PERFORMANCE

NSF PERFORMANCE FRAMEWORK

Introduction

Per the GPRA Modernization Act, this chapter contains basic information about NSF's mission, strategic plan, and priority goals, as well as NSF's Annual Performance Plan for FY 2015 and Annual Performance Report for FY 2013. Information about NSF's performance can also be found on the federal site performance.gov, which is updated quarterly with information about Agency and Cross-Agency Priority Goal achievement, and on the NSF site in the Performance and Financial Highlights Report.[1]

The Overview chapter of this Request highlights NSF's priorities for key program investments and organizational efficiencies. NSF's Performance Plan for FY 2015 underscores these priorities. In FY 2015, NSF continues its strategic monitoring of key program, infrastructure, and management investments. Together with NSF's longstanding performance goal to make timely award decisions, these performance goals provide the foundation of NSF's Performance Plan. The FY 2015 Plan also includes goals that focus on responsible stewardship of facility construction (Research Infrastructure Investments), efficiency (Virtual Merit Review Panels, Modernize Financial Systems, Data-driven Management Reviews), and inclusion (Diversity and Inclusion).

Mission Statement

The NSF Act of 1950 (Public Law 81-507) states the Foundation's mission: "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes." For information about NSF's organizational structure and scope of responsibilities, see the Overview chapter of this Request.

Strategic Plan and Strategic Objectives

NSF's new Strategic Plan, *Investing in Science, Engineering, and Education for the Nation's Future: NSF Strategic Plan for 2014 – 2018*, lays out two strategic goals that embody the dual nature of NSF's mission to advance the progress of science while benefitting the Nation: *Transform the Frontiers of Science and Engineering* and *Stimulate Innovation and Address Societal Needs through Research and Education*.[1] A third goal, *Excel as a Federal Science Agency*, directs NSF to hold itself accountable for achieving excellence in carrying out its mission. This goal structure enables NSF to link its investments to longer-term outcomes. To bridge the gap between these strategic goals and measurable outputs, the Strategic Plan establishes a set of strategic objectives for each strategic goal (see next page).

Agency and Cross-Agency Priority Goals

NSF has set three priority goals for accomplishment in FY 2015 that reflect leadership's top implementation-focused performance improvement priorities (see next page). NSF also contributes to Cross-Agency Priority (CAP) Goals which relate closely to its mission, such as the CAP goal supporting Science, Technology, Engineering, and Mathematics (STEM) Education. Per the GPRA Modernization Act requirement to address CAP Goals in the agency Strategic Plan, the Annual Performance Plan, and the Annual Performance Report, please refer to www.performance.gov for more on the agency's contributions to those goals and progress, where applicable.

[1] www.nsf.gov/about/performance

2014-2018 NSF Strategic Framework

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

FY 2014-FY 2015 NSF Agency Priority Goals

Goal Header	Goal Statement
Ensure Public Access to Publications	Increase public access to NSF-funded peer-reviewed publications. By September 30, 2015, NSF-funded investigators will be able to deposit versions of their peer-reviewed articles in a repository that will make them available to the public.
Increase the Nation's Data Science Capacity	Improve the nation's capacity in data science by investing in the development of human capital and infrastructure. By September 30, 2015, implement mechanisms to support the training and workforce development of future data scientists; increase the number of multi-stakeholder partnerships to address the nation's big-data challenges; and increase investments in current and future data infrastructure, extending data-intensive science into more research communities.
Optimize the Award Process to Level Workload	Improve agency and awardee efficiency by leveling award of grants across the fiscal year. By September 30, 2015, NSF will meet targets to level distribution of awards across the fiscal year and subsequently improve awardee capacity to effectively manage research funding.

FY 2013 ANNUAL PERFORMANCE REPORT

Each fiscal year the National Science Foundation is required to prepare three reports to provide financial management and program performance information. This report, the Annual Performance Report (APR), includes the results of NSF's FY 2013 performance goals, including the agency's priority goals, related to the Government Performance and Results Act of 1993 (GPRA) and the GPRA Modernization Act of 2010. The other two reports are the Agency Financial Report (AFR), and the Performance and Financial Highlights Report. All three of these reports can be found on the Budget and Performance page of the NSF web site (www.nsf.gov/about/performance/).

In FY 2013, NSF tracked progress toward its three strategic goals, using 15 performance goals and three Priority Goals. Out of the total of 18 goals in FY 2013, nine were achieved and nine were not achieved. Below is a tabular overview.

Strategic Goal	Performance Goal			FY 2013 Results
Transform the Frontiers	Goal 1	T-1.1	INSPIRE	Not Achieved
	Goal 2	T-2.1	***Priority Goal:*** Undergraduate Programs	Achieved
	Goal 3	T-2.2	Career-Life Balance	Not Achieved
	Goal 4	T-3.1	International Implications	Achieved
	Goal 5	T-4.1	Construction Project Monitoring	Not Achieved
	Goal 6	T-4.2	***Priority Goal***: Access to Digital Products	Achieved
Innovate for Society	Goal 7	I-1.1	***Priority Goal:*** Innovation Corps	Achieved
	Goal 8	I-1.2	Industrial and Innovation Partnerships	Achieved
	Goal 9	I-2.1	Public Understanding and Communication	Not Achieved
	Goal 10	I-2.2	K-12 Scale-up	Not Achieved
	Goal 11	I-3.1	Innovative Learning Systems	Not Achieved
Perform as a Model Organization	Goal 12	M-1.1	Model EEO Agency	Achieved
	Goal 13	M-1.2	IPA Performance Plans	Not Achieved
	Goal 14	M-1.3	Performance Management System	Not Achieved
	Goal 15	M-2.1	Assess Developmental Needs	Not Achieved
	Goal 16	M-3.1	Financial System Modernization	Achieved
	Goal 17	M-3.2	Time To Decision	Achieved
	Goal 18	M-3.3	Virtual Panels	Achieved

INSPIRE: Integrated NSF Support Promoting Interdisciplinary Research and Education
EEO: Equal Employment Opportunity
IPA: Intergovernmental Personnel Act

This section presents the results for each performance goal in its strategic context, with reference to strategic goals, objectives, and targets from NSF's FY 2011-FY 2016 Strategic Plan (see below). Multiple years of trend data are available for NSF's longest-standing quantitative performance measures, "time to decision" (Goal 17) and "construction project monitoring" (Goal 5). Other performance goals do not have significant historical data associated with them, with the exception of a few goals with activities that were being monitored before they were identified as performance goals.

A statement by the NSF Director verifying the reliability and completeness of the performance data in this report can be found in the FY 2013 Performance and Financial Highlights report at www.nsf.gov/about/history/annual-reports.jsp.

Strategic Framework of NSF FY 2011-FY 2016 Strategic Plan

Strategic Goal	Strategic Objectives	Performance Goals
Transform the Frontiers (T) emphasizes the seamless integration of research and education as well as the close coupling of research infrastructure and discovery.	T-1: Make investments that lead to emerging new fields of science and engineering and shifts in existing fields.	T-1.1 INSPIRE
	T-2: Prepare and engage a diverse science, technology, engineering, and mathematics (STEM) workforce motivated to participate at the frontiers.	T-2.1 Undergraduate Programs T-2.2 Career-Life Balance
	T-3: Keep the United States globally competitive at the frontiers of knowledge by increasing international partnerships and collaborations.	T-3.1 International Implications
	T-4: Enhance research infrastructure and promote data access to support researchers' and educators' capabilities and to enable transformation at the frontiers.	T-4.1 Construction Project Monitoring T-4.2 Access to Digital Products
Innovate for Society (I) points to the tight linkage between NSF programs and societal needs, and it highlights the role that new knowledge and creativity play in economic prosperity and society's general welfare.	I-1: Make investments that lead to results and resources that are useful to society.	I-1.1 Innovation Corps I-1.2 Industrial and Innovation Partnerships
	I-2: Build the capacity of the nation's citizenry for addressing societal challenges through science and engineering.	I-2.1 Public Understanding and Communication I-2.2 K-12 Scale-up
	I-3: Support the development of innovative learning systems.	I-3.1 Innovative Learning Systems
Perform as a Model Organization (M) emphasizes the importance to NSF of attaining excellence and inclusion in all operational aspects.	M-1: Achieve management excellence through leadership, accountability, and personal responsibility.	M-1.1 Model EEO Agency M-1.2 IPA Performance Plans M-1.3 Performance Management System
	M-2: Infuse learning as an essential element of the NSF culture with emphasis on professional development and personal growth.	M-2.1 Assess Developmental Needs
	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.	M-3.1 Financial System Modernization M-3.2 Time To Decision M-3.3 Virtual Panels

Strategic Goal 1: Transform the Frontiers

Strategic Objective T-1: Make investments that lead to emerging new fields of science and engineering and shifts in existing fields.

Goal T-1.1 INSPIRE (Integrated NSF Support Promoting Interdisciplinary Research and Education) (New in FY 2012)
Lead Organization: Office of the Director.

Fiscal Year	Goal Statement and Target	Target Measure, Milestone, or Deliverable	Result
2013	Strengthen support of unusually novel, potentially transformative, interdisciplinary research (IDR), through new funding mechanisms, systems, and incentives that facilitate and encourage IDR.	By September 30, 2013, 1. Track 1: Modify NSF's eBusiness systems to facilitate co-review and management of proposals by multiple divisions, and to ease tracking of co-funded IDR. 2. Track 2a: Award up to one-third of FY 2013 INSPIRE funds via the CREATIV mechanism. 3. Track 2b: Establish a second pilot award mechanism for funding mid-scale IDR (up to $3.0 million), and make first round of awards.	One of three targets met. 1. Not Achieved. 2. Achieved. 100 percent of funds awarded. 3. Partially achieved. Proposals received but awards not made in FY 2013.
Actual Results for Preceding Fiscal Years			
2012	Strengthen support of unusually novel, potentially transformative, interdisciplinary research (IDR), through new funding mechanisms, systems, and incentives that facilitate and encourage IDR.	By September 30, 2012, 1. Track 1: Gather baseline data on NSF-supported IDR. 2. Track 2: Make 25 awards via the pilot CREATIV (Creative REsearch Awards for Transformative Interdisciplinary Ventures) mechanism.	One of two targets met. 1. Not Achieved. 2. Achieved. 40 awards made totaling $29.10 million in FY 2012 funds.
2011	Produce an analysis of NSF's FY 2010 investments in activities undertaken to foster potentially transformative research.	Deliverable: One analysis.	Achieved. Report delivered in fourth quarter.

Discussion

INSPIRE addresses some of the most complicated and pressing scientific problems that lie at the intersections of traditional disciplines. INSPIRE is designed to strengthen NSF's support of interdisciplinary, potentially transformative research (PTR) by complementing existing efforts with a suite of new, highly innovative Foundation-wide activities and funding opportunities. For more information about INSPIRE's background, goals, design, and investment and evaluation framework, refer to the Selected Crosscuts section of the NSF-Wide Investments chapter.

Information on Unmet Targets

Track 1 Targets: NSF continues to work towards the Track 1 targets identified for FY 2012 and FY 2013. For the FY 2012 target to gather baseline data on NSF-funded IDR, a statement of work for an external evaluation was under development, but was delayed by changes in personnel. Progress continued in FY 2012 and FY 2013 on text-driven classification of INSPIRE submissions, which facilitates identification of interdisciplinary connections. Based on lessons learned, the first two years of INSPIRE have involved different review processes (and hence different NSF systems). Pending assessment of lessons learned from variations in program implementation, recommendations for changes in eBusiness systems, as anticipated by the FY 2013 target, are premature.

In FY 2014, NSF plans to continue efforts related to text-driven classifications and to implement an assessment framework, including completion of a statement of work for a formative evaluation of the INSPIRE initiative to test whether the established process is conducive to achieving program and portfolio-level goals. The evaluation will encompass (a) a short-term portfolio analysis of the proposals received and the awards made to determine NSF's success in selecting awards that can be characterized by INSPIRE Multi-year goal 2, and (b) an analysis of the different steps of the review and award process and their implementation. NSF is particularly interested in how mechanisms such as INSPIRE can be successful in developing new partnerships that could generate new knowledge and concepts that advance science and engineering.

Track 2 Targets: FY 2013 post-proposal-submission budget reductions (approximately 43 percent reduced from the FY 2013 Request of $63.0 million) prevented NSF from meeting all Track 2 performance goals. By the end of FY 2013, 53 awards totaling $35.60 million were made using FY 2013 funds (the mechanism formerly called CREATIV, renamed "INSPIRE Track 1"). FY 2014 funds will be used to support three additional deferred proposals. The second award mechanism ("INSPIRE Track 2" for $1-3 million awards) was established in FY 2013 under solicitation NSF 13-518, leading to FY 2013 submissions of 18 proposals requesting a total of ~$51.0 million. Due to the budget reduction no second mechanism awards were made in FY 2013. "INSPIRE Track 2" awards will be made in FY 2014, but fewer will be supported than originally planned.

Strategic Goal 1: Transform the Frontiers

Strategic Objective T-2: Prepare and engage a diverse science, technology, engineering, and mathematics (STEM) workforce motivated to participate at the frontiers.

Goal T-2.1 STEM Priority Goal: Undergraduate Programs
Lead Organization: Directorate for Education and Human Resources.

Fiscal Year	Goal Statement and Target	Target Measure, Milestone, or Deliverable	Result
2012-2013	Develop a diverse and highly qualified science and technology workforce.	By September 30, 2013, 80 percent of institutions funded through NSF undergraduate programs document the extent of use of proven instructional practices.	Achieved. 86.6 percent.
Actual Results for Preceding Fiscal Years			
2011	NSF science, technology, engineering, and mathematics (STEM) workforce development programs at the graduate, professional, or early career level participate in evaluation and assessment systems. (Priority Goal)	Six programs.	Achieved. 12 programs.[1]
2010	Develop goals and metrics for NSF's programmatic investments in its FY 2010 Learning portfolio.	100 percent of programs (baseline: 80 percent).	Achieved. 100 percent of programs that received funding in FY 2010.[2]

Discussion (from performance.gov)
This priority goal addressed NSF's long-term core commitment to the importance of undergraduate education in engaging and preparing a diverse and highly qualified science and engineering (S&E) workforce. Recent literature indicates that the number of jobs in science, technology, engineering, and mathematics (STEM) fields is growing at a rate faster than the number of STEM professionals graduating from institutions in the United States, and that measures should be taken to increase the number of qualified STEM graduates. In the 2012 report, *Engage to Excel: Producing One Million Additional College Graduates with Degrees in Science, Technology, Engineering, and Mathematics*,[3] the President's Council of Advisors on Science and Technology (PCAST) argued that "retaining more students in STEM majors is the lowest-cost, fastest policy option to providing the STEM professionals that the nation needs for economic and societal well-being." While many factors influence the persistence rate of students in STEM majors, one reason students have provided is the lackluster introductory courses that do not offer them the support they need to succeed in those classes. Furthermore, research shows that evidence-based instructional practices lead to improved student learning and thus are a useful metric for assessing impact on a well-prepared workforce.

[1] www.nsf.gov/about/budget/fy2013/FY2010-FY2011PriorityGoalReport.pdf
[2] www.nsf.gov/about/budget/fy2012/pdf/add_perf_info_fy2012_request.pdf
[3] www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-engage-to-excel-final_feb.pdf

PCAST is not the only group concerned with this issue. In October 2011, the Association of American Universities (AAU) committed to a five-year initiative for improving undergraduate STEM education through the development of a framework for assessing and improving the quality of STEM teaching and learning. In recognition of the importance of this topic, in September 2009, NSF funded the National Research Council to undertake a synthesis study regarding the status, contributions, and future directions of discipline-based education research (DBER) in physics, biological sciences, geosciences, and chemistry. DBER combines knowledge of teaching and learning with deep knowledge of discipline-specific science content. The study addresses questions that are essential to advancing DBER and broadening its impact on undergraduate science teaching and learning. It was released in May 2012.

Another way that NSF can advance its efforts to invest in the preparation of a strong S&E workforce is by encouraging and facilitating the use of empirically-based instructional practices in undergraduate STEM education. To do this first means establishing a baseline about the use of such practices, which was the aim of this Priority Goal. There were 933 institutions funded through NSF undergraduate programs with active awards as of October 1, 2012. Of these, 808 (86.6 percent) documented the use of proven instructional practices, defined as "Methods of teaching and instruction, primarily for STEM disciplines, that have been researched and tested, and have resulted in successful learning outcomes, on a repeated basis, by subject matter experts and authoritative sources."

For more information about this goal, please refer to its page on performance.gov: http://my-goals.performance.gov/goal_detail/NSF/388.

Strategic Goal 1: Transform the Frontiers

Strategic Objective T-2: Prepare and engage a diverse science, technology, engineering, and mathematics (STEM) workforce motivated to participate at the frontiers.

Goal T-2.2 Career-Life Balance (New in FY 2012)
Lead Organization: Office of the Director.

Fiscal Year	Goal Statement and Target	Target Measure, Milestone, or Deliverable	Result
2013	Promote Career-Life Balance policies and practices that support more fully utilizing the talents of individuals in all sectors of the American population – principally women, underrepresented minorities and persons with disabilities.	By September 30, 2013, 1. Establish the FY 2013 baseline for number and value of awards provided to ADVANCE institutions intended to fund dual career supports. 2. Increase the number and value of research technician award support provided to CAREER awardees and postdoctoral fellows by 10 percent over FY 2012.	One of two targets achieved. 1. Achieved. Baseline established: 18 ADVANCE supplements awarded for a total of $3.25 million. 2. Not achieved. Number increased less than 10 percent (25 supplements), and value of awards decreased ($498,442).
Actual Results for Preceding Fiscal Years			
2012	Promote Career-Life Balance policies and practices that support more fully utilizing the talents of individuals in all sectors of the American population – principally women, underrepresented minorities and persons with disabilities.	By September 30, 2012, establish the FY 2012 baseline for number and value of award support provided to CAREER awardees and postdoctoral fellows intended to fund research technicians.	Achieved. Baseline established.[4] 23 supplements were awarded to CAREER awardees, totaling $537,501 for FY 2012.

Discussion
Although women comprise a significant and growing fraction of the U.S. STEM talent pool, recent studies demonstrate the challenges that they face when attempting to balance the often extreme demands of career and life without adequate institutional support. Utilizing the talent and potential of women in STEM fields is critical to the Nation's future success in science and technology and to economic prosperity.

To address this challenge, NSF's Career-Life Balance (CLB) Initiative, a set of forward-looking policies and practices, will help to increase the placement, advancement, and retention of women in STEM disciplines, particularly women who are seeking tenure in academe. NSF aims to enhance existing – and implement new – gender-neutral, family-friendly policies, as it is important that our Nation's colleges and universities accommodate the needs of this segment of our science and engineering workforce. The Foundation is pursuing an agency-level pathway approach across higher education and career levels (i.e.,

[4] In FY 2012 NSF reported "20 supplements were awarded to CAREER awardees, totaling $420,355 for FY 2012." In FY 2013, this baseline was adjusted upward when additional awards were found to fit CLB criteria.

graduate students, postdoctoral students, and early-career scientists, and engineers). CLB seeks new and innovative ways in which NSF can partner with U.S. universities, colleges, and research institutions to help attract, nurture, and retain a much greater fraction of women engineers and scientists in the Nation's STEM workforce.

In FY 2013, NSF's CLB program awarded 18 ADVANCE-IT supplements, 24 CAREER Principal Investigators (PI) supplements, two non-CAREER PI supplements, and one GRF supplement for a total of 45 awards totaling $3,784,165. NSF increased the number of supplements made to CAREER awardees, but did not exceed the target, and established a baseline for awards made under the ADVANCE program. Progress was also made in extending CLB-related programs to all postdocs funded by NSF research and to GRF fellows.

Information on Unmet Target

The target to increase the number and value of research technician award support provided to CAREER awardees and postdoctoral fellows by 10 percent over FY 2012 was not achieved in either aspect. The number of awards increased by 8 percent (from 23 to 25), and the value of awards decreased by 7 percent (from $537,501 to $498,442). Award value declined because the dollar amount of funding that was requested by institutions was less in FY 2013 than in FY 2012. CAREER PIs were invited to submit supplemental funding requests to support additional personnel (e.g., research technicians or equivalent) to sustain research when the PI is on family leave. These requests may include funding for up to three months of salary support and may include fringe benefits and associated indirect costs. While there were more CLB awards in FY 2013, the total value of these supplements declined due to institutional differences in requests for salary payments, fringe benefits, and associated indirect costs.

Strategic Goal 1: Transform the Frontiers

Strategic Objective T-3: Keep the United States globally competitive at the frontiers of knowledge by increasing international partnerships and collaborations.

Goal T-3.1 International Implications
Lead Organization in FY 2012: Office of International Science and Engineering.

Fiscal Year	Goal Statement and Target	Target Measure, Milestone, or Deliverable	Result
2013	Increase proportion of new NSF solicitations, announcements, and Dear Colleague Letters that have international implications.	Increase proportion of new NSF solicitations, announcements, and Dear Colleague Letters that have international implications by 10 percent over FY 2012.	Achieved. The proportion of proposal calls with international implications increased from 17 percent to 45 percent.
Actual Results for Preceding Fiscal Years			
2012	Increase proportion of new NSF solicitations, announcements, and Dear Colleague Letters that have international implications.	Increase proportion of new NSF solicitations, announcements, and Dear Colleague Letters that have international implications by 10 percent over FY 2011.	Not Achieved. The proportion of proposal calls with international implications decreased from 20 percent to 17 percent.
2011	Identify number of new NSF program solicitations, announcements, and Dear Colleague Letters with international implications.	Establish baseline.	Achieved. Baseline: 20 percent of proposal calls had international implications.

Discussion
The T-3 performance goal recognizes that international engagement between U.S. and foreign investigators is essential to keep the U.S. globally competitive at the frontiers of knowledge. NSF promotes and funds cooperation between U.S. investigators and like-minded colleagues from other countries. The T-3 goal supports this broad strategic objective by issuing announcements, solicitations, and Dear Colleague Letters encouraging U.S. investigators to include an international element in their research or education proposal.

In FY 2011, the Office of International Science and Engineering (now a part of the Office of International and Integrative Activities) conducted a baseline analysis of the T-3 goal and found that NSF issued 116 proposal calls in FY 2011, of which 23 (20 percent) had international implications. In FY 2012, NSF issued 158 proposal calls, of which 27 (17 percent) had international implications. In FY 2013, NSF issued 159 proposal calls, of which 71 (45 percent) encouraged principal investigators to engage with foreign partners on mutually beneficial research and education projects. This achievement far exceeded NSF's goal and indicates that NSF programs are embracing international opportunities for their communities.

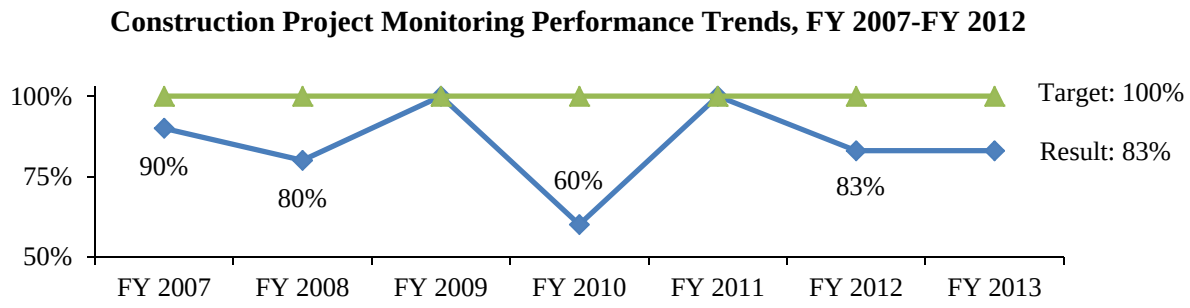
Fiscal Year	Annual Target	Proposal calls	Calls with international implications	Result
2011	(Baseline year)	116	23	20%
2012	22%	158	27	17%
2013	24%	159	71	45%

Strategic Goal 1: Transform the Frontiers

Strategic Objective T-4: Enhance research infrastructure and promote data access to support researchers' and educators' capabilities and to enable transformation at the frontiers.

Goal T-4.1 Construction Project Monitoring
Lead Organization: Large Facilities Office, Office of Budget, Finance, and Award Management.

Fiscal Year	Goal Statement and Target	Target Measure, Milestone, or Deliverable	Result
2013	For all MREFC facilities under construction, keep negative cost and schedule variance at or below 10 percent.	100 percent of construction projects that are over 10 percent complete	Not Achieved. 83 percent.
Actual Results for Preceding Fiscal Years			



Discussion
The Major Research Equipment and Facilities Construction (MREFC) account supports the acquisition, construction, and commissioning of major research facilities and equipment that provide unique capabilities at the frontiers of science and engineering. Performance of construction projects funded by the MREFC account is monitored using the Earned Value Management (EVM) system. EVM is an integrated management control system for assessing, understanding, and quantifying what a contractor or field activity is achieving with program dollars. Monitoring cost and schedule is a standard measure of performance for construction projects. Projects that are under 10 percent complete are not considered eligible for this goal because EVM data is less meaningful statistically in the very early stages of a project.

Information on Unmet Goal
Six facilities under construction were over 10 percent complete at the end of FY 2013. Of those six, five had cost and schedule variances under 10 percent. One facility, the Ocean Observatories Initiative (OOI), was behind schedule. For more information, see the OOI section of the Major Research Equipment and Facilities Construction chapter.

Strategic Goal 1: Transform the Frontiers

Strategic Objective T-4: Enhance research infrastructure and promote data access to support researchers' and educators' capabilities and to enable transformation at the frontiers.

Goal T-4.2 Priority Goal: Access to Digital Products of NSF-Funded Research
Lead Organization in FY 2012: Directorate for Mathematics and Physical Sciences.

Fiscal Year	Goal Statement and Target	Target Measure, Milestone, or Deliverable	Result
2012-2013	Increase opportunities for research and education through public access to high-value digital products of NSF-funded research.	By September 30, 2013, NSF will have established policies for public access to high-value data and software in at least two data-intensive scientific domains.	Achieved. Two testbeds identified.
Actual Results for Preceding Fiscal Years			
2011	Determine current data management practices at NSF-funded facilities.	Current data management practices documented for 100 percent of NSF-funded facilities.	Achieved. 17 of 17 facilities.

Discussion (from performance.gov)
Digital data are increasingly becoming one of the primary products of scientific research. As advanced by the National Science Board, open data sharing is closely linked with public access to scholarly publications resulting from federally funded unclassified research, and should be considered in concert. The digital data underlying the figures and key findings in this literature should be accessible and linked to one another so that scientists can verify and reproduce major findings from within this material, as well as repurpose data to enable new discoveries. Simultaneously, access to research data enhances openness and transparency in the scientific enterprise and enables new types of multidisciplinary research and education.

Over the long term, NSF's goal is to make results of NSF-funded research data broadly available and accessible with minimal barriers. Availability of NSF research data and a fully-fledged NSF public access policy will have the effect of accelerating progress in scientific research and encouraging citizens to become more scientifically literate. The aim of this goal was that by the end of 2013, NSF's portfolio will include and promote an emphasis and focus on testbeds and pilots that address research data issues. The expectation is that these testbeds and pilots will, in turn, also lead to near-term contributions to community capabilities and real-world outcomes.

In FY 2012, NSF convened a working group of program officers from various directorates and offices. Based on its review of written policies from cooperative agreements, program plans, and major facility web sites, the group determined that many NSF-funded large facilities, which represent their scientific domains, already had in place policies for public access to high-value data and software, consistent with the intent of the Priority Goal. In FY 2013, NSF broadened focus from large facilities to include other types of awards, and identified two testbeds that increase opportunities for research and education through data sharing and public access to data, and that fulfill the priority goal by increasing opportunities for access to high-value digital products of NSF-funded research. For more information about the testbeds identified and this goal in general, please refer to its page on performance.gov: http://goals.performance.gov/goal_detail/NSF/387.

Strategic Goal 2: Innovate for Society

Strategic Objective I-1: Make investments that lead to results and resources that are useful to society.

Goal I-1.1 Priority Goal: Innovation Corps
Lead Organization: Directorate for Engineering.

Fiscal Year	Goal Statement and Target	Target Measure, Milestone, or Deliverable	Result
2012-2013	Increase the number of entrepreneurs emerging from university laboratories.	By September 30, 2013, 80 percent of teams participating in the Innovation Corps program will have tested the commercial viability of their product or service.	Achieved. Cumulative rate: 98.7 percent (233 of 236).

Discussion (from performance.gov)
The NSF Innovation Corps (I-Corps) is a set of activities and programs that prepare 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 NSF-supported basic research frequently advances a particular field of science or engineering, some results also show immediate potential for broader applicability and impact in the commercial world. Such results may be translated through I-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 can emerge from academic research, and offers entrepreneurship training for student participants. The six-month program enrolled its first cohort in October 2011.

I-Corps Teams—composed of academic researchers, student entrepreneurs, and business mentors—have participated in the I-Corps curriculum administered via on-site activities through one of several I-Corps Nodes and online instruction. In addition, in January 2013, the suite of innovation programs was expanded to include I-Corps Sites that are funded to provide resources to local teams at academic institutions to enable those teams to explore transition of projects into the marketplace.

I-Corps was launched in 2011 with the first cohort of Teams immersed in the rigorous Entrepreneurial Immersion curriculum in October 2011. In fiscal year 2012, a total of 100 teams were accepted to the program. By the end of FY 2013, 233 teams—699 individuals—had received training in entrepreneurship by completing the Lean Launch Pad curriculum, including four teams identified through partnership with the Department of Energy's Advanced Research Projects Agency - Energy (ARPA-E). The goal was for 80 percent of teams to complete the program by reaching a decision about whether to proceed with commercialization of their product (a "go/no-go decision"). This goal was met for each cohort that went through the program, for an overall completion rate of 98.7 percent.

For more information about the results and this goal in general, please refer to its page on performance.gov: http://goals.performance.gov/goal_detail/NSF/389.

Quarterly results for Priority Goal

Cohort began in...	Teams in cohort	Teams completing course	Teams reaching a decision about commercialization	Completion rate	Quarter in which decision was reached
FY 2012 Q1	21	21	21	100%	FY 2012 Q2
FY 2012 Q2	0	0	0	n/a	FY 2012 Q3
FY 2012 Q3	25	24	24	96%	FY 2012 Q4
FY 2012 Q4	54	53	53	98%	FY 2013 Q1
FY 2013 Q1	47	47	47	100%	FY 2013 Q2
FY 2013 Q2	24	23	23	96%	FY 2013 Q3
FY 2013 Q3	42	42	42	100%	FY 2013 Q4
FY 2013 Q4	23	23	23	100%	FY 2014 Q1
Total	**236**	**233**	**233**	**99%**	

Strategic Goal 2: Innovate for Society

Strategic Objective I-1: Make investments that lead to results and resources that are useful to society.

Goal I-1.2 Industrial and Innovation Partnerships
Lead Organization: Directorate for Engineering.

Fiscal Year	Goal Statement and Target	Target Measure, Milestone, or Deliverable	Result
2013	Identify the number and types of partnerships entered into by Industrial & Innovation Partnerships (IIP) Division grantees.	Count number of financial partnerships in FY 2012 made by IIP program grantees.	Achieved. See table for results.
Actual Results for Preceding Fiscal Years			
2012	Identify the number and types of partnerships entered into by Industrial & Innovation Partnerships (IIP) Division grantees.	1. Count number of financial partnerships in FY 2010 and FY 2011 made by IIP program grantees. 2. Evaluate the potential to collect other types of partnership data in the future.	Achieved. 1. See table for results. 2. Internal report delivered.
2011	Industrial and Innovation Partnerships (IIP): Identify the number and types of grantee's partnerships.	Establish baseline for 2010.	Achieved. Baseline: 911 partnerships.

Discussion
In general, NSF is interested in identifying how the links between science, industry, and innovation transfer the long term impacts of NSF investments. The Directorate for Engineering's IIP division acts as the model to start the process of collecting data on the diverse types of partnerships grantees can establish with others. The IIP programs are:

- Small Business Innovation Research (SBIR)
- Small Business Technology Transfer (STTR)
- Industry/University Cooperative Research Centers (I/UCRC)
- Partnerships for Innovation (PFI)
- Grant Opportunities for Academic Liaison with Industry (GOALI)

"Partnership" here includes only "financial investments" for the purpose of baselining all IIP programs. Examples of a financial investment would include:

- Subcontractor in SBIR Award
- Executed third party investment package in SBIR supplement (required for award)
- Partnership condition in award (e.g. GOALI, PFI, STTR, SBIR: Phase IICC, Phase IIA, TECP)
- I/UCRC Industrial Advisory Board Member
- I/UCRC Interagency Agreement and Military Interdepartmental Purchase Requests (MIPRs)

Type of partnership	FY 2010[5]	FY 2011	FY 2012
Sub-award partnerships	251	173	207
Consulting partnerships	178	162	158
Award partnerships	130	185	166
Supplement partnerships	179	192	186
I/UCRC partnerships	173	355	122
Total	**911**	**1,067**	**839**

Table key:

Sub-award and consulting partnerships: Each budget form has line items for sub-award and consulting funds. Each sub-award and consulting budget request represents at least one partnership. Thus, these items will have a value of one partnership.

Awards that imply the formation of a partnership: Certain awards imply the formation of a partnership. These are the GOALI, PFI, PFI:AIR, and STTR awards. The PFI and PFI:AIR awards imply the formation of two partnerships and were counted as such.

Supplements that imply the formation of a partnership: The following supplements can be used as indicators of one partnership (at least): SBIR/STTR Phase IB, Phase II (TECP), Phase IIA, Phase IIB, Phase IICC, STTR Phase II (SECO), and SBIR/STTR I/UCRC.

I/UCRC reports: The membership reports of the I/UCRC provide useful information, such as the number of licensing agreements and in-kind support, and the number of new industry members per center per year.

[5]In FY 2012, the data collection system was redesigned and new data tools were available. The method used in 2011 was updated and the FY 2010 results re-baselined. The results reported for all fiscal years were obtained using the new method. The FY 2011 Annual Performance Report originally reported 1,567 partnerships.

Strategic Goal 2: Innovate for Society

Strategic Objective I-2: Build the capacity of the Nation's citizenry for addressing societal challenges through science and engineering.

Goal I-2.1 Public Understanding and Communication
Lead Organization: Division of Research on Learning in Formal and Informal Settings, Directorate for Education and Human Resources.

Fiscal Year	Goal Statement and Target	Target Measure, Milestone, or Deliverable	Result
2013	Establish a common set of evidentiary standards for programs and activities across the agency that fund public understanding and communication of science and engineering activities.	By September 30, 2013, utilize FY 2012 report to inform the revision of solicitation language in one-half of programs identified in FY 2012 to reflect evidence standards.	Not Achieved. Four programs adopted evidentiary standards.
Actual Results for Preceding Fiscal Years			
2012	Establish a common set of evidentiary standards for programs and activities across the agency that fund public understanding and communication of science and engineering activities.	By September 30, 2012, deliver an internal report defining standards of evidence for the models used by the 16 programs identified in FY 2011 that fund public understanding and communication of science and engineering. Identify all programs across the agency that employ the models and strategies.	Achieved. Internal report of evidence standards and inventory produced. Nineteen programs identified.
2011	Identify number of programs that fund activities that address public understanding and communication of science and engineering.	Establish baseline.	Achieved. Baseline: 16 programs.

Discussion
Certain programs in EHR's Division of Research on Learning in Formal and Informal Settings (DRL) aim to address public understanding and communication of science and engineering, but other NSF activities also work towards this aim. In FY 2011, under its new Strategic Plan, NSF aimed to identify all such activities across the Foundation and provide them with evidence-based criteria for evaluation of such projects. A three-year trajectory was established and tracked by a series of performance goals, with the ultimate goal of establishing more consistent expectations across NSF for projects involving public understanding and communication of science and engineering activities.

Targets for FY 2011 and FY 2012 were met. NSF has not achieved the FY 2013 target that 50 percent of identified programs include evidentiary standards for public understanding and communication of science and engineering in their solicitations (see next section for explanation). At the time of publication, eight solicitations are still active and relevant and four of those have included evidentiary standards. If the

achievement of the target were based on the proportion of active and relevant programs that have adopted the evidentiary standards, then this target would be considered achieved. In addition, as relevant new solicitations move forward, evidentiary standards are being included in them.

Information on Unmet Goal

A number of factors have impacted NSF's ability to meet the FY 2013 target of revising the solicitation language in one half of the relevant programs at NSF. The baseline identified for this target was established using the FY 2012 goal results. However, the number of active programs has decreased substantially, for several reasons: some programs sunsetted or were discontinued; several program solicitations came out before the *Common Guidelines for Education Research and Development* [6] were released*;* and some of the programs no longer use public understanding and communication language, or the equivalent, in their solicitations.

[6] www.nsf.gov/pubs/2013/nsf13126/nsf13126.pdf

Strategic Goal 2: Innovate for Society

Strategic Objective I-2: Build the capacity of the Nation's citizenry for addressing societal challenges through science and engineering.

Goal I-2.2 K-12 Components
Lead Organization: Directorate for Education and Human Resources.

Fiscal Year	Goal Statement and Target	Target Measure, Milestone, or Deliverable	Result
2013	Establish a common set of evidentiary standards for programs across the agency that fund activities with K-12 components.	By September 30, 2013, 1. 100 percent of programs identified in FY 2012 ("the portfolio") will include the common standards in their solicitations. 2. A baseline count will be taken of the projects in the portfolio that already meet these standards.	One of two targets achieved. 1. Not Achieved. Three of 14 programs in FY 2012 portfolio (21 percent) included common standards in solicitations. 2. Achieved. 284 of 837 projects met standards (34 percent).
Actual Results for Preceding Fiscal Years			
2012	Establish a common set of evidentiary standards for programs across the agency that fund activities with K-12 components.	By September 30, 2012, 1. Identify the number of programs that fund activities with K-12 components. 2. Develop common standards of evidence for inclusion in future solicitations of the identified programs.	Achieved. 1. Fourteen programs were identified (three deleted from the initial list and one added to the list). 2. Evidence standards and inventory have been documented.
2011	Identify number of programs that fund activities with K-12 components.	Establish baseline.	Achieved. Baseline: 16 programs.

Discussion
There is increasing interest across the federal government not just to count the number of programs addressing K-12 education, but to examine the potential of projects for "going to scale": moving beyond the initial project site to be adapted and implemented successfully under more representative conditions and with appropriate population groups. There are multiple sets of standards for identifying a project's readiness for scale-up. A three-year trajectory was established in FY 2011 and tracked by a series of performance goals to establish a set of standards in common across NSF to articulate a pathway toward readiness to scale up.

Targets for FY 2011 and FY 2012 were met. In FY 2013, a baseline count of the projects in the portfolio that meet evidentiary standards was taken, achieving the second target. The first target was not reached (see next section): three program solicitations were revised to include the *Common Guidelines* in FY 2013.

Information on Unmet Target

The first target, that 100 percent of the 14 programs identified in FY 2012 as explicitly including K-12 components in their solicitations include reference to the *Common Guidelines*, could not be reached. One major reason was that the *Common Guidelines* as a cross-agency document was posted to the NSF web site later than expected. In addition, some programs were archived and no longer have competitions, some have not yet revised their program solicitations, and still other programs are slated to be eliminated or merged.

Because of the solicitation cycle, updates to include the *Common Guidelines* in three additional program solicitations identified in FY 2012 as including K-12 activities were published after September 30, 2013. Reference to the *Common Guidelines* has been included in the Innovative Technology Experiences for Students and Teachers (ITEST) solicitation, posted November 14, 2013; and the two transition solicitations, STEM-C Partnerships: MSP and STEM-C Partnerships: CE-21 (a fusion of Computing Education for the 21st Century with Math and Science Partnerships, both programs on the FY 2012 list), which were posted December 20, 2013.

Strategic Goal 2: Innovate for Society

Strategic Objective I-3: Support the development of innovative learning systems.

Goal I-3.1 Innovative Learning Systems
Lead Organization: Directorate for Education and Human Resources.

Fiscal Year	Goal Statement and Target	Target Measure, Milestone, or Deliverable	Result
2013	Integrate common language about, or goals for, innovative learning research into the Cyberlearning, Data and Observation for STEM Education focus area of the Expeditions in Education (E2) investment, and into other programs across the agency that fund innovative learning tools, structures, and systems.	By September 30, 2013, 1. Programs with significant innovative learning system research will update their solicitations with the language developed in FY 2012 to include common language or goals about innovative learning systems. 2. At least 50 percent of new projects funded in the innovative learning systems portfolio have in place research and evaluation mechanisms that will provide high quality evidence about the nature of student learning.	One of two targets achieved. 1. Not Achieved. Five of six programs incorporated language. 2. Achieved. 76 percent (103 of 136) of funded projects had mechanisms in place.
Actual Results for Preceding Fiscal Years			
2012	Integrate common language about, or goals for, innovative learning research into the Cyberlearning, Data and Observation for STEM Education focus area of the Expeditions in Education (E2) investment, and into other programs across the agency that fund innovative learning tools, structures, and systems.	By September 30, 2012, write a synthesis report on NSF support of Innovative Learning Systems supporting common language for solicitations.	Achieved. Report written. See summary in FY 2012 APR.
2011	Identify number of programs that fund the development of research-based innovative learning systems.	Establish baseline.	Achieved. Baseline: 150 awards across 28 distinct programs.

Discussion

Networked computing and communications technologies that support learning, teaching, and education are already opening up access for all learners, in all age groups, in all settings. Innovative learning systems can bring authentic scientific data immediately to learners, which enable learners to experience science through modeling, simulation, sensor networks, digital telescopes, and remote instruments. This goal intent was to identify activities across the Foundation that contribute to development of innovative learning systems, which are not funded by any one program.

Targets for FY 2011 and FY 2012 were met. In FY 2013, the Goal had two targets. The second target was achieved; that is, at least 50 percent of new projects funded in this portfolio (103 of 136 or 76 percent) had research and evaluations in place. The first target was that programs with significant innovative learning system research would update their solicitations to include common language or goals about innovative learning systems. Five of the six solicitations identified incorporated this language in their solicitations.

Information on Unmet Target

The target was not achieved because the Transforming Undergraduate Education in STEM program, one of the six programs identified in FY 2012 as having significant innovative learning system research, did not update its solicitation in FY 2013.

Strategic Goal 3: Perform as a Model Organization

Strategic Objective M-1: Achieve management excellence through leadership, accountability, and personal responsibility.

Goal M-1.1 Model EEO Agency
Lead Organization: Office of Diversity and Inclusion.

Fiscal Year	Goal Statement and Target	Target Measure, Milestone, or Deliverable	Result
2013	Perform activities necessary to attain essential elements of a model EEO agency, as defined by the Equal Employment Opportunity Commission (EEOC).	Attain five of six essential elements.	Achieved. Five elements attained.
Actual Results for Preceding Fiscal Years			
2012	Perform activities necessary to attain essential elements of a model EEO agency, as defined by the Equal Employment Opportunity Commission (EEOC).	Attain four of six essential elements. Submit Diversity and Inclusion Strategic Plan to OPM by March 30, 2012.	Achieved. Four elements attained. Plan submitted by deadline.
2011	Attain essential elements of a model Equal Employment Opportunity (EEO) program, as defined in Equal Employment Opportunity Commission (EEOC) requirements.	Three elements.	Achieved. Three elements obtained.

Discussion
For NSF to achieve model EEO agency status, it must meet and maintain each of the six criteria established by the Equal Employment Opportunity Commission (EEOC). The EEOC refers to these criteria as the "Essential Elements" of a Model Agency (see table below). In FY 2013, NSF fully achieved and complied with five of the six essential elements towards attaining a model EEO Agency Program: elements A, B, D, E, and F.

EEOC Essential Element Definitions and NSF Activities

Essential Element	NSF Activities
A: Demonstrated commitment from agency leadership requires the agency head to issue a written policy statement ensuring a workplace free of discriminatory harassment and a commitment to equal employment opportunity.	NSF continued to fully achieve and comply with all of essential element A when it ensured EEO policy statements were current, communicated to all employees, and vigorously enforced by agency management.
B: Integration of EEO into the agency's strategic mission requires that the agency's EEO programs be organized and structured to maintain a workplace that is free from discrimination in any of the agency's	NSF has continued to fully achieve and comply with all of essential element B when it ensured the reporting structure for the EEO program provides the principal EEO official with appropriate authority and resources to effectively carry out a successful EEO program; the EEO Office has a regular and effective means of informing the agency head and senior

policies, procedures, or practices and supports the agency's strategic mission.	management officials of the status of EEO programs; the EEO Office is involved in, and is consulted on, management/personnel action; and agency has committed sufficient human resources and budget allocations to its EEO programs to ensure successful operation.
C: Management and program accountability requires the Agency Head to hold all managers, supervisors, and EEO Officials responsible for the effective implementation of the agency's EEO Program and Plan.	NSF has made progress toward the achievement and compliance with essential element C. NSF has continued to fully achieve and comply with the EEO program officials advising and providing appropriate assistance to managers/supervisors about the status of EEO programs within each manager's or supervisor's area of responsibility. NSF is in progress toward the achievement of the measure of whether the Human Resources Director and the EEO Director meet regularly to assess whether personnel programs, policies, and procedures are in conformity with instructions contained in EEOC management directives regarding time-tables and schedules for Merit Promotion Program Policy, Employee Recognition Awards Program, and Employee Development/Training Programs. NSF is also beginning dialogue about when findings of discrimination are made, the agency explores whether or not disciplinary actions should be taken.
D: Proactive prevention requires that the Agency Head makes early efforts to prevent discriminatory actions and eliminate barriers to equal employment opportunity in the workplace.	NSF has continued to fully achieve and comply with all of essential element D when it conducts analyses to identify and remove unnecessary barriers to employment throughout the year; and encourages the use of alternative dispute resolution with involvement of senior management.
E: Efficiency requires that there are effective systems in place for evaluation of the impact and effectiveness of the agency's EEO Programs as well as an efficient and fair dispute resolution process.	NSF has continued to fully achieve and comply with all of essential element E when it provided sufficient staffing, funding, and authority to achieve the elimination of identified barriers; provided an effective complaint tracking and monitoring system to increase the effectiveness of the agency's EEO programs; provided sufficient staffing, funding, and authority to comply with the time frames in accordance with the EEOC regulations for processing EEO complaints of employment discrimination; provided an effective and fair dispute resolution process and effective systems for evaluating the impact and effectiveness of the agency's EEO complaint processing program; and implemented effective systems for maintaining and evaluating the impact and effectiveness of its EEO programs.
F: Responsiveness and legal compliance requires that federal agencies are in full compliance with EEO statutes and EEOC regulations, policy guidance, and other written instructions.	NSF has continued to fully achieve and comply with all of essential element F when the agency's system of management controls ensures that the agency completes all ordered corrective actions in a timely manner and submits its compliance report to EEOC within 30 days of such completion; and agency personnel are accountable for the timely completion.

Strategic Goal 3: Perform as a Model Organization

Strategic Objective M-1: Achieve management excellence through leadership, accountability, and personal responsibility.

Goal M-1.2 Intergovernmental Personnel Agreement (IPA) Performance Plans
Lead Organization: Division of Human Resources Management, Office of Information and Resource Management.

Fiscal Year	Goal Statement and Target	Target Measure, Milestone, or Deliverable	Result
2013	Include assignees on temporary appointment to NSF under the Intergovernmental Personnel Act (IPAs) under an NSF performance management system.	1. By March 31, 2013, 100 percent of executive IPAs with appointments exceeding 90 days will have performance plans in place. 2. By September 30, 2013, 95 percent of all non-executive IPAs whose assignments have at least 90 days remaining will have performance plans in place. 3. By October 1, 2013, an evaluation of the effectiveness of executive and non-executive IPA performance plans in setting and communicating expectations will be completed. 4. By October 31, 2013, best practices for managing executive and non-executive IPA performance will be identified and shared.	Two of four targets achieved. 1. Not Achieved. 93 percent (14 of 15) 2. Not Achieved. 93 percent (136 of 146) 3. Achieved. Report delivered in fourth quarter of FY 2013. 4. Achieved. Best practices reported to NSF senior management in Q1 FY 2014.
Actual Results for Preceding Fiscal Years			
2012	Include assignees on temporary appointment to NSF under the Intergovernmental Personnel Act (IPAs) under an NSF performance management system.	1. By March 31, 2012, 95 percent of executive-level IPAs whose assignments have at least 90 days remaining will have performance plans in place. 2. By September 30, 2012, 90 percent of non-executive IPAs whose assignments have at least 90 days remaining will have performance plans in place.	Achieved. 1. 100 percent of executive-level IPAs had performance plans in place. 2. 92 percent of non-executive IPAs had performance plans in place.
2011	Include temporary staff appointed under the Intergovernmental Personnel Act (IPAs) under NSF's performance management system.	As of July 1, 2011, 1. 80 percent of all IPAs have performance plans. 2. 90 percent of IPAs in executive-level positions have performance plans.	Achieved. 1. 92 percent of all IPAs had performance plans. 2. 90 percent of executive IPAs had performance plans.

Discussion

The Intergovernmental Personnel Act (IPA) mobility program (5 CFR part 334) provides the authority for NSF to bring in scientific staff from academic institutions for limited periods of time. IPA assignees are on detail to NSF and remain on the payroll of their home institution. Using the IPA authority to recruit active researchers infuses new talent and expertise into NSF and provides scientists and engineers with valuable information and knowledge to bring back to their home institutions. NSF's use of the IPA helps to maintain the Foundation's close association with the Nation's colleges and universities and the contributions made by NSF's IPA scientists furthers the agency's mission of supporting the entire spectrum of science and engineering research and education. This goal addresses human resource management challenges specific to NSF that were identified by Congress, the Office of Personnel Management, and NSF's Office of the Inspector General.

Before FY 2011, IPAs were not required to have performance plans. In FY 2011, a performance goal to expand the coverage of NSF's performance management framework to include IPAs was set.

Including IPAs in an annual performance assessment affords supervisors and IPAs an opportunity to communicate on a regular basis around goal attainment and challenges. FY 2012 Federal Employee Viewpoint Survey (FEVS) results support the value of the new process. Scores in two related FEVS questions improved significantly between FY 2011 and FY 2012, the same time period where IPAs began receiving more formal performance reviews.

Federal Employee Viewpoint Survey results for NSF IPAs	**2011 (IPA)**	**2012 (IPA)**	**Percent Change**
(19) In my most recent performance appraisal, I understood what I had to do to be rated at different performance levels (for example, Fully Successful, Outstanding).	48%	62%	+29%
(50) In the last six months, my supervisor/team leader has talked with me about my performance.	51%	74%	+45%

Information on Unmet Target

Having the 100 percent and 95 percent targets in place allowed NSF to keep the importance of the IPA performance plans in front of managers throughout the year. NSF is automating the IPA performance management process to address challenges in tracking, routing, and signing performance plans. This automated process should result in higher completion rates.

Strategic Goal 3: Perform as a Model Organization

Strategic Objective/Performance Goal M-1: Achieve management excellence through leadership, accountability, and personal responsibility.

Strategic Target: More effective management enables all staff to understand how their duties support the mission of the Foundation.

Goal M-1.2 Performance Management System
Lead Organization: Division of Human Resources Management, Office of Information and Resource Management.

Fiscal Year	Goal Statement and Target	Target Measure, Milestone, or Deliverable	Result
2013	Use findings from assessments to guide improvement of NSF's employee performance management systems.	By July 31, 2013, 1. Submit 2013 NSF SES PAAT to OPM.[7] 2. Put in place the needed supporting materials for full implementation of the government-wide SES Performance Plan and Appraisal Process. 3. By September 30, 2013, achieve a 65 percent positive response rate on the 2012 EVS to the question: "In my most recent performance appraisal, I understood what I had to do to be rated at different performance levels (for example, Fully Successful, Outstanding)."	One of three targets achieved. 1. Not Achieved. SES PAAT not required in 2013, per agreement with OPM. 2. Achieved. Supporting materials submitted to OPM in June 2013. 3. Not Achieved. 62 percent positive response rate.
Actual Results for Preceding Fiscal Years			
2012	Use findings from assessments to guide improvement of NSF's employee performance management systems.	• By September 30, 2012, deliver an action strategy for improvement of one to three areas noted in NSF's SES or GWF PAAT or identified in NSF's FEVS results to the NSF CHCO.[6]	Achieved. Action strategy issued.

Discussion
NSF has two primary performance management systems for NSF employees, one that covers members of the Senior Executive Service (SES) and one that covers the General Workforce (GWF), plus a third performance management system that covers IPAs.

The Office of Personnel Management (OPM) revised its process for certifying SES performance systems during FY 2013, and extended NSF's SES performance system certification through July, 2014. NSF will provide requisite SES performance system certification materials in 2014 to maintain its current certification, which is critical to attracting and retaining NSF's SES workforce.

[7]Acronyms: SES, Senior Executive Service; GWF, General Workforce; PAAT, Performance Appraisal Assessment Tool; FEVS, Employee View Point Survey; CHCO, Chief Human Capital Officer

NSF implemented the new federal-wide SES performance management system for the performance cycle beginning October 1, 2013. In preparation for this implementation, NSF provided a robust series of training opportunities for SES members, supervisors of SES members, human resources staff, and others. NSF is also providing review of all SES plans and one-on-one assistance in fine-tuning draft plans to bring them into alignment with requirements. NSF is currently preparing materials to apply for SES certification from OPM and OMB in the second quarter of FY 2014.

Also in FY 2013, NSF continued to implement its plans to: (1) strengthen supervisory plans; (2) institutionalize recurring training; and (3) better tie organizational performance results to the ratings and awards given to employees. For example, NSF provided performance management training targeted towards both supervisors and employees, incorporated performance management into discussions at the New Employee Orientation, developed and held trainings to increase the effectiveness of performance conversations, and provided organization specific training and consultations upon request. The agency also provided additional guidance on developing effective performance plans, increased the number of mid-year and recurring performance discussions held between managers and supervisors, and provided employees tools for self-assessment.

The FEVS is a tool that measures employees' perceptions of whether, and to what extent, the conditions that characterize successful organizations are present in their agencies. The FEVS includes questions related to performance appraisals. The 2011 FEVS found that the percentage of NSF employees who understood what they had to do to be rated at different performance levels was lower than in previous years. For the FEVS question "In my most recent performance appraisal, I understood what I had to do to be rated at different performance levels (for example, Fully Successful, Outstanding)":

- 2010 FEVS positive response rate: 68 percent.
- 2011 FEVS positive response rate: 63 percent.
- 2012 FEVS target: 65 percent. Positive response rate: 62 percent.
- 2013 FEVS target: 68 percent. Positive response rate: 67 percent.

This goal addresses human resource management challenges specific to NSF that were identified by Congress, the Office of Personnel Management, and NSF's Office of the Inspector General.

Information on Unmet Target

The Office of Personnel Management (OPM) revised its process for certifying SES performance systems during the year, and extended NSF's SES performance system certification through July, 2014. NSF will provide requisite SES performance system certification materials in 2014 to maintain its current certification, which is critical to attracting and retaining NSF's SES workforce.

NSF received a 62 percent positive response rate in 2012 to the FEVS question targeted, three percent below the 65 percent target. However, NSF received a 67 percent positive response in 2013, two percent above the target.

Strategic Goal 3: Perform as a Model Organization

Strategic Objective M-2: Infuse learning as an essential element of the NSF culture with emphasis on professional development and personal growth.

Goal M-2.1 Assess Developmental Needs
Lead Organization: Division of Human Resources Management, Office of Information and Resource Management.

Fiscal Year	Goal Statement and Target	Target Measure, Milestone, or Deliverable	Result
2013	Enhance NSF capabilities to provide training of staff for their current positions.	1. By September 30, 2013, identify gaps between desired curricula and current course offerings and recommend approaches to filling identified gaps. 2. Attain a 60 percent positive response rate on the 2013 Employee Viewpoint Survey (EVS) on the question "How satisfied are you with the training you receive for your present job?" (results available in FY 2014)	One of two targets achieved. 1. Achieved. Assessment delivered to CHCO in June 2013. 2. Not Achieved. 51 percent positive response rate.
Actual Results for Preceding Fiscal Years			
2012	Enhance NSF capabilities to provide training of staff for their current positions.	By September 30, 2012, design a structured curriculum which meets assessed needs for at least two types of NSF staff roles (e.g. leaders, program officers, administrative professionals, technical professionals).	Achieved. Designed curricula for supervisors, program officers, and administrative professionals.
2011	Pilot process for assessing developmental needs and addressing them.	1. By March 31, 2011 commence survey of administrative support staff. 2. By September 20, 2011, obtain contract support for assessment of non-administrative-support staff.	1. Achieved. 2. Achieved late: contract support obtained September 23, 2011.

Discussion
NSF's core values and strategic goals articulate the high priority that is placed on staff learning and development. This goal addresses a specific action identified in the Strategic Plan: "review current NSF learning opportunities and develop a plan for addressing gaps."

In FY 2012, NSF completed its first agency-wide training needs assessment. NSF's Mission Critical Occupations: Administrative Professionals, Program Directors, and leadership occupations were addressed independently in the needs assessment along with other critical administrative functions. Based on the findings of the training needs assessment, the NSF Academy and Instructional Technology Office identified 43 new courses that are already developed or are currently under development for executives, supervisors, program managers, and the general workforce. Additionally, NSF's Program Officer training underwent revisions to streamline and integrate different elements to improve the onboarding and

continual development of this crucial NSF occupation. Proposals for both a competitive Senior Leadership Development Program and a competitive Aspiring Leaders Program are under consideration.

The FY 2014 training needs assessment is now underway at NSF. This year, the analysis takes a broader look at learning and professional development, expanding beyond formal training. The assessment also requires the Foundation to consider gaps in available learning and development opportunities needed to maintain or enhance skill sets required for current work and for career development.

Information on Unmet Target

NSF conducted a training needs assessment in FY 2012–FY 2013, but the missed target suggests that staff may be largely unaware of this activity. NSF is currently undertaking a higher profile approach, including outreach to all directorates and offices and a survey sent to all employees.

Strategic Goal 3: Perform as a Model Organization

Strategic Objective 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.

Goal M-3.1 Grant-By-Grant Payments
Lead Organization: Division of Financial Management, Office of Budget, Finance, and Award Management.

Fiscal Year	Goal Statement and Target	Target Measure, Milestone, or Deliverable	Result
2013	Upgrade NSF's financial system.	By September 30, 2013, to support the transition to the grant-by-grant payment process known as the Award Cash Management $ervice (ACM$), DFM will reconcile 100 percent of the grantee's reported cash on hand balances as of December 31, 2012 with NSF's general ledger.	Achieved. All grantees were transferred to ACM$ by June 30, 2013.
Actual Results for Preceding Fiscal Years			
2012	Upgrade NSF's financial system.	By September 30, 2012, to support the iTRAK initiative, the Division of Financial Management (DFM) and the Division of Acquisition and Cooperative Agreements (DACS) will award a contract for the iTRAK financial system implementation and integration services.	Achieved. Contract awarded September 25, 2012.
2011	Gather functional requirements for changes in current system processes that will accommodate the transition to a grant by grant payment method.	Documentation of functional requirements.	Achieved late. Functional requirements delivered first quarter of FY 2012.

Discussion
Financial system modernization efforts have been underway at NSF for several years. The iTRAK effort–a Foundation-wide effort to transition NSF from its legacy financial support systems to a fully integrated, commercial-off-the-shelf (COTS) financial management shared services solution—is central, but other modernization steps are required as prerequisites. One of those prerequisites is to change NSF processes and transfer to a grant-by-grant payment method.

In FY 2011, NSF gathered requirements for this new payment method, known as the Award Cash Management Service (ACM$), and developed the system in FY 2012. In FY 2013, NSF was able to pilot the system and transfer all grantees to the new ACM$ system. The new ACM$ grant payment system provides real time cash management and expenditure information to NSF and the grantee community. This achievement significantly enhances NSF post-award monitoring information.

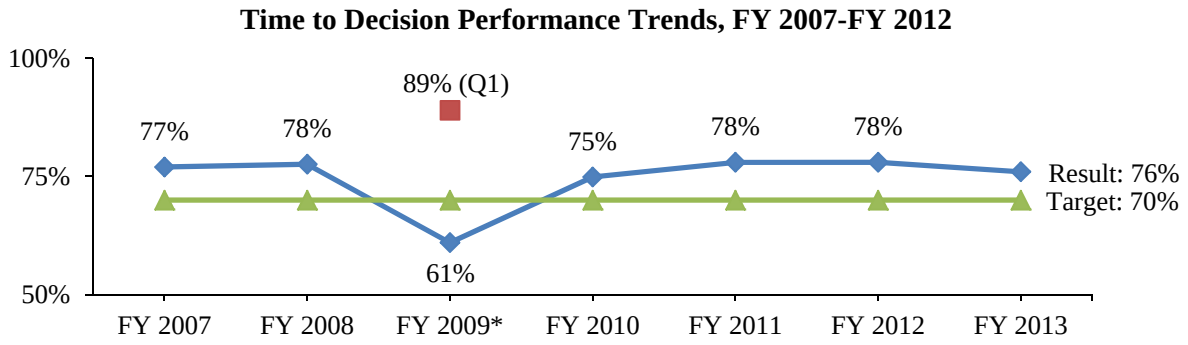
Strategic Goal 3: Perform as a Model Organization

Strategic Objective 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.

Goal M-3.2 Time to Decision
Lead Organization: Office of the Director.

Fiscal Year	Goal Statement and Target	Target Measure, Milestone, or Deliverable	Result
2013	Inform applicants whether their proposals have been declined or recommended for funding within six months of deadline, target date, or receipt date, whichever is later.	70 percent.	Achieved. 76 percent.

Actual Results for Preceding Fiscal Years



*In FY 2009, this goal was in effect only for the period October 1 through December 31, 2008 (Quarter 1, FY 2009). The goal was suspended for all actions taking place between January 1, 2009 and September 30, 2009 to allow for a greater number of proposals to be processed with the additional funds from the American Recovery and Reinvestment Act of 2009 (ARRA).

Discussion

Time to decision or "dwell time" is the amount of time that passes between receipt of a proposal and notification to the principal investigator about the funding decision. One of the most significant issues raised in customer satisfaction surveys is the time it takes NSF to process proposals. Too long a time period inhibits the progress of research as it delays the funding process, but too short a time period may inhibit the merit review process. The six-month target seeks to strike a balance between the need of the investigator for timely action and the need of NSF for a credible and efficient merit review system.

The most relevant recent variations in performance took place in FY 2009 and FY 2010. In FY 2009, the goal was suspended after the first quarter to allow for a greater number of proposals to be processed with additional funds from ARRA. The goal was reinstated in FY 2010, when NSF exceeded this goal despite a significant increase in workload. Overall, staffing levels increased by 5.6 percent between FY 2008 and FY 2013, while proposal pressure increased by 11.6 percent.

Strategic Goal 3: Perform as a Model Organization

Strategic Objective 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.

Goal M-3.3 Virtual Merit Review Panels (New in FY 2012)
Lead Organization: Office of the Director.

Fiscal Year	Goal Statement and Target	Target Measure, Milestone, or Deliverable	Result
2013	Expand the use of virtual merit review panels.	As a pilot activity, five percent of merit review panels will be virtual panels.	Achieved. 28.6 percent of panels were virtual panels.
Actual Results for Preceding Fiscal Years			
2012	Expand the use of virtual merit review panels.	By September 30, 2012, develop guidelines and training modules for NSF staff on the use of virtual merit review panels.	Achieved. Training modules developed.

Discussion
NSF makes extensive use of panels of reviewers to evaluate proposals. The predominant practice is for the panelists to travel to a single location, usually NSF, and meet face-to-face for one to five days. In FY 2010, approximately 2,100 review panels were held. Of these, just over one quarter involved six or fewer panelists. Face-to-face panels impose a significant time burden on the reviewers, making some potential reviewers reluctant to participate. For example, panelists with young children may not be able to obtain two continuous days of childcare, or panelists in remote locations or foreign countries may find the amount of travel required prohibitive. It also causes NSF to incur significant travel costs.

As used in reference to this goal, the term "virtual panel" refers to a panel meeting in which the reviewers do not travel to a common location but instead participate via teleconference, videoconference, or an online meeting technology. NSF has experimented with virtual panels at a small scale for several years. In FY 2011, approximately 2.2 percent of panels were virtual panels, and approximately one percent of proposals that were reviewed by panels were reviewed by virtual panels.

In FY 2012, administrative offices and program staff collaborated to develop the first of a planned set of four training modules for organizers of virtual panels at NSF. An internal website that provides guidance to NSF staff on when to choose a virtual panel and how best to implement such panels was also developed and numerous outreach activities were conducted to familiarize staff with the resources available to them. In FY 2012, 99 virtual panels were conducted.

In FY 2013, 1,874 panels were held, of which 537 were wholly virtual (28.6 percent), exceeding the FY 2013 target of five percent wholly virtual panels. This significant increase in virtual participation over prior years can be attributed to several factors: a response to reductions in travel budgets; development of virtual panel training materials; and management's encouragement to utilize virtual panels as a viable reviewer participation mechanism. Thirteen percent of all competitive proposals were reviewed by wholly virtual panels and 38 percent of competitive proposals were reviewed by some virtual participation (either wholly virtual panels or a mixture of face-to-face and virtual participation). A virtual panelist survey administered to participating virtual panelists is being used to inform NSF's virtual panel

process. Three of four planned virtual panel training modules have now been completed, with the fourth expected to be completed in FY 2014.

FY 2015 PERFORMANCE PLAN

In FY 2015 NSF will use the following ten performance goals to monitor progress in fulfilling its strategic goals and objectives. The remaining pages of this section provide a detailed description of each goal along with our proposed target measures, milestones, or deliverables.

Goal ID	Goal Short Title	Lead organization	Goal Statement
1 Priority Goal	Increase Public Access to NSF-funded peer-reviewed Publications	OD/SBE	By September 30th 2015, NSF-funded investigators will be able to deposit versions of their peer-reviewed articles in a repository that will make them available to the public.
2 Priority Goal	Improve the Nation's capacity in data science by investing in the development of human capital and infrastructure	CISE/EHR	By September 30th, 2015, implement mechanisms to support the training and workforce development of future data scientists; increase the number of multi-stakeholder partnerships to address the nation's big-data challenges; and increase investments in current and future data infrastructure extending data –intensive science into more research communities.
3 Priority Goal	Optimize the Award Process to Level Workload	BFA	By September 30, 2015, meet targets to level distribution of awards across the fiscal year and subsequently improve awardee capacity to effectively manage research funding.
4	Ensure that Key Program Investments are on Track	BFA	Meet critical targets for key FY 2015 program investments.
5	Ensure that Infrastructure Investments are on Track	BFA	Ensure program integrity and responsible stewardship of major research facilities and infrastructure.
6	Use Evidence to Guide Management Decisions	OIRM	Use evidence-based reviews to guide management investments.
7	Make Timely Award Decisions	OIIA BFA	Inform applicants whether their proposals have been declined or recommended for funding within 182 days, or six months, of deadline, target, or receipt date, whichever is later.
8	Foster an Environment of Diversity and Inclusion	ODI	Foster an environment of diversity and inclusion while ensuring compliance with the agency's equal opportunity and civil rights programs.
9	Improve the Efficiency of Proposal Review	OD/CTO, BFA, OIIA	Identify new approaches to keep NSF's world-renowned merit review process innovative, effective, and efficient.
10	Evaluate NSF Investments	OIIA	Enable consistent evaluation of the impact of NSF investments with a high degree of rigor and independence.

Goal 1: Increase Public Access to NSF-funded peer-reviewed Publications (Agency Priority Goal)

Goal Statement	By September 30th 2015, NSF-funded investigators will be able to deposit versions of their peer-reviewed articles in a repository that will make them available to the public.
Indicator and Target Measure, Milestone, or Deliverable	FY 2014 Quarter 1: Develop a conceptual integration architecture and definition of requirements for pilots and testing by December 2013. FY 2014 Quarter 2: Initiate a standing forum with the National Research Council (NRC) with the goals of supporting ongoing discussion among key stakeholder groups, commissioning relevant reports, and obtaining consensus on key issues by January 2014. Launch preliminary technical discussions with potential partners in the private sector, higher education, and other federal agencies. FY 2014 Quarter 3: Initiate discussion of possible interagency agreements with appropriate partners in the private sector, higher education, and other federal agencies. FY 2014 Quarter 4: Finalize public access plan. Deploy initial changes (to be proposed) to NSF's internal systems to accommodate integration information from the repository system by September 2014. FY 2015 Quarter 1: Conclude conceptual integration architecture, pilots, and testing. FY 2015 Quarter 2: Public Notification of our intention to revise the Proposal and Award Policies and Procedures Guide (PAPPG) to reflect any new requirements in the Federal Register in March 2015. Complete appropriate testing of repository (data exchange, application programming interfaces, etc.) by March 2015. Implement agreements with partners to support operation of the initial repository implementation by March 2015. FY 2015 Quarter 4: Implementation of repository system. Integrate information from the repository system into post-award reporting systems (Research.gov).

Goal 1: Increase Public Access to NSF-funded peer-reviewed Publications (Agency Priority Goal), cont.

Description	Progress in science and technology, and the associated benefits for the American people, thrives in an environment of open communication. Therefore, the NSF seeks to enable increased access to the results of its investments in research. NSF will do this by reducing barriers to communication of research results, while ensuring the integrity of the research record, protection of sensitive information, and consistency with existing law. To this end and pursuant to the OSTP memorandum, *Increasing Access to the Results of Federally Funded Scientific Research* (February 22, 2013), NSF will articulate a strategy and develop plans that will require recipients of NSF funding to deposit a copy of their work in a public access repository. Although some conditions of deposit are likely to vary, NSF expects to adhere to the OSTP recommended guideline for peer-reviewed journal publications that will delay free access to either the author's final accepted version of the manuscript or the published version of record no longer than 12 months after the date of initial publication. To achieve this APG, NSF will utilize strategies that: • Are open, flexible, and implemented in phases; • Minimize burdens on awardees and staff; • Recognize the diversity of science and research communities supported by the Foundation; • Manage publications and data in an integrated approach; and • Take appropriate advantage of infrastructure, resources, and best practices in the government and the private sector.
Trend Information	This is a new activity and a new performance goal.
Strategic Goal Linkage, 2014-2018 Strategic Plan	Strategic Goal: "Transform the Frontiers of Science and Engineering" Strategic Objective: "Provide world-class research infrastructure to enable major scientific advances." Strategic Goal: "Stimulate Innovation and Address Societal Needs through Research and Education" Strategic Objective: "Strengthen the links between foundational research and societal needs through investments and partnerships." Strategic Goal: "Excel as a Federal Science Agency" Strategic Objective: "Use effective business methods and innovative solutions to achieve excellence in accomplishing the agency's mission."
Lead Organization/s	Office of the Director Directorate for Social, Behavioral, and Economic Sciences

Goal 2: Improve the Nation's Capacity in Data Science by investing in the development of human capital and infrastructure. (Agency Priority Goal)

Goal Statement	Improve the Nation's capacity in data science by investing in the development of human capital and infrastructure. By September 30th, 2015, implement mechanisms to support the training and workforce development of future data scientists; increase the number of multi-stakeholder partnerships to address the nation's big-data challenges; and increase investments in current and future data infrastructure extending data – intensive science into more research communities.
Indicator and Target Measure, Milestone, or Deliverable	Milestones: Human Capital Development: Internally, NSF will address the issues of big-data workforce development by investigating what kinds of add-ons, emphasis areas, or big-data tracks could be added to existing programs. In particular, NSF will use one or more of the following mechanisms for students or recent PhDs to gain experience on data and data-intensive science projects: • Advanced Technological Education (ATE) • Improving Undergraduate STEM Education; • NSF's Research Traineeship (NRT) program; • The Graduate Research Fellowship (GRF) program; • Recruit AAAS Fellows in the Data Science track; • Critical Techniques and Technologies for Advancing Big Data Science & Engineering (BIGDATA); • Data Infrastructure Building Blocks (DIBBs); • EarthCube, Building Collaborative Communities, and other community building activities for data-intensive projects/programs; and • CDS&E activities that can be leveraged to create opportunities for students and faculty to develop the skills and expertise needed to engage in data science. As new programs and activities come on line in FY 2014 and FY 2015, NSF will look for opportunities to incorporate training and preparation of data scientists at all stages of a researcher's career. NSF will host a conference or workshop of graduate students who are studying data science, from across IGERT/NRT, SLCs, GRF, etc. in FY 2014. A monitoring contract will be used to gather baseline data about the students entering programs to study data science through NSF-funded awards and will follow their progress into further education or careers. Baselines/activities: • Inventory of NSF solicitations that could appropriately include an emphasis on the preparation of data scientists by June 30, 2014. • Develop a mechanism for tracking the applications to GRF and NRT program that indicate research interest in data science by September 30, 2014.

	Targets: • Introduce language emphasizing interest in preparing data scientists in 75% of solicitations that could appropriately do so by September 30, 2015. • Provide outcome data on the success of GRF and NRT applications that indicate research interest in data science by September 30, 2015. Partnerships: Internally, NSF will develop strategies and pilot activities within current programs to pull together industry and academic partners to engage in national big data challenges (e.g., I/UCRC, Big Data Hubs for center-scale projects.) Externally, NSF will sponsor workshops and other activities to engage potential stakeholders in building multi-stakeholder partnerships. A workshop planned for FY 2014 is intended to maintain and build on partnerships announced at a major, multi-agency big-data event in the fall. This workshop will inform what specific external activities NSF will support in FY 2014. Target: Host or support two additional partnership-building workshops in FY 2014-15 that produce reports identifying emerging data science and big data needs with implications for the preparation of data scientists. Existing Programs: Ensure that the DIBBS and BIGDATA programs are strategically positioned to support the development of new data infrastructure. Indicators: The acceptance of "data scientist" as a professional category in academia, industry, government; • Baseline: establish verifiable baselines for undergraduate, certificate, and graduate programs by September 30, 2014. • Target: 25% increase in the number of degree and concentration, and certificate programs in data science in U.S. universities by 2015. The number and/or quality of multi-stakeholder partnerships created to address big-data challenges; • Baseline was zero in FY 2013 and increase to 30 partnerships and 90 partners in FY 2014. • Four big data center will be funded in FY 2014 to do partnership outreach. • Target: Each big data center will develop ten partnerships by September 30th of 2015. The number of communities/organizations/ecosystems that use data infrastructure and tools for their R&D activities. • Establish baseline of NSF-funded infrastructure projects by discipline. • Increase the numbers of disciplines with funding from NSF data infrastructure programs to produce tools and infrastructures to advance R&D activities to approximately 50 (approximately 7 communities per directorate) by September 30, 2015.
Description	Innovative information technologies are transforming the fabric of society, and data represent a transformative new currency for science, education, government, and commerce. Data are everywhere; they are produced in

	rapidly increasing volume and variety by virtually all scientific, educational, governmental, societal and commercial enterprises.[1] Today we live in an era of data and information. This era is enabled by modern experimental methods and observational studies; large-scale simulations; scientific instruments, such as telescopes and particle accelerators; Internet transactions, email, videos, images, and click streams; and the widespread deployment of sensors everywhere – in the environment, in our critical infrastructure, such as in bridges and smart grids, in our homes, and even on our clothing. Every day, 2.5 quintillion bytes of data are generated – so much that 90 percent of the data in the world today has been created in the last two years alone.[2] It is important to note that when we talk about big data it is not just the enormous volume of data that needs to be emphasized, but also the heterogeneity, velocity, and complexity that collectively create the science and engineering challenges we face today. In December 2010, the President's Council of Advisors on Science and Technology (PCAST) published a report to the President and Congress entitled: *Designing a Digital Future: Federally Funded Research and Development in Networking and Information Technology.*[3] In that report, PCAST pointed to the research challenges involved in large-scale data management and analysis and the critical role of Networking and Information Technology (NIT) in moving from data to knowledge to action, underpinning the Nation's future prosperity, health and security. Through long-term, sustained investments in foundational computing, communications and computational research, and the development and deployment of large-scale facilities and cyberinfrastructure, federal agency R&D investments over the past several decades have both helped generate this explosion of data as well as advance our ability to capture, store, analyze, and use these data for societal benefit. More specifically, we have seen fundamental advances in machine learning, knowledge representation, natural language processing, information retrieval and integration, network analytics, computer vision, and data visualization, which together have enabled Big Data applications and systems that have the potential to transform all aspects of our lives. These investments are already starting to pay off, demonstrating the power of Big Data approaches across science, engineering, medicine, commerce, education, and national security, and laying the foundations for U.S. competitiveness for many decades to come. But much more needs to be done, particularly in four areas: 1) basic research; 2) data infrastructure; 3) education and workforce development; and 4) community outreach.

[1] "Dealing with Data," Science Magazine, Volume 331, February 11, 2011.
[2] See http://www-01.ibm.com/software/data/bigdata/
[3] See http://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-nitrd-report-2010.pdf

	NSF can catalyze progress in these areas by developing programs to engage the research community, and by creating mechanisms to catalyze the development of people and infrastructure to address the challenges posed by this new flood of data. NSF will help increase the number of data scientists engaged in academic research, development, and implementation. As defined in the 2005 NSB publication of *Long-lived Digital Data Collections: Enabling Research and Education in the 21st Century* defines data scientists as "the information and computer scientists, database and software programmers, disciplinary experts, curators, and expert annotators, librarians, archivists and others, who are crucial to the successful management of a digital data collection." Using its ability to convene diverse sets of stakeholders, NSF will promote multi-stakeholder partnerships by supporting workshops and follow-on activities that bring together representatives of industry, academia, not-for-profit organizations, and other entities to address current and future big-data challenges. NSF will also leverage existing programs, such as the NSF Research Traineeship (NRT) and the Graduate Research Fellowship (GRF) programs, and create new programs and tracks to current programs, as needed, to support the creation of more researchers and students competent in the deep analytical and technical skills required to address those challenges. NSF will develop strategies to build and sustain data infrastructure for the 21st century through CIF21. NSF will coordinate with other agencies through the National Science and Technology Council to achieve this goal.
Trend Information	This is a new activity and a new priority goal.
Strategic Goal Linkage, 2014-2018 Strategic Plan	Strategic Goal: "Transform the Frontiers of Science and Engineering" Strategic Objective: "Provide world-class research infrastructure to enable major scientific advances." The Strategic Goal: "Stimulate Innovation and Address Societal Needs through Research and Education" Strategic Objective: "Strengthen the links between foundational research and societal needs through investments and partnerships."
Lead Organization/s	Directorate for Computer and Information Science and Engineering (CISE) Directorate for Education and Human Resources

Goal 3: Optimize the Award Process to Level Workload (Agency Priority Goal)

Goal Statement	By September 30, 2015, meet targets to level distribution of awards across the fiscal year and subsequently improve awardee capacity to effectively manage research funding.
Indicator and Target Measure, Milestone, or Deliverable	Milestones: First Quarter FY 2014 – Establish implementation teams that will develop approaches that make sense for each directorate/office and solicit input from advisory committees for awardee perspective on possible improvements. Second Quarter FY 2014 – Develop an implementation plan to set the stage for success toward meeting goals that will be established for FY 2015. Third and Fourth Quarters FY 2014 – Begin piloting approaches that may provide novel and/or innovative solutions to leveling proposal and award workload across the fiscal year. First Quarter FY 2015 – Assess preliminary success of pilot efforts and scale up ideas that worked and share best practices across the agency. Second Quarter FY 2015 – Monitor progress and make adjustments as needed. Third and Fourth Quarters FY 2015 – Measure results and evaluate progress. Indicators: To improve efficiency and timeliness of agency funding decisions that enable grant-making across the fiscal year, the following quarterly targets for funding recommendations by program directorate have been established using baseline data averaged over FY 2010-2013 to ensure that more than half of all funding recommendations are made before the second half of the fiscal year. This would shift approximately 27 percent of funding recommendations to an earlier time period. Agency Funding Recommendation Targets: FY Quarter 1: 20 percent of funded actions, which represents a 12 percent increase over baseline (8 percent) FY Quarter 2: 35 percent of funded actions, which represents a 15 percent increase over baseline (20 percent) FY Quarter 3: 25 percent of funded actions, which represents a 6 percent decrease over baseline (31 percent) FY Quarter 4: 20 percent of funded actions, which represents a 21 percent decrease over baseline (41 percent) External Indicators: In order to assess awardee improvements in capacity to manage awards, NSF will seek to utilize evaluation tools such as a survey or before and after study of the impacts of proposal deadlines and award distribution on awardees.

Goal 3: Optimize the Award Process to Level Workload (Agency Priority Goal), cont.

Description	NSF typically awards half of its nearly 20,000 funded grant actions in the 4th quarter due to the fact that almost 75 percent of proposals and funding requests are recommended for award during the last half of the fiscal year. This unbalanced award workload is largely a result of clustered proposal deadlines, as well as due to annual budget delays, uncertainties of final allocations, and program practice of making funding decisions late in the fiscal year. Issuing such a high volume of awards in a compressed time period during the end of the fiscal year not only strains NSF's workforce, and other resources such as IT business systems and space for conducting review panels, but also increases risk and places added stress on awardee capabilities coinciding with these peak workload periods. Adopting strategies that address calendar management, operating procedures, and potential IT improvements should result in improved efficiencies that mitigate the negative impacts of the current imbalanced award distribution for both NSF and the Nation's scientific research community, supporting NSF's strategic goal to excel as a federal science agency. Spreading proposal deadlines and leveling issuance of awards in a more balanced approach across the fiscal year would provide for more optimal utilization of limited resources to administer and manage research funding and therefore improve award compliance and overall stewardship of federal research dollars. Realizing improved efficiency in the administration of federally sponsored scientific research would also help to further reduce administrative burden and enable research to be initiated and executed more efficiently across the research community. Implementation of this goal will require the full support of all program directorates and offices that make funding recommendations. Implementation teams will be established in each program directorate and office to develop approaches that consider the full proposal cycle and are sensible for each program area (e.g., polar programs may need to time funding solicitation deadlines and subsequent recommendations in a manner that accommodates the logistical concerns associated with operating in an extreme weather environment). NSF's Office of Budget, Finance and Award Management (BFA) divisions will support the program directorates and offices in this effort by working with each of the implementation teams to suggest options for consideration, to foster pilot approaches, and to assist in the clearance process which impacts the release and timing of proposal solicitation deadlines. Some of the strategies for leveling that NSF may consider include: • **NSF-wide Calendar Management Activities** – e.g., shifting solicitation and proposal deadlines and evaluation of panel cycles related to distributed deadlines; • **Operating Procedures** – e.g., establishing quarterly program targets for funding recommendations, share best practices and prepare guidelines to streamline and/or reduce delays in clearance of proposal-generating documents, and standardize procedures across program directorates and offices to maximize utilization of administrative staff; and

Goal 3: Optimize the Award Process to Level Workload (Agency Priority Goal), cont.

	• **IT Improvements** – e.g., modernize the outdated award system by migrating the functionality into a web-based eJacket system used by programs for proposal management in order to have an NSF-wide end-to-end proposal and award management system. This would enable process improvements and efficiencies in the agency's administration and management of its portfolio.
Trend Information	This is a new activity and a new priority goal.
Strategic Goal Linkage, 2014-2018 Strategic Plan	Strategic Goal: "Excel as a Federal Science Agency" Strategic Objective: "Use effective business methods and innovative solutions to achieve excellence in accomplishing the agency's mission."
Lead Organization/s	Office of Budget, Finance, and Award Management

Goal 4: Ensure that Key Program Investments are on Track

Goal Statement	Meet critical targets for key FY 2015 program investments.
Indicator and Target Measure, Milestone, or Deliverable	Monitor the progress of the following NSF-wide investments using a common set of milestones and indicators: • Cognitive Science and Neuroscience • CEMMSS • CIF21 • SaTC • SEES
Description	Key investments will be strategically monitored using a set of common metrics. These will include: • Contextual indicators, such as the investment's funding level. • Input indicators, such as date of release of solicitation, number of proposals received, numbers of reviews conducted. • Output indicators, such as number of awards, average and total amounts awarded, and funding rate. • Medium-term output and outcome indicators that funded projects are on track. • Activity-specific outcome indicators, e.g., those relating to programmatic long-term goals to change a given field. Progress will be assessed with quarterly review meetings to discuss progress and annual Strategic Reviews.
Trend Information	This is a new goal in FY 2014. Since FY 2012, the INSPIRE and I-Corps programs have been the subjects of performance goals. For more information on those goals, refer to the FY 2013 Annual Performance Report.
Strategic Goal Linkage, 2014- 2018 Strategic Plan	Strategic Goal: "Transform the Frontiers of Science and Engineering." Strategic Goal: "Stimulate Innovation and Address Societal Needs through Research and Education."
Lead Organization/s	Performance Improvement Officer: Office of Budget, Finance, and Award Management

Goal 5: Ensure that Infrastructure Investments are on Track

Goal Statement	Ensure program integrity and responsible stewardship of major research facilities and infrastructure.
Indicator and Target Measure, Milestone, or Deliverable	Construction Project Monitoring: For all MREFC facilities under construction that are over 10 percent complete, keep negative cost and schedule variance at or below 10 percent.
Description	NSF monitors the performance of projects funded by the Major Research Equipment and Facilities Construction (MREFC) account by monitoring cost and schedule, a standard measure of performance for construction projects. Projects that are under ten percent complete are not considered eligible for this goal because EVM data is statistically less meaningful in early stages.
Trend Information	NSF has tracked the performance of its construction projects, as a performance goal for over a decade.
Strategic Goal Linkage, 2014-2018 Strategic Plan	Strategic Goal: "Transform the Frontiers of Science and Engineering" Strategic Objective: "Provide world-class research infrastructure to enable major scientific advances."
Lead Organization/s	Large Facilities Office: Office of Budget, Finance, and Award Management

Goal 6: Use Evidence to Guide Management Decisions

Goal Statement	Use evidence-based reviews to guide management investments.
Indicator and Target Measure, Milestone, or Deliverable	PortfolioStat measures: • NSF's information technology governance boards will evaluate and prioritize proposed investments for FY 2016. • NSF's information technology governance boards will use cost and schedule data on existing investments to inform investment decisions for FY 2016. Percentage of IT projects within 10 percent of budgeted costs and percentage of IT projects within 10 percent of budgeted schedule will be tracked. HRStat measures: • Establish indicators to assess the impact and progress of three workforce initiatives designed to advance progress toward or address barriers to the accomplishment of mission related goals and objectives. • During FY 2015, focus at least two evidence-based reviews on the three identified workforce initiatives.
Description	This goal captures NSF's commitment to two government-wide processes, PortfolioStat and HRStat, which aim to ensure that decisions regarding resource investments are made through formal processes involving cross-agency decision-makers. Data regarding business need, cost, and risk-analysis will be provided. This approach to decision making promotes transparency and accountability through data driven decision-making. As directed in OMB M-12-10, "Implementing PortfolioStat," NSF will employ this new tool to assess the current maturity of its IT portfolio management process, make decisions on eliminating duplication, augment current Chief Information Officer (CIO)-led capital planning and investment control processes, and move to shared solutions in order to maximize the return on IT investments across the portfolio. NSF will build upon its experience as an HRStat pilot in 2012-2013, incorporate lessons learned from the development of its human capital dashboard, and continue to update its evidence based review process, as it establishes indicators and methods to measure human capital management initiatives aligned with the goals set out in the draft strategic plan. NSF will incorporate human capital goals defined in the Federal Employee Viewpoint Survey Action Plan; integrate OPM's revised Human Capital Framework; and facilitate data driven investment decisions as it designs these assessment approaches.
Trend Information	The scope of data included in this goal has broadened from last year's. In keeping with the Key Performance indicators utilized in the FY 2013 PortfolioStat, budgeted and actual data will now be made available to NSF's governing bodies. Since FY 2011, the Office of the Chief Human Capital Officer (CHCO) has led three performance goals per year relating to human resources development. For more information about those goals, refer to the Annual Performance Reports for those years.

Goal 6: Use Evidence to Guide Management Decisions (cont.)

Strategic Goal Linkage, 2014-2018 Strategic Plan	Strategic Goal: Excel as a Federal Science Agency Strategic Objective: Build an increasingly diverse, engaged, and high-performing workforce by fostering excellence in recruitment, training, leadership, and management of human capital. Strategic Goal: "Excel as a Federal Science Agency" Strategic Objective: "Use effective methods and innovative solutions to achieve excellence in accomplishing the agency's mission."
Lead Organization/s	Office of the CIO: Office of Information and Resource Management Office of the CHCO: Office of Information and Resource Management

Goal 7: Make Timely Award Decisions

Goal Statement	Inform applicants whether their proposals have been declined or recommended for funding within 182 days, or six months, of deadline, target, or receipt date, whichever is later.
Indicator and Target Measure, Milestone, or Deliverable	75 Percent
Description	Time-to-decision or "dwell time" is the amount of time that passes between receipt of a proposal and notification to the principal investigator about the funding decision. One of the most significant issues raised in customer satisfaction surveys is the time it takes NSF to process proposals. Too long a time period inhibits the progress of research as it delays the funding process, but too short a time period may inhibit the merit review process. The six-month target balances the need of the investigator for timely action and the need of NSF for a credible and efficient merit review system. Monitoring the merit review process with the time-to-decision metric is an ongoing practice at NSF.
Trend Information	NSF has been tracking this measure as a performance goal for over a decade with a target of 70 percent. For additional information and trend data, refer to the Annual Performance Report. FY 2010 result: 75 percent FY 2011 result: 78 percent FY 2012 result: 78 percent FY 2013 result: 77 percent Because NSF has consistently exceeded the target of 70 percent the FY 2015 target has been increased to 75 percent.
Strategic Goal Linkage, 2014-2018 Strategic Plan	Strategic Goal: "Excel as a Federal Science Agency" Strategic Objective: "Use effective business methods and innovative solutions to achieve excellence in accomplishing the agency's mission."
Lead Organization/s	Office of International and Integrative Activities Office of Budget, Finance, and Award Management

Goal 8: Foster an Environment of Diversity and Inclusion

<table>
<tr><td>Goal Statement</td><td colspan="4">Foster an environment of diversity and inclusion while ensuring compliance with the agency's equal employment opportunity and civil rights programs.</td></tr>
<tr><td>Indicator and Target Measure, Milestone, or Deliverable</td><td>FY 2012
• Attain four of six essential elements of a model EEO agency. (FY 2011 baseline of three elements.)
• Submit Diversity and Inclusion (D&I) Strategic Plan to OPM by March 30, 2012. (Achieved)</td><td>FY 2013
• Attain five of six essential elements of a model EEO agency.
• Assist in implementation of at least one ODI action within NSF's D&I Strategic Plan.
(Achieved)</td><td>FY 2014
• Attain six of six essential elements of a model EEO agency.
• Assist in implementation of one ODI action within NSF's D&I Strategic Plan.
• Perform two compliance desk reviews under the applicable anti-discrimination laws.</td><td>FY 2015
• Continue to perform as a model EEO agency.
• Perform two compliance desk reviews under the applicable anti-discrimination laws.</td></tr>
<tr><td>Description</td><td colspan="4">NSF's diversity and inclusion goal has several components.
• For NSF to achieve model EEO agency status, it must meet and maintain each of the six criteria established by the EEOC. The EEOC refers to these criteria as the "Essential Elements" of a Model Agency, which are: 1. Demonstrated commitment from agency leadership; 2. Integration of EEO into the agency's strategic mission; 3. Management and program accountability; 4. Proactive prevention of unlawful discrimination; and 5. Responsiveness and legal compliance. NSF's activities have been aimed towards attainment of Model EEO status for several years and it will continue its efforts to obtain this goal.

• The Office of Diversity and Inclusion (ODI) will work collaboratively with the NSF Chief Human Capital Officer (CHCO) and the Office of Human Resource Management in implementing NSF's first D&I Strategic Plan focusing on specific areas in which potential barriers exist. ODI will continue to identify processes and mechanisms for effective implementation of NSF's D&I Strategic Plan.

• Title IX of the Education Amendments of 1972 (hereinafter Title IX) prohibits discrimination based on gender in any educational program or activity receiving federal financial assistance.</td></tr>
</table>

Goal 8: Foster an Environment of Diversity and Inclusion (cont.)

Goal Statement	Foster an environment of diversity and inclusion while ensuring compliance with the agency's equal employment opportunity and civil rights programs.
Description (continued)	Additionally, ODI's compliance program will include desk and on-site reviews to ensure recipients are in compliance under Title IX. NSF is also implementing regulations to ensure that educational programs that receive NSF funds are free of gender discrimination and harassment. (45 C.F.R. § 618). NSF's regulations under Title VI of the Civil Rights Act of 1964 incorporates NSF's Title IX compliance responsibilities, which require the agency to conduct periodic review of recipient practices to determine if they are in compliance. NSF has adopted a philosophy that involves serving as a resource to grantees while maintaining a balance of identifying and reporting on "career-life" best practices and ensuring full compliance. NSF's process will involve educating its stakeholders on the roles and responsibilities under Titles IX and VI as well as NSF's specific compliance process, which includes a strong communication strategy to all stakeholders, inclusive of NSF's internal staff and grantees. For compliance reviews, NSF will use collaborative approaches that are modeled specifically for its programs and adopted from effective proven models for conducting annual desk and site reviews as part of its risk assessment as well as its Business Systems Review processes. Similar to these models, NSF's compliance process will involve making neutral selections for review, which may include the amount of financial assistance, the location and size of the institution, the demographic composition of the science and math programs granted, the potential impact of a review, and the recentness of a compliance review; engaging and collaborating with recipients; assisting in ensuring basic compliance; and focusing on best practices. NSF's compliance model will also involve conducting desk reviews to gather preliminary compliance information in which participants will be selected based on neutral criteria referenced earlier. NSF will request information needed to evaluate whether a recipient's policies, procedures, and practices are consistent with Title IX and Title VI requirements, NSF's regulations, and other relevant guidelines.
Trend Information	NSF has been tracking its progress towards Model EEO Agency status as a performance goal since FY 2011. In FY 2011, NSF exceeded its baseline goal of three elements by attaining four of six elements. In FY 2012, five of six elements were attained.
Strategic Goal Linkage, draft FY 2014-FY 2018 Strategic Plan	Strategic Goal: "Excel as a Federal Science Agency" Strategic Objective: "Build an increasingly diverse, engaged, and high-performing workforce by fostering excellence in recruitment, training, leadership, and management of human capital."
Lead Organization/s	Office of Diversity and Inclusion: Office of the Director

Goal 9: Improve the Efficiency of Proposal Review

Goal Statement	Identify new approaches to keep NSF's world-renowned merit review process innovative, effective, and efficient.
Indicator and Target Measure, Milestone, or Deliverable	1) At least 33 percent of merit review panels will be wholly virtual panels. 2) At least five divisions explore use of asynchronous panels. 3) Pilot at least two additional innovative merit review mechanisms. 4) Assess the results from two merit review pilot activities conducted prior to FY 2015. 5) Complete assessments of synchronous virtual panel pilot.
Description	The merit review process is NSF's most critical business function. Increased proposal submissions without attendant increases in staff have resulted in increased workload for staff and reviewers. Currently the merit review process uses panels (either face-to-face or virtual) and ad-hoc (mail) reviews. It is imperative that NSF explore other review mechanisms under controlled conditions so that we may assess their efficacy with respect to timeliness, workload, cost, and merit review impact.
Trend Information	This is a new goal in FY 2015.
Strategic Goal Linkage, FY 2014-FY 2018 Strategic Plan	Strategic Goal: "Excel as a Federal Science Agency" Strategic Objective: "Use effective business methods and innovative solutions to achieve excellence in accomplishing the agency's mission."
Lead Organization/s	NSF Chief Technology Officer (CTO) Office of International and Integrative Activities Division of Institution and Award Support: Office of Budget, Finance, and Award Management

Goal 10: Evaluate NSF Investments

Goal Statement	Enable consistent evaluation of the impact of NSF investments with a high degree of rigor and independence.
Indicator and Target Measure, Milestone, or Deliverable	By September 2015, the Evaluation and Assessment Capability will have developed evaluation quality principles and disseminated them to all directorates. These quality principles will be followed by all new evaluation projects across the agency. NSF will have incorporated logic models/theory of change in the language that describes the rationale for all new programs.
Description	The NSF Evaluation and Assessment Capability (EAC) will enable NSF to consistently evaluate the impacts of its investment, make more data-driven decisions, and establish a culture of evidence-based planning and policy-making. Before EAC, evaluation activities were managed within the directorate of the program being evaluated with little centralized coordination. Although the distributed approach allows for the input of local program knowledge, there are significant advantages to building evaluation capacity centrally in order to promote rigor, integrate evaluation into performance management, and ensure that the results of evaluation are consistently used to inform decisions. Progress to date has focused on selection of a national leader to head the Evaluation and Assessment Capability, clarification of roles and responsibilities for integrated evidence-based system for decision-making, formation of the internal evaluation working group, and an inventory of current and future evaluations. In FY 2013, a 3-part workshop on developing logic models/theory of change and evaluation was held at NSF to improve program and organizational effectiveness.
Trend Information	This is a new performance goal for a recently initiated activity.
Strategic Goal Linkage, FY 2014-FY 2018 Strategic Plan	This performance goal is linked to all three Strategic Goals: Strategic Goal 1: "Transform the Frontiers of Science and Engineering." Strategic Goal 2: "Stimulate Innovation and Address Societal Needs through Research and Education." Strategic Goal 3: "Excel as a Federal Science Agency."
Lead Organization/s	Office of International and Integrative Activities

OTHER INFORMATION

Management Reviews
Each quarter, NSF senior leadership reviews progress towards all performance goals of the agency in a data-driven review meeting led by the Chief Operating Officer and Performance Improvement Officer. While focus is on the quarterly performance of the priority goals, all of the agency's goals are discussed.

Alignment of Human Capital Efforts with Organizational Performance
NSF requires all employees, executives, and the general workforce to set individual goals aligned with the Foundation's mission and strategic goals in order to drive individual and organizational performance. NSF provides training and makes tools and templates available for all supervisors and employees on linking performance plans to agency mission, as well as providing assistance and training on the policies, processes, requirements, and timeframes for the development of performance plans and appraisals.

NSF also directly aligns its strategic human capital and accountability efforts to the agency goals identified in the NSF Strategic Plan. Agency performance goals currently outline specific human capital goals, and NSF uses HRStat as the agency reporting mechanism to articulate the nexus between NSF's strategic goals/objectives, including agency performance goals, and human capital initiatives at the agency. Senior leaders are briefed quarterly regarding the status of agency performance goals and the human capital initiatives aligned to those goals.

Strategies and Collaborations
No one standard strategy is used across NSF for achievement of goals. Goal leaders at NSF choose strategies tailored to their stakeholders' needs and their institutional capabilities. NSF goals often involve testing the impacts of new activities or new approaches to existing activities, so feedback mechanisms are built in. Use of analysis, evidence, and evaluation findings is also at the discretion of each individual goal leader, as is the decision to collaborate with other agencies or external entities or to invest in contract support for their activities. Performance at NSF is reviewed quarterly by NSF's Performance Improvement Officer, who reports on goal progress to NSF senior management.

NSF employs a balanced set of performance indicators, milestones, and measures. Due to the nature of NSF investments, the two mission-oriented goals, *Transform the Frontiers of Science and Engineering* and *Stimulate Innovation and Address Societal Needs through Research and Education*, tend to be output- or outcome-based. The management-oriented goal, *Excel as a Federal Science Agency*, contains efficiency and customer-service measures, but also output and outcome measures relating to long-term activities such as financial system modernization and strategic human capital management.

Advisory Committees and Committees of Visitors
Each directorate and office has an external advisory committee that typically meets twice a year to review and provide advice on program management, discuss current issues, and review and provide advice on the impact of policies, programs, and activities in the disciplines and fields encompassed by the directorate or office. In addition to directorate and office advisory committees, NSF has several committees that provide advice and recommendation on specific topics: astronomy and astrophysics; environmental research and education; equal opportunities in science and engineering; direction, development, and enhancements of innovations; polar programs; advanced cyberinfrastructure; international and integrative activities; the agency's merit review processes; and business and operations.

Committees of Visitors (COVs) are subcommittees of NSF directorate advisory committees. COV reviews provide NSF with external expert judgments in two areas: (1) assessments of the quality and integrity of program operations and program-level technical and managerial matters pertaining to proposal decisions; and (2) comments on how the outputs and outcomes generated by awardees have

contributed to the attainment of NSF's mission and strategic outcome goals. COV reviews are conducted at regular intervals of approximately three years for programs and offices that recommend or award grants, cooperative agreements, and/or contracts and whose main focus is the conduct or support of NSF research and education in science and engineering. Approximately one-third of NSF's divisions are assessed each year.

A COV typically consists of up to 20 external experts, selected to ensure independence, programmatic coverage, and geographic balance. COV members come from academia, industry, government, and the public sector. They meet for two or three days to review and assess program priorities, program management, and award accomplishments or outcomes. Each COV prepares a report and the division or program that is being reviewed must prepare a response to the COV recommendations. These reports and responses are submitted to the parent advisory committee and to the Director of NSF. All reports and responses are public and posted on NSF's website at: www.nsf.gov/od/oia/activities/cov/covs.jsp.

In FY 2013, six directorates convened 16 Committees of Visitors (COVs), covering 8 divisions and 17 programs. A list of the COVs performed is provided below. The chapters of the directorates also contain information on these COVs, as well as information on *ad hoc* reports.

List of FY 2013 Committees of Visitors Meetings

DIR	Division	Program or Cluster
BIO	Biological Infrastructure Plant Genome Research Program	
EHR	Human Resource Development	• Alliances for Graduate Education and the Professoriate • Centers for Research Excellence in Science and Technology • Historically Black Colleges and Universities–Undergraduate Program • Louis Stokes Alliances for Minority Participation • Tribal Colleges and Universities Program
	Undergraduate Education	• STEM Talent Expansion Program • Transforming Undergraduate Education in STEM (was CCLI)
ENG	Engineering, Education and Centers Industrial Innovation and Partnerships	
GEO	Atmospheric and Geospace Sciences	Lower Atmosphere Research Section
	Earth Sciences	Instrumentation and Facilities
	Polar Programs	• Antarctic Infrastructure & Logistics • Antarctic Sciences • Arctic Sciences
	Education and Diversity programs	• Geoscience Education • Geoscience Teacher Training • Global Learning and Observations to Benefit the Environment • Opportunities for Enhancing Diversity in the Geosciences • Earth Sciences Education and Human Resources
MPS	Chemistry Mathematical Sciences	
SBE	Behavioral and Cognitive Sciences Social and Economic Sciences	

Evaluations and Research

Evaluations at NSF are currently performed at the discretion of the individual directorate, office, or program being evaluated. For discussion of how NSF uses planned, current, and recently completed evaluations in its program decisions, refer to individual directorate and office chapters. A list of the evaluations completed in FY 2013 follows, along with a list of selected high-impact events (workshops, symposia, or other meetings resulting in publications) reported by directorates. For more details about how the results of these specific evaluations or events are being used to shape agency decisions, see the chapter of the sponsoring directorate. In FY 2015 NSF will expand and coordinate program evaluation and collection and management of NSF programmatic data; for more information, see the NSF-Wide investments chapter section on NSF's Evaluation and Assessment Capability.

External Evaluations Completed in FY 2013

DIR	Program, Topic, or Area Evaluated	Name of Evaluation	Contractor	Link to report
EHR	ADVANCE	Implementation Evaluation of the NSF ADVANCE Program	Urban Institute	No link available
	Integrative Graduate Education and Research Traineeship	Essential Competencies for Interdisciplinary Graduate Training in IGERT	Abt Associates	www.abtassociates.com/Reports/2013/Essential-Competencies-for-Interdisciplinary-Gradu.aspx
IIA	NSF overseas offices	An Assessment of NSF's Foreign Offices	STPI	(No link available)
MPS	Physics education	Adapting to a Changing World - Challenges and Opportunities in Undergraduate Physics Education	National Academy of Sciences	sites.nationalacademies.org/BPA/BPA_059078
MPS	Mathematical sciences	The Mathematical Sciences in 2025	National Academy of Sciences	Full report: www.nap.edu/catalog.php?record_id=15269 Brochure: www.nap.edu/catalog.php?record_id=13373

Selected Meetings, Symposia, and Workshops in FY 2013

DIR	Workshop Name	Link to report
BIO	How organisms walk the tightrope between stability and change	www.nsf.gov/bio/pubs/reports/gcob_banbury_report.pdf
MPS	Strengthening Forensics Science through Connections with the Analytical Sciences	www.chem.purdue.edu/docs/ForensicWorkshopFinalReport.pdf
MPS	Biomaterials: Important Areas for Future Investment	http://nsfbiomatworkshop2012.caltech.edu/report
MPS	Investing in the Next Generation through Innovative and Outstanding Strategies for Mathematics and Statistics (INGenIOuS)	www.ingeniousmathstat.org/workshop
MPS	Physical and Mathematical Principles of Brain Structure and Function	http://physicsoflivingsystems.org/brainstructureandfunction/

DIR	Workshop Name	Link to report
MPS	Ensuring the Sustainability of Critical Materials and Alternatives: Addressing the Fundamental Challenges in Separation Science and Engineering (SSE)	www.aiche.org/sites/default/files/docs/conferences/critical_materials_separations_sciences_final.pdf
MPS	Laboratory Safety	http://dx.doi.org/10.1016/j.jchas.2012.10.002
SBE/ CISE	Integrating Approaches to Computational Cognition	http://matt.colorado.edu/compcogworkshop/report.pdf
	Linking Language and Cognition to Neuroscience via Computation	www.psych.nyu.edu/clash/dp_papers/NSF-Workshop-report.pdf
NSF-wide	Public Access to Federally-Supported Research and Development Data and Publications	sites.nationalacademies.org/DBASSE/CurrentProjects/DBASSE_082378

Data Verification and Validation

It is NSF's practice to follow Government Accountability Office (GAO) guidance and engage external contractors to conduct an independent validation and verification (V&V) review of its annual performance information, data, and processes. The guidance from GAO indicates that agencies should "…describe the means the agency will use to verify its performance data…" and "…provide confidence that [their] performance information will be credible." [1] NSF will continue this process in FY 2014 and FY 2015.

In FY 2013, IBM Global Business Services (IBM) assessed the validity of NSF data and verified the reliability of the methods used to collect, process, maintain, and report that data, and reviewed NSF's information systems based on GAO standards for application controls. IBM was able to fully (14 goals) or partially (4 goals) verify the reliability of the processes and validate the accuracy of results reported for NSF's annual performance goals.[2] IBM's FY 2013 report concluded:

> *Overall, IBM verifies that NSF relies on sound business practices, internal controls, and manual checks of system queries to ensure accurate performance reporting. NSF maintains adequate documentation of its processes and data to allow for an effective V&V review. Based on the V&V assessment, IBM has confidence in the systems, policies, and procedures used by NSF to calculate results for its performance measures that contained targets. NSF continues to take concerted steps to improve the quality of its systems and data. IBM confirms NSF's commitment to ensuring the accuracy of its reported GPRA results, and the reliability of its processes for collecting, processing, maintaining, and reporting data for its performance goals.*[3]

[1] GAO, The Results Act: An Evaluator's Guide to Assessing Agency Annual Performance Plans, GAO/GGD-10.1.20 (Washington, D.C.: April 1998), pp. 40-41.

[2] T-1.1 INSPIRE; I-1.2 K-12 Components; M-1.2 IPA Performance Plans, and M-1.3 Performance Management System all had one or more un-V&V'd targets. These goals were not achieved.

[3] IBM Global Business Services, *National Science Foundation Performance Measurement Verification and Validation Final Report, Fiscal Year 2013*. November 12, 2013.

Data Sources, Limitations, and Intended Use
The data and information required to measure progress towards NSF's performance goals fall into three broad categories.

- NSF automated administrative systems. Performance monitoring can be a valuable secondary function of such systems. In FY 2011, reporting included data from systems that:
  - Store and approve publications such as solicitations announcements, and Dear Colleague Letters;
  - Collect transactional data about proposal and award management;
  - Perform financial transactions;
  - Store human resources data; and
  - Permit keyword search of abstract or full texts of proposals and awards.
  - The data were used either directly or for achieving milestones that involve the writing of a report. While not all goals require a high level of accuracy, data from these systems are highly reliable.
- Reports on internal activities. Milestone achievement is often determined from review of records of certain activities and events. Records of this sort tend to be compiled from review of the evidence provided by goal leaders.
- Data requests of external parties. Qualitative or quantitative information is solicited directly from awardees.

Management Challenges
A discussion of agency management challenges can be found in the FY 2013 Agency Financial Report, www.nsf.gov/pubs/2014/nsf14002/.

Burden Reduction/Unnecessary Plans and Reports to Congress
The GPRA Modernization Act of 2010 requires that agencies identify which of the plans and reports they provide to Congress are outdated or duplicative of other required plans and reports. The complete list of reports that NSF suggested for consolidation or elimination can be found on performance.gov.

Lower-Priority Program Activities
The 2014 Cuts, Consolidations, and Savings (CCS) Volume of the President's Budget identifies the lower-priority program activities under the GPRA Modernization Act (31 U.S.C. 1115(b)(10)), available at: www.whitehouse.gov/omb/budget.

Use of Non-Federal Parties
No non-federal parties were involved in preparation of this Annual Performance Report.

Classified Appendices Not Available to the Public
None