PERFORMANCE INFORMATION

This chapter provides supporting information on the performance activities used in developing NSF's FY 2008 Request. The NSF Strategic Plan for FY 2006-2011 established a new overall framework for evaluating NSF's performance through the Discovery, Learning, Research Infrastructure, and Stewardship strategic goals. Two overarching objectives are associated with these goals: To Inspire and Transform and To Grow and Develop. Annual performance goals and measures have been established for the Stewardship goal. In addition, three of NSF's investment categories under its previous Strategic Plan were assessed for this budget cycle through the Program Assessment Rating Tool (PART): Centers and Capability Enhancement under the previous Ideas goal, and Infrastructure and Instrumentation under the previous Tools goal.

NSF's leadership in advancing the frontiers of science and engineering research and education is demonstrated, in part, through internal and external performance assessments. The results of our performance assessment process provide our stakeholders and the American taxpayer with vital information about the return on our investments. Performance assessment at NSF is guided by the Government Performance and Results Act (GPRA) of 1993, the Performance Assessment Rating Tool (PART), as well as the Strategic Plan.

National Science Foundation
By Strategic Outcome Goal*
(Dollars in Millions)

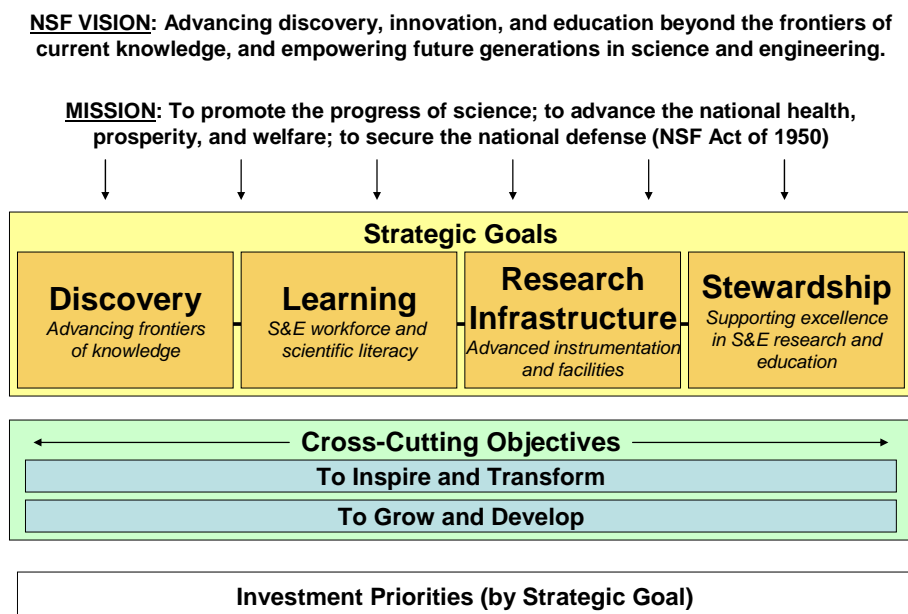|	FY 2006 Actuals	FY 2007 Request	FY 2008 Request	Change over FY 2007 Amount	Percent
Discovery	$2,942.82	$3,086.93	$3,312.96	$226.03	7.3%
Learning	878.99	898.51	938.22	39.71	4.4%
Research Infrastructure	1,508.17	1,685.24	1,813.99	128.75	7.6%
Stewardship	315.82	349.53	363.83	14.30	4.1%
Total, NSF	$5,645.79	$6,020.21	$6,429.00	$408.79	6.8%

Totals may not add due to rounding.

*New Strategic Plan Outcome Goals presented here are roughly equivalent to Ideas, People, Tools, and Organizational Excellence in the FY 2003 - 2008 Strategic Plan.

For NSF and other federal agencies with significant R&D portfolios, assessment activities are required to draw heavily upon the R&D Investment Criteria established by OMB and the Office of Science and Technology Policy. These three criteria, Relevance, Quality, and Performance are listed below and are reflected in each of the directorate and office narratives throughout this Budget Request.

- Relevance: R&D programs must be able to articulate *why* this investment is important, relevant, and appropriate.

- Quality: R&D programs must justify *how* funds will be allocated to ensure quality R&D.

- Performance: R&D programs must be able to monitor and document *how well* the investment is performing.

The NSF Strategic Plan for FY 2006 – 2011 provides the basis for performance evaluation of all NSF activities. The performance framework is illustrated in the chart below.

NSF VISION: Advancing discovery, innovation, and education beyond the frontiers of current knowledge, and empowering future generations in science and engineering.

MISSION: To promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense (NSF Act of 1950)

Strategic Goals

Discovery	**Learning**	**Research Infrastructure**	**Stewardship**
Advancing frontiers of knowledge	*S&E workforce and scientific literacy*	*Advanced instrumentation and facilities*	*Supporting excellence in S&E research and education*

Cross-Cutting Objectives

To Inspire and Transform

To Grow and Develop

Investment Priorities (by Strategic Goal)

The four interrelated goals – *Discovery*, *Learning*, *Research Infrastructure*, and *Stewardship* – establish an integrated strategy to deliver new knowledge at the frontiers, meet vital national needs, and work to achieve the NSF vision. Although these goals are similar to the previous Strategic Plan's goals of *Ideas, People, Tools,* and *Organizational Excellence*, the first three goals are aligned directly with the three strategic priorities recently established in the *National Science Board 2020 Vision for the National Science Foundation*. The fourth goal, Stewardship, was added as an internally focused goal to support excellence in science and engineering research and education through a capable and responsive organization.

The external Advisory Committee for GPRA Performance Assessment (AC/GPA) will evaluate NSF's achievement under *Discovery, Learning, and Research Infrastructure* to determine if NSF has demonstrated significant achievement. In doing so, the Committee will be guided by the two objectives: *To Inspire and Transform*, and *To Grow and Develop*. For the *Stewardship* goal, the Foundation has established annual goals to monitor progress in improving administrative and management practices.

Annual performance measures are also linked to the Foundation's program priorities and key investments and the long term investment priorities under the strategic outcome goals. Some annual performance measures are taken from NSF's PART (Program Assessment Rating Tool) evaluations that began in FY 2003. NSF was rated "Effective" (the highest rating) in all of its PART evaluations. Complete PART results are available at www.whitehouse.gov/omb/expectmore/index.html.

STRATEGIC OUTCOME GOALS

Discovery - Foster research that will advance the frontiers of knowledge, emphasizing areas of greatest opportunity and potential benefit and establishing the nation as a global leader in fundamental and transformational science and engineering.

FY 2008 Annual Performance Goal for Discovery: NSF will demonstrate significant achievement for the two objectives related to the Discovery strategic outcome goal: *To Inspire and Transform* and *To Grow and Develop.*

Means and Strategies for Success: NSF's ongoing portfolio of investments and continuing priorities are outlined in this budget submission. In addition, the following long-term investment priorities, associated with the strategic goal of Discovery, have been identified for increased emphasis or additional funding during 2006-2011.

- Promote transformational, multidisciplinary research.
- Investigate the human and social dimensions of new knowledge and technology.
- Further U.S. economic competitiveness.
- Foster research that improves our ability to live sustainably on Earth.
- Advance fundamental research in computational science and engineering, and in fundamental, applied, and interdisciplinary mathematics and statistics.

Baseline/Prior Year Results: This goal is a continuation of NSF's previous goal of Ideas. FY 2001 was the first year that NSF had an annual performance goal with associated indicators for Ideas. Each fiscal year's performance indicators may differ from those of prior years, but in all cases they serve as measures of progress toward achievement of NSF's strategic outcome goal. The Foundation's external Advisory Committee for GPRA Performance Assessment (AC/GPA) determined that NSF was successful in achieving the annual performance goal associated with the Ideas strategic outcome goal in FY 2006. Find the latest AC/GPA Report at www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf06206.

Resources Required: This goal can be achieved with NSF's requested FY 2008 staff and budgetary resources.

Program Assessment Rating Tool (PART) Evaluations: Three PART evaluations were conducted based on the investment categories within NSF's previous goal of Ideas. All were rated "effective."

Learning – Cultivate a world-class, broadly inclusive science and engineering workforce, and expand the scientific literacy of all citizens.

FY 2008 Annual Performance Goal for Learning: NSF will demonstrate significant achievement for the two objectives related to the Learning strategic outcome goal: *To Inspire and Transform* and *To Grow and Develop*.

Means and Strategies for Success: NSF's ongoing portfolio of investments and continuing priorities are outlined in this budget submission. In addition, the following long-term investment priorities, associated with our strategic goal of Learning, have been identified for increased emphasis or additional funding during 2006-2011.

- Build strong foundations and foster innovation to improve K-12 teaching, learning, and evaluation in science and mathematics.
- Advance the fundamental knowledge base on learning, spanning a broad spectrum from animals and humans to machines.
- Develop methods to effectively bridge critical junctures in STEM education pathways.
- Prepare a diverse, globally engaged STEM workforce.
- Integrate research with education, and build capacity.
- Engage and inform the public in science and engineering through informal education.

Baseline/Prior Year Results: This goal is a continuation of NSF's previous goal of People. FY 2001 was the first year that NSF had an annual performance goal with associated indicators for People. Each fiscal year's performance indicators may differ from those of prior years, but in all cases they serve as measures of progress toward achievement of NSF's strategic outcome goal. The Foundation's external Advisory Committee for GPRA Performance Assessment (AC/GPA) determined that NSF was successful in achieving the annual performance goal associated with the Ideas strategic outcome goal in FY 2006. Find the latest AC/GPA Report at www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf06206.

Resources Required: This goal can be achieved with NSF's requested FY 2008 staff and budgetary resources.

Program Assessment Rating Tool (PART) Evaluations: Three PART evaluations were conducted based on the investment categories within NSF's previous goal of People. All were rated "effective."

Research Infrastructure – ***Build the Nation's research capability through critical investments in advanced instrumentation, facilities, cyberinfrastructure and experimental tools.***

FY 2008 Annual Performance Goal for Research Infrastructure: NSF will demonstrate significant achievement for the two objectives related to the Research Infrastructure strategic outcome goal: *To Inspire and Transform* and *To Grow and Develop*.

Means and Strategies for Success: NSF's ongoing portfolio of investments and continuing priorities are outlined in this budget submission. In addition, the following long-term investment priorities, associated with our strategic goal of Research Infrastructure, have been identified for increased emphasis or additional funding during 2006-2011.

- Fill the gaps in our ability to provide enabling research infrastructure.
- Identify and support the next generation of large research facilities.
- Develop a comprehensive, integrated cyberinfrastructure to drive discovery in all fields of science and engineering.
- Strengthen the Nation's collaborative advantage by developing unique networks and innovative partnerships.

Baseline/Prior Year Results: This goal is a continuation of NSF's previous goal of Tools. FY 2001 was the first year that NSF had an annual performance goal with associated indicators for Tools. Each fiscal year's performance indicators may differ from those of prior years, but in all cases they serve as measures of progress toward achievement of NSF's strategic outcome goal. The Foundation's external Advisory Committee for GPRA Performance Assessment (AC/GPA) determined that NSF was successful in achieving the annual performance goal associated with the Tools strategic outcome goal in FY 2006. Find the latest report at www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf06206.

Resources Required: This goal can be achieved with NSF's requested FY 2008 staff and budgetary resources.

Program Assessment Rating Tool (PART) Evaluations: Four PART evaluations were conducted based on the investment categories within NSF's previous goal of Tools. All were rated "effective."

<u>Stewardship</u> - Support excellence in science and engineering research and education through a capable and responsive organization.

FY 2008 Strategic Goal for Stewardship: The Stewardship strategic outcome goal is fundamental to NSF's leadership in implementing outstanding results-oriented management practices and establishing collaborative partnerships with the scientific and federal communities. As the Foundation transitions to a new Strategic Plan for the period 2006 - 2011, new annual performance measures have been adopted to illustrate NSF's continuing emphasis on improvement of the effectiveness and efficiency of its internal operations.

Means and Strategies for Success: Several long-term investment priorities associated with our strategic goal of Stewardship were identified in the Strategic Plan for increased emphasis or additional funding during 2006-2011. As a result, the Foundation has developed the following annual Stewardship goals:

- Time to Decision: For 70 percent of proposals, be able to inform applicants whether their proposals have been declined or recommended for funding within six months of deadline or target date or receipt date, whichever is later.
- Merit Review: Improve the transparency of our decisions and the quality of the merit review process.
- Customer Service: Improve customer service to the science, engineering, and education communities.
- Broaden Participation: Expand efforts to increase participation from underrepresented groups and diverse institutions throughout the United States in all NSF activities and programs.
- Management of Large Facilities: Ensure the effective management of the construction and operation of large facilities.
- Post-Award Monitoring: Fully implement NSF's program of post-award financial and administrative monitoring.
- E-Government: Establish an E-Government Implementation Plan.
- IT Security: Conduct a successful FISMA IT Security Program Review.

Baseline/Prior Year Results: This goal is a continuation and expansion of NSF's goal of Organizational Excellence. NSF achieved the goal in FY 2006. Evaluation of achievement included input from two groups of external experts: The Advisory Committee for GPRA Performance Assessment and the Advisory Committee for Business and Operations.

Resources Required: This goal can be achieved with NSF's requested FY 2008 staff and budgetary resources.

Program Assessment Rating Tool (PART)

NSF used the Program Assessment Rating Tool to assess three of the investment categories that existed under the previous Strategic Plan to inform the FY 2008 budget decision-making process: Capability Enhancement, Centers, and Infrastructure and Instrumentation. These programs, as well as the Foundation's other PART evaluations, were given the highest rating of "Effective." Complete PART results are available at www.whitehouse.gov/omb/expectmore/index.html.

The Capability Enhancement PART Program included several NSF programs: Centers of Research Excellence in Science and Technology (CREST), EPSCoR (Experimental Program to Stimulate Competitive Research, SBIR (Small Business Innovation Research), STTR (Small Business Technology Transfer), Industry/University Cooperative Research Centers (I/UCRC), Research Opportunity Awards, and Research in Undergraduate Institutions. Investments in these programs strengthen NSF's commitment to broadening participation from groups that are underrepresented in the science and engineering workforce; strengthening partnerships with industry, particularly small businesses; and supporting research in undergraduate institutions.

The Centers PART Program encompassed Science and Technology Centers, Engineering Research Centers, Materials Research Science and Engineering Centers, Nanoscale Science and Engineering Centers, Chemical Bonding Centers, Centers for Analysis and Synthesis, and Science of Learning Centers. The purpose of the program is to enable academic institutions along with their non-academic partner institutions to integrate research and education on scales that are extensive enough to significantly impact important science and engineering fields through large-scale, organized efforts. Research efforts at these centers stimulate collaborations across organizations, disciplines, sectors, and international boundaries. Centers address specific problems, interests, and national needs that cannot be met fully under traditional individual investigator, small group, or instrumentation awards.

The Infrastructure and Instrumentation PART Program included the Digital Library Program, the Major Research Instrumentation Program, Shared Cyberinfrastructure Tools, Science Resources Statistics, and Research Resources. Its purpose is to support the development and use of technological tools for scientific and engineering research and education. Within these programs, concepts are evolving to encompass distributed systems including software, databases, telescience capabilities, and expert systems. Rapid advances in computing power, communications bandwidth, data storage, and distributed systems allow innovative collaborative and data-intensive research styles in revolutionary ways. NSF's PART schedule is shown below.

National Science Foundation PART Assessments

Budget Year	Investment Category	Rating
FY 2009:	K-12 Education	
FY 2008:	Capability Enhancement	Effective
	Centers	Effective
	Infrastructure and Instrumentation	Effective
FY 2007:	Fundamental Science and Engineering	Effective
	Federally Funded Research and Development Centers	Effective
FY 2006:	Biocomplexity in the Environment Priority Area	Effective
	Institutions	Effective
	Collaborations	Effective
	Polar Tools, Facilities and Logistics	Effective

FY 2005:	Nanoscale Science and Engineering Priority Area	Effective
	Information Technology Research Priority Area	Effective
	Individuals	Effective
	Facilities	Effective

New PART Structure

On September 30, 2006, NSF adopted a new Strategic Plan for FY 2006 – 2011, which features four strategic outcome goals of Discovery, Learning, Research Infrastructure, and Stewardship and two overarching objectives: *To Inspire and Transform* and *To Grow and Develop*. However, the investment categories in the previous Strategic Plan, upon which the PARTs were based, were not carried over into the new Plan. Beginning in FY 2007, the Foundation will conduct PART evaluations on Research Activities, Centers, K-12 Math and Science Education, Postsecondary Education and Informal Science Education, Facilities, and Polar Facilities and Logistics. These PART evaluations fall under the first three strategic outcome goals of Discovery, Learning, and Research Infrastructure. The fourth outcome goal of Stewardship, which is to "support excellence in science and engineering research and education through a capable and responsive organization," will <u>still</u> not be a subject of a PART evaluation but will be monitored according to annual performance goals.

ANNUAL PERFORMANCE GOALS

The National Science Foundation's annual performance goals consist of the performance measures developed during the PART evaluation process and new annual Stewardship goals that focus on important administrative and management priorities for the Foundation. Examples of new Stewardship goals are to improve the transparency of our decisions and the quality of the merit review process, to expand efforts to increase participation from underrepresented groups and diverse institutions throughout the United States in all NSF activities, and to ensure the effective management of the construction and operation of large facilities. One important efficiency goal that has been in place for several years is the time-to-decision goal, explained below. Examples of other existing annual performance goals follow.

FY 2008 Annual Performance Goal – Time to Decision: For 70 percent of proposals, be able to inform applicants whether their proposals have been declined or recommended for funding within six months of deadline or target date, or receipt date, whichever is later.

Time-to-Decision					
	2004	**2005**	**2006**	**2007**	**2008**
Goal	70%	70%	70%	70%	70%
Result	77%	76%	78%	&	&

& = data not yet available

Several of NSF's PART programs have adopted the time-to-decision goal for their individual programs. These goals include a quality component based on a review by the Advisory Committee for GPRA Performance Assessment. That component is to maintain a credible and efficient merit review system, as evaluated by external experts. Merit review is the cornerstone of the National Science Foundation's work and is an international "gold standard" for review of science and engineering research proposals. The chart below shows results for FY 2004-2006 and targets for 2007-2008.

Time-to-Decision by PART Program										
	2004		2005		2006		2007		2008	
	Goal	Result	Goal	Result	Goal	Result	Goal	Result	Goal	Result
Individuals	70%	74%	70%	78%	70%	85%	70%	&	70%	&
Institutions	70%	83%	70%	76%	70%	74%	70%	&	70%	&
Collaborations	70%	82%	70%	82%	70%	78%	70%	&	70%	&
Capability Enhancement	n/a	n/a	n/a	n/a	70%	93%	70%	&	70%	&
Fundamental Science & Engineering	70%	83%	70%	73%	70%	76%	70%	&	70%	&
Infrastructure & Instrumentation	n/a	n/a	n/a	n/a	70%	67%	70%	&	70%	&

& = data not yet available

FY 2008 Annual Performance Goal – Graduate Fellowships and Traineeships: The number of graduate students supported through the NSF's three primary fellowship and traineeship programs is a key performance measure. The annual performance goal is to increase the number of graduate students funded through fellowships or traineeships from Graduate Research Fellowships (GRF), Integrative Graduate Education, and Research Traineeships (IGERT), or Graduate Teaching Fellowships (GK-12). In FY 2008, an increase is requested for these three flagship programs, which will enable NSF to support an estimated 5,375 graduate students.

FY 2008 Annual Performance Goal – MREFC Construction: For all MREFC projects, keep negative cost and schedule variances to less than 10 percent. This goal applies to all current MREFC projects and those to be completed in FY 2008 that have a total project cost of at least $5.0 million.

Facility Construction (MREFC)					
	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Goal	90%	90%	90%	90%	90%
Result	100%	79%	73%	&	&

& = data not yet available

FY 2008 Annual Performance Goal – Facility Operations: For 90 percent of operational facilities, keep scheduled operating time lost to less than 10 percent. This goal applies to all NSF-supported Facilities that received greater than $8.0 million in annual operations and maintenance support.

Facility Operating Time					
	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Goal	90%	90%	90%	90%	90%
Result	26 of 29 (89.7%) facilities met goal	100%	95%	&	&

& = data not yet available

FY 2008 Annual Performance Goal – Increase the number of users of National Center for Atmospheric Research (NCAR) data sets with unique access addresses who have downloaded data within the last 12 months.

Use of NCAR Data Sets					
	FY 2004	**FY 2005**	**FY 2006**	**FY 2007**	**FY 2008**
Goal	1332	3000	4500	5000	5500
Result	2191	3990	4779	&	&

& = data not yet available

FY 2008 Performance Goal – Maintain a high percentage of observing time at the National Optical Astronomy Observatory that is awarded competitively through the NOAO allocation committee.

NOAO Observing Time					
	FY 2004	**FY 2005**	**FY 2006**	**FY 2007**	**FY 2008**
Goal	baseline	95%	95%	95%	95%
Result	98.6%	96.4%	98.5%	&	&

& = data not yet available

FY 2008 Annual Performance Goal – Increase the number of distinct science/engineering/education users who make use of the TeraGrid (a distributed national infrastructure supporting computational science).

Users of the TeraGrid					
	FY 2004	**FY 2005**	**FY 2006**	**FY 2007**	**FY 2008**
Goal	n/a	n/a	2500	3500	4500
Result	600	1800	3200	&	&

& = data not yet available