



INSE

Chapter 1

**Management's Discussion
and Analysis**

Agency Overview

Mission and Vision

The mission of the National Science Foundation (NSF), “to promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense,”¹ is indispensable to the long-term economic health and well-being of our nation. The agency’s investments in basic research in science and engineering have enhanced the science and engineering enterprise in the United States, ensuring its future vitality and leading to important innovations that drive economic prosperity and increase national security.²

NSF’s vision is a nation that capitalizes on new concepts in science and engineering and provides global leadership in advancing research and education.³ As the only federal agency dedicated to the support of non-biomedical research and education across all fields of science and engineering, 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 60 percent when medical research supported by the National Institutes of Health is excluded.⁴

NSF’s investment builds on its 60-plus year legacy of supporting basic research and spawning innovation by broadening the impact of select, NSF-funded, basic-research projects by preparing scientists and engineers to extend their focus beyond the laboratory and make contributions to the 21st century science and engineering enterprise from the frontiers of science. In addition, our investments integrate research and education to support the development of a world-class scientific workforce that can engage fully and contribute imaginatively in a 21st century life that increasingly relies on technology to meet challenges and leverage opportunities.

As part of our focus on investing in the development of a world-class workforce, since 1952 NSF has funded nearly 47,800 Graduate Research Fellows. 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, 413 of them have become members of the National Academies of Science or Engineering, and 40 have been honored as Nobel laureates. In fact, 212 Nobel

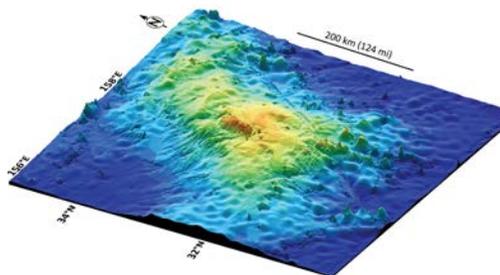


Photo Credit: Will Sager

Largest single volcano on Earth: Scientists in 2013 confirmed that the Northwest Pacific is home to the largest single volcano yet documented on Earth. Covering an area roughly equivalent to the British Isles or the State of New Mexico, Tamu Massif is nearly as big as the giant volcanoes of Mars, placing it among the largest in the solar system. The researchers used several sources of evidence, including core samples and data collected on board the *JOIDES Resolution*. This research sheds new light on the nature of oceanic volcanos, how oceanic plateaus form, and the mantle-crust system. For more information see www.nsf.gov/news/news_summ.jsp?org=NSF&cntn_id=128991&preview=false.

¹ The National Science Foundation Act of 1950 (Public Law 81-507).

² Bush, V. (1945). *Science—The Endless Frontier: A Report to the President* available at www.nsf.gov/about/history/vbush1945.htm.

³ *Empowering the Nation Through Discovery and Innovation—NSF Strategic Plan for Fiscal Years (FY) 2011-2016* available at www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf11047.

⁴ NSF/National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development, FY 2011.

Prize winners have received NSF support at some point in their careers, and 6 of the scientists and engineers recognized in *Popular Science*'s "Brilliant Ten 2013" were NSF-funded.⁵ These investments are a critical means by which NSF achieves its mission; we excel at identifying, nurturing, and investing in scientific potential.

Overall, NSF achieves its mission and vision by making awards and managing portfolios of the highest quality research and education projects that further our strategic goals, reflect our national priorities, and keep the United States at the forefront of innovation and as a global leader of the 21st century science and engineering enterprise. In doing so, NSF is visionary, pursuing transformational work, new fields, and new theoretical paradigms, particularly through multidisciplinary mechanisms that reflect the increasingly interdisciplinary nature of modern science and engineering. We are dedicated to excellence and efficiency, always striving to be wise stewards of federal funding, investing in priorities that will address key national challenges and promote innovation and economic growth.

All NSF programs and activities are driven by three interrelated strategic goals—*Transforming the Frontiers*, *Innovating for Society*, and *Performing as a Model Organization*. Our pursuit of these goals can be assessed through our success in achieving our performance goals, which include measureable targets for our near-, mid-, and long-term actions. Figure 4 on page I-9 depicts our current strategic plan, which we continued to implement in FY 2013, utilizing it as our roadmap to achieving the NSF mission and vision, as we prepare for launch and implementation of a new strategic plan.⁶

Following the Money

NSF is funded primarily through six congressional appropriations, which totaled \$6,884 million in FY 2013 (Figure 1). This includes the \$356 million reduction required as part of the government-wide sequester, as well as two across-the-board rescissions that were imposed on all federal agencies in FY 2013. By comparison, NSF's FY 2012 budget authority was \$7,033 million—about 2 percent higher.

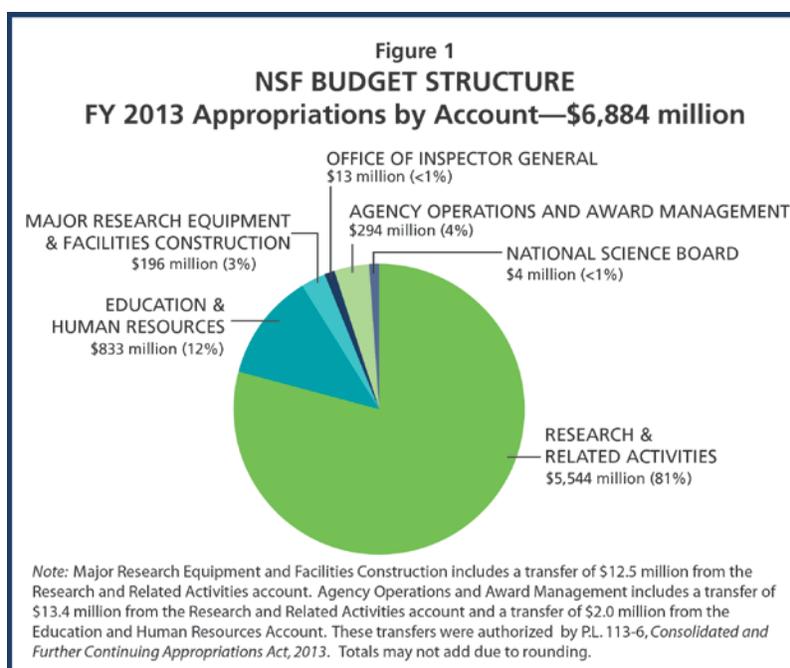
Research and Related Activities (R&RA), Education and Human Resources (EHR), and Major Research Equipment and Facilities Construction (MREFC) fund the agency's programmatic activities and account for 95 percent of NSF's total appropriations.

- 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 2013 funding. The FY 2013 R&RA net funding of \$5,544 million was \$145 million or 2.6 percent below its prior year FY 2012 level. As authorized by P.L. 113-6, *Consolidated and Further Continuing Appropriations Act, 2013*, transfers from the R&RA were made to the MREFC and the Agency Operations and Award Management (AOAM) accounts in FY 2013.
- EHR, which supports activities that ensure a diverse, competitive, and globally engaged U.S. science, technology, engineering, and mathematics workforce and a scientifically literate citizenry is NSF's second largest appropriation, accounting for 12 percent of the agency's budget. The FY 2013 funding of \$833 million was about \$4 million or 0.5 percent above its prior year level.

⁵ See <http://www.popsci.com/category/tags/brilliant-ten-2013>.

⁶ The NSF strategic plan details the mission and vision, along with core values, strategic and performance goals, targets and core strategies, and finally evaluation and assessment mechanisms designed to ensure that we are achieving the mission and vision; see www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf11047. NSF is currently updating its strategic plan.

- 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. A transfer of \$12.5 million from the R&RA account boosted the MREFC account to \$196 million—about \$1 million below its prior year FY 2012 level.
- The AOAM appropriation supports NSF's administrative and management activities and accounted for about 4 percent of the agency's FY 2013 funding. A transfer of \$13.4 million from the R&RA account and \$2.0 million from the EHR account helped increase AOAM funding to \$294 million—about 2 percent below its FY 2012 level.
- Separate appropriations support the activities of the Office of Inspector General (OIG) and National Science Board (NSB); each account for less than 1 percent of NSF's FY 2013 budget. The OIG and NSB FY 2013 accounts were \$13 million and \$4 million, respectively; each was about 7 percent below their respective prior year levels.⁷



In FY 2013, 89 percent of research funding was allocated based on competitive merit review.⁸ About 36,500 members of the science and engineering community participated in the merit review process as panelists and proposal reviewers.⁹ Awards were made to 1,922 institutions in 50 states, the District of Columbia, and 3 U.S. territories. These institutions employ America's leading scientists, engineers, and educators and train the leading-edge innovators of tomorrow. In FY 2013, an estimated 299,000 people

⁷ In Figure 1, FY 2013 Appropriations by Account of \$6,884 million plus Trust Funds (\$40.37 million) and H1-B Nonimmigrant Petitioner Receipts (\$115.84 million) equal Appropriations (Discretionary and Mandatory) of \$7,040 million as shown on the Statement of Budgetary Resources.

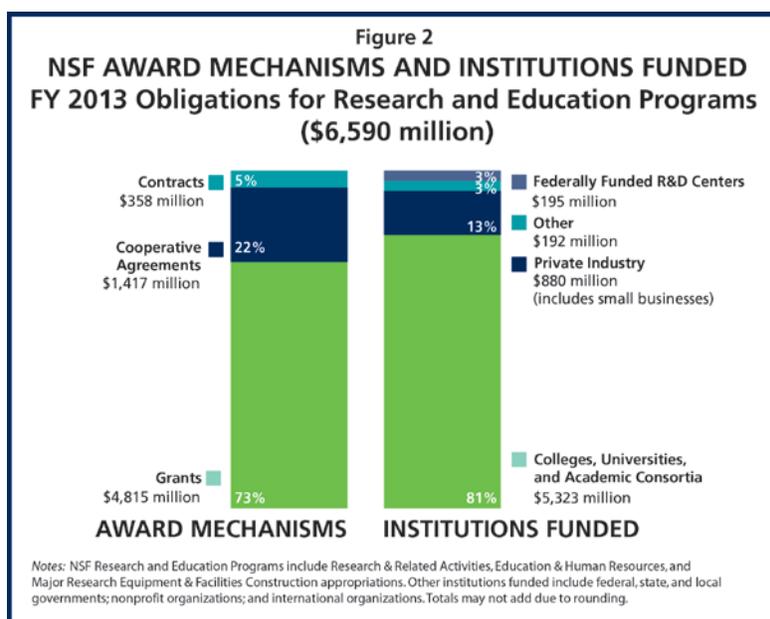
⁸ NSF does not require merit review for certain kinds of proposals, including proposals for international travel grants and some conferences, symposia, and workshops.

⁹ For more information about NSF's merit review process, see http://www.nsf.gov/bfa/dias/policy/merit_review and *Report to the National Science Board on the National Science Foundation's Merit Review Process FY 2011* (NSB-12-28) at www.nsf.gov/nsb/publications/pub_summ.jsp?ods_key=nsb1333.

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 dissemination of improved curriculum and teaching methods.

In FY 2013, NSF funded 10,844 new awards, mostly to academic institutions. As shown in Figure 2, 81 percent of support for research and education programs (\$5,323 million) was to colleges, universities, and academic consortia. Private industry including small businesses accounted for 13 percent (\$880 million) and support to Federally Funded Research and Development (R&D) Centers accounted for 3 percent (\$195 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 the U.S. leadership at the helm of 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 multi-year project is provided in 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.

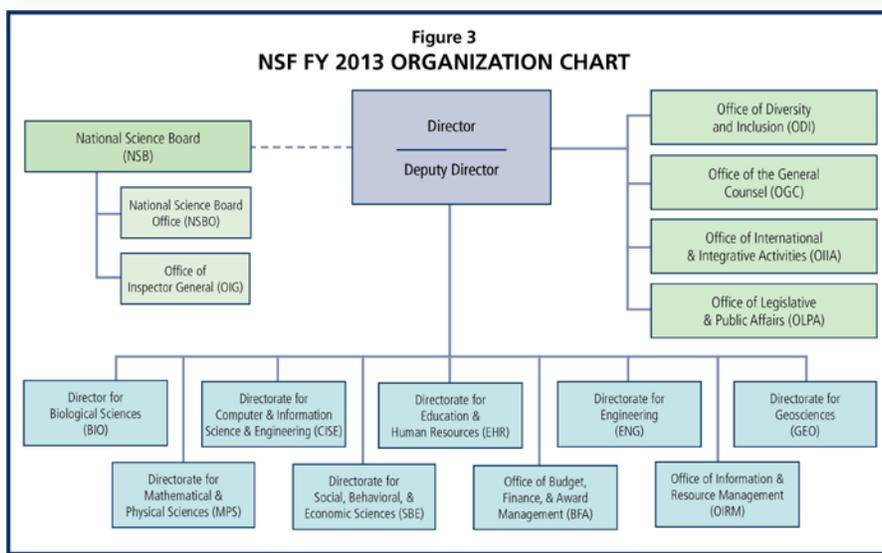


Organizational Structure

NSF is an independent federal agency headed by a Director appointed by the President and confirmed by the U.S. Senate. In March 2013, NSF Director, Dr. Subra Suresh, stepped down to accept an appointment as Carnegie Mellon University's president, and NSF Deputy Director, Dr. Cora Marrett, also appointed by the President and Senate confirmed, assumed the position of Acting Director.¹⁰ A 25-member NSB

¹⁰ Dr. Marrett's biography is available at www.nsf.gov/od.

meets five times a year to establish the overall policies of the Foundation. NSB members are also appointed by the President and are prominent contributors to the science and engineering research and education community.¹¹ The NSF Director is a member *ex officio* of the Board. Both the Director and the other NSB members serve 6-year terms. The NSF workforce includes about 1,400 permanent staff.¹² NSF also regularly recruits visiting scientists, engineers, and educators as rotators who work at NSF for up to 4 years.¹³ 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). In October 2012, NSF realigned three program offices, moving them out of the Office of the Director and reintegrating them into units where there is more programmatic and administrative depth and expertise. The Office of Cyberinfrastructure became a division within the Directorate for Computer and Information Science and Engineering; the Office of Polar Programs became a division within the Directorate for Geosciences; and the Office of International Science and Engineering merged with the Office of Integrative Activities.¹⁴

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

Management Challenges

For FY 2013, the OIG identified eight major management and performance challenges facing the agency: establishing accountability over large cooperative agreements, improving grant administration,

¹¹ For additional information about the NSB, see Appendix 5 and www.nsf.gov/nsb.

¹² Full-time equivalents.

¹³ As of September 30, 2013, temporary appointments included 180 under the Intergovernmental Personnel Act.

¹⁴ This realignment has improved the efficiency of the Office of the Director by reducing the number of reporting elements and by providing the Director and the Deputy Director greater opportunity to address agency-wide opportunities and challenges. Longer-term, it also promises to improve the scientific impact and organizational efficiency of the affected organizations, by creating stronger integration across programs and setting a tone for considering organizational arrangements more broadly.

strengthening contract administration, ensuring proper stewardship of American Recovery and Reinvestment Act (ARRA or Recovery Act) funds, managing the U.S. Antarctic Program, implementing recommendations to improve workforce management and the workplace environment, encouraging the ethical conduct of research, and managing programs and resources in times of budget austerity.¹⁵ Management's report on the significant activities undertaken in FY 2013 to address these challenges is included as Appendix 3B. The report also discusses activities planned for FY 2014 and beyond. Some of the agency accomplishments in FY 2013 are highlighted below:

- *To establish accountability over large cooperative agreements:* A report to the NSF Director was issued that assessed agency processes, policies, and mechanisms supporting large research facilities from conception through construction and operation to sun-setting. NSF continued to ensure that awardees of large construction projects were managing their risks and properly accounting for contingency. NSF also assessed compliance performance of large facility awardees by conducting Business Systems Reviews (BSR) and related post-BSR monitoring activities.
- *To improve grant administration:* Throughout FY 2013, NSF continued to align its policies and business practices with changes in federal regulations, legislative mandates, and agency-specific requirements, as well as made major contributions to the Office of Management and Budget (OMB) Council on Financial Assistance Reform (COFAR) in its development of uniform guidance on cost principles for federal research awards. NSF also completed its transition to a new awardee payment process, Award Cash Management Service (ACM\$), which has enabled the agency to obtain award-specific data based on real-time cash transactions. Jointly with the OIG, NSF developed audit templates to strengthen documentation requirements for questioned costs. NSF also reduced the time needed to resolve and close OMB Circular A-133 audits. NSF successfully expanded use of virtual Award Monitoring and Business Assistance Program site visits to mitigate current travel and resource restraints while still maintaining oversight quality.
- *To strengthen contract administration:* NSF has continued to take a comprehensive approach by improving policies, procedures, and human capital initiatives. Specifically, NSF achieved certification for all of the agency's acquisition staff. NSF also issued new guidance on Price Negotiation Memorandums to

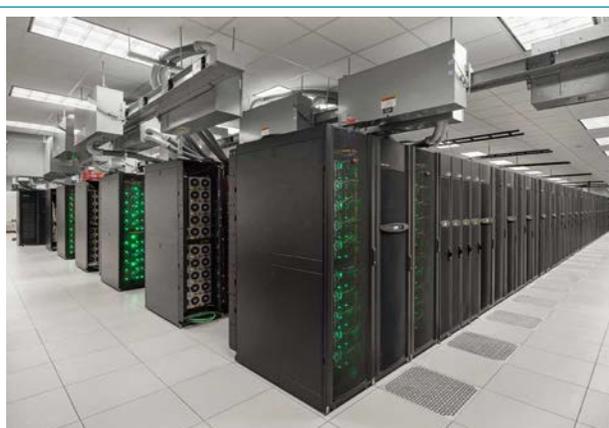


Photo Credit: TACC

Stampede: In 2013, NSF dedicated a world-class supercomputer called Stampede. Even before the official launch, the computer had enabled research teams to predict where and when earthquakes may strike, how much sea levels could rise, and how fast brain tumors grow. Stampede is a cornerstone of NSF's investment in an integrated advanced cyberinfrastructure, which empowers America's scientists and engineers to share advanced computational resources, data and expertise. See www.nsf.gov/news/news_summ.jsp?cntn_id=127194&org=NSF&from=news.

¹⁵ The NSF Inspector General's Memorandum on Management Challenges for NSF in FY 2013 can be found in NSF's *FY 2012 Agency Financial Report* (www.nsf.gov/publications/pub_summ.jsp?ods_key=afir), Appendix 3A.

ensure proper documentation of pre-award requirements. In addition, NSF continued to take affirmative action to receive additional incurred cost audits on its largest contract.

- *To ensure proper stewardship of ARRA funds:* NSF continued to implement a robust, comprehensive, and multi-stage review program for recipient reporting with an average reporting compliance rate of 99.65 percent, which exceeded the government-wide reporting compliance rate in each quarter. NSF also submitted and subsequently received OMB approval for its narrowly tailored request for waiver under OMB Memorandum M-11-34, which included only about 10 percent of its more than 5,000 ARRA-funded awards. In addition, NSF implemented an aggressive outreach strategy to ensure that awardees who were not granted a waiver would complete their projects by September 30, 2013. All NSF communications have emphasized *responsible* acceleration of ARRA expenditures, in accordance with the award terms and conditions and applicable cost principles.
- *To manage the U.S. Antarctic Program:* NSF funds and manages the USAP through its Division of Polar Programs in order to support research and national policy goals in the Antarctic. The extreme environment and the short period of time during which regular access to the continent is possible presents significant challenges for providing the necessary logistics and operational support, in addition to the environmental, health, and safety issues unique to the remote location. In July 2012, a Blue Ribbon Panel conducted a review and issued a report finding that the logistics system was badly in need of repair and that failure to upgrade the system would continue to increase costs and squeeze out funding for scientific research. In response to the Panel's recommendations, NSF has taken steps to prioritize logistical support needs, develop contingency plans, and work toward establishing a long-range strategy to address the critical needs.
- *To implement recommendations to improve workforce management and the workplace environment:* NSF has successfully addressed numerous workforce management and workplace environment recommendations in alignment with NSF's Human Capital Strategic Plan and Diversity and Inclusion Strategic Plan, as well as within the context of the agency's Strategic Plan and annual Government Performance and Results Modernization Act performance goals. In addition, NSF has continued to address the OIG's recommendations with respect to the use of Intergovernmental Personnel Act assignees and to enhance its orientation for program and performance management of rotators with particular attention to rotating executives.
- *To encourage the ethical conduct of research:* As part of NSF's response to the America Competes Act, 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. In addition, ethical conduct of research is addressed in policy guidance, incorporated into program funding opportunities, and emphasized through the development of resources to enhance the quality of such training provided by research institutions.
- *To manage programs and resources in times of budget austerity:* NSF has made significant progress toward 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 innovations for increasing productivity. Approval and reporting procedures were implemented to closely monitor the costs of major conferences and travel costs have been reduced by 38 percent below FY 2010 travel obligations for a savings of \$12.1 million in FY 2013. A key driver in travel savings has been realized through increased use of virtual merit review panels. In addition, efforts are underway to reduce telecommunications costs by participating in a U.S. General Services Administration (GSA) strategic sourcing initiative.

Performance

This discussion of NSF's FY 2013 performance management activities focuses on the agency's efforts related to the Government Performance and Results Act of 1993 (GPRA), the GPRA Modernization Act of 2010,¹⁶ the American Recovery and Reinvestment Act (ARRA or Recovery Act), and management workload metrics.

FY 2013 Strategic Framework

NSF is subject to GPRA and the GPRA Modernization Act of 2010, as well as related performance reporting guidance issued by OMB.¹⁷ NSF's Strategic Plan, *Empowering the Nation Through Discovery and Innovation: NSF Strategic Plan for Fiscal Years (FY) 2011–2016*,¹⁸ lays out the following strategic goals:

- *Transform the Frontiers* emphasizes the seamless integration of research and education as well as the close coupling of research infrastructure and discovery.
- *Innovate for Society* points to the tight linkage between NSF program and societal needs and highlights the role that new knowledge and creativity play in economic prosperity and society's general welfare.
- *Perform as a Model Organization* emphasizes the importance to NSF of attaining excellence and inclusion in all operational aspects.

These three strategic goals are broken down into ten specific objectives (Figure 4). Progress toward these objectives is monitored through annual performance targets. In FY 2013, 15 targets were set.

In addition to these strategic goals and objectives, which are intended to monitor agency performance against its entire mission, NSF set three Priority Goals for FY 2012–FY 2013, to monitor progress in specific areas where near-term focus on agency execution can have the most impact. In FY 2013, NSF continued its practice of having agency leaders conduct quarterly data-driven performance reviews for each of the three Priority Goals.

The following discussion of NSF's performance goals and results summarizes information available to date. NSF's *FY 2013 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 2013 performance goals have undergone an independent verification and validation review by an external consultant using U.S. Government Accountability Office guidance.¹⁹ More detailed information about NSF's GPRA verification and validation review will be part of the APR. NSF's FY 2013 APR will be included in the agency's *FY 2015 Budget Request to Congress*, which will be available at www.nsf.gov/about/performance.

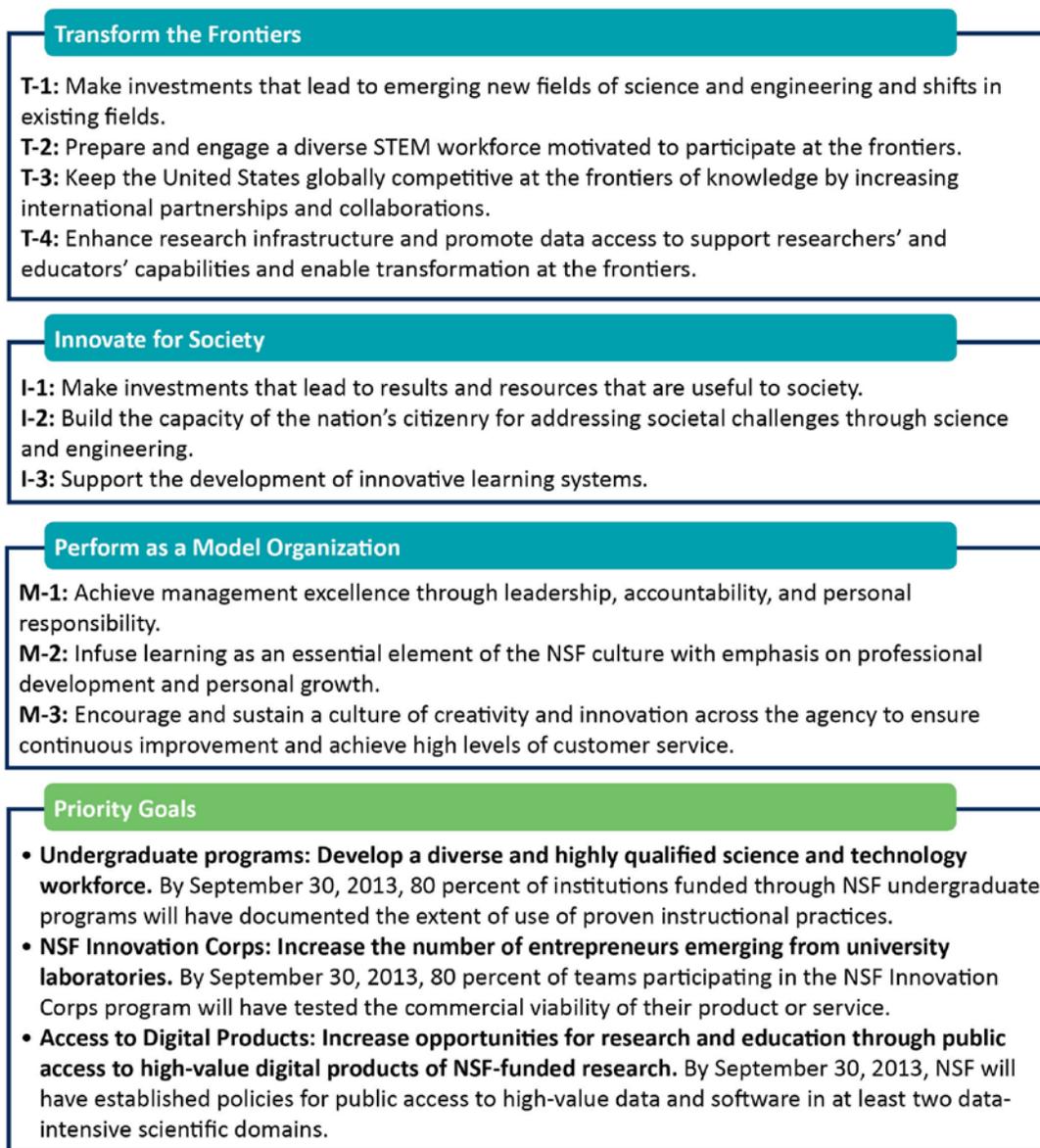
¹⁶ See www.whitehouse.gov/omb/mgmt-gpra/index-gpra.

¹⁷ OMB Circular A-11, *Preparation, Submission, and Execution of the Budget* (Part 6); see www.whitehouse.gov/omb/circulars_a11_current_year_a11_toc.

¹⁸ See www.nsf.gov/news/strategicplan.

¹⁹ U.S. Government Accounting Office. *The Results Act: An Evaluator's Guide to Assessing Agency Annual Performance Plans* (GAO/GGD-10.1.20) (April 1998) (www.gao.gov/special.pubs/gg10120.pdf)

Figure 4: NSF Strategic Goals and Objectives



*STEM: Science, Technology, Engineering, and Mathematics.

FY 2013 Progress Toward Strategic and Priority Goals

In FY 2013, NSF tracked progress toward three strategic goals and three Priority Goals. All program activities within the agency were covered by the 15 targets used to monitor the three strategic goals.

Transform the Frontiers. Progress toward this goal's objectives involved tracking key indicators for NSF-wide activities at various stages in their implementation.

- Two recently created programs worked to establish funding mechanisms more flexible and adaptable to current realities: INSPIRE supports unusually novel, potentially transformative, and

interdisciplinary research, while Career-Life Balance investments support greater use of the talents of Americans in all sectors of the population.

- Five of six NSF-funded facilities kept cost variance within 10 percent of targets. Four of six construction projects kept schedule variance within 10 percent of targets.
- Funding opportunities were screened for possible international implications by the Office of International and Integrative Activities.

Innovate for Society. In FY 2013, NSF met the objectives under this strategic goal by applying new approaches to the design and monitoring of existing portfolios.

- In the Directorate for Engineering, the Division of Industrial and Innovation Partnerships (IIP) continued to develop tools to monitor its portfolio of investments. Baseline data were collected for the number of partnerships made by companies in IIP.
- The Directorate for Education and Human Resources has been leading efforts to establish a single set of evidentiary standards for education programs that are thematically linked. In FY 2013, the themes were: K-12 education ready for scale-up, public understanding and communication of science, and innovative learning systems/cyberlearning.

Perform as a Model Organization. Targets to achieve this strategic goal focused in FY 2013 on customer service, human resources development, and technological upgrades.

- Seventy-seven percent of applicants were informed whether their proposals were declined or recommended for funding within 6 months of submission. This exceeded the target of 70 percent.
- Nearly 29 percent of review panels were conducted virtually, exceeding the target of 5 percent.
- NSF continued to make progress toward achieving “Model Equal Employment Opportunity (EEO) Agency” status. Five of the six essential elements required by the Equal Employment Opportunity Commission to attain a model EEO agency program have been met.
- For the third year, NSF’s temporary scientific staff members were included under the same performance management system used for full-time employees.
- The Division for Human Resources Management made significant progress toward employee performance management related goals. Increased Federal Employee Viewpoint Survey (FEVS)²⁰ scores from all employee groups suggest that improvements made to performance management training, the development of sample critical elements for all supervisors, a focus on targeted and timely communications around performance management processes, and the sharing of best practices resulted in positive change. In particular, NSF saw a jump in the FEVS scores of its temporary scientific staff members, including its Intergovernmental Personnel Act (IPA) assignees. Increased satisfaction in this group may be attributed to the implementation of a new IPA performance process that better articulated expectations. In FY 2013, NSF piloted a new Senior Executive Service (SES) performance management process rounding out NSF focus on improving performance management for all types and levels of employees. The Office of Personnel Management approved NSF’s plans for implementation of the government-wide SES performance system for the coming performance cycle.
- Efforts to improve training and development opportunities resulted in the implementation of an updated suite of courses on the merit review process and mandatory merit review training for all new program officers. NSF anticipates significant business process- and mission-related improvements in future years based upon the implementation of this requirement.

²⁰ For more information about the FEVS, see www.fedview.opm.gov.

- In an important financial modernization step, NSF successfully transitioned to the Award Cash Management Service (ACM\$), a grant-by-grant payment process. More information about ACM\$ can be found on page I-15.

Priority Goal—Undergraduate Programs.

This goal was achieved in FY 2013. Greater than 80 percent of academic institutions funded by NSF undergraduate programs documented the extent of use of proven instructional practices.

NSF has a long-term core commitment to the role of undergraduate education in engaging and preparing a diverse and highly qualified science and engineering workforce. While many factors influence whether students stay in science, technology, engineering, and mathematics (STEM) majors, one challenge students report is lackluster introductory courses that do not provide the support they need to succeed in STEM classes. Research shows that evidence-based instructional practices lead to improved student learning, making them a useful metric for assessing the impact of educational practices on a well-prepared workforce. In order to encourage and facilitate the use of empirically based instructional practices in STEM undergraduate education, NSF must first establish baseline information about their use.

For this goal, NSF adopted multiple strategies, which cover a wide variety of regular NSF processes such as solicitation development, monitoring system development, data collection, and outreach. Progress toward quantitatively meeting this goal should also contribute to improvement on and better coordination of these NSF processes. For more details, refer to the Priority Goal section of www.performance.gov.

Priority Goal—NSF Innovation Corps.

This goal was achieved in FY 2013. One hundred percent of teams participating in the Innovation Corps program tested the commercial viability of their product or service, exceeding the target of eighty percent.

The NSF Innovation Corps (I-Corps) is a set of activities and programs that prepares scientists and engineers to extend their focus beyond the laboratory and broadens the impact of select, NSF-funded basic research projects. While knowledge gained from these projects frequently advances a particular field of science or engineering, some of the research results also show immediate potential for broader applicability and impact in the commercial world. These results may be translated through I-



SHIFT teacher participants at biofuels algae ponds

Credit: University of Kansas

SHIFT Inspires Biofuels Innovation: To help teachers relate lessons to real-world needs, the University of Kansas developed the Shaping Inquiry from Feedstock to Tailpipe (SHIFT) program. The summer program engages high-school and community college educators in the topic of biofuels—everything from how biofuels are made to how they burn and their impact on the environment. Participants create and share lesson plans and activities and each participant receives a \$100 tool kit to teach the new activities. Throughout the year, the teachers continue to collaborate on the lessons, which are inspiring students to seek new opportunities in biofuels research. One student group's energy exhibit won first place—and a \$50,000 award—in the Burns and McDonnell "Battle of the Brains" competition, and a Kansas City-based science center is developing a hands-on exhibit based on their work.

Corps into technologies with near-term benefits for the economy and society. Combining experience and guidance from established entrepreneurs with a targeted curriculum, I-Corps is a public-private partnership program that teaches grantees to identify valuable product opportunities that might emerge from academic research. I-Corps also offers entrepreneurship training to student participants.

Cumulatively in FY 2012 and FY 2013, a total of 235 teams were accepted into the 6-month program. The completion rate over the 2-year period was 98.3 percent, well above the 80 percent target. For more details, refer to the Priority Goal section of www.performance.gov.

Priority Goal—Access to Digital Products. This goal was achieved in FY 2013. Digital data are increasingly becoming one of the primary products of scientific research. Access to the digital products of research enhances openness and transparency in the scientific enterprise and enables new types of multi-disciplinary research and education. Therefore, it is increasingly important for NSF to facilitate and encourage access to data and research results. This Priority Goal supports collaborative and multidisciplinary science by enabling data to flow more easily across traditional disciplinary boundaries.

In FY 2012, NSF convened a cross-agency group that assessed the state of NSF's policies in this area. The group determined that many NSF-funded large facilities, which represent their scientific domains, already have established policies for public access to high-value data and software, and recommended a shift in focus from large facilities to other types of NSF investments. In FY 2013, test beds were identified to increase opportunities through data sharing and public access to data. By June 2013, two of the projects identified had data policies in place that have expanded the opportunities for access to high-value digital products of NSF-funded research (Data ONE and nanoHUB). For more details, refer to the Priority Goal section of www.performance.gov.

Recovery Act Performance Results

The broad agency goals for NSF's ARRA program are derived directly from the purposes and principles expressed in the Recovery Act: long-term investments in basic research, education, and research infrastructure are needed "to increase economic efficiency by spurring technological advances in science and health."²¹ NSF targeted investments that would fuel economic growth by yielding new discoveries that will enhance productivity for many years to come and will contribute to the preparation of a dynamic U.S. workforce.

- In initial years (FY 2009 and FY 2010), targets were set for the numbers of awards made under the R&RA and EHR programs.
- Investments in the EHR ARRA program were designed to increase the number of well-trained teachers and master's degree holders in the workforce. The longer-term goals for those programs relate to the number of students enrolled and the number of graduates of the funded programs.
- Investments in research infrastructure—the MREFC program—were intended to monitor that construction projects funded by ARRA were on time and within budget.

Final information for the EHR and MREFC program awards are still being collected and will be included in NSF's *FY 2013 Annual Performance Report*.

²¹ The American Recovery and Reinvestment Act of 2009 is available at www.gpo.gov/fdsys/pkg/BILLS-111hr1enr/pdf/BILLS-111hr1enr.pdf.

In FY 2013, NSF began the process of winding down implementation of our three ARRA programs. NSF's entire ARRA portfolio of more than 5,000 awards and \$3 billion has been obligated since the end of FY 2010. As of September 30, 2013, the portfolio was 92 percent expended since the vast majority of the ARRA projects had concluded by this date. The key focus for FY 2013 was implementation of OMB's guidance requiring the acceleration of ARRA expenditures,²² and the complementary awardee communication, outreach, and oversight that such implementation required. NSF also focused on monitoring awardee performance, including compliance with requirements for quarterly recipient reporting and lessons learned.

OMB Memorandum M-11-34, *Accelerating Spending of Remaining Funds from the American Recovery and Reinvestment Act for Discretionary Grant Programs*, required all recipients of federal financial assistance in connection with ARRA to accelerate expenditures and complete projects by September 30, 2013. NSF had been particularly challenged by this OMB guidance because our ARRA program had been purposely designed to advance the long-term reinvestment goals of the Act, and encompassed many projects that were specifically designed to last 3, 4, and 5 years. To meet this challenge, NSF designed an extensive model by which the agency could analyze and submit worthy projects to OMB for waiver consideration from the acceleration requirement. Implementation of this effort, however, required detailed expenditure monitoring and extensive and robust communication and outreach to our awardees to ensure the timely and responsible expenditure of ARRA funds. Ultimately, NSF sought and was granted a waiver constituting less than 5 percent of its ARRA obligations.

As noted previously, we continued to implement NSF's comprehensive, multi-stage review program for recipient reporting. Our effective program and 99 percent compliance rate over the last 15 reporting quarters firmly establish NSF as a leader on which the accountability and transparency community can rely for government-wide process-improvement recommendations.²³

Though the bulk of the program has now concluded, in FY 2014, NSF will continue to implement our ARRA program. Although the Recovery Accountability and Transparency Board had been scheduled to sunset on September 30, 2013, its activities have been extended through September 30, 2015. Recipient reporting will continue, as will periodic expenditure monitoring and targeted outreach and communication with ARRA awardees, albeit on a much smaller scale. Finally, we will use ARRA "lessons learned" to inform NSF-wide management practices, particularly in the areas of expenditure monitoring, integrated program and administrative management, NSF-OIG stewardship collaborations, and increased stakeholder outreach and engagement.

Workload and Management Trends

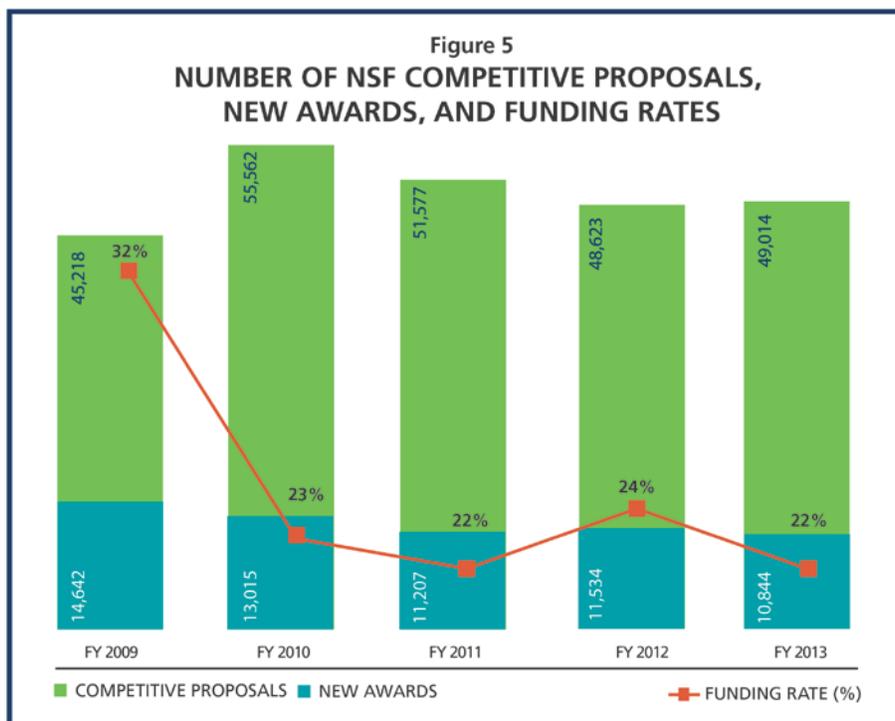
NSF continuously monitors key portfolio, workload, and financial measures to understand short- and long-term trends and to help inform management decisions.

- In FY 2013, the number of competitive proposals reviewed by NSF increased by about 400—from 48,623 in FY 2012 to 49,014 in FY 2013 (Figure 5).
- The number of new awards decreased by 6 percent (690) to 10,844. The number of new awards in FY 2013 is the lowest since FY 2006. This decrease is in line with the overall reduction of 2.1 percent in total NSF funding from FY 2012 to FY 2013.

²² OMB Memorandum M-11-34.

²³ NSF has overseen 12 recipient reporting quarters to date, delivering compliance rates of 99 percent over the last 11 quarters, with several quarters at 99.8 percent.

- The decrease in new award actions coupled with a 0.8 percent increase in the number of competitive proposals resulted in a funding rate of 22 percent.



- As shown in Figure 6, in FY 2013, the average annual award size of competitive awards decreased slightly, from \$169,217 in FY 2012, to \$169,107. The average annual award size in FY 2013 is nearly 4 percent or \$6,807 below the average annual award size of the previous 4-year period (\$175,914), which included funding from ARRA. Adequate award size is important for enabling science of the highest quality and ensuring that the proposed work can be accomplished as planned. Larger award size may also permit the participation of more students and allow investigators to devote a greater portion of their time to conducting research.²⁴
- In FY 2013, NSF's workforce in terms of full-time equivalents (FTE) was at 1,414. The agency's FTE has essentially remained unchanged since FY 2011.
- The number of active awards decreased 1.6 percent (890) in FY 2013, from 56,432 in FY 2012 to 55,542 in FY 2013. This decrease reflects a combination of factors including the expiration of the majority of NSF's ARRA grants and the fact that the number of new awards made in the years following ARRA have dropped back to levels observed in pre-ARRA years.

²⁴ See *Report to the National Science Board on the NSF's Merit Review Process, FY 2012* (NSB-13-33) at www.nsf.gov/nsb/publications/pub_summ.jsp?ods_key=nsb1333.

Figure 6: Workload and Management Trends

Measure		FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Percent Change (FY 2013/ FY 2012)	Average, FY 2009- FY 2012
Portfolio	Competitive proposal actions	45,218	55,562	51,577	48,623	49,014	0.8%	50,245
	Competitive award actions	14,642	13,015	11,207	11,534	10,844	-6.0%	12,600
	Average annual award size (competitive awards)	\$172,569	\$189,338	\$172,533	\$169,217	\$169,107	-0.1%	\$ 175,914
	Funding rate	32%	23%	22%	24%	22%	-2% points	25%
Workload	Number of employees (FTE, usage)	1,386	1,424	1,415	1,415	1,414	-0.1%	1,410
	Number of active awards *	52,858	55,449	56,414	56,432	55,542	-1.6%	55,288
	Proposal reviews conducted	241,712	287,017	262,005	235,654	233,116	-1.1%	256,597
Financial	Number of grant payments	25,723	22,782	29,214	28,016	27,649	-1.3%	26,434
	Federal Financial Reports (FFR) submitted	99.60%	99.80%	99.89%	99.91%	100.00%	<1% point	99.80%

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

- During the period April through June 2013, NSF transitioned grantees to the ACM\$. In the ACM\$ environment, 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. This enables NSF financial and program staff to have access to up-to-date expense and award balance information. As a result, NSF grantees no longer have to report their expenditures at the end of each quarter by submitting a Federal Financial Report (FFR). In preparation for the ACM\$ transition during the first half of FY 2013, 100 percent of the FFRs—all 3,291—were submitted for the reporting periods. High FFR submission levels enabled NSF to ensure award balances were reconciled between NSF and awardee financial systems and contributed significantly to the smooth and timely conversion of all grantees onto the ACM\$ payment process without interruption or delay in program activity.
- For FY 2013, the number of NSF grant payments decreased by 1.3 percent, reflecting the closeout process of the ARRA awards.

Financial Discussion and Analysis

In FY 2013, NSF focused resources to achieve performance results through enhancing financial accountability, improving transparency, and implementing risk management across the agency. At a time of both growing agency responsibilities and budget austerity, increasing NSF's ability to provide useful and reliable financial information is critical for better management and more effective resource allocation decisions that will ensure sound stewardship of the public trust. In FY 2013, NSF improved financial management on several fronts:

- Implementation of the ACM\$ ended the "pooling" method of paying awards. Under ACM\$, requests for funds must now be submitted at the award level. This enables NSF financial management and program staff to have access to up-to-date expense and award balance information, which allows for more effective monitoring and management of funds.
- NSF continued to seek ways to improve accountability and effectiveness of operations through an effective internal control system. To improve how the agency detects and prevents improper payments, NSF leveraged its internal control system to develop a revised risk assessment methodology for improper payments.
- NSF's ongoing effort to modernize its 25-year-old financial management system made significant progress during the year. The new iTRAK system will increase the agency's capabilities for more informed operational and programmatic decisionmaking, improve effectiveness and efficiency of financial and business processes, and enhance financial and business accountability, integrity, and compliance with OMB requirements.

In addition, NSF has made significant progress towards reducing certain administrative costs by identifying and implementing efficiencies, prioritizing work, and exploring new ways of getting the job done. As an example, NSF revised policy to standardize and accelerate the time period when outstanding travel obligations are financially closed. This has minimized the amount of time funds remain obligated on completed travel. Overall, in FY 2013, agency travel obligations were 38 percent below the FY 2010 level.

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 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, 2013 and September 30, 2012.

For FY 2013, NSF received its 16th consecutive unqualified audit opinion. The audit report noted no material weaknesses. However, it repeated a significant deficiency related to the monitoring of construction-type agreements. NSF continues to work to strengthen controls for awarding and managing construction-type cooperative agreements, including working with the OIG to find agreement on the oversight of cooperative agreements and contingency budgets and resolve the audit findings. Although we continue to disagree with this significant deficiency, we are committed to building on the progress that we have made this year. For a more detailed discussion of the independent audit results, see the audit report on page II-3. Management's response to the audit report can be found on page II-17.

Understanding the Financial Statements

NSF's FY 2013 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 5 years. Figure 7 summarizes the changes in NSF's financial position in FY 2013.

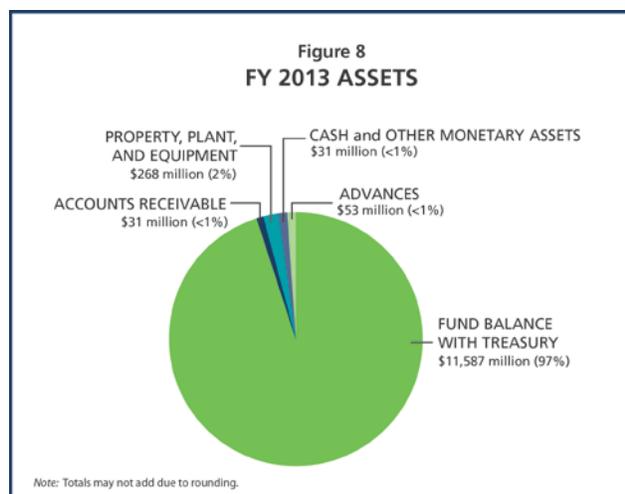
Figure 7. Changes in NSF's Financial Position in FY 2013 (dollars in thousands)

Net Financial Condition	FY 2013	FY 2012	Increase/ (Decrease)	% Change
Assets	\$11,970,603	\$12,388,642	(\$418,039)	-3.4%
Liabilities	\$259,846	\$543,474	(\$283,628)	-52.2%
Net Position	\$11,710,757	\$11,845,168	(\$134,411)	-1.1%
Net Cost	\$7,117,071	\$7,335,657	(\$218,586)	-3.0%

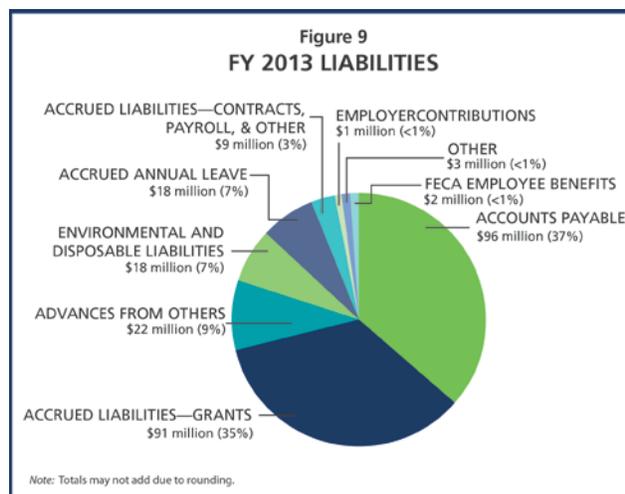
Balance Sheet

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 FY 2013, Total Assets (Figure 8) decreased 3.4 percent from FY 2012. The bulk of the change occurred in the *Fund Balance with Treasury* account, which decreased by \$460.2 million in FY 2013. *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. The FY 2013 decrease is largely attributed to sequestration and across-the-board rescissions.



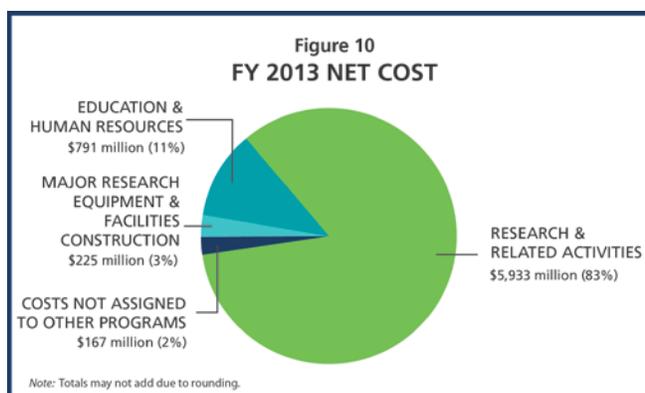
NSF's Total Liabilities (Figure 9) decreased by 52.2 percent in FY 2013. The majority of this change is related to the decrease in *Accrued Liabilities—Grants*. This decrease is attributed to the implementation of a new grantee cash request and reporting system, Awardee Cash Management Service (ACM\$). The previous system did not enable grantees to request funds at the award level and resulted in the reporting of detailed expenditure data subsequent to financial reporting deadlines. As such, NSF was required to accrue for grant expenditures incurred but not yet reported, resulting in a large *Accrued Liabilities—Grants* balance at the end of FY 2012. ACM\$ allows grantees to request cash at



the award level, enabling NSF to record grant expenditures as incurred. This change in reporting eliminated the previous grant accrual methodology and resulted in a significantly lower *Accrued Liabilities—Grants* balance.

Statement of Net Cost

This statement 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 Funds from Dedicated Collections, which are classified as *Costs Not Assigned to Other Programs* in the Statement of Net Cost. 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 Costs Not Assigned to Other Programs 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 decreased slightly by 1.1 percent, or \$134.4 million, in FY 2013.

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 2013, *Total Budgetary Resources* decreased by \$113.8 million. *Budgetary Resources—Appropriations* for the R&RA, EHR, and MREFC accounts were \$5,543.7 million, \$833.3 million, and \$196.2 million, respectively. The combined *Budgetary Resources—Appropriations* in FY 2013 for the NSB, OIG, and AOAM accounts totaled \$310.9 million. NSF also received funding via warrant from the special earmarked H-1B receipt account in the amount of \$115.8 million, and via donations from foreign governments, private companies, academic institutions, nonprofit foundations, and individuals in the amount of \$40.3 million. In FY 2013, the *Budgetary Resources—Appropriations* line was also affected by sequestration and across-the-board rescissions.

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 2013 and 2012, these costs amounted to \$327.4 million and \$333.7 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 2013 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 \$31.0 million at September 30, 2013. Of that amount, \$28.2 million is due from other federal agencies. The remaining \$2.8 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 180 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 2 years old. Additionally, NSF seeks Department of Justice concurrence for action items over \$100 thousand.

Cash Management Improvement Act

In FY 2013, 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 2013.

Systems, Controls, and Legal Compliance



National Science Foundation FY 2013 Statement of Assurance

The National Science Foundation (NSF) management is responsible for maintaining effective internal control and financial management systems that meet the objectives of the Federal Managers Financial Integrity Act of 1982 (Integrity Act), as well as related laws and regulations. The agency is required to perform an evaluation of management and financial system internal control as required by Sections 2 and 4 of the Integrity Act.

NSF's internal control program is designed to ensure full compliance with the objectives of the Integrity Act, laws and regulations, and Office of Management and Budget (OMB) guidance including: (1) 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 Card Programs; Appendix C, Requirements for Effective Measurement and Remediation of Improper Payments; and Conducting Acquisition Assessments under OMB Circular A-123; (2) OMB Circular A-127, Financial Management Systems; and (3) OMB Circular A-130, *Management of Federal Information Resources*.

NSF completed its evaluation and carefully considered the appropriate balance between controls and risk in programs and operations. Based on the results of these evaluations, NSF provides reasonable assurance that as of September 30, 2013, its internal control over programs and operations 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 Integrity Act and no system non-conformances were identified under Section 4 of the Integrity Act.

In accordance with Appendix A of OMB Circular A-123, NSF conducted an 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, 2013, 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.

For FY 2013, NSF is providing an unqualified statement of assurance that its internal control and financial management systems meet the objectives of the Integrity Act, as well as related laws and guidance.

A handwritten signature in blue ink that reads "Cora B. Marrett".

Cora B. Marrett
Acting Director

December 16, 2013

Management Assurances

Federal agencies are striving to obtain better performance results in an ever-changing environment with growing demands and changing priorities. An effective internal control system is a necessity in obtaining desired outcomes and minimizing operational problems. Implementation of new technology and improvements to the operational processes require continual reassessments of internal control systems to ensure it is updated and functioning effectively.

The Federal Managers Financial Integrity Act of 1982 (Integrity Act or FMFIA) requires each federal agency to conduct ongoing evaluations and reporting of the adequacy of the systems of internal accounting and administrative control. OMB Circular A-123, *Management's Responsibility for Internal Control*, provides guidance to federal managers on improving accountability and effectiveness of federal programs and operations by establishing, assessing, correcting, and reporting on internal control. The head of the agency is required to provide a Statement of Assurance as to whether the agency has met these requirements based on an annual evaluation.

The NSF Acting Director provides an unqualified Statement of Assurance for FY 2013. The statement is management's assessment of the effectiveness of NSF's internal control over financial reporting as of June 30, 2013. The assessment provides reasonable assurance that the objectives of the Integrity Act were achieved for FY 2013, concluding the internal controls over financial reporting are effective.

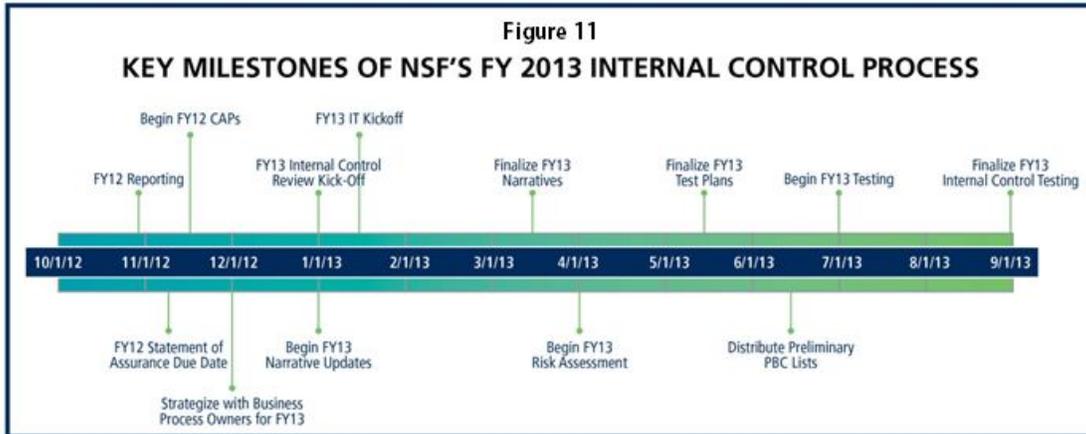
FY 2013 Internal Control Assessment and Results

NSF has worked diligently to embrace the intent and requirements of OMB Circular A-123, *Management's Responsibility for Internal Control* as amended including Appendix A, *Internal Control over Financial Reporting*. To maximize efficiencies and eliminate duplication of efforts, NSF's Internal Control Quality Assurance Program annually conducts a review and incorporates changes to key NSF processes and procedures. The key components comprise an effective internal control process.

To perform the internal control review, NSF uses a proven principle-based approach, which consists of a thorough understanding of the internal control environment at the entity and process levels followed by testing of the control design and operating effectiveness at the transaction level. The five integrated components of the internal control process are: Control Environment, Risk Assessment, Control Activities, Monitoring, and Information and Communication, utilized for effective internal control.

The internal control process is a continuous process effected by people. The components provide management with reasonable assurance that internal control over operations, financial reporting, and compliance with laws and regulations are designed and operating effectively. NSF management develops and maintains documentation of its internal control system to support the design, implementation, and operating effectiveness of the five components. The NSF internal control process includes evaluation of internal control issues and a determination for the appropriate corrective actions for resolution. Corrective Action Plans for remediation are tracked to ensure completion is timely. The annual internal control review is conducted in accordance with the OMB Circular A-123; no significant deficiencies were identified for FY 2013.

The following timeline (Figure 11) displays the major agency events related to the key components and the timeframe for NSF's FY 2013 internal control process. The timeline of events and dates displays NSF's structured, detailed approach. The NSF internal control process provides a thoughtful assessment approach that elevates the agency's internal control evaluations beyond a "compliance only" approach to meaningful and comprehensive evaluations.



Highlights from NSF's Internal Control Quality Assurance Program

In FY 2013, NSF's Internal Control Quality Assurance Program had significant accomplishments related to both new and ongoing initiatives. Management's ongoing internal control review for 11 business processes for the period July 1, 2012, through June 30, 2013, determined that the agency's internal control was adequately designed, properly executed, and effective. This is the result of an annual effort, on an ongoing basis, to systematically document, test, evaluate, and improve NSF's internal control processes. This process also encourages standardization of similar processes for use in different parts of the agency. Emphasizing transparency, collaboration, and participation throughout NSF's internal control reviews and corrective actions directly supports the agency's strategic goal of "Perform as a Model Organization" through leadership, accountability, and personal responsibility.

- **NSF's Integrated Approach Internal Control System:** NSF continues to seek ways to improve accountability and effectiveness of operations through an effective internal control system. The NSF internal control system supports the organization to adapt to new federal mandates, resource constraints, and emerging priorities. Management evaluates its internal control system to assure it is effective and updated when necessary.

Internal control reviews are conducted in accordance with the Integrity Act requirements to assure achieving the three objectives of internal control:

- Effectiveness and efficiency of operations
- Compliance with regulations and applicable laws
- Reliability of financial reporting

NSF conducts reviews of the agency's business processes (assessable units) to attain an appropriate balance between controls and risk. In accordance with FMFIA, the agency head provides an annual Statement of Assurance on whether the agency has met these requirements.

- **NSF Internal Control Training:** "NSF Internal Control and You" is an online course intended for all NSF employees featuring and narrated by the NSF Internal Control Team. The course addresses the use of internal control at NSF to reduce fraud, waste, and abuse. It describes how the Internal Control Team can assist NSF staff in meeting federal requirements for internal

control, how to prepare for an internal control review, and how to generally improve NSF internal control processes.

- ***The United States Antarctic Program Property, Plant, and Equipment:*** In FY 2013, the United States Antarctic Program successfully transitioned to a new contractor. In the past, an independent validation and verification (IV&V) of additions, deletions, and transfers of real property and capital equipment was conducted. NSF management determined conducting an internal control review in place of the IV&V would provide reasonable assurance that the objectives were met through a more integral part of the operational processes. This change in approach required a shift in focus from property, plant, and equipment (PP&E) to conducting an internal control review of the business processes, which includes PP&E. The review provided validation that proper property balances and activity were transferred and recorded by the new contractor.
- ***Information Technology Assessments:*** NSF performed the information technology review in accordance with the National Institute of Standards and Technology Special Publication 800-53. In recent years, NSF has implemented a systematic approach for providing and accessing documentation using an automated tool, which has improved accountability, responsiveness, and efficiencies. The internal control review utilized the U.S. Government Accountability Office Federal Information Security Management Act of 2002 (FISMA) guidance to develop an information system assessment strategy. The top-down, risk-based approach considered materiality and significance as internal control review objectives. The objectives provided assurance that the transactions and data utilized during application processing were complete, accurate, valid, and confidential.

Improper Payments Elimination and Recovery Act

In March 2013, the OIG issued an audit report on NSF's compliance with the Improper Payments Elimination and Recovery Act of 2010 (IPERA). The scope of the audit was limited to the agency's improper payments reporting in its FY 2012 *Agency Financial Report* (AFR) and concluded that NSF is in partial compliance with OMB reporting requirements. The OIG report is available at www.nsf.gov/oig/IPERA_13-2-007.pdf.

To improve compliance with IPERA and the Improper Payments Elimination and Recovery Improvement Act of 2012, NSF is taking a retrospective and prospective view to develop and implement a revised risk assessment methodology (see Appendix 2). NSF will review its grants program and other activities the agency administers to identify whether they are susceptible to significant improper payments with the objective to detect and prevent improper payments in the future.

The IPERA review process is a 2-year effort undertaken in coordination with OMB. In FY 2013, NSF is reporting on risk assessment. Any required testing results will be done and reported in FY 2014. NSF is taking a holistic view of its single program, Research and Education Grants and Cooperative Agreements, as well as the funding types associated with its appropriations.

Financial System Strategy

NSF's financial system goals are to increase capabilities for more informed operational and programmatic decision-making, improve effectiveness and efficiency of financial and business processes, and enhance financial and business accountability, integrity, and compliance. In an effort to achieve these goals, NSF is replacing its current Financial Accounting System (FAS) with a commercial-off-the-shelf (COTS) core

financial management system and key interfaces that will be hosted in a shared service environment. This effort is part of a Foundation-wide initiative known as iTRAK.

Strategic Overview

The Chief Financial Officers Act of 1990 assigns clear responsibilities for planning, developing, maintaining, and integrating financial management systems within federal agencies. NSF currently maintains a core accounting system, FAS, and various grants management systems to support NSF's mission. Financial systems strategies include:

- 1) Implementing iTRAK Phase 1, a COTS core financial management solution hosted in a shared services environment in accordance with OMB Memorandum M-10-26, *Immediate Review of Financial Systems IT Projects*, and compliant with federal financial system guidance including OMB Circular A-127, *Financial Management Systems*, and government-wide accounting and reporting requirements. NSF will be implementing Oracle Federal Financials.
- 2) Implementing future iTRAK phases including integration of acquisition, property, and budget formulation systems with the COTS core financial system (upon funding availability).

Ongoing Financial System Initiatives

In FY 2013, NSF continued to make substantial progress in its financial systems modernization efforts. In FY 2012, NSF successfully completed the planning and acquisition phases of the NSF Project Management Lifecycle by awarding a systems implementation contract to Accenture Federal Services, LLP. The iTRAK Core Financial project is broken down into six phases: Planning and Initiation, Requirements, Design, Develop, Test, and Deploy. In FY 2013, iTRAK began activities for implementing core financials and completed the Initiation/Planning and Requirements phases of the project. Accomplishments include:

- Establishing a Project Management Office
- Creating a Change Control Board
- Passing the Initiation and Planning Gate Review
- Passing the Requirements Phase Gate Review
- Defining the Solution Strategy
- Completing the Integration Solution Analysis
- Validating more than 1,100 system requirements
- Completing the Reporting Strategy
- Completing the Data Conversion Strategy
- Continuing data cleanup efforts
- Creating a comprehensive Change Management Strategy
- Establishing a Change Champions Working Group with more than 35 Change Champions
- Completing preliminary solution preview sessions
- Beginning activities that focus on workforce analysis
- Purchasing Oracle Federal Financial software

These activities were completed within schedule and budget.

In FY 2014, iTRAK will continue to implement core financials and should complete the Design, Development, and Testing phases of the project. Activities in these phases include: continuing stakeholder outreach; finalizing data cleanup; building system interfaces; performing mock data conversions; performing system testing; developing and conducting training; standing up the iTRAK help desk; completing the work force Transformation Plan; and finally, taking the system live October 2014.

Future Financial System Initiatives: Implement Future iTRAK Phases

iTRAK will help to improve NSF's operational excellence and enable efficient and effective execution of financial activities and business operations by integrating an Acquisition Module, Fixed Asset Module, and Budget Formulation Module with the COTS core financial system. NSF plans to integrate these applications in later phases as resources permit.