.061
Travel	\$0.019	\$0.019
Purchase Cards	\$0.000	\$0.000
Payroll and Other	\$0.033	\$0.033
<i>TOTAL</i>	\$8.585	\$6.980

f. Not Applicable.

1. Not applicable.

Table 5
Disposition of Funds Recaptured through Payment Recapture Audits

Not applicable.

2. Not applicable.

Table 6
Aging of Outstanding Overpayments Identified in the Payment Recapture Audits

Not applicable

XI. Additional Comments

Not applicable.

XII. Agency Reduction of Improper Payments with the Do Not Pay Initiative

NSF has been actively participating in OMB’s Do Not Pay (DNP) initiative to reduce improper payments through the implementation of pre-award and post-payment activities. For pre-award activities, the agency has incorporated the DNP solution into its pre-award review process for all grants and cooperative

Appendix 2: Improper Payments Elimination and Recovery Act Reporting

agreements. The DNP solution complements NSF’s existing policies and procedures for award management. The agency has integrated the functionality into its award management process. NSF has also automated the reviews and centralized the pre-award verification. This has created efficiency gains by reducing the workload for manual verification.

NSF uses the Department of Treasury to disburse all funds. NSF payments are compliant with the Treasury’s Payment Application Modernization format and are screened against the following data sources: Death Master File (DMF)-Public and the System for Award Management (SAM) Exclusion Records-Restricted. Any subsequent matches are viewable in the Treasury Do Not Pay Portal for adjudication purposes. No additional data sources are available in the Treasury payment integration process at this time. In FY 2015, 49,000 payments for over \$6 billion were screened through the Treasury Do Not pay process (Table 7). NSF had no positive matches for DMF and SAM.

Implementation of the Treasury’s Payment Application Modernization screening process has reduced the number of false positives from over 550 during fiscal year 2014 to zero in fiscal year 2015. This has produced resource savings for the agency from not having to manually research each false positive using the Do Not Pay online portal.

Table 7
Results of the Do Not Pay Initiative in Preventing Improper Payments
(\$ in Millions)

	Number of Payments Reviewed for Possible Improper Payments	Dollars of Payments Reviewed for Possible Improper Payments	Number of Payments Stopped	Dollars of Payments Stopped	Number of Potential Improper Payments Reviewed and Determined Accurate	Dollars of Potential Improper Payments Reviewed and Determined Accurate
Reviews with the IPERIA specified databases	51,960	\$6,601.40	0	0	0	\$0
Reviews with databases not listed in IPERIA	N/A	N/A	N/A	N/A	N/A	N/A

DMF: Social Security Death Master File
 SAM: GSA System for Award Management



National Science Foundation • Office of Inspector General
4201 Wilson Boulevard, Suite I-1135, Arlington, Virginia 22230

October 15, 2015

MEMORANDUM

To: Dr. Dan E. Arvizu
Chair, National Science Board

Dr. France Cordova
Director, National Science Foundation

From: Allison Lerner
Inspector General, National Science Foundation

Subject: Management Challenges for NSF in FY 2016

In accordance with the Reports Consolidation Act of 2000, I am submitting our annual statement summarizing what the Office of Inspector General considers to be the most serious management and performance challenges facing the National Science Foundation (NSF). We have compiled this list based on our audit and investigative work, general knowledge of the agency's operations and evaluative reports of others, including the Government Accountability Office and NSF's various advisory committees, contractors, and staff.

We have focused on seven issue areas that reflect fundamental program risk and are likely to require management's attention for years to come. They are:

- Establishing Accountability over Large Cooperative Agreements
- Managing of NSF's Business Operations
- Managing of the IPA Program
- Moving NSF Headquarters to a New Building
- Managing the U.S. Antarctic Program
- Improving Grant Administration
- Encouraging the Ethical Conduct of Research

As you can see, we lead with a challenge focused on large cooperative agreements. While the agency has agreed to take some actions to enhance accountability over such agreements, we believe that significant risks remain. Our September 2015 alert memo on NSF's management of the potential \$80 million cost overrun for NEON outlined factors that contributed to the overrun, including that fact that NSF did not increase its monitoring of expenditures in the wake of significant problems with the project's cost proposal.

We have broadened the previous challenge on managing programs and resources in times of budget austerity to include the significant challenges faced by the "business" side of NSF, such

as finding and eliminating improper payments, protecting agency information and IT resources, and managing the government's records. Selecting and producing great science is the agency's most important job, but with an annual appropriation of over \$7 billion and a diverse portfolio of projects to manage, NSF leadership cannot overlook the importance of its administrative operations. Effective business executives and administrators are as critical to NSF's success as are its scientists.

Finally, we have added a challenge on NSF's management of the IPA program. While there are benefits that come from having IPAs at NSF, there are also less positive aspects such as higher costs and frequent turnover in leadership positions. In addition, since IPAs make funding decisions while at the Foundation, it critical that strong controls be in place to identify and mitigate conflicts of interest that occur as a result of rotators' research activities and connections with their home institution.

If you have any questions, or need additional information, please call me at 703-292-7100.

Sincerely,



Allison C. Lerner

CHALLENGE: Establishing Accountability over Large Cooperative Agreements

Overview: For the past four years we have directed significant attention to proposed construction budgets for NSF's recent high-risk, high-dollar cooperative agreements for large construction projects. We found that NSF approved proposed budgets for four major projects, totaling more than \$1.4 billion although significant questions existed as to the adequacy of the proposed budgets. As a result, while NSF knows what it will spend on these projects, it is not clear whether it knows what they should cost.

After four years of audit effort, the OIG escalated the recommendation for NSF to require current cost estimates for its large projects, in addition to our other recommendations-- to remove unallowable contingency from budget; require annual incurred cost submissions and audits; track contingency expenditures; and strengthen cost surveillance over large cooperative agreements. Escalation of recommendations is the final step available to the OIG in an attempt to urge NSF to strengthen accountability and to exercise proper stewardship of federal funds. NSF did not agree completely with any of the recommendations, but has stated that it will revise certain policies to address some of them.

Challenge for the Agency: It is an ongoing challenge for NSF to establish accountability for the billions of federal funds in its large cooperative agreements at the pre- and post-award stages and throughout the lifecycle of the projects.

Accountability begins at the pre-award stage and should include audits of awardees' proposed budgets and accounting systems to ensure that awardees' cost estimates are fair and reasonable and that the accounting system is adequate to bill the government properly. The Large Synoptic Survey Telescope (LSST) project was the first construction project NSF considered since our 2012 alert memo on the agency's management of its high-risk, high-dollar cooperative agreements.

We found that NSF's internal review of the cost of the LSST project could not independently verify costs for any of the 136 proposed expenditures sampled, including approximately \$145 million in direct materials, nearly \$20 million for contingencies and more than \$6 million in direct labor costs. Nonetheless, NSF moved forward with this project although it has limited insight into the makeup of the project's cost and little if any, assurance that they are reasonable.

NSF also moved forward with the \$433.8 million National Ecological Observatory Network (NEON) project. NEON project risks originated with the construction budget, which included \$154 million (nearly 36 percent of the total proposed budget) in questioned and unsupported costs, as identified by OIG audits. Auditors issued three inadequacy memos over a four month period in 2011 and issued an adverse opinion on the proposed budget in 2012 because the proposal did not form an acceptable basis for negotiation of a fair and reasonable price. As the project has progressed, additional serious financial management problems have surfaced. For example:

- An August 2015 independent, external assessment commissioned by NSF of NEON's cost estimate to complete the project gave the estimate an overall rating of "inadequate."
- In 2013, during the indirect cost rate negotiation of fiscal year 2011, NSF found potential questionable spending by NEON for meals, visa, and entertainment activities, among other things. In the same year, the indirect cost rate negotiation of fiscal year 2012 disclosed the potential of lobbying activities.
- The NEON construction award requires NSF approval before using contingency funds; however, NEON has been executing against a revised project plan that incorporated \$35 million of budget contingency into the performance measurement baseline without prior NSF approval. To date, NSF has not determined whether NEON actually spent any of the \$35 million in contingency. If, as OIG recommended, NSF held contingency funds until NEON provided sufficient support for their use, the NSF would have greater visibility over contingency expenditures and assurance that the funds were not spent in advance of NSF approval.

In June 2015, NEON management notified NSF that the project was facing a potential cost overrun of \$80 million. It is noteworthy, that NSF was originally informed by NEON that the cost overrun would be \$27 million. In response to questions from NSF, NEON increased that estimate to \$40 million, then to \$60 million and finally to \$80 million.

In light of the concerns about the NEON cost proposal, NSF should have increased its oversight of costs as the project progressed. Instead, once the project was underway NSF did not require adequate evidence that project expenditures were warranted, reasonable, or allowable under NSF and federal requirements.

NSF did not start requiring NEON to provide more detail about its spending until May 2015, and NSF has just recently started reviewing transaction level detail associated with expenditures that appeared unusual. Obtaining and reviewing transaction level data throughout the life of the project could have revealed unallowable or unreasonable expenditures, or funds spent for awards other than those for which they were provided. Incurred cost submissions and visibility over expenditures, including contingency spending, as OIG has recommended, are critical.

If NSF had strong cost surveillance practices in place from the start of the NEON project, it would have had the information it needed to identify the potential cost overruns early on, and would have been able to address them before they amounted to tens of millions of dollars. We will continue to urge the Foundation to exercise the highest level of attention and scrutiny to the financial management of its large facility projects.

OIG's Assessment of the Agency's Progress: In response to our recommendations on LSST, NSF stated that it would review the project's risk management process, including a detailed contingency review. NSF stated that it agreed with the "spirit" of our recommendations on NEON and that it is conducting monthly expenditure reviews and increasing its involvement in

management of the NEON project. NSF also stated that it plans to contract for an independent assessment of the December 2015 cost estimate to complete the project.

With respect to its large cooperative agreements, NSF has said that it will require annual incurred cost information that can be used to conduct an audit and that it will conduct incurred cost audits for projects valued at \$100 million or more at project completion and possibly at other points during the project, based on its own assessment of risk. Finally, NSF has contracted for an external, independent evaluation of its policies and procedures for large facility projects. That evaluation is expected to be available in December 2015.

As described above, NSF has stated that it intends to take some actions to strengthen accountability over its large cooperative agreements. However, in most instances, these proposed actions are forward looking, and we have not been able to verify whether they have been implemented and are working. Therefore, we remain concerned about NSF's progress toward improving cost surveillance for its largest cooperative agreements.

CHALLENGE: Management of NSF's Business Operations

Overview: NSF is a small agency in terms of staff, but one with a significant appropriation and an important portfolio of responsibilities. Its mission is to promote the progress of science primarily by making productive investments in research and the nation's science infrastructure. Consequently, most of NSF's managers and staff are successful science or engineering professionals highly qualified to help determine the composition of the agency's investments.

Selecting and producing great science is the agency's most important job, but with an annual appropriation of over \$7 billion and a diverse portfolio of projects to manage, NSF leadership cannot overlook the importance of its administrative operations. Effective executives and administrators are as critical to NSF's success as are its scientists. The "business" side of NSF faces a set of challenges aimed at improving the organizations' management controls over payments, information security, recordkeeping, and reporting. Simply stated, NSF will be challenged to "multitask" and deliver both scientific and organizational excellence.

Challenge for the Agency:

Finding and Eliminating Improper Payments

Ensuring that payments are proper at the time they're initiated has always been challenging for NSF because grant recipients are generally not required to present supporting documentation, such as invoices and receipts, in order to receive payments from the agency. As a result, NSF issues approximately \$6 billion annually in grant and cooperative agreement payments without verification, relying almost completely on the *recipients'* systems of internal control to ensure that only proper payments are requested and that any improper payments are self-identified and corrected by the recipient.

In June 2015, we issued a report on NSF's non-compliance with the Improper Payment Elimination Act (IPERA) requirements for FY 2014. The report identified significant issues

with how NSF executed the risk assessment used by the agency to conclude it was not susceptible to significant improper payments. Specifically, in its risk assessment NSF did not address all of the required risk factors, reached unsupported conclusions for some of the transactions tested, and lacked alignment of the risk indicators with the ultimate conclusion of low risk. In addition, in the quantitative portion of the risk assessment NSF did not consider payments corrected after the fact by recipients to be improper payments, nor did it maintain the stated statistical validity in the execution of its sampling plan. As this was the second consecutive report that found significant issues with NSF's risk assessment, we recommended that the agency conduct a statistically valid sample in order to determine an estimated improper payment rate that would establish once and for all whether or not NSF is susceptible to significant improper payments. While NSF generally agreed with some of the report's findings, it did not believe that it was non-compliant with IPERA.

The *Standards for Internal Control in the Federal Government*, issued by the Government Accountability Office in September 2014 (the "Green Book") states that, "Internal control is a process effected by an entity's oversight body, management, and other personnel..." It further states that, "...management designs control activities so that all transactions are completely and accurately recorded." NSF's challenges in this area are to develop an internal control process that provides reasonable assurance that payments are proper at the time they are made, and to develop a sound process for assessing its risk of improper payments.

Protecting Agency information and IT Resources

The protection of its information systems against unauthorized access or modification is critical to NSF's ability to carry out its mission. As demonstrated by the recent data breach at the Office of Personnel Management, extreme diligence is required to deal with today's increasingly sophisticated threat landscape. In addition to certain recurring IT security weaknesses, NSF has some long-standing issues that warrant increased attention, particularly with regard to its Antarctic Program. NSF management should allocate appropriate resources to correcting these weaknesses and providing increased assurance that the systems and information are adequately protected.

In addition, continuous monitoring of IT systems is essential to the timely identification and mitigation of IT security risks. OMB requires agencies to develop and maintain an information security continuous monitoring (ISCM) strategy and implement an ISCM program in accordance with specific NIST guidelines. Per OMB's guidance, agencies must implement continuous monitoring of security controls as part of a phased approach through Fiscal Year (FY) 2017. NSF's approach to strengthen continuous monitoring includes implementing the DHS Continuous Diagnostic and Mitigation Program and transitioning to ongoing authorization. In this environment of an ever increasing number and sophistication of IT security threats, it is imperative that NSF continue to dedicate the appropriate attention and resources to implementing a robust ISCM program.

Promoting Accountability and Transparency

The Digital Accountability and Transparency Act (DATA Act) directs the federal government to standardize and publish a wide variety of reports and data in order to foster greater transparency over federal spending. Federal agencies must implement the DATA Act by May 2017. The implementation is being led by a joint team from the U.S. Department of the Treasury and the Office of Management and Budget (the DATA Act Project Management Office or PMO). The iterative nature of the Data Act PMO's implementation strategy and evolving federal guidance make it difficult for agencies, including NSF, to integrate the implementation effort into existing IT governance and resource requirements planning structures. Also, there are critical issues that still need to be resolved on a government-wide basis, as well as guidance in key areas that is needed before agencies can fully develop their own project plans.

Other factors also present a significant challenge for NSF in successfully implementing the requirements of the Act including: the potential for necessary modifications to the agency System for Award Management (SAM) interfaces; the lack of available agency FTEs to ensure that adequate staff are dedicated to DATA Act implementation; and the potential that NSF's relocation in 2017 may impact the allocation of additional funding (should it be needed) beyond what is currently planned. Also, the lack of a clear source of funding to make the necessary system and process changes to support implementation presents a risk to the success of the DATA Act implementation. As the guidance on DATA Act requirements is rolled out, cost estimates and implementation plans are likely to change, making it difficult for the agency to adequately prepare.

Managing the Government's Records

In 2011, President Obama signed a memorandum initiating a government-wide effort to reform federal recordkeeping in light of the dramatic increase in the amount of electronic information that the government manages. The Office of Management and Budget (OMB) and the National Archives and Records Administration (NARA) issued a follow-up directive in 2012, which required federal agencies to take specific actions by appointed dates to reform the policies and practices for the management of records, and provide a framework for the management of electronic records.

The U.S. Government Accountability Office (GAO) issued an audit report in May 2015 on the implementation of the directive at 24 departments and agencies, including NSF. GAO found that NSF did not submit a Senior Agency Official report, and did not provide information to NARA on how it intended to manage permanent electronic records, or a date when it would submit this information. Nor did NSF provide a date when its required review for temporary and permanent email records would be completed. Further, GAO found that NSF did not report to NARA that it did not possess any permanent records that were 30 years old or older, as the directive required. Finally, GAO found that as late as March 2015, NSF could not provide a date when it will complete the identification of any portion of its unscheduled records, increasing the risk that it might destroy such records without NARA approving or being aware. GAO made four recommendations to NSF to address the agency-specific findings in the report. NSF should provide a prompt response to GAO's recommendations, and comply with NARA's directive.

OIG's Assessment of the Agency's Progress: NSF needs to devote more attention to its business operations in order to surmount the challenges presented by these four issue areas. While NSF has taken steps to improve its reporting on improper payments in the agency financial records, it confuses the differences between improper payments and unallowable costs. For example, a cost may ultimately be allowable while also being considered an improper payment at the time it was made. And a payment may be considered improper, even if the recipient later identifies and self-corrects the error. Without a better understanding of how an improper payment is defined, NSF will continue to have difficulties assessing whether it is susceptible to improper payments.

NSF also continues to take action to correct IT security issues, although progress in resolving the issues in its Antarctic Program (USAP) have been delayed during the past several years by the changeover to a new Antarctic contractor, as well as the impending expiration of the lease on the USAP's facility in Centennial, CO. During FY 2015 USAP finally replaced a very out-of-date software application used to process personnel, medical, equipment maintenance, and procurement transactions. However, since FY 2006 we have reported that USAP needs to improve its disaster recovery and continuity of operations planning for its Denver data center. The timeline for remediation of this issue is contingent upon the availability of funding. Regarding NSF's continuous monitoring program, DHS recently awarded a contract that will allow NSF to initiate contacts with the contractor and to form a Continuous Diagnostic and Mitigation working group.

With regard to the Data Act, in FY 2015 NSF organized its DATA Act implementation team, and established a governance structure, including a Senior Accountable Official (SAO), an Executive-level Steering Committee, and a NSF DATA Act Working Group (DAWG). NSF also assigned staff to the on-going government-wide working group effort to review, define, and standardize DATA Act data elements; actively participated in other DATA Act-related government-wide activities; and identified agency staff with subject matter expertise for consultation. Finally, NSF issued its initial Data Act Implementation Plan in August, along with its related cost estimate.

Regarding the GAO report on recordkeeping, NSF stated that it is currently preparing a response.

CHALLENGE: Management of the IPA Program

Overview: In addition to its permanent scientific staff, NSF utilizes a rotating staff of external researchers and educators from across the United States to participate in the funding decision process. Those external researchers, called "rotators", constitute roughly 30% of NSF's program officers and also serve in executive positions such as Assistant Directors who lead one of NSF's seven science directorates. Most come to NSF under the authority of the Intergovernmental Personnel Act (IPA) for a period of up to four years, and then return to their home institutions.

Rotating staff are an important component of NSF's workforce and bring valuable experience to the Foundation. In many instances, however, rotators cost more than federal employees performing the same job, and they are frequently away from the office as they continue research

at their home institutions. While we recognize the significant contributions made by rotators, it is essential for NSF to examine the costs associated with the rotator programs – funds spent directly on the rotators and costs associated with the rotator program--to ensure that federal funds entrusted to the Foundation are being spent effectively and efficiently.

Challenge for the Agency: Recent audits and investigations have identified weaknesses in NSF's management of the IPA program, a program that serves as a cornerstone of its scientific and management hiring programs. NSF is challenged to establish and maintain strong oversight of this program to ensure continuity of effective leadership within the Foundation while maintaining high ethical standards and compliance with laws and regulations despite the high personnel turnover rate the program produces.

The challenges associated with NSF's reliance on rotators include: frequent turnover of personnel, management of inherent conflict of interests (COI) that arise from having individuals whose institutions receive NSF funding come to the agency to assist in funding decisions, the establishment and maintenance of transparency in funding decisions, and ensuring that rotators comply with federal laws after they leave NSF. Finally, the additional cost of using IPAs instead of hiring permanent employees is significant; our 2013 audit found that NSF paid an annual additional cost of approximately \$6.7 million or an average of over \$36,000 per IPA for the 184 IPAs we examined.

Managing Conflicts of Interest

In light of the Foundation's reliance on rotators to make funding decisions, it is critical that strong controls are in place to identify and mitigate conflicts of interests (COIs) that occur as a result of rotators' research activities and their connections with their home institutions. Such controls protect rotators—many of whom have never worked in a federal environment—as well as the Foundation itself.

A recent investigative report documented problems with controls over COIs we identified in the context of one rotator's tenure at NSF. We found that:

- No concrete plan to manage the rotator's known conflicts was developed and communicated;
- There were significant delays in the rotator's completion of a required ethics course and her submission of a required financial disclosure form;
- Actions taken to assess the impact of the rotator's COIs on an award she made were seriously flawed;
- The names of the persons who wrote the justification for funding and who actually made the decision to fund the award with which the rotator had conflicts were not included in NSF's system of record, undermining the agency's ability to identify and mitigate COIs; and
- A critical tool used to enforce the one-year cooling off period following the rotator's tenure at NSF was circumvented.

We have recommended that NSF take various actions to strengthen its controls over COIs.

Impact of Frequent Turnover in Management Positions

As noted, IPAs generally serve in executive positions, such as Assistant Directors who lead NSF's science directorates. NSF expects its executives to provide strategic direction, make investment and funding decisions, oversee and monitor grant-making processes, as well as supervise and manage scientific and administrative staff. Currently, six out of seven of NSF's Scientific Directorates are headed by IPAs.

Continual turnover, especially in leadership positions, presents challenges for NSF. Succession planning and knowledge transfer become constant and thus, more critical functions, as NSF is continually recruiting and assessing new leaders. Once they are found and hired, NSF is challenged to ensure these leaders receive training to understand the culture of the Federal government, and how that impacts the day-to-day management of NSF. New leaders must be trained in NSF's government and management processes and systems, and conflicts of interest must be identified and recognized and managed, as current and prior activities of these executives may influence funding decisions and oversight responsibilities. The constant reshuffling of senior management also leads to lack of continuity for programmatic leadership for research initiatives.

Transparency in Funding Decisions

The turnover in program managers, who make significant contributions to funding decisions, also creates a transparency challenge. In one directorate, we identified a concern about transparency regarding grant funding decisions between outgoing and incoming IPAs. Specifically some IPA program officers believed it to be acceptable to carry out a predecessor's decision to fund a proposal. In one instance, after an outgoing IPA negotiated a budget and agreed to fund a proposal, his replacement IPA was expected to complete the funding action without exercising independent analysis of the matter. NSF did not have any record of the first IPA's deliberations on the matter.

Compliance with Federal Laws after IPA Assignment Ends

It is a challenge for NSF to ensure that IPA personnel fully understand their responsibility to comply with federal laws and regulations. We found an instance in one directorate in which an IPA interacted with NSF program officers during the one-year "cooling off" after departure from NSF. An NSF database, used to monitor conflicts by departed IPAs and enforce the cooling off period, was circumvented so that grants officers could not determine that the IPA should not be negotiating a new grant.

Cost of IPAs

Finally, NSF pays IPAs the salary and fringe benefits they were earning at their home institutions in addition to reimbursing them for travel to NSF, temporary living expenses, lost consulting income and state income taxes if the IPA in some instances. With respect to salaries, we found that for one year NSF paid an additional \$3 million for IPA salaries, and, that, in August 2012,

54 IPAs' salaries exceeded the federal executive pay limit of \$179,700. NSF paid 34 of these IPAs an annual salary of \$200,000 or more; the highest annual IPA salary was over \$300,000.

We calculated that NSF paid nearly \$800,000 in additional fringe benefit costs for IPAs and paid more than \$337,000 for lost consultations. We recommended that NSF evaluate ways to reduce IPA costs such as increasing telework from IPAs' home institutions and increasing cost sharing. While NSF has developed a plan to examine higher costs for IPAs, it has not yet implemented concrete actions.

OIG's Assessment of the Agency's Progress: NSF informed us that it communicates COI standards to rotators before they arrive and that it reinforces this information to each rotator in an email message after the rotator starts at NSF. With respect to transparency in funding decisions, NSF stated that it will review program management training to incorporate "best practices" related to funding decisions including that an outgoing program officer cannot bind an incoming program officer to recommend an initial award. In addition, NSF implemented a process to orient and train IPAs who are unfamiliar with federal government processes and practices.

In response to our audit of IPA costs, NSF stated that it would initiate actions that would balance potential costs reductions with possible effects on either recruitment efforts or the effectiveness of IPA working arrangements. NSF also informed us that in order to identify an appropriate set of actions, it undertook an assessment of mechanisms to reduce the cost of IPAs.

With respect to our findings related to controls over rotators' COIs, we remain concerned that additional attention is needed in this area and are currently assessing ways for us to evaluate the extent to which the problems we identified in one division are occurring across the Foundation.

With respect to the added costs of IPAs, in August 2014 NSF identified several actions it could take to reduce the added costs of IPAs. Unfortunately, as of the end of this reporting period, little progress had been made in accomplishing those actions.

CHALLENGE: Moving NSF Headquarters to a New Building

Overview: NSF was scheduled to occupy its new building in December 2016, and to be out of its existing buildings by February 2017. However, due to delays from an impasse in negotiations between NSF and its Union on workstation sizes and allocation of shared and support space, GSA negotiated the rental start date to September 1, 2017 at a delay cost of approximately \$14.5 million.

Challenge for the Agency: If NSF causes additional schedule delays, it may need to extend these leases, which would require it to continue paying rent at two locations, with the rent for the current buildings likely being higher than it currently is. The revised relocation schedule includes little slack time and two phases of negotiations still need to be completed. The risk of further delay is considerable in light of the number of items that have to be negotiated with the union and the tight deadlines for resolving differences.

NSF faces four major risks to moving to its new headquarters before leases at its current buildings expire December 31, 2017. First, NSF lacks a detailed master schedule for its move. Second, NSF will have to negotiate with its union on several furniture-related and space issues, and has little time to do so. Third, the current schedule includes fewer opportunities for design review and a shorter time to complete these reviews. Finally, NSF faces risks because its new building has less storage space and the agency lacks an approved record schedule allowing destruction of underlying hard copy documents. These risks are exacerbated by constant leadership turnovers and the lack of a single person responsible for the project who has direct access to the Director. We have issued two alert memos to the NSF Director raising concerns about continued schedule delays and the risk of the associated higher costs.

OIG's Assessment of the Agency's Progress: With assistance and input from GSA, NSF's schedule for the move was revised, which reduced the original delay by approximately six months. NSF successfully met two deadlines for reviewing interior design. NSF has informed us that a contractor will present workstation layout design options to both NSF and Union together. It is NSF's view that presenting options in this manner may help NSF and the Union reach agreement on this issue.

NSF continues to face significant challenges with respect to union negotiations for items which must be decided within a short time. Therefore, we continue to encourage NSF senior management to focus the highest level of attention on its move to its new headquarters.

CHALLENGE: Management of the U.S. Antarctic Program

Overview: Antarctica is the coldest, driest, windiest, most remote continent on earth. The weather changes frequently and abruptly; temperature drops of as much as 65 degrees Fahrenheit in twelve minutes have been recorded.

NSF, through the United States Antarctic Program (USAP), manages U.S. scientific research in Antarctica. The program's goals are: to understand the Antarctica and its associated ecosystems; to understand the region's effects on, and responses to global processes such as climate; and to use Antarctica's unique features for scientific research that cannot be done as well elsewhere. The Antarctic Support Contract, which was awarded to Lockheed Martin in December 2011 is NSF's largest contract, valued at nearly \$2 billion over 13 years.

Challenge for the Agency: Establishing and maintaining a world-class scientific research program in Antarctica's remote and harsh environment is a formidable logistical challenge. The July 2012 report by the Blue Ribbon Panel, commissioned by NSF and the Office of Science and Technology Policy, focused on eight major areas including capital budgeting, communications, and health and safety, which presented the most significant challenges.

NSF developed a matrix to track its progress in implementing recommendations from the Blue Ribbon Panel report. In June 2013, we issued a memorandum to NSF making several suggestions to improve the usefulness of this matrix, such as including timelines for action and identifying a responsible person for each action. Our 2013 audit of the medical screening process for travelers to Antarctica found that NSF's medical review panel has made

recommendations that could reduce the cost of this process, but NSF has not implemented many of these recommendations.

Another challenge for NSF is to control the cost of the USAP and to ensure adequate oversight of payments to the USAP contractor. For example, for the last five years the medical review panel recommended that NSF base required medical tests on factors such as how long an individual will be in Antarctica, and what their duty station and job responsibilities will be. Revising the number of medical tests performed to reflect these criteria could lower costs of the screening process, which currently totals approximately \$860 per person.

Our July 2015 audit of the health and safety of USAP participants identified four areas for improvement in: 1) developing a process to identify, respond to, track, and collect data on all misconduct incidents that occur in USAP; 2) improving pharmacy operations; 3) ensuring Special Deputies in the Antarctic have adequate tools and training to perform their law enforcement responsibilities; and 4) enforcing and potentially expanding the requirement for breathalyzer tests.

OIG's Assessment of the Agency's Progress: NSF has been tracking progress against the Blue Ribbon Panel recommendations in its working matrix and has improved that document in response to our recommendations. In response to our audit on reducing costs of the medical screening process, NSF concurred with the OIG's recommendations and has formalized its process for addressing and tracking medical panel recommendations.

NSF generally agreed with the recommendations in our 2015 health and safety audit and informed us that it plans to take several steps to implement the recommendations such as sharing information on violations of the Code of Conduct and issuing a reminder to the contractor regarding management of drug interactions and making patients aware of drug safety information.

In addition, NSF informed us that it authorized the contractor to obtain breathalyzers that do not require calibration and that the contractor recently updated the manuals for the medical clinics, including procedures related to controls over medication. Finally, NSF plans to host a law enforcement site visit to Antarctica.

Finally, NSF has informed us that it does not plan to develop a process to identify and track misconduct by all USAP participants, including researchers. As a result, NSF lacks information needed to prevent or limit future misconduct, which increases the risk that future problems may go unaddressed and possibly become more severe. The lack of such information about all USAP participants may also undermine the agency's ability to ensure that similar infractions are handled consistently, whether they are committed by a researcher or a contractor employee.

CHALLENGE: Improving Grant Administration

Overview: Making grants in support of promising scientific research is NSF's primary business and a key element of its mission. In FY 2014, NSF acted on more than 48,000 proposals for research, education and training projects, and funded close to 11,000 new awards. As of

September 30, 2015, NSF had a portfolio of over 48,000 active awards totaling approximately \$32.5 billion. Since most of these awards are grants, it is vital that NSF's grant-related business processes ensure that grantees spend their funds appropriately.

Challenge for the Agency: Ensuring that grant funds are spent as intended has always been challenging because grant recipients are not required to present supporting documentation, such as invoices and receipts, in order to receive payment from the agency. In addition, while recent efforts to reduce the administrative impact on grantees are commendable, accountability for public funds should not be compromised in the process. Therefore, the challenge for NSF is to implement controls over the spending of grant funds that ensure transparency and accountability, but do not create undue administrative impacts on awardees and federal program officers.

One step NSF and other federal agencies have taken to reduce the burden on researchers is to streamline the written guidance for administering grants. However, we are concerned that in an effort to reduce the guidance, some clarifying text has been eliminated that may lead to inconsistent interpretations and directions being given to awardees. With scores of program officers fielding questions from numerous awardees on a daily basis, NSF will be challenged to provide consistent guidance that does not contradict previous responses or its written policies.

On December 26, 2013, OMB issued its final rule, 2 CFR Part 200, "Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards" (Uniform Grant Guidance or UGG). The UGG streamlined eight OMB administrative, cost, and audit circulars into one circular that covers all types of non-federal entities that receive federal awards. NSF revised its *Proposal & Award Policies & Procedures Guide* to implement the UGG. Changes included in the revised Guide became effective December 26, 2014. As NSF makes new awards and renews existing ones under the revised Guide, it should monitor implementation of the new policies to ensure that no unintended consequences arise as a result. Also, as noted in last year's Management Challenge, OMB raised the single audit threshold from \$500,000 to \$750,000, effectively removing audit coverage on millions of dollars in NSF funding. NSF will need to take additional steps to oversee the awardees who fall below the threshold.

In addition, OMB changed requirements related to documentation of labor effort, making it more challenging to assess the allowability of salaries and related costs on an ongoing basis. Under the UGG, colleges and universities are permitted to charge awards for salary costs based on budget estimates rather than on the actual work performed, provided only that "significant changes" are entered "in a timely manner" and that the final amount charged to the federal award is accurate, allowable, and properly allocated. NSF faces the challenge of implementing OMB guidance over awardee spending for research salaries—generally the largest item of expense in research awards—that only requires awardees to ensure salary costs are reasonable at the end of an award.

As OMB is changing its documentation requirements for research salaries, ongoing initiatives to reduce administrative requirements on sponsored researchers present additional challenges to NSF. Among these is an effort to change the manner in which salaries are certified as allowable charges to federal grants. OIG recently issued reports on implementation of pilot payroll

certification systems at two NSF awardee institutions.¹ Our audits highlighted the challenges NSF faces in providing effective stewardship over taxpayer money without placing unnecessary administrative burdens on researchers. The reports noted that any system's ability to properly account for federal research funds relies on the controls built into the system. They reminded NSF to reinforce with its awardees the need to design and implement controls that reduce the risk of improper charges to federal awards and provide a means to ensure the controls are achieving that objective.

Finally, OMB significantly shortened the audit resolution timeframe. Prior to the UGG, federal agencies had 6 months to issue management decision letters on findings affecting the agency from the time they received an audit report. The new OMB requirement allows 6 months from the date that *the report is submitted to the Federal Audit Clearinghouse*. For NSF, this change would effectively shorten the audit resolution timeframe by 30 days, unless the agency can establish a new accelerated process for identifying and tracking reports that require resolution.

OIG's Assessment of the Agency's Progress: NSF took several actions this past year to strengthen grant administration but more are needed. As previously noted, the agency's revised *Proposal & Award Policies & Procedures Guide*, implementing the UGG, became effective in December 2014. OIG and NSF continue to discuss transferring responsibility for identifying single audit findings that require NSF resolution to NSF. Finally, NSF continues to use its Award Monitoring and Business Assistance Program (AMBAP) which includes baseline and advanced monitoring activities. During advanced monitoring, NSF assesses the internal controls of its awardees to ensure adequate administration of the NSF awards. During FY 2015, NSF planned and completed 30 Advanced Monitoring Site Visit reviews and 147 desk reviews.

Challenge: Encouraging the Ethical Conduct of Research

Overview: Congress passed the America COMPETES Act in 2007 to increase innovation through research and development, and to improve the competitiveness of the United States in the world economy. NSF responded to the Act by mandating mentoring plans for all postdoctoral positions and directing that grantees provide appropriate training and oversight in the responsible and ethical conduct of research to undergraduate and graduate students, and postdoctoral researchers participating in the proposed research project.

However, information collected during investigations, site visits, and reviews of institutional Responsible Conduct of Research (RCR) plans suggests that some institutions consider RCR as just another compliance requirement, rather than part of its educational mission. Furthermore, some research suggests that many of the ethics training programs currently available do little to change the perspectives of students and postdocs regarding the ethical conduct of research. As more stories about research misconduct circulate in the media, the public's confidence in the research enterprise is weakened and taxpayer support of science is undermined. NSF is therefore challenged to provide more oversight on institutional implementation of these requirements and to provide meaningful guidance regarding RCR training.

¹ Reports on pilot implementation at George Mason University (OIG 15-1-017, issued July 31, 2015) and Michigan Technological University (OIG 15-1-023, issued September 30, 2015).

Challenge for the agency: NSF's primary challenge is to ensure that awardees implement effective RCR programs. At a time when opinion surveys indicate more Americans are becoming distrustful of science, it is important that the conduct of scientific research not be tainted by instances of misrepresentation or cheating. Recent surveys also suggest that cheating is endemic at various levels of education, with 30% of researchers admitting to engaging in questionable research practices or knowing someone who has engaged in such practices.

Consistent with these survey results, OIG has seen a dramatic increase in substantive allegations of plagiarism and data fabrication since 2004, especially as it relates to junior faculty members and graduate students. The number of allegations investigated has grown from a low of 45 in 2004 to 75 this past year. Even more important, however, has been the rise in serious instances of research misconduct as evidenced by the number of research misconduct findings by NSF. In 2004, two research misconduct findings were made, while in 2014 there were 20 research misconduct findings.

In addition, OIG has seen a substantial increase of allegations related to peer-review based confidentiality violations, false representations in CVs, false representations of publications in annual/final reports, failure to list all affiliations and current support (especially at overseas institutions), and fraudulent or otherwise improper use of grant funds. The number and variety of ethical issues identified in our investigative activities suggest that institutions have not sufficiently emphasized research integrity as a core value – not only at the student level but at the faculty level as well.

The NSF Act places responsibility on NSF to strengthen scientific and engineering research potential at all levels in various fields. NSF's research and training programs reach individuals who are ultimately employed by academia, industry, and government. These individuals could have a broad and positive impact on the US science, engineering, and education workforce. NSF has been responsive to recommended actions contained in our individual research misconduct investigation reports. However, such agency actions only address incidents after the fact. Extrapolation of the number of allegations OIG has received across the 40,000 proposals NSF receives annually, suggests that approximately 1200 proposals could contain plagiarism and up to 800 proposals or NSF-supported research results (e.g., papers and annual/final reports) could contain falsified or fabricated data. Since NSF funds research in virtually every non-medical research discipline, and its funding reaches the educational range of kindergarten through post-Ph.D., the agency is in a unique position to lead the government response to these disturbing trends and have an impact across all levels of education.

OIG's Assessment of the Agency's Progress: The agency responded to the America COMPETES Act by creating a requirement that grantees submit mentoring plans for all NSF-supported postdoctoral positions and by requiring that grantees provide appropriate training and oversight in the responsible and ethical conduct of research to undergraduate students, graduate students, and postdoctoral researchers participating in the proposed NSF-funded research project. However, in contrast to the RCR requirements adopted by NIH in 2010, those implemented by NSF do not have specific course requirements, nor do they provide guidance about the content, structure, or format of the courses.

Other actions the agency has taken include the development of a new ethics research program called Cultivating Cultures for Ethical Science Technology Engineering Mathematics (CCE STEM). The CCE STEM research effort is focused on identifying the factors that create climates that foster and encourage research integrity rather than focusing on curriculum development on integrity issues. The Agency also worked with the National Academies to develop and make available ethics materials that will be applicable across all scientific fields that NSF supports.

OIG has developed a plan to systematically review RCR plans that were initiated as a result of the NSF's implementation of the America COMPETES Act. We have requested RCR plans from 50 random grantee institutions, and have so far reviewed about one half of the plans. To date, OIG has observed a broad disparity among grantee responses to the RCR requirement, which range from high-quality mentoring programs, to programs that simply refer students to web-based training, to schools that are unaware of the RCR requirement. Early educational intervention remains critical to any effort to ensure that students understand proper professional practices and the implications of failing to follow them.

OIG continues to receive substantive data fabrication/falsification allegations involving students, post-docs, and faculty. We currently have 38 active investigations regarding such allegations, an increase of 58% over the previous year. Therefore, we believe that more needs to be done to address this problem, and NSF should exert its influence with institutions regarding this important issue.

NATIONAL SCIENCE FOUNDATION
4201 WILSON BOULEVARD
ARLINGTON, VIRGINIA 22230



October 27, 2015

MEMORANDUM

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

FROM: Dr. France Córdova 
Director, National Science Foundation

SUBJECT: Acknowledgement of the Inspector General's FY 2016 Management Challenges Memorandum and Transmittal of NSF's Progress Report on the FY 2015 Management Challenges

This serves to acknowledge receipt of your memorandum dated October 15, 2015, summarizing what the Office of Inspector General (OIG) considers to be the most serious management and performance challenges facing the National Science Foundation (NSF). These challenges include: establishing accountability over large cooperative agreements; managing NSF's business operations; managing NSF's Intergovernmental Personnel Act (IPA) program; moving NSF headquarters to a new building; managing the U.S. Antarctic program; improving grant administration; and encouraging the ethical conduct of research. As in past years, your memorandum has already been shared with NSF's executives and senior officers.

NSF's senior leadership will continue to address these issues through collaborative, cross-agency communication and action. Also included with this memorandum is NSF's progress report highlighting the significant actions taken in FY 2015 on the management challenges outlined in your November 5, 2014, memorandum. The report provides anticipated next steps, which will serve as a prospective guide for many of the actions planned for FY 2016.

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

Attachment

Cc: Chair, National Science Board
Chair, National Science Board, Audit and Oversight Committee

National Science Foundation (NSF) Fiscal Year (FY) 2015 Progress Report on OIG Management Challenges

CHALLENGE: Establishing Accountability over Large Cooperative Agreements

NSF Overview: This Office of Inspector General (OIG) challenge relates to NSF’s use of cooperative agreements to construct and fund the operations and maintenance of large research facilities. The Foundation currently utilizes end-to-end cost surveillance policies and procedures for its cooperative agreements to ensure adequate stewardship over federal funds. These activities are carried out via the decisional and governing responsibilities of the Office of the Director and the National Science Board, respectively, and through the management and oversight responsibilities of the sponsoring Science and Engineering Directorates and Offices and the NSF Chief Financial Officer (CFO), Office of Budget, Finance and Award Management (BFA). Additionally, the Major Research Equipment and Facility Construction (MREFC) Panel, comprised of NSF Senior Management representatives from across the agency, provides governance of the overall MREFC process, reviews specific cases as presented by the originating program office, and defines the specific implementation processes utilized by NSF to oversee, assess, prioritize, and fund major research infrastructure projects that utilize the MREFC account. Within BFA, the CFO relies on the Large Facilities Office (LFO) to develop policy related to large facilities, to advise NSF management on large facility issues, to coordinate with and assist program offices on large facility management by Recipients, and to help provide assurance related to NSF oversight. Other BFA units, including the Division of Acquisition and Cooperative Support, Cooperative Support Branch (DACS/CSB) and the Cost Analysis and Audit Resolution (CAAR) Branch under the Division of Institutional and Award Support (DIAS), are engaged in budget and award development and monitoring related to large facilities. NSF is currently implementing enhancements to its pre-award and post-award budget and cost review processes (initiated in June 2014 and further updated in March, June, and September of 2015) for large research facility cooperative agreements to include additional analysis of awardee cost proposal budget information and the utilization of incurred cost audits, to the extent appropriate based on risk, to strengthen the review of proposed and actual costs. For construction awards, these strengthened procedures include requirements for an independent assessment of the Recipient’s cost proposal that will inform the NSF cost analysis (implemented in June 2014).

a. *Establish accountability for the billions of federal funds in NSF’s large cooperative agreements at the pre- and post-award stages and throughout the lifecycle of projects.*

NSF’s Significant Actions Taken in FY 2015:

- Revised and strengthened internal Standard Operating Guidance for accomplishing the NSF cost analysis of construction cost proposals and use of incurred cost audits in awarding and administering large facility related cooperative agreements as set forth in corrective action plans from previous audit reports. This Guidance incorporates the requirement for an independent cost assessment as part of the NSF analysis.
- Implemented the new cost analysis guidance on one potential MREFC project (Regional Class Research Vessel).
- Published revised policy and guidance on the planning and use of budget contingency in large facility cooperative agreements in the Large Facilities Manual (15-089, June 2015) following resolution of the audit escalation on contingency.
- Published revised, strengthened policy on management fee in large facility cooperative agreements in the Large Facilities Manual (15-089, June 2015).
- Implemented the new policy on management fee on seven (7) large facility cooperative agreements.
- Completed draft standards for the preparation of construction cost estimates and operational budget proposals by Recipients for publication in the next revision of the Large Facilities Manual in FY 2016.

Appendix 3B: NSF FY 2015 Progress Report on OIG Management Challenges

	<ul style="list-style-type: none"> Published Standard Operating Guidance setting forth a risk-based approach to determining the need for audit services prior to awarding large facility related cooperative agreements above \$100M (approximately twenty five awards). <p>NSF’s Anticipated Next Steps:</p> <ul style="list-style-type: none"> Implement mechanisms for accomplishing the independent cost assessment for new construction and use of audit services for incurred cost audits. Develop an implementation plan for application of strengthened construction award oversight to operational awards.
<p><i>b. Ensure that costs proposed for and incurred under the LSST were fair and reasonable, and that proposers’ accounting systems were adequate to bill the government properly.</i></p>	<p>NSF’s Significant Actions Taken in FY 2015</p> <ul style="list-style-type: none"> Continued to ensure that awardees of large construction projects were managing their risks and properly accounting for contingency by reviewing the project’s risk management process, and monitoring both the allocation of contingency and the project’s mitigation of identified risks as identified in the monthly report. This included a detailed contingency review for the LSST project in April 2015 following the newly developed NSF requirements on contingency. Enhanced NSF oversight through establishment of a standardized monthly reporting format by the LFO. This includes Earned Value Management (EVM) metrics and trends that are communicated bi-monthly to the Office of the Director. Continued to assess compliance performance of large facility awardees by conducting four Business System Reviews (BSRs) and related post-BSR monitoring activities. <p>NSF’s Anticipated Next Steps</p> <ul style="list-style-type: none"> Continue the practice of LFO and program office review of contingency allocation and accounting through monthly reports and yearly progress reviews for all ongoing projects. Provide training and routine assistance by LFO to facility program officers on risk management and the appropriate allocation and accounting of contingency for MREFC projects. Continue Business System Review activities. Receipt and evaluation of the independent report from the National Academy of Public Administration (NAPA) on NSF’s use of cooperative agreements to support large scale investments in science and technology, expected December 17, 2015.
<p>CHALLENGE: Improving Grant Administration</p> <p>NSF Overview: NSF manages awards throughout the project life cycle from pre-award through closeout. As of mid-FY 2015, NSF was managing 41,507 active awards, representing \$27.9 billion in obligated funds to 2,924 unique awardees. NSF policies, business practices, and information technology (IT) systems – the foundation of NSF accountability efforts – constantly evolve to align with changes in federal regulations, legislative mandates, and agency-specific requirements. During FY 2015, NSF continues to see benefits deriving from technology investments designed to strengthen its business infrastructure. iTRAK, a modernization of NSF’s 30-year old financial system, has been fully implemented, and is providing increased transparency and capacity for generating data needed for decision-making and oversight. Its implementation follows that of the Award Cash Management Service (ACMS), NSF’s re-designed awardee payment process, that has enabled the Agency to obtain award-specific expenditure data based on near real-time cash transactions. Re-engineering requirements for the modernization of its</p>	

<p>Award Management System are under development and will be implemented incrementally over the next several years. In FY 2015, NSF has been actively engaged in two important federal initiatives: (1) NSF fully implemented the <i>Uniform Guidance: Cost Principles, Audit, and Administrative Requirements for Federal Awards</i>, and has continued to support the Office of Management and Budget (OMB) Council of Financial Assistance Reform (COFAR) in developing Frequently Asked Questions to bring further clarity to these regulations. And, (2) in support of transparency and accountability, NSF is participating in interagency efforts to develop the Data and Accountability Act framework and prepare for its implementation, as well as ensure that its published abstracts are tied to national interest as defined by the National Science Foundation Act of 1950. NSF also continued its important work related to strengthening transparency and accountability in connection with the merit review process, specifically concerning the role of Division Directors (DDs). This past year, NSF and its Office of the Inspector General continued to clarify roles and responsibilities in the use of data analytics for audits and audit resolution, as well as to develop common understanding of selected NSF policies. Finally, NSF continues to expand and upgrade mechanisms for communicating policies, procedures, and business practices within this dynamic environment to its staff and external stakeholder communities.</p>	
<p><i>a. Implementing controls over spending that ensure transparency and accountability without creating undue administrative impact on awardees and federal program officers.</i></p>	<p>NSF’s Significant Actions Taken in FY 2015</p> <ul style="list-style-type: none"> • Initiated streamlined processes for “Do Not Pay” results and improved implementation of internal controls to identify grantees that require corrective action plan follow-up. • Convened the NSF Transparency and Accountability Working Group (TAWG 2) to address the recommendation from an FY 2014 working group on strengthening transparency and accountability to clarify the roles and responsibilities of the DD around the merit review process. • Implemented the TAWG 2 recommendations by way of the Proposal & Award Manual (PAM) which went into effect on September 1, 2015. Guidance in the PAM was supplemented to clarify the roles and responsibilities of Division Directors with regard to the merit review process.
	<p>NSF’s Anticipated Next Steps</p> <ul style="list-style-type: none"> • Ensure that awards meet “Do Not Pay” requirements and continue to utilize the internal controls in place to assist in the monitoring of corrective action plan follow-up. • Continue to consider transparency and accountability measures relating to the NSF Merit Review process as appropriate. • Integrate the on-boarding materials and training for DDs into the Merit Review Basics updated courses via the NSF Academy.
<p><i>b. Provide consistent messages across the spectrum of authorities and ensure different NSF replies do not contradict each other or written policy.</i></p>	<p>NSF’s Significant Actions Taken in FY 2015</p> <ul style="list-style-type: none"> • Provided a summary of significant changes and other clarifications at the beginning of each issuance of NSF internal and external policies and procedures documents. • Provided training to NSF program staff with the release of each major policy issuance, as well as the entire suite of grant conditions. Such training occurred in NSF-wide Town Hall meetings, as well as division All Hands Meetings, as requested. • Conducted presentations/training (on-site and virtually) at major conferences of professional research administration societies, as well as NSF Grant Conferences on NSF implementation of the Uniform Guidance and related policy matters.

Appendix 3B: NSF FY 2015 Progress Report on OIG Management Challenges

	<p>NSF’s Anticipated Next Steps</p> <ul style="list-style-type: none"> Continue an active program of outreach to internal and external stakeholder communities to promote thorough understanding of NSF policies and procedures and relevant federal regulations.
<p>c. <i>Due to Uniform Guidance changes increasing Single Audit threshold from \$500,000 to \$750,000, NSF will have to do more to ensure appropriate oversight of awards from \$500,000 to \$750,000 as they will no longer be subject to Single Audits.</i></p>	<p>NSF’s Significant Actions Taken in FY 2015</p> <ul style="list-style-type: none"> Completed timely implementation of the <i>Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (Uniform Guidance)</i>, fully upgrading all relevant policies, procedures, and award terms and conditions. Continued to support the <i>Uniform Guidance Work Group</i>, assisting the Office of Management and Budget (OMB) Council on Financial Assistance Reform (COFAR) in developing Frequently Asked Questions that clarify the federal requirements set forth in the <i>Guidance</i>. Increased weighting factors in the FY 2015 Annual Risk Assessment for 166 (7%) of NSF awardees managing high-risk awards and receiving more than \$500,000 in NSF funding thereby increasing their probability of being subject to advanced monitoring. <p>NSF’s Anticipated Next Steps</p> <ul style="list-style-type: none"> Continue to strengthen the NSF annual risk assessment of awards and institutions to ensure appropriate levels of oversight across its entire investment portfolio.
<p>d. <i>Due to Uniform Guidance changes in labor effort reporting, it may be more difficult to determine the allowability of salaries and related costs. Collectively, these changes may increase workload for BFA Staff.</i></p>	<p>NSF’s Significant Actions Taken in FY 2015</p> <ul style="list-style-type: none"> Completed timely implementation of the <i>Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (Uniform Guidance)</i>, fully upgrading all relevant policies, procedures, and award terms and conditions. Continued to support the <i>Uniform Guidance Work Group</i>, assisting the Office of Management and Budget (OMB) Council on Financial Assistance Reform (COFAR) in developing Frequently Asked Questions that clarify the federal requirements set forth in the <i>Guidance</i>. Assessed impact of <i>Uniform Guidance</i> on analysis of salaries and related costs, and determined no detrimental impact to date on BFA staff workload in assessing allowability. <p>NSF’s Anticipated Next Steps</p> <ul style="list-style-type: none"> Continue a strong program of oversight ensuring that NSF awardees have implemented relevant policies, procedures, and systems to adequately document salaries, wages, and related costs. Consult with the National Science Board on any proposed changes to reporting that would adversely impact efforts to reduce administrative burden.
<p>e. <i>Due to Uniform Guidance changes in the NSF audit resolution timeframe</i></p>	<p>NSF’s Significant Actions Taken in FY 2015</p> <ul style="list-style-type: none"> Hired two additional cost analysts in the Cost Analysis and Audit Resolution (CAAR) Branch to mitigate the effect of other oversight priorities on timely audit resolution. Continued applying risk assessment strategies focusing CAAR resources on those audit reports with findings most critical to the

<p><i>will be shortened by 30 days unless NSF can establish a new accelerated process.</i></p>	<p>oversight of NSF investments.</p> <p>NSF’s Anticipated Next Steps</p> <ul style="list-style-type: none"> • Complete onboarding and initiate training of two additional CAAR cost analysts allowing for increased attention to the audit resolution functions.
<p>CHALLENGE: Management of the U.S. Antarctic Program</p> <p>NSF Overview: Through the Division of Polar Programs in the Directorate for Geosciences, NSF funds and manages the U.S. Antarctic Program (USAP), which supports United States’ research and national policy goals in the Antarctic. Given the remote location, an extreme environment and the short period of time during which the continent is accessible, significant challenges exist for ensuring the availability of necessary logistics, operations and science support. There are also unique and internationally-linked environmental, health and safety issues present at the remote location. In exercising its management responsibilities, NSF relies on internal staff with the requisite expertise as well as a network of contracted support and federal agency partners. Periodically, the program is reviewed by external panels of experts.</p>	
<p>a. <i>Establishing and maintaining a world-class scientific research program in Antarctica’s remote and harsh environment and providing a point-by-point response to the 2012 U.S. Antarctic Program Blue Ribbon Panel Report recommendations.</i></p>	<p>NSF’s Significant Actions Taken in FY 2015</p> <ul style="list-style-type: none"> • Continued progress on activities in accordance with the agency’s official initial response to the Blue Ribbon Panel Report (BRP). That response was published in March 2013 by the NSF Director and the Chair of the National Science Board. • Completed the supply chain software modernization and decommissioning of legacy Advanced Revelation (AREV) applications that had become unsupported for security and software support. • Continued development of the Antarctic Infrastructure Modernization for Science (AIMS), a potential Major Research Equipment and Facilities Construction (MREFC) project to address major infrastructure upgrades recommended by the BRP report for McMurdo Station. • Palmer Station will be addressed with funding from the NSF Research and Related Activities appropriation account. <p>NSF’s Anticipated Next Steps</p> <ul style="list-style-type: none"> • Continue progress on BRP recommendations, including investment in prioritized lifecycle acquisitions and infrastructure upgrades. • Conduct preliminary design for the AIMS MREFC project in preparation for the Preliminary Design Review (PDR). • Continue resolution of outstanding actions via NSF’s AIMS project, a potential MREFC project to address major infrastructure upgrades recommended by the BRP report for McMurdo Station. • Proceed with addressing Palmer Station infrastructure needs using funding from the NSF Research and Related Activities appropriation account.
<p>b. <i>Controlling the cost of the USAP and ensuring adequate oversight of payments to the USAP contractor.</i></p>	<p>NSF’s Significant Actions Taken in FY 2015</p> <ul style="list-style-type: none"> • Implemented a corrective action plan in response to OIG-identified issues including payments and privity of contract. The plan included improved review and oversight of invoices from its subcontractors. • Continued to review and approve invoices to the USAP contractor, including staff whose primary responsibility is review and resolution of invoiced amounts with the contracting officer and contracting officer’s representative prior to approval, a documented

	<p>process initiated in FY2013.</p> <ul style="list-style-type: none"> • Questioned invoiced costs when necessary and worked with the USAP contractor for adjustments to billing amounts.
<p>c. <i>Addressing cost containment issues, i.e. inherent risk of poor performance and cost overruns.</i></p>	<p>NSF’s Anticipated Next Steps</p> <ul style="list-style-type: none"> • Continue to monitor invoices from the USAP contractor in accordance with established procedures. <p>NSF’s Significant Actions Taken in FY 2015</p> <ul style="list-style-type: none"> • Continued close coordination among the contractor, the NSF program office (GEO/PLR), and the contracting officer (BFA/DACS) during the annual planning and budget approval process. The current arrangement for the Antarctic Support Contract is within requirements set out in the Federal Acquisition Regulation (FAR) and NSF contracting procedures. Prior to awarding the support contract, the Defense Contract Audit Agency (DCAA) performed pre-award audits. In addition, the contractor has Defense Contract Management Agency (DCMA) approved business systems. • Conducted an annual evaluation of the contractor’s performance that feeds into the determination of award fee received on the cost-plus component of the contract. This multi-tier review process includes an assessment of overall technical, cost, and business performance, and is developed based on monthly assessments from activity based managers, which feed into the annual performance evaluation by the Performance Review Board. The award fee recommendation developed by the Performance Review Board is then reviewed by the Fee Determination Official, who, in consultation with the contracting officer, makes the final determination of award fee earned. Contractor performance is also reported through the government-wide CPARS tool. • Established a coordination group to work with executive management from the USAP prime contractor regarding the potential sale or spin-off of the business unit of the prime contractor currently supporting the USAP. <p>NSF’s Anticipated Next Steps</p> <ul style="list-style-type: none"> • Continue to monitor contractor performance on the cost-plus award fee elements of the USAP contract and conduct performance evaluations in accordance with the award fee plan incorporated as part of the USAP contract. • Continue regular meetings with executive management from the USAP prime contractor to ensure that cost containment and performance risk issues are addressed during discussions and implementation of the longer-term future of the business unit supporting USAP.
<p>CHALLENGE: Moving NSF Headquarters to a New Building</p> <p>NSF Overview: In April 2013, capping off five years of planning, economic challenges and negotiations, the House Committee on Transportation and Infrastructure authorized, through a General Services Administration (GSA) prospectus resolution, a new long term replacement lease for NSF. GSA’s competitive action for the lease was limited to Northern Virginia, which resulted from three Expressions of Interest (EOI) advertisements. Using a low cost-technically acceptable procurement approach, the award was made to the Hoffman Company of Alexandria, Virginia in June 2013 and included a pre-designed, to-be-constructed office building to be completed and occupied by NSF in the first quarter of FY 2017 (12/30/2016). The new lease offered financial terms that demonstrated significant savings (approximately \$65 million) to the government and to NSF over the life of the lease, and was less costly than maintaining NSF in its current location. NSF’s existing leases were extended for 48 months (at a premium) beyond their original expiration to accommodate the time required to design, build, and relocate the agency. Immediately after the new lease signing, NSF embarked on a wide-ranging set of efforts with GSA, the new building owner (Hoffman) and internal NSF stakeholders to ensure NSF could meet the aggressive relocation schedule. The new HQ building lease transferred ownership to USAA Realco, Inc. in April 2015 who, along with their development manager, Lowe Enterprises, is working collaboratively with GSA and NSF to formulate schedule strategies that address NSF’s relocation objectives. In an effort to complete the design, NSF and the American Federation of Government Employees (AFGE) Local 3403 underwent formal negotiations,</p>	

with the Federal Services Impasse Panel (FSIP) resolving an impasse.	
<p><i>a. Risk of continued projects delays which could impact milestones such as interior construction and the occupancy date.</i></p>	<p>NSF’s Significant Actions Taken in FY 2015</p> <p>Actions taken related to the negotiations with AFGE Local 3403 and the FSIP decision:</p> <ul style="list-style-type: none"> • Implemented the FSIP decision related to office and workstation sizes. • Provided GSA a timely response to the Modified 35% Design Intent Drawings, which reflected space determinations ordered by FSIP. • Modified the Program of Requirements to comply with the FSIP order. <p>Actions taken to mitigate schedule delays:</p> <ul style="list-style-type: none"> • Along with GSA, negotiated the financial impact of the FSIP order with the owner, reducing NSF’s liability from an estimated \$54 million down to \$14.5 million. In addition, negotiated a revised project schedule that limited the delay to 8 months rather than the owner’s original proposal of 16 months. • Managed design and engineering tasks in concert with GSA and the building owner to pursue NSF’s move completion by the lease date of December 30, 2017, despite unforeseen hurdles. • Resumed regular meetings with the AFGE Local 3403 on project information, pre-decisional items as well as impact and implementation issues. Worked with the NSF Labor Relations Officer (LRO) and the AFGE throughout FY 2015 to collaborate with and respond to the AFGE’s issues about the planning for the new building. • Completed the 65% Design Intent Drawing review in accordance with the project schedule. • Updated internal cost estimates for personal property and began a Value-Engineering (VE) process to align costs with available funding. Established OIRM management team to prepare VE options and brief senior leadership on recommendations. Established a framework to develop construction VE options with the owner.
	<p>NSF’s Anticipated Next Steps</p> <ul style="list-style-type: none"> • Continue to work with GSA and new headquarters ownership project construction team to re-assess the project schedule for opportunities to deliver the building earlier. • Develop an Integrated Project Schedule that identifies the project’s critical path, assigns responsibility, and forms the basis for tracking progress. • Ensure all procurements are awarded in accordance with the Integrated Project Schedule. • Manage FY 2016 relocation-related procurement activities; ensure that the FY 2016 and FY 2017 procurement and budget schedules support and align with the projected relocation timeline. • Work closely with GSA contracting officials and GSA management to ensure NSF receives complete deliverables and cost estimates as agreed upon in the settlement. • Continue to work with each directorate, NSF leadership and the AFGE Local 3403 to implement NSF’s updated design. Oversee design completion and building planning and relocation efforts consistent with those program requirements and project schedule. • Brief senior leadership on VE options and drive decisions that control costs, and provide a functional headquarters that helps NSF meet its mission.

<p><i>b. Planning and logistics of the actual move to the new headquarters building.</i></p>	<p>NSF’s Significant Actions Taken in FY 2015</p> <p>Completed the collection of FY 2017 panel meeting projections in order to discuss and propose final relocation/move operations approach and determined that panel meetings can continue throughout the move at either location or both. This can be achieved if room availability is provided 6-8 months in advance.</p> <p>NSF’s Anticipated Next Steps</p> <ul style="list-style-type: none"> • Determine the strategy to move employees into the new building in accordance with the project schedule. Communicate plan with senior leadership, AFGE, and directorates. • Engage OIRM essential senior staff to centralize relocation planning and identify potential move-related cost-impacts. • Mitigate costly change orders and additional fees of NSF move-related procurements by managing them in close alignment with GSA and the lessors’ space delivery and move-in schedules. • Determine phasing for the move based on current and new building constraints and other major move assumptions associated with IT, furniture, elevator and dock availability, etc.
<p>CHALLENGE: Managing Programs and Resources in Times of Budget Austerity</p> <p>NSF Overview: Across the board, NSF has made significant progress towards reducing certain administrative costs by identifying and implementing efficiencies, by prioritizing work, by eliminating or scaling back the scope of some activities, and by exploring new ways of getting the job done. Travel costs have been reduced by 32 percent below the FY 2010 baseline. Efforts are underway to streamline how NSF procures and utilizes telecommunications services (including mobile devices). NSF has also reduced the cost of light refreshments in support of conferences and panels.</p>	
<p><i>Identify opportunities to streamline processes and cut costs where it can in order to send a clear message to its employees and stakeholders that strong, sound management practices are being applied, reasonable ideas to reduce spending are welcome and will be implemented; and that NSF is a responsible steward of the public’s funds.</i></p>	<p>NSF’s Significant Actions Taken in FY 2015</p> <ul style="list-style-type: none"> • Merit Review Business Practice <ul style="list-style-type: none"> ○ By investing in expanded training for panel moderators and providing other technical and human resources to support the use of virtual meeting technology on a larger scale, in 2015 NSF was able to further expand its use of virtual panels as a review mechanism for small groups of proposals. From the results to-date, it is projected that at least 25 percent of proposals competitively reviewed in FY 2015 will be reviewed by virtual panels instead of face-to-face panels or purely ad hoc review. Benefits realized have included a reduction in the average time commitment necessary from individual panel reviewers and a reduction in NSF’s expenditure on panelists’ travel. ○ The Graduate Research Fellowship Program switched from using in-person panels to virtual panels for its annual review of fellowship applications. This replaced a process that in FY 2013 brought approximately 800 reviewers to DC for in-person panels, held simultaneously in a hotel conference venue, with virtual meetings that collectively involved 1,200 reviewers. Although this required increased DIS expenditures and additional DAS staff support, these were offset by savings in travel costs. The virtual meeting approach also made it possible for more reviewers to participate and enabled the program to raise the minimum number of reviews per application from the two to three. • Travel: Issued FY 2015 travel targets (January 2015) to promote and monitor achievement of the \$3.9 million reduction goal established in response to OMB Memorandum M-12-12; which requires that agencies must maintain the reduced level of travel

	<p>spending each year through FY 2016. By the third quarter of FY 2015, NSF had realized savings totaling \$8.4 million – a reduction of 32 percent below FY 2010 travel obligations. Savings have been achieved across most travel categories, but the key driver is reduced travel costs associated with merit review panels.</p> <ul style="list-style-type: none"> ○ NSF held 27 percent of merit review panels wholly virtually through third quarter of FY 2015. As a result, comparing through the third quarter of each fiscal year since 2010, spending on panel travel was reduced by \$5.9 million—a reduction of 50 percent below FY 2010. ○ The use of non-refundable airline tickets continued to be encouraged for meetings required by the Federal Advisory Committee Act (panels, advisory committee meetings, committees of visitors). Airline tickets savings totaled \$774,700 through the third quarter of FY 2015. ○ Conferences: Continued the policy (set forth in NSF Bulletin No. 12-19) to ensure that all conference costs are appropriate, necessary, and managed in a way that minimizes expenses. This policy established requirements related to conference planning, approval, and reporting. To ensure full transparency to the public of the agency’s major conferences, published the NSF OMB M-12-12 Annual Report – FY 2014 on the NSF public website. This report provided details on conferences hosted by NSF that cost over \$100,000. Continued enforcing the conference reporting and notification requirements set forth in Section 739 of the 2015 Appropriations Act (P.L. 113-235). Compiled information on NSF-sponsored conferences costing over \$100,000 in order to prepare the required annual report and ensure consistency with conferences tracked under the NSF Bulletin No. 12-19 approval process. Provided reports to the OIG on conferences costing over \$20,000 to meet notification requirements of Section 739. ○ Continued utilization of the Blanket Purchase Agreements associated with the light refreshment program for on-site panel and advisory committee meetings, leading to continued lower costs for the program as compared to previous fiscal years. <ul style="list-style-type: none"> ● Printing: Currently developing a comprehensive Managed Print Services Strategy based on current market research and on the cost-benefit analysis previously prepared. This strategy consists of several key components that directly address management challenges as it relates to printing, and includes reducing the total number of printing devices, manufacturers, and models. The strategy intends to centralize the approval, acquisition, and maintenance of all NSF printing devices within OIRM. ● Telecommunications: In FY 2014, NSF initiated a pilot for the use of Telecommunications Expense Management Services (TEMS) in four directorates and offices. Since the pilot began, NSF has expanded the use of TEMS services to additional directorates, with 100 percent NSF participation completed in FY 2015. NSF is in the process of determining TEMS program savings to date. ● IPA Costs: Continued to monitor and implement the corrective action plan associated with the OIG report on the “Audit of Costs Associated with NSF’s Use of Intergovernmental Personnel Act (IPA) Assignees.” Initiated actions will balance the potential for costs savings with the operational risks of incorporating strategies to lower costs. Actions taken in FY 2015 include: 1) developed a document describing the benefits to institutions for allowing their staff to come to NSF as IPAs, to be used when requesting cost sharing, 2) reached the highest percentage of IPA awards with cost sharing ever achieved; more than 40% of all active agreements have cost sharing, which is double the rate in previous years, and 3) incorporated data on IPAs and their costs in the HRStat dashboard and quarterly review process and initiation of a summary annual report. <p>NSF’s Anticipated Next Steps</p> <ul style="list-style-type: none"> ● Conferences:
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	<ul style="list-style-type: none"> ○ Continue to monitor per person costs of light refreshments purchased for on-site panel and advisory committee meetings. ○ Continue to follow the conference planning, approval, and reporting requirements established to minimize the cost of conferences hosted and attended by NSF. ● Printing: Garner buy-in for the Managed Print Services Strategy from NSF senior management with a plan to begin execution such that a complete implementation will coincide with the agency’s relocation to Alexandria, VA. ● Telecommunications: Work towards fully optimized mobile device plans across the Foundation through use of the TEMS contract. Confirm yearly savings with all NSF organizations using TEMS for a full fiscal year. ● IPA Costs: NSF will continue to look at minimizing IPA costs in the areas of expanded telework (including development of guidelines on combining Independent Research and Development (IR/D) Travel and telework as well as piloting remote duty assignments) and cost sharing of IPA salaries with universities, balancing the potential for costs savings with the operational risks of incorporating strategies to lower costs. NSF will review the overall IPA program and associated costs and benefits every four years strategies to lower costs.
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CHALLENGE: Encouraging the Ethical Conduct of Research

NSF Overview: The responsible and ethical conduct of research is critical to ensure excellence, as well as public trust, in science and engineering. Moreover, the globalization of science and engineering research and education poses unique challenges and risks due to variations in international codes of conduct. Recognizing the importance of ethical conduct of research and in accordance with the America COMPETES Act of 2009 (ACA), NSF requires that each institution submitting a proposal certify that it has a plan to provide appropriate training and relevant oversight in the ethical conduct of research to all undergraduates, graduate students, and postdoctoral researchers who will conduct NSF-sponsored research and to have the plan available for review upon request. Research on the topic is meagre with conflicting conclusions. Thus, current ethics training may only be having a modest impact and the traditional focus on the responsible conduct of research is overly narrow because there are many other equally important ethical dimensions of STEM research and practice. NSF implementation of ACA promotes awareness of ethical issues to NSF staff, as well as U.S. and international scientific research and education communities. In addition, research ethics are addressed in policy guidance, incorporated into program funding opportunities, and emphasized through the development of resources to enhance the ability of research institutions to cultivate cultures of academic and research integrity.

<p><i>To provide oversight on institutional implementation of Responsible Conduct of Research (RCR) and to provide meaningful guidance regarding RCR training.</i></p>	<p>NSF’s Significant Actions Taken in FY 2015</p> <ul style="list-style-type: none"> ● Managed the Cultivating Cultures for Ethical STEM (CCE STEM) program. CCE STEM “focuses on cultivating climates that expect and encourage academic and research integrity at all levels. Rather than focusing on curriculum development, the focus of the new program is to identify factors that are effective in creating climates that foster integrity.” ● Oversaw year 1 of the 5-year cooperative agreement with the National Academies to develop their Online Ethics Center to include material relevant to all fields that NSF supports. This award plans to develop a cohort of international collaborators to collect new ideas and best practices from international sources about ethics and social responsibility in research and education, and expertise in developing policies and codes of ethics for STEM faculty, students, and practitioners. ● Organized a NSF-Japan Society for the Promotion of Science Collaborative Workshop on research integrity in Japan in the aftermath of a large research misconduct scandal that occurred in 2014 in Japan. Participated in two AAAS workshops with Chinese delegations on research integrity.
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	<ul style="list-style-type: none">• Sponsored cross-directorate workshop on September 10, 2015, entitled "Reproducible, Reliable Science," highlighting the value of replicability in science.• Detailed a science-based program officer to OIG to assist with a proactive review of the implementation of NSF's RCR policy at a sample of awardee institutions.
	<p>NSF's Anticipated Next Steps</p> <ul style="list-style-type: none">• Continue to support research that provides answers to questions about creating responsible research communities.• Continue to share state-of-the-art understanding of what approaches are most effective in outreach opportunities with NSF staff, and with U.S. and international scientific research and education communities.• Identify and develop funding mechanisms to support reproducible and reliable science.

Freeze the Footprint

NSF is scheduled to move to new headquarters in Alexandria, Virginia by December 2017. The General Services Administration (GSA) negotiated new leases for NSF’s current primary office spaces, Stafford Place I and II, to allow time for the new NSF headquarters to be built and made ready for occupancy. Because NSF will be moving to a new facility, the agency cannot make any major investments in the current headquarters space to renovate and create new and more flexible work spaces to accommodate demands for staff growth and meeting spaces, as there would not be enough time to realize a return on the investment. NSF will continue to work with its facilities team to ensure maximum utilization of the current space available. Additionally, the new lease rates in Alexandria will be lower than the current lease rates in Stafford Place I and II.

NSF has dedicated a significant effort to planning for its new headquarters, which will take the agency 15 years into the future. This forward-looking effort is incorporating the most creative thinking in terms of flexible workspaces, functionally-based office and workspace standards, virtual technologies, cloud computing, and alternate work styles that will allow the agency to increase in staff numbers but not in real estate footprint.

Freeze the Footprint Baseline Comparison			
<i>Square Footage</i>	<i>FY 2012 Baseline</i>	<i>2014</i>	<i>Change (FY 2012 – 2014)</i>
NSF Occupancy Agreements	581,455	616,998	35,543
Grantee Assets	611,089	610,491	-598
<i>Total</i>	<i>1,192,544</i>	<i>1,227,489</i>	<i>34,945</i>

Note: Preliminary information, pending verification by GSA.

Undisbursed Balances in Expired Grant Accounts

In FY 2015, NSF funded research and education in science and engineering through grants and cooperative agreements to 1,859 colleges, universities, and other institutions. NSF grants are funded in one of two ways: 1) the grant may be funded fully at the time of award, called a standard grant, or 2) the grant may be funded incrementally (one year at a time), called a continuing grant. In both cases, all costs on the grant must be incurred by the grantee during the term of the grant period. At NSF, grantees typically have 120 days after the grant expires to complete final drawdowns and expenditures. In prior years, NSF grantees had 90 days to complete final drawdowns and expenditures. The period was changed during January 2015 from 90 to 120 days in response to many comments NSF had received from the grantee community.

The information provided here pertains to the agency's two grant making appropriation accounts: Research and Related Activities (R&RA) and Education and Human Resources (EHR). 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 whose period of performance has expired.
- **Undisbursed balances on expired grants** represent the unliquidated obligation amounts that remain available for expenditure on an expired grant award before it is closed out.

Once a grant has expired, NSF takes actions to close out the grant both administratively and financially. The financial closeout action takes place 120 days after the award expiration date when the undisbursed balances are de-obligated from the award. Administrative closeout is initiated after financial closeout is completed.

The methodology used to develop undisbursed balances on expired grant awards is consistent with the U.S. Government Accountability Office (GAO) conclusions documented in their April 2012 report, GAO-12-360, *Grants Management: Action Needed to Improve the Timeliness of Grant Closeouts by Federal Agencies*, along with discussion and clarifying information from GAO. The data reported here reflects the amount of undisbursed balances in grant accounts that have reached their end date and are eligible for closeout.

1. Details on future action the department, agency, or instrumentality will take to resolve undisbursed balances in expired grant accounts.

NSF continually monitors its grant awards throughout their lifecycle following a comprehensive post-award monitoring process. NSF grants are closed based on their period of performance end date. 120 days after the grant period has expired, all unliquidated (or undisbursed) award balances are de-obligated. Having small undisbursed balances at the end of the grant period is a routine occurrence, as not all grantees fully spend all of the funds obligated in the course of their research.

2. The method that the department, agency or instrumentality uses to track undisbursed balances in expired grant accounts.

NSF completes financial closeout of expired grant awards on a daily basis using a set of automated and manual activities. Eligibility for closeout for all NSF awards begins 120 days after the award expiration date. The NSF closeout process automatically de-obligates any unliquidated (unspent) award balance,

Appendix 5: Undisbursed Balances in Expired Grant Accounts

produces an award closeout transaction to flag the award as financially closed, and sends the financial closeout date to NSF's award management system. This initiates final administrative closeout procedures in the award management system.

The expected award closeout date is made available to awardees and staff through the Award Cash Management Service (ACM\$). ACM\$ requires the submission of award level payment amounts and expenditures each time funds are requested by awardees and allows NSF to complete post-award monitoring at the individual award level throughout the lifecycle of the award.

3. Identification of undisbursed balances in expired grant accounts that may be returned to the Treasury of the United States.

When a grant is closed out, the unliquidated (or undisbursed) balances are de-obligated. The de-obligated grant balances are treated one of three ways:

- If the source appropriation is still active, 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 has been canceled, the grant balances are returned to the Treasury.

At 2015 fiscal year end, there were no grants that had to be canceled. All undisbursed balances in canceling grant accounts were de-obligated prior to fiscal year end. These grant balances will be returned to Treasury.

4. In the preceding three fiscal years, details on the total number of expired grant accounts with undisbursed balances (on the first day for each fiscal year) for the department, agency, or instrumentality and the total finances that have not been obligated to specific project remaining in the accounts.

The number of expired grants with undisbursed balances for the preceding three fiscal years is provided in the table below. These numbers and balances reflect a point in time before they are closed out in our normal processes described above. The table shows that for FY 2015, there were 4,406 expired grants with undisbursed balances of \$72,275,377.

Status of Undisbursed Balances in Expired Grants				
	FY 2015 (as of 9/30/15)	FY 2014 (as of 9/30/14)	FY 2013 (as of 9/30/13)	FY 2012 (as of 9/30/12)
Number of expired grants	4,406	4,295	6,556	7,986
Undisbursed balances prior to closeout	\$72,275,377	\$72,612,661	\$118,371,186	\$184,489,992

Awards to Affiliated Institutions

This table lists the institutions affiliated with members of the National Science Board (NSB) in FY 2015.

Affiliated Institution ¹	Awards Obligated in FY 2015 (\$ in thousands)
American Association for the Advancement of Science	\$ 10,448
Arizona State University	71,668
California Institute of Technology	73,022
Cornell University	100,891
Georgetown University	4,667
Georgia Institute of Technology	82,233
Illinois Institute of Technology	5,482
Massachusetts Institute of Technology	93,972
Princeton University	66,892
Purdue University	71,943
Stanford University	78,768
Tufts University	8,962
University of California – Berkeley	113,125
University of California – Davis	47,803
University of Chicago	56,252
University of Colorado	83,516
University of Michigan	100,046
University of Oklahoma	17,004
University of Oregon	14,157
TOTAL	\$ 1,100,851

¹ This table is provided solely in the interest of openness and transparency. 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 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. Individual NSF grant awards are made pursuant to a peer-review based process and most are not reviewed by the Board. 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.

Patents and Inventions Resulting From NSF Support

The following information about inventions 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)]. There were 1,279 NSF invention disclosures reported to NSF either directly or through NIH's iEdison database during FY 2015. 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

AAAS	American Association for the Advancement of Science	EHR	Education and Human Resources
ACA	America COMPETES Act of 2009	EIS	Enterprise Information System
ACM\$	Award Cash Management Service	FASAB	Federal Accounting Standards Advisory Board
AFGE	American Federation of Government Employees	FBWT	Fund Balance with Treasury
AFR	Agency Financial Report	FECA	Federal Employees' Compensation Act
AIMS	Antarctic Infrastructure Modernization for Science	FERS	Federal Employees Retirement System
AOAM	Agency Operations and Award Management	FFATA	Federal Funding Accountability and Transparency Act of 2006
APR	Annual Performance Report	FFMIA	Federal Financial Management Improvement Act of 1996
AREV	Advanced Revelation	FFR	Federal Financial Report
ARRA	American Recovery and Reinvestment Act of 2009	FFRDC	Federally Funded Research and Development Center
ASC	Antarctic Support Contractor	FISMA	Federal Information Security Management Act of 2002
BFA	Office of Budget, Finance and Award Management	FMFIA	Federal Managers Financial Integrity Act of 1982
BOC	Budget Object Class	FSIP	Federal Service Impasses Panel
BRP	Blue Ribbon Panel	FTE	Full-Time Equivalent
BSR	Business System Review	FY	Fiscal Year
CAAR	Cost Analysis and Audit Resolution (Branch)	GAAP	Generally Accepted Accounting Principles
CAP	Cross-Agency Priority (Goal)	GAO	Government Accountability Office
CAS	Cost Accounting Standards	GEO	Directorate for Geosciences
CCE STEM	Cultivating Cultures for Ethical STEM	GMRA	Government Management Reform Act of 1994
CDR	Conceptual Design Review	GPRA	Government Performance and Results Act of 1993
CFO	Chief Financial Officer	GSA	General Services Administration
COFAR	Council on Financial Assistance Reform	H-1B	Non-immigrant Petitioner Fees Accounts
COI	Conflict of Interest	IBC	Interior Business Council
COSO	Committee of Sponsoring Organizations of the Treadway Commission	IBNR	Incurred but Not Reported
COTS	Commercial Off-the-Shelf	ICASS	International Cooperative Administrative Support Services
CPARS	Contractor Performance Assessment Reporting System	ICQA	Internal Control Quality Assurance
CSRS	Civil Service Retirement System	IG	Inspector General
DAEO	Designated Agency Ethics Official	IPA	Intergovernmental Personnel Act
DACS/CSB	Division of Acquisition and Cooperative Support, Cooperative Support Branch	IPIA	Improper Payments Information Act of 2002
DAS	Division of Administrative Services	IPERA	Improper Payments Elimination and Recovery Act of 2010
DATA	Digital Accountability and Transparency (Act)	IPERIA	Improper Payments Elimination and Recovery Improvement Act of 2012
DCAA	Defense Contract Audit Agency	ISCM	Information Security Continuous Monitoring
DD	Division Director	K-12	Kindergarten to Grade 12
DHS	Department of Homeland Security	LFO	Large Facilities Office
DIS	Division of Information Systems	LIGO	Laser Interferometer Gravitational-Wave Observatory
DMF	Social Security Administration's Death Master File	LRM	Linear Regression Model
DNP	Do Not Pay	LRO	Labor Relations Officer
DOL	Department of Labor		
DRB	Director's Review Board		
EEO	Equal Employment Opportunity		

LSST	Large Synoptic Survey Telescope
MREFC	Major Research Equipment and Facilities Construction
NARA	National Archives and Records Administration
NEON	National Ecological Observatory Network
NIH	National Institutes of Health
NIST	National Institute of Standards and Technology
NSB	National Science Board
NSF	National Science Foundation
OIG	Office of Inspector General
OIRM	Office of Information and Resource Management
OMB	Office of Management and Budget
OPM	Office of Personnel Management
PAM	Proposal & Award Manual
PD	Project Director
PLR	Division of Polar Programs
PP&E	General Property, Plant, and Equipment
R&D	Research and Development
R&RA	Research and Related Activities
RCR	Responsible Conduct of Research
RFP	Request for Proposal
RSSI	Required Supplementary Stewardship Information
S&E	Science and Engineering
SAM	GSA System for Award Management
SBR	Statement of Budgetary Resources
SFFAS	Statement of Federal Financial Accounting Standards
SOS	Schedule of Spending
SSAE	Statement on Standards for Attestation Engagements
SSP	Shared Service Provider
STEM	Science, Technology, Engineering, and Mathematics
TAWG 2	Transparency and Accountability Working Group
TEMS	Telecommunications Expense Management Services
UGG	Uniform Grant Guidance
USAP	United States Antarctic Program
USSGL	U.S. Standard General Ledger