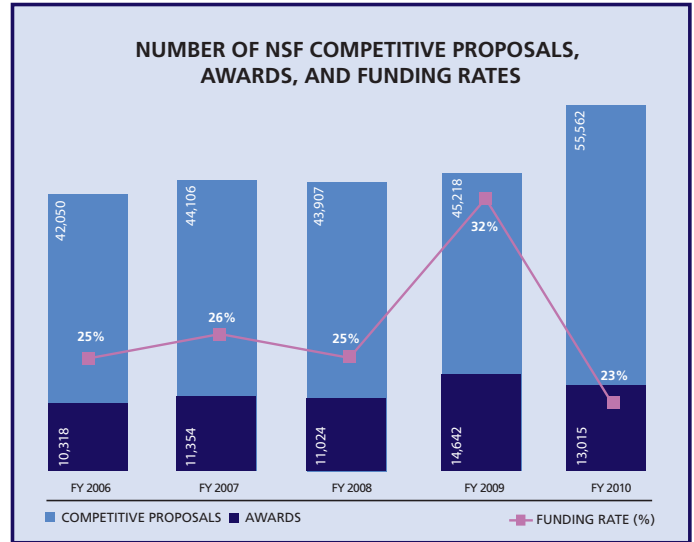


National Science Foundation

FY 2010 Performance and Financial Highlights

Who We Are and What We Do

- The National Science Foundation (NSF) is the only federal agency dedicated to advancing research and education in science and engineering across all fields and disciplines and at all educational levels.
- NSF seeks high-risk, potentially transformative projects that will generate path-breaking discoveries and new technologies.
- NSF integrates research and education to support the development of a world-class scientific and engineering workforce.
- NSF funds advanced instrumentation and facilities and Arctic and Antarctic research, science operations, and other related activities for the U.S. polar research program.
- NSF supports cooperative research between universities and industry as well as United States participation in international scientific efforts.
- In many fields, including computer science, mathematics, and the social sciences, NSF is the principal source of federal support.



From the Director



It is my pleasure to share with you the third of the three reports that the National Science Foundation (NSF) is preparing to demonstrate the agency's accountability to our stakeholders and the American public. The purpose of this report is to highlight key information from NSF's FY 2010 *Agency Financial Report* (AFR) and *Annual Performance Report* (APR).

A quick look at just a few numbers gives one an immediate sense of the breadth and impact of NSF's reach and its contribution. The figures in the table to the right demonstrate that FY 2010 was a busy year at the Foundation.

Investing in science and technology fosters economic growth and creates high-tech, high-wage jobs that allow American workers to lead the global economy, improve the quality of life for all Americans, and strengthen national security. Details about NSF's annual performance achievements can be found in the APR. I am pleased to report that the performance information included in the APR is complete and reliable. As in past years, all NSF performance data has been verified and validated by an independent management consulting firm using guidelines from the Government Accountability Office.

NSF BY THE NUMBERS

| | |
|---------------|--|
| \$6.9 billion | FY 2010 appropriations (does not include special or donated funds) |
| 2,100 | Colleges, universities, and other institutions receiving NSF funding in FY 2010 |
| 55,600 | Proposals evaluated in FY 2010 through a competitive merit review process |
| 13,000 | Competitive awards funded in FY 2010 |
| 287,000 | Proposal reviews conducted in FY 2010 |
| 294,000 | Estimated number of people NSF supports directly (researchers, postdoctoral fellows, trainees, teachers, and students) |
| 42,000 | Students supported by NSF Graduate Research Fellowships since 1952 |

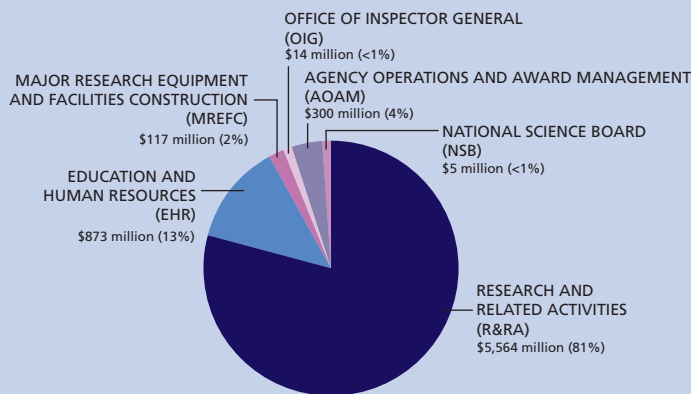
Thank you for your interest in NSF. Should you have comments or suggestions for how to make this report more informative, please send them to Accountability@nsf.gov.

Subra Suresh
February 15, 2011

Following the Money

WHERE IT COMES FROM

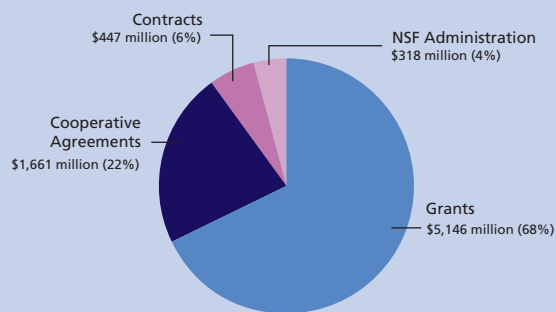
FY 2010 Appropriations by Account—\$6,873 million



Note: Totals may not add due to rounding.

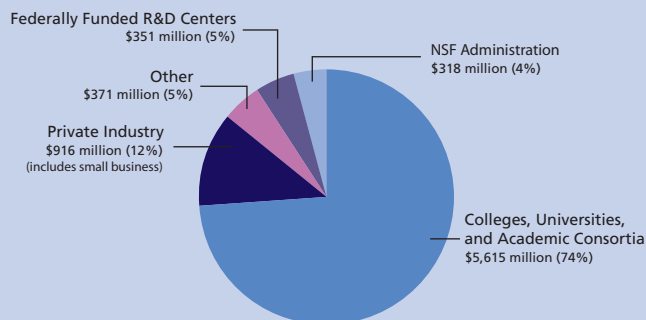
HOW IT GETS THERE: AWARD MECHANISMS

FY 2010 Budget Obligations—\$7,572 million

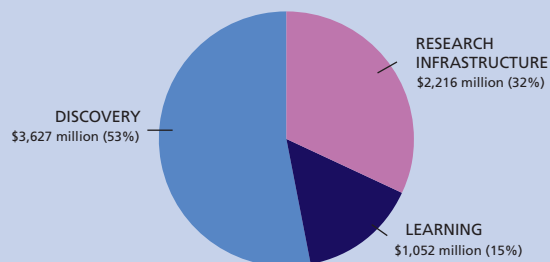


WHERE IT GOES: INSTITUTIONS FUNDED BY NSF

FY 2010 Budget Obligations—\$7,572 million



HOW IT'S SPENT: FY 2010 NET COST BY STRATEGIC GOAL



Note: Totals may not add due to rounding. Net cost data was derived from NSF's audited financial statements; however, such limited data have not been specifically audited as stand-alone information.

- NSF is funded primarily through six congressional appropriations. R&RA, EHR, and MREFC fund the agency's programmatic activities and account for 95 percent of NSF's total appropriations. The AOAM appropriation provides funds to administer and manage those programmatic activities. Separate appropriations are provided to support the activities of the OIG and NSB.
- Most NSF awards are to academic institutions. About 10 percent of NSF funds support Federally Funded Research and Development (R&D) Centers and projects at other federal agencies and state and local governments. NSF also funds for-profit businesses, including small businesses. A small number of awards are for research in collaboration with other countries that has value to the U.S. science enterprise.
- Most projects are funded through grants or cooperative agreements. Grants can be funded as standard awards, in which full funding 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 for projects that require substantial agency involvement. Contracts are used to acquire services and studies required for NSF or other government use.
- Net cost represents the annual cost of operating NSF programs. Approximately 96 percent of all current year costs funded activities that directly support the *Discovery*, *Learning*, and *Research Infrastructure* strategic outcome goals. The other 4 percent (\$307 million) of current year costs—the focus of the *Stewardship* goal—funded general operational activities, including the activities of the NSF and OIG. These operational expenses are allocated among the other three strategic outcome goals.
- NSF Administration includes three appropriation accounts—AOAM, OIG, and NSB—that support salaries, general operating expenses, and the activities of the OIG and NSB. NSF also funds other operational activities—totaling \$112 million in FY 2010—through the R&RA and EHR appropriations. These are principally associated with staff working at NSF under the Intergovernmental Personnel Act and certain NSF-wide activities, including information technology investments that are directly related to programmatic investments. This larger portfolio is captured by the NSF *Stewardship* goal, which for FY 2010 was \$431 million, or 6 percent of NSF's total obligations.

For more information:

NSF Budget and Performance Website
www.nsf.gov/about/performance

NSF FY 2010 Annual Performance Report
 (see NSF FY 2012 Budget Request to Congress at
www.nsf.gov/about/budget)

NSF Research and Education Highlights and Discoveries
www.nsf.gov/discoveries

Photo Credits

Twin Galaxies (top of page 1)
www.gemini.edu/node/10979

IceCube (page 6)
www.nsf.gov/news/news_summ.jsp?cntn_id=118236

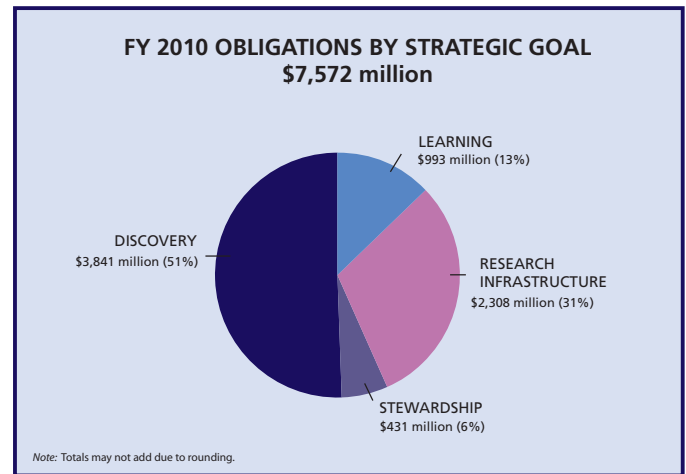
STOMP (page 6)
www.nsf.gov/discoveries/disc_summ.jsp?cntn_id=117563
www.stompnetwork.org

Cutting Nanotubes (page 6)
www.nsf.gov/news/news_summ.jsp?cntn_id=118277

www.nsf.gov

How We Are Doing: Performance Highlights

- In FY 2010, NSF adopted a streamlined performance assessment framework while efforts were underway to finalize and transition to a new strategic plan.
- In compliance with the Government Performance and Results Act (GPRA), NSF monitored 13 key performance goals, each aligned with one of NSF's four strategic outcome goals outlined in the FY 2006–2011 NSF strategic plan, *Investing in America's Future*.
- In FY 2010, NSF achieved 10 of 13 goals (77 percent).
- More than half of FY 2010 obligations supported the *Discovery* goal; 31 percent supported *Research Infrastructure*, and 13 percent supported *Learning*.
- Stewardship*, which focuses on internal operations, management activities, and the activities of the OIG and NSB, accounted for 6 percent of total NSF obligations.



GPRA STRATEGIC OUTCOME GOALS: KEY PERFORMANCE MEASURES

| | 2008 | 2009 | 2010 Target | 2010 Results | |
|--|---|----------------|------------------|------------------|---|
| Discovery: Foster research that will advance the frontiers of knowledge, emphasizing areas of greatest opportunity and potential benefit, and establishing the nation as a global leader in fundamental and transformational science and engineering. | | | | | |
| Percent of proposals with a time to decision within 6 months | 78% | 89%* | 70% | 75% | ✓ |
| Research and Related Activities directorates will invest a minimum of \$2 million per research division to leverage and facilitate activities that foster potentially transformative research | N/A | N/A | \$94.0 million | \$138.4 million | ✓ |
| Learning: Cultivate a world-class, broadly inclusive science and engineering workforce and expand the scientific literacy of all citizens. | | | | | |
| Percent of NSF Learning portfolio with established metrics | N/A | 80% | 100% | 100% | ✓ |
| Research Infrastructure: Build the nation's research capability through critical investments in advanced instrumentation, facilities, cyberinfrastructure, and experimental tools. | | | | | |
| Percent of MREFC facilities under construction with negative cost and schedule variances at or below 10% | 80% | 100% | 100% | 60% | ✗ |
| Percent of facilities in the operational phase with less than 10% lost operating time | 100% | 100% | 90% | 100% | ✓ |
| Stewardship: Support excellence in science and engineering research and education through a capable and responsive organization. | | | | | |
| Conduct a Business Systems Review once per 5-year award cycle for all institutions hosting NSF-supported large facilities** | N/A | 3 | 3 | 4 | ✓ |
| Analyze Committees of Visitors reports to identify issues of quality and transparency of the merit review process | N/A | Analysis begun | Completed report | Completed report | ✓ |
| Percent of reviewed proposals with a written statement describing review process and context of the decision | 95% | 96% | 95% | 93% | ✗ |
| Post-award monitoring | ARRA recipient reporting rate | N/A | N/A | 98% | Q1: 99.7% Q2: 99.5% Q3: 99.8% Q4: 99.6% ✓ |
| | ARRA uncorrected significant error rate | N/A | N/A | Under 1% | Q1: <1% Q2: 0% Q3: <1% Q4: 0% ✓ |
| Appropriately apply risk assessment strategy to ensure adequate post-award financial and administrative monitoring of riskiest awards | Site visits | 100% | 100% | 95% of 30 | 80% ✗ |
| | Desk reviews | 100% | 100% | 95% of 73 | 146% ✓ |
| | FFR transaction testing | 100% | 100% | 100% | 100% ✓ |

N/A: Not applicable because the performance measure was established after that fiscal year.

MREFC: Major Research Equipment and Facilities Construction

ARRA: American Recovery and Reinvestment Act of 2009

FFR: Federal Financial Report

* The time-to-decision goal was in effect only for the first quarter of FY 2009. NSF suspended this goal to expedite processing time of the additional proposals received as a result of ARRA.

** A Business Systems Review is an award monitoring activity that assesses an institution's capacity to manage a facility in compliance with NSF expectations and federal regulations.

- In February 2009, NSF received \$3.0 billion through the American Recovery and Reinvestment Act of 2009 (ARRA or Recovery Act). Eighty percent—\$2.4 billion—was obligated in FY 2009, and the remaining \$600 million in FY 2010. At the end of FY 2010, total ARRA outlays were \$598 million.
- A key focus of the agency's ARRA program in FY 2010 was monitoring awardee performance. NSF implemented a quarterly, multi-phase recipient reporting review process and engaged in a communications and outreach effort that minimized the staff time necessary to review the nearly 5,000 recipient reports received each quarter. NSF achieved excellent results and is a government leader in ARRA recipient reporting compliance and quality of data reported. (See GPRA *Stewardship* goals.)
- In FY 2010, NSF achieved six of nine (67 percent) ARRA performance goals. NSF achieved 11 of 14 (79 percent) over the 2-year period.

| RECOVERY ACT: KEY PERFORMANCE MEASURES | | | | | | |
|--|--|---------------------------|--------|--------|-----------------|-------------------|
| PROGRAM/ SUBPROGRAM | MEASURE | 2009 | | 2010 | | OVERALL RESULT |
| | | Target | Result | Target | Result | |
| Research and Related Activities | | | | | | |
| Competitive Awards | Number of awards* | 4,000 | 4,599 | - | 5,027 | ✓ |
| | Number of ARI-R ² and MRI-R ² awards | - | - | 500 | 398 | ✗ |
| Principal Investigators (PIs) | Total number of Principal Investigators* | 6,400 | 6,762 | - | 8,030 | ✓ |
| | Number of new Principal Investigators* | 2,400 | 2,352 | - | 2,839 | ✓ |
| Education and Human Resources | | | | | | |
| Robert Noyce Teacher Scholarship Program | Number of new awards | 67 | 67 | N/A | N/A | ✓ |
| | New pre-service teachers and teacher participants | 30 | 124 | 370 | 420 | ✓ |
| | New teachers teaching in high-need districts | 0 | 0 | 28 | 75 | ✓ |
| Math and Science Partnership (MSP) Program | Number of new awards | 9 | 9 | N/A | N/A | ✓ |
| | Number of MSP teacher leader/master teacher participants | 15 | 24 | 133 | 180 | ✓ |
| | Number of post-baccalaureate credentials or master's degree recipients | 13 | 15 | 119 | 110 | ✗ |
| Science Masters Program | Number of new awards | New program in FY 2010 | | 21 | 21 | ✓ |
| | Number of students supported | | | 80 | 100 | ✓ |
| | Number of students earning science master's degrees | | | N/A | N/A | N/A |
| Major Research Equipment and Facilities Construction | | | | | | |
| Alaska Region Research Vessel (ARRV) | Variance from target cost and schedule: <10% behind schedule <10% above cost | > -10% | N/S | >-10% | Achieved | ✓ |
| Advanced Technology Solar Telescope (ATST) | | > -10% | N/S | >-10% | N/S | N/A |
| Ocean Observatories Initiative (OOI) | | > -10% | N/S | >-10% | Not Achieved | ✗ |
| *Targets and results are cumulative. N/A: Not applicable N/S: Not significant; variance data from projects under 10 percent complete are not considered significant. ARI-R ² : Academic Research Infrastructure—Recovery and Reinvestment solicitation MRI-R ² : Major Research Instrumentation—Recovery and Reinvestment solicitation | | | | | | |

| FY 2010 FINANCIAL PERFORMANCE RESULTS | |
|---|--------------------------|
| Financial Statement Audit • Unqualified ("clean") opinion • Timely financial reporting • Material weaknesses | Yes Yes None |
| Management Assurances • Effective internal control over financial reporting (FMFIA §2) • Effective internal control over operations (FMFIA §2) • Conformance with financial management system requirements (FMFIA §4) • Substantial compliance with FMFIA system requirements, accounting standards, and U.S. General Ledger at transaction level | Yes Yes Yes Yes |
| Improper Payments rate (For FY 2009; NSF is on a three-year reporting cycle) | 0% |
| Number of grant payments | 22,782 |
| FMFIA: Federal Managers Financial Integrity Act of 1982 FMFIA: Federal Financial Management Improvement Act of 1996 | |

Looking Ahead

A New Strategic Plan: *Empowering the Nation Through Discovery and Innovation, FY 2011–2016*

NSF’s new strategic plan sets the agency’s direction for the next 5 years. It builds on previous plans, refining and refocusing the agency’s vision statement and strategic goals to better integrate them with the concepts of research and learning, and more closely aligns with NSF’s merit review criteria of intellectual merit and broader impacts. The plan also draws upon new approaches and methods for assessing and evaluating the performance of NSF’s investments in science and engineering research and education. Three interrelated strategic goals—*Transform the Frontiers*, *Innovate for Society*, and *Perform as a Model Organization*—stem from NSF’s mission and our expectations for leadership and excellence in carrying out that mission. These goals provide the programmatic and operational underpinning for all NSF programs and activities, and they apply to the entire portfolio spanning research, education, and infrastructure.

MISSION: To promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense.

—*From the National Science Foundation Act of 1950*

VISION: NSF envisions a nation that capitalizes on new concepts in science and engineering and provides global leadership in advancing research and education.

—*Empowering the Nation Through Discovery and Innovation: NSF Strategic Plan for FY 2011–2016*

| STRATEGIC GOAL | PERFORMANCE GOALS |
|---|---|
| <p>Transform the Frontiers (T) Emphasizes the seamless integration of research and education as well as the close coupling of research infrastructure and discovery.</p> | <p>T-1: Make investments that lead to emerging new fields of science and engineering and shifts in existing fields.</p> <p>T-2: Prepare and engage a diverse science, technology, engineering, and mathematics (STEM) workforce motivated to participate at the frontiers.</p> <p>T-3: Keep the United States globally competitive at the frontiers of knowledge by increasing international partnerships and collaborations.</p> <p>T-4: Enhance research infrastructure and promote data access to support researchers’ and educators’ capabilities and enable transformation at the frontiers.</p> |
| <p>Innovate for Society (I) 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.</p> | <p>I-1: Make investments that lead to results and resources that are useful to society.</p> <p>I-2: Build the capacity of the nation’s citizenry for addressing societal challenges through science and engineering.</p> <p>I-3: Support the development of innovative learning systems.</p> |
| <p>Perform as a Model Organization (M) Emphasizes the importance to NSF of attaining excellence and inclusion in all operational aspects.</p> | <p>M-1: Achieve management excellence through leadership, accountability, and personal responsibility.</p> <p>M-2: Infuse learning as an essential element of the NSF culture with emphasis on professional development and personal growth.</p> <p>M-3: Encourage and sustain a culture of creativity and innovation across the agency to ensure continuous improvement and achieve high levels of customer service.</p> |

Note: This plan was completed before the enactment of the GPRM Modernization Act of 2010. NSF therefore expects to have an updated plan in FY 2013 to address the requirements in the new legislation.

Management Challenges and Future Opportunities

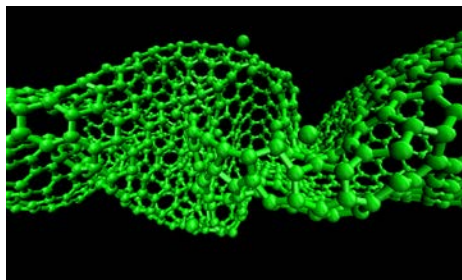
- The NSF Office of Inspector General (OIG) identified six issue areas as the most serious management and performance challenges facing the agency in FY 2010 and FY 2011: Ensuring proper stewardship of Recovery Act funds, improving grant administration, strengthening contract administration, becoming a model organization for human capital management, encouraging the ethical conduct of research, and effectively managing large facilities and instruments.
- In a report addressing recent efforts undertaken by the agency to address the OIG management challenges, among activities cited by NSF management were the establishment of a program to monitor Recovery Act awardee performance and recipient reporting and spending; the update of the entire suite of NSF’s Award Terms and Conditions to incorporate new mandates issued by the Office of Management and Budget to improve grant administration; and refocusing Award Monitoring and Business Assistance Program monitoring activities to organizations identified as needing more intensive business assistance.
- Other areas of focus for the agency in FY 2011 and in the longer term include the support for innovative and potentially transformative research, performance and program evaluation, the Open Government directive, Federal Funding Accountability and Transparency Act sub-award reporting, and the Future NSF Headquarters project. More information about each of these issues and NSF’s management challenges can be found in the *NSF FY 2010 AFR*.

Research and Education Highlights



IceCube
Credit: NSF/B. Gudbjartsson

Construction of the world's largest neutrino observatory, installed in the ice of the Antarctic plateau at the geographic South Pole, was successfully completed in December 2010. IceCube provides an innovative means to investigate the properties of fundamental particles that originate in some of the most spectacular phenomena in the universe. In the deep, dark, stillness of the Antarctic ice, IceCube records the rare collisions of neutrinos—elusive sub-atomic particles—with the atomic nuclei of the water molecules of the ice. NSF was the primary funder of this multinational project.



Cutting Nanotubes
Credit: Kim Lab/Brown University

Researchers at Brown University and in Korea have described the dynamics behind cutting single-walled carbon nanotubes, cylindrical structures just 1/50,000th the width of a human hair. The tubes are compressed by potent sonic booms, causing them to buckle at certain points at helical, 90-degree angles. This research could lead to better-quality nanotubes for potential use in automotive, electronic, optics, and other fields. Results appear in the *Proceedings of the Royal Society A*. NSF and the Korea Institute of Science and Technology funded the work.



STOMP
Credit: Elsa Head, Tufts University

Shown above are fifth grade students participating in the Student Teacher Outreach Mentorship Program (STOMP), a program established by Tufts University that enlists undergraduate engineering students to mentor K–12 teachers and students. The STOMP program has been successful, expanding to 18 universities. Studies have found that participating in engineering service opportunities improved students' acquisition of technical and professional skills and teachers increased their content knowledge and confidence in teaching technical concepts.

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Director, National Science Foundation

Michael L. Van Woert²
Executive Officer and Director, NSB Office

¹Replaced by Cora B. Marrett (Acting), June 2010. In October 2010, Subra Suresh was sworn in as the new NSF Director.

²Effective May 2010.

³Effective September 2010.

⁴Effective January 2010.

⁵Effective June 2010.

⁶Effective February 2010.

⁷Term ended May 2010.



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