NSF MANAGEMENT GOALS
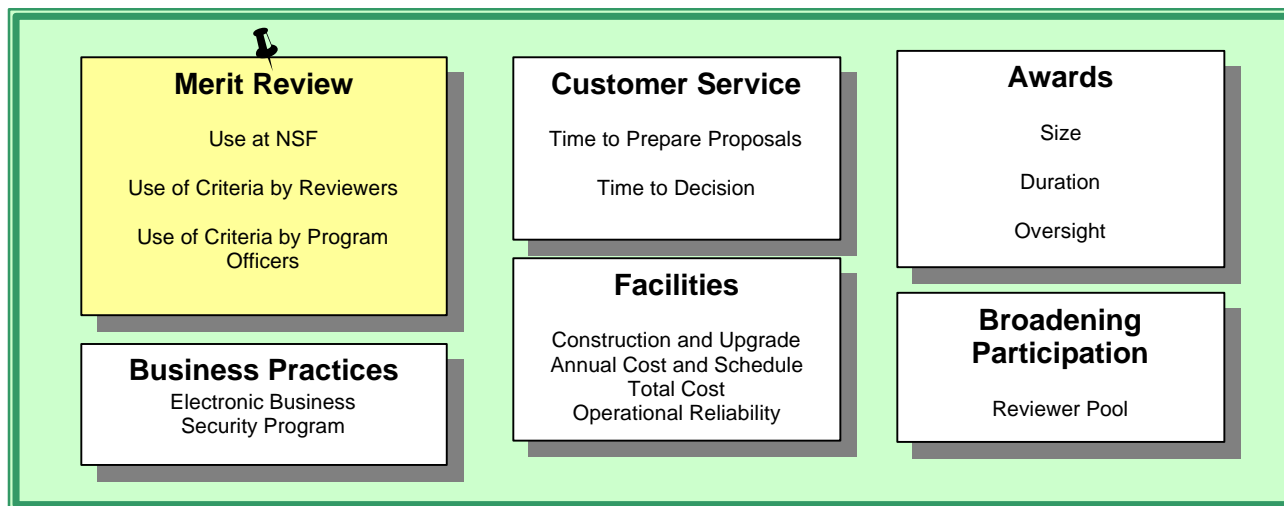
NSF MANAGEMENT GOALS

Success in achieving our outcome goals is dependent upon the award portfolio developed by our program staff. The following sections provide information on how our management shapes the award portfolio and supports our outcome goals. Management goals focus on means and strategies for successful performance – in merit review and award oversight and management processes, broadening participation, and facilities oversight.

Summary of Results for Management Goals

We achieved 14 of our 19 Management Goals in FY 2002. We achieved our goals for allocation of funds to merit-reviewed projects, use of the two merit review criteria by reviewers, use of the two merit review criteria by program officers, the time it takes to make a decision on funding or declining a proposal, average annualized award size, developing and initiating a risk assessment / risk management plan for awards, annual and total cost of construction and upgrade projects, advancing the role of "e-business" in review, award, and management processes, implementing an agency-wide security program in response to the Government Information Security Reform Act, showing an increase over FY 2000 in the total number of hires to NSF science and engineering positions from underrepresented groups, establishing an internal NSF Academy to promote continuous learning for NSF staff, initiating a strategic business analysis to provide a comprehensive perspective on future workforce requirements, and developing an employee survey to establish various baselines that will enable management to better assess the quality of worklife and work environment within the Foundation.

We did not meet our Management Goals for time for the science and engineering community to prepare proposals, for establishing a baseline for the diversity of our reviewer pool, the average award duration, and annual construction/upgrade schedules and operating efficiency of facilities.

Merit Review	Customer Service	Awards
Use at NSF	Time to Prepare Proposals	Size
Use of Criteria by Reviewers	Time to Decision	Duration
Use of Criteria by Program Officers		Oversight

Business Practices	Facilities	Broadening Participation
Electronic Business Security Program	Construction and Upgrade Annual Cost and Schedule Total Cost Operational Reliability	Reviewer Pool

PROPOSAL AND AWARD PROCESS

A. MERIT REVIEW

Merit review is the keystone to identification of the most promising People, Ideas, and Tools and is critical to fostering the highest standards of excellence and accountability—standards for which NSF is globally recognized. We evaluate proposals for research and education projects using two criteria—the intellectual merit of the proposed activity and the broader impacts of the proposed activity.

Evaluations of proposals and funding decisions made through the process of merit review rely on evaluation by experts. Each year, more than 200,000 merit reviews are conducted to help program officers evaluate the proposals submitted for consideration.

The two NSF merit review criteria are:

What is the intellectual merit of the proposed activity?
How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of the prior work.) To what extent does the proposed activity suggest and explore creative and original concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

What are the broader impacts of the proposed activity?
How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

Goal IV-1 – Use of Merit Review
✓ Goal Achieved

Goal IV-1: At least 85% of basic and applied research funds will be allocated to projects that undergo merit review.

The vast majority of proposals we receive undergo external merit review. The Foundation makes a small number of exceptions to this general requirement in situations where timeliness is crucial such as for studies of volcanic eruptions or earthquakes or where objective external reviewers may be difficult to find. It also considers exceptions when researchers propose such new ideas that knowledgeable external reviewers do not exist.

As of FY 2000 NSF utilizes OMB's definition of merit-reviewed scientific research[13]. This performance goal applies to federal science, space, and technology agencies. NSF has established the 85% target to be consistent with the OMB recommended range of 70% to 90%.

RESULTS: NSF successfully achieved this goal.

PERCENT OF FUNDS TO PROJECTS THAT UNDERGO MERIT REVIEW							
	FY 1997	**FY 1998**	**FY 1999**	**FY 2000**	**FY 2001**	**FY 2002**	**FY2003**
Baseline	85%						
Goal			N/A	80%*	85%	85%	85%
Result		86%	86%	87%	88%	✓88%	

* The 80% estimated goal, recalculated from NSF's original goal of 90%, is based on the FY 2000 OMB definition of merit-reviewed scientific research.

Funds Allocated to Merit-Reviewed Projects
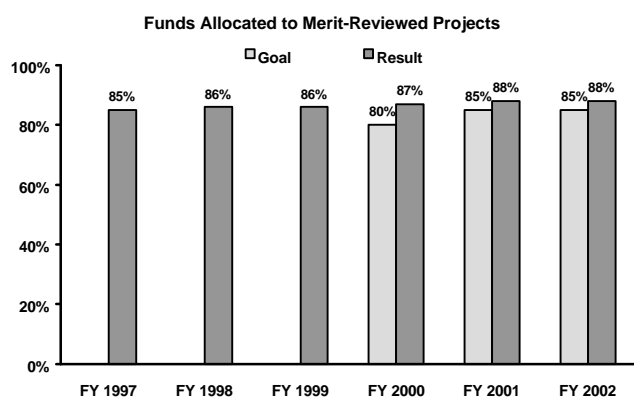
IMPLICATIONS FOR THE FY 2003 PERFORMANCE PLAN: An examination of our performance over the last four years shows that we have consistently exceeded our current goal of 85%. Furthermore, we are showing a small increase in the funds allocated to merit-reviewed proposals each year. We will continue to maintain the goal of at least 85% in FY 2003.

*Goal not established for FY 1997 – FY 1998, related goal for FY 1999.

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[13] *"Merit-reviewed scientific research with competitive selection and external (peer) evaluation. Intramural and extramural research programs where funded activities are competitively awarded from a pool of qualified applicants following review by a set of external scientific or technical reviewers (often called peers) for merit. The review is conducted by appropriately qualified scientists, engineers, or other technically-qualified individuals who are apart from the people or groups making the award decisions, and serves to inform the program manager or other qualified individual who makes the award."*

Goal IV-2 – Reviewer Use of Both Merit Review Criteria
✓ Goal Achieved

Goal IV-2: Reviewers will address the elements of both generic review criteria at a level above that of FY 2001.

Performance Indicator: Percent of reviews using both merit review criteria

On September 20, 1999, NSF issued Important Notice #125 to Presidents of Universities and Colleges, encouraging Principal Investigators to address the merit review criterion, "the broader impacts of the proposed activity", in their proposals and reviews.

RESULTS: This goal was achieved[14]. NSF data indicates that 84% of reviews received by NSF address both review criteria compared with the 69% response rate in FY 2001. In FY 2001 assessment focused on the percent of reviews that addressed only the broader impacts criterion. Based on the assumption that all reviews address the intellectual merit criterion, the 69% value shown here represents a maximum percent for proposals addressing both review criteria.

IMPLICATIONS FOR THE FY 2003 PERFORMANCE PLAN: In FY 2003, NSF will continue to develop and apply procedures focused on strategies that stress the importance of using both criteria.

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[14] IBM Business Consulting Services reviewed the data collection, maintenance, processing, and reporting procedures used to calculate results for this goal. They concluded that the procedures related to this goal were sufficient and adequate and yielded valid results. We provide the Executive Summary of their entire report, as well as a table listing their conclusions as to whether the processes we used for selected goals were verifiable and the results valid, in Appendix III.

Goal IV-3 – Program Officer Use of Both Merit Review Criteria
✓ Goal Achieved

Goal IV-3: Program Officers will consider elements of both generic review criteria in making decisions to fund or decline proposals.

> **Performance Indicator: Percent of review analyses (Form 7s) that comment on aspects of both merit review criteria as determined by directorate or advisory committee sampling.**
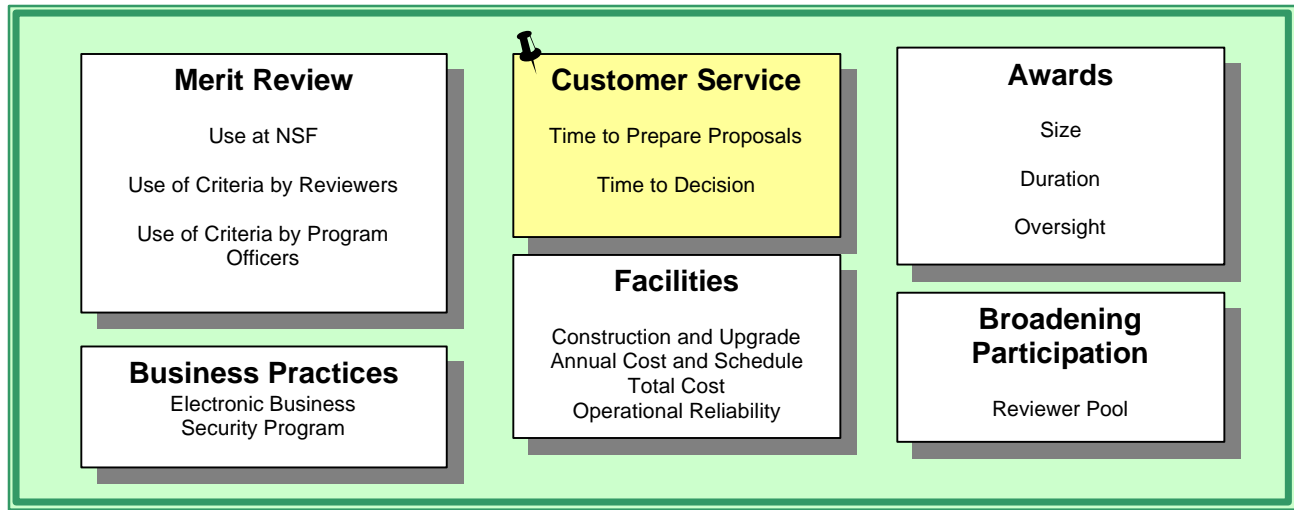
After a proposal has been subjected to external peer review a NSF Program Officer makes a recommendation concerning support of the proposal. The matters to be discussed in this recommendation are described in our Proposal and Award Manual, Chapter VI, Section B-4. We state that "*Program Officers must comment on the intellectual merit of the proposed activity and the broader impacts of the proposed activity.*"

RESULTS: NSF is successful for this goal[15]. During FY 2002 we examined a statistically determined sample of FY 2002 review analyses to determine the extent of Program Officer usage of both review criteria. We found, overall, that approximately 77.8% of review analyses used both merit review criteria.

IMPLICATIONS FOR THE FY 2003 PERFORMANCE PLAN: In FY 2003 this goal will have a target to reflect our expectation of increasing use of both criteria in FY 2003. In FY 2003, for at least 80 percent of decisions to fund or decline proposals, program officers will comment on aspects of both generic review criteria.

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[15] IBM Business Consulting Services reviewed the data collection, maintenance, processing, and reporting procedures used to calculate results for this goal. They concluded that the procedures related to this goal were sufficient and adequate and yielded valid results. We provide the Executive Summary of their entire report, as well as a table listing their conclusions as to whether the processes we used for selected goals were verifiable and the results valid, in Appendix III.

Merit Review	Customer Service	Awards
Use at NSF	Time to Prepare Proposals	Size
Use of Criteria by Reviewers	Time to Decision	Duration
Use of Criteria by Program Officers		Oversight
Business Practices	**Facilities**	**Broadening Participation**
Electronic Business Security Program	Construction and Upgrade Annual Cost and Schedule Total Cost Operational Reliability	Reviewer Pool

PROPOSAL AND AWARD PROCESS

B. Customer Service

Customer service has a potential impact on the number and quality of proposals received and thus on our ability to meet all Outcome goals. In 1995, we adopted a set of customer service standards, primarily related to the merit review process, treating grantees and potential grantees (*applicants*) as the primary *customers* for NSF's administrative processes. In a survey, applicants valued three standards most highly: (1) clear guidelines for proposal content and preparation, (2) a minimum of three months between release of program announcements and proposal deadlines, and (3) notification of proposal funding recommendation within six months of proposal submission.

For our FY 2001 Performance Plan, we focused on the latter two of these standards, ones to which our staff have devoted special attention since the standards were adopted. The first of these standards (provision of clear guidelines) is being addressed in internal processes.

# Goal IV-4: – Time to Prepare Proposals
✘ Goal Not Achieved

Goal IV-4: Ninety-five percent of program announcements will be available to relevant individuals and organizations at least three months prior to the proposal deadline or target date.

We realize that researchers and educators require sufficient time to prepare submissions. To encourage new investigators and solicit quality proposals, and based on responses to customer surveys, program announcements and solicitations should be available a minimum of 90 days prior to the deadline for submission. We define this time as the time between the posting of the announcement on the web and the deadline for proposal submission given in the web posting.

RESULTS: We were not successful in achieving this goal. In FY 2002, 94% (111 out of 118) of program announcements and solicitations were made available at least 90 days before the proposal deadline[16].

PERCENT OF PROGRAM ANNOUNCEMENTS AND SOLICITATIONS AVAILABLE AT LEAST 3 MONTHS PRIOR TO PROPOSAL DEADLINE OR TARGET DATES						
	FY 1998	**FY 1999**	**FY 2000**	**FY 2001**	**FY 2002**	**FY 2003**
Baseline	66%					
Goal		95%	95%	95%	95%	95%
Actual		75%	89%	100%	**94%**	

*No goal established for FY 1998

Program Announcements Available
3 Months Prior to Deadline or Target Dates
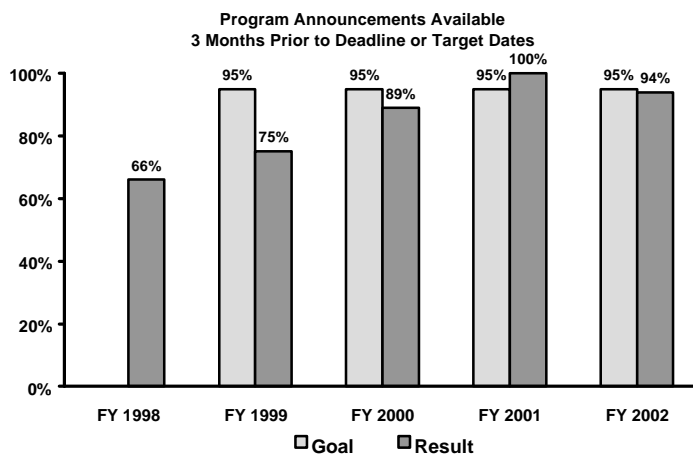
WHY WE DID NOT ACHIEVE THIS GOAL: Inadequate oversight led to the failure of these announcements to meet the 90-day deadline.

STEPS WE WILL TAKE IN FY 2003 TO ACHIEVE THIS GOAL: In FY 2003 NSF will work toward this goal by planning for competitions requiring individual announcements and solicitations as far in advance as possible and initiating clearance processes in a timely manner.

IMPLICATIONS FOR THE FY 2003 PERFORMANCE PLAN: This goal will be maintained in FY 2003.

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[16] A number of continuing programs have standing or previously established deadline dates. Some of these programs reissue announcements within 90 days of a proposal due date. As long as that deadline date was previously announced, thereby providing the community with at least 90 days to prepare a proposal, the announcement is considered to be in compliance with this GPRA goal.

Goal IV-5 – Time to Decision
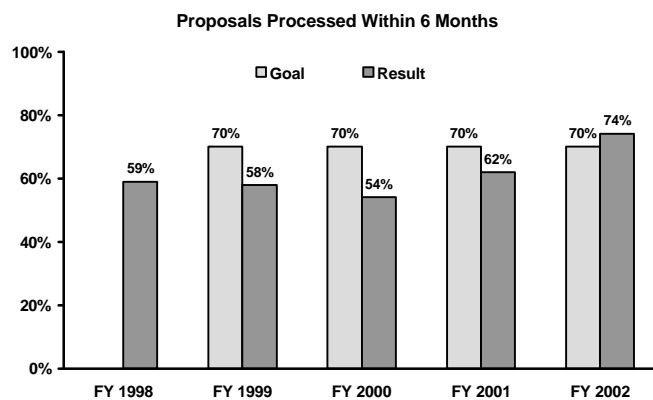## ✓ Goal Achieved

Goal IV-5: For 70 percent of proposals, be able to tell applicants whether their proposals have been declined or recommended for funding within six months of receipt.

One of the most significant issues raised in customer satisfaction surveys is the amount of time it takes us to process proposals. We recognize the importance of this issue, and we are continually reviewing the steps needed to decrease proposal processing time. We will continue to use brainstorming sessions for staff at all levels within the organization to discuss issues, concerns, and effective practices related to proposal processing time.

RESULTS: We were successful in achieving this goal. In FY 2002, we processed 74% of all proposals within six months of receipt.
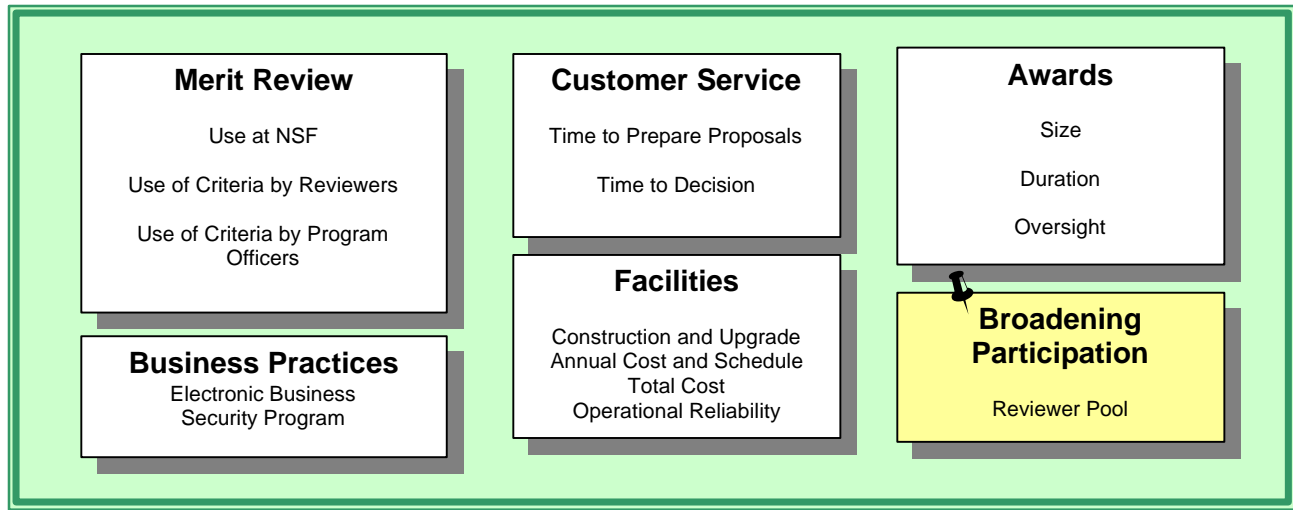
	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
PERCENT OF PROPOSALS PROCESSED WITHIN 6 MONTHS OF RECEIPT							
Baseline	61%						
Goal			70%	70%	70%	70%	70%
Actual		59%	58%	54%	62%	✓**74%**[17]	

Proposals Processed Within 6 Months

In FY 2003, we will continue to focus on improving the efficiency of proposal processing, including the dissemination of best practices to program staff.

IMPLICATIONS FOR THE FY2003 PERFORMANCE PLAN: This goal will be maintained in FY 2003. We believe that the expanded use of electronic processing of proposals and the adoption of effective practices identified in staff brainstorming sessions will lead to our continued success in meeting the 70% goal.

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[17] IBM Business Consulting Services reviewed the data collection, maintenance, processing, and reporting procedures used to calculate results for this goal. They concluded that the procedures related to this goal were sufficient and adequate and yielded valid results. We provide the Executive Summary of their entire report, as well as a table listing their conclusions as to whether the processes we used for selected goals were verifiable and the results valid, in Appendix III.

Merit Review	Customer Service	Awards
Use at NSF	Time to Prepare Proposals	Size
Use of Criteria by Reviewers	Time to Decision	Duration
Use of Criteria by Program Officers		Oversight

Facilities

Construction and Upgrade
Annual Cost and Schedule
Total Cost
Operational Reliability

Business Practices

Electronic Business
Security Program

Broadening Participation

Reviewer Pool

PROPOSAL AND AWARD PROCESS

C. BROADENING PARTICIPATION

We are strongly committed to increasing the participation of science and engineering researchers, educators and students from groups currently underrepresented in the science and engineering enterprise in all NSF activities. Congress has enacted legislation giving NSF explicit responsibility for addressing issues of equal opportunity in science and engineering. This assignment of responsibility reflected the serious underrepresentation of women, minorities, and persons with disabilities in the science and engineering workforce, and, although progress has been made, underrepresentation persists.

Recognizing that progress toward all outcome goals for research and education requires maximum diversity of intellectual thought, NSF is focusing its attention on enhancing the participation of groups currently underrepresented in science and engineering in all its programs. In order to realize this increased participation, and so contribute to the development of a dynamic, diverse, human resource pool in science and engineering, over the next decade NSF seeks to:

- Increase the participation of scientists and engineers from underrepresented groups in NSF's merit review process;
- Increase the participation of scientists and engineers from underrepresented groups in NSF's workshops and conferences;
- Increase the number of proposals submitted by and awards made to scientists and engineers from underrepresented groups; and
- Increase the number of scientists and engineers from underrepresented groups appointed by NSF to its staff.

At present we are focusing on the first and fourth of these efforts. NSF is committed to maintaining openness in the system and strives to increase the percentage of awards to new investigators.

Goal IV-6 – Broadening Participation: Reviewer Pool Diversity
✖ Goal Not Achieved

Goal IV-6: Establish a baseline for participation of members of underrepresented groups in NSF proposal review activities.
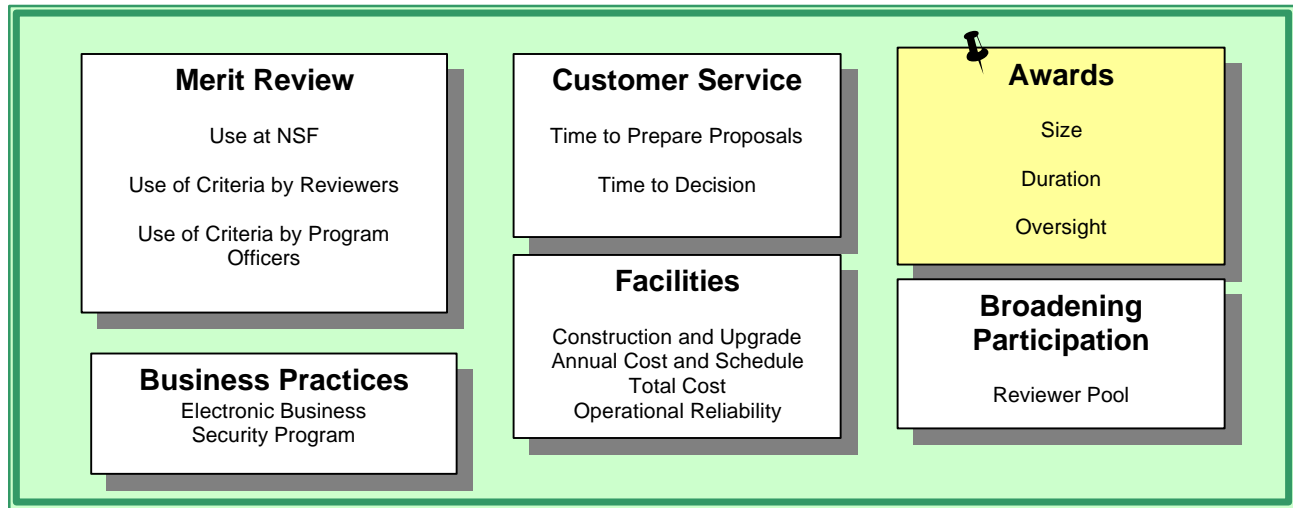
NSF is strongly committed to increasing the participation of science and engineering researchers, educators and students from groups currently underrepresented in the science and engineering enterprise in all NSF activities. Congress has enacted legislation giving NSF explicit responsibility for addressing issues of equal opportunity in science and engineering.

FY 2001 marked the first time we have formally focused attention on reviewer pool data. To establish the baseline, we began, in FY 2002, to gather the appropriate voluntary data from the reviewers with the intent of deriving a baseline from this data.

RESULTS: We were not successful in achieving this goal.

WHY WE DID NOT ACHIEVE THIS GOAL: NSF cannot legally require reviewers to provide demographic information. Provision of such data is voluntary. NSF requested and collected demographic data from reviewers but given the low response rate there is not enough information to establish a baseline. A total of 37,943 distinct reviewers returned their reviews on proposals decided upon in FY 2002. Demographic information is available for 3,507 of these reviewers and 1,168 (33%) of these 3,507 reviewers are members of an underrepresented group.

STEPS WE WILL TAKE IN FY 2003 TO ACHIEVE THIS GOAL: The goal of establishing a baseline for participation of members of underrepresented groups in NSF proposal review activities will not be continued in FY 2003. Nevertheless, we will continue to attempt to gain more information on the demographic composition of our reviewers by continuing to request demographic information from them.

Merit Review	Customer Service	Awards
Use at NSF	Time to Prepare Proposals	Size
Use of Criteria by Reviewers	Time to Decision	Duration
Use of Criteria by Program Officers		Oversight

Merit Review

Use at NSF

Use of Criteria by Reviewers

Use of Criteria by Program Officers

Customer Service

Time to Prepare Proposals

Time to Decision

Awards

Size

Duration

Oversight

Business Practices

Electronic Business
Security Program

Facilities

Construction and Upgrade
Annual Cost and Schedule
Total Cost
Operational Reliability

Broadening Participation

Reviewer Pool

AWARD PORTFOLIO

D. AWARDS

The size and duration of NSF awards impact research and education activities at many institutions. Increasing award size and duration will allow scientists and engineers to devote more time to productive research and education in comparison to the time spent preparing proposals. Adequate award size and duration are important both to obtaining high quality proposals and to ensuring that proposed work can be accomplished as planned.

Goal IV-7a – Increased Average Annualized Award Size
✓ Goal Achieved

Goal IV-7a: NSF will increase the average annualized award size for research projects to a level of $113,000, compared to a goal of $110,000 in FY 2001.

Increasing award size was a new goal in FY 2001 and is continued in FY 2002[18]. Our long-term goal is to reach an average annualized award size of $250,000.

Adequate award size is important both for attracting high-quality proposals and for ensuring that proposed work can be accomplished as planned. Larger awards increase the efficiency of the system by allowing scientists and engineers to devote a greater portion of their time to actual research rather than to proposal writing and other administrative work.

RESULTS: We were successful in achieving and exceeding this goal.

	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
AVERAGE ANNUALIZED AWARD SIZE FOR RESEARCH PROJECTS						
Baseline	$90,000					
Goal				$110,000	$113,000	$125,000
Actual		$94,000	$105,800	$113,601	✓**$115,666**[19]	

IMPLICATIONS FOR THE FY 2003 PERFORMANCE PLAN: Our goal for FY 2003 will be an average annualized award size of $125,000.

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[18] The award size and duration performance goals are applicable only to competitive research grants (a subset of awards that focuses on awards to individual investigators and small groups).

[19] IBM Business Consulting Services reviewed the data collection, maintenance, processing, and reporting procedures used to calculate results for this goal. They concluded that the procedures related to this goal were sufficient and adequate and yielded valid results. We provide the Executive Summary of their entire report, as well as a table listing their conclusions as to whether the processes we used for selected goals we report were verifiable and the results valid, in Appendix III.
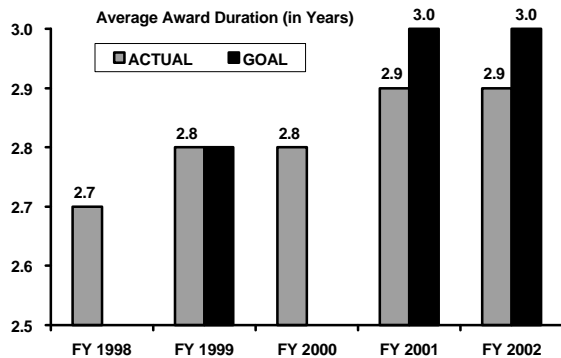
Goal IV-7b – Increased Average Award Duration
✖ Goal Not Achieved

Goal IV-7b: NSF will maintain the FY 2001 goal of 3.0 years for the average duration of awards for research projects.

Our long-term goal is to reach an average award duration of 5 years[20]. Increasing award duration was a new goal in FY 2001 and is continued in FY 2002. The award duration goal built on a FY 1999 goal (the duration goal was dropped in FY 2000 and reinstated in FY 2001).

RESULTS: We were not successful in achieving this goal.

AVERAGE AWARD DURATION FOR RESEARCH PROJECTS						
	FY 1998	**FY 1999**	**FY 2000**	**FY 2001**	**FY 2002**	**FY 2003**
Baseline	2.7 years					
Goal		2.8 years	N/A	3.0 years	3.0 years	3.0 years
Actual		2.8 years	2.8 years	2.9 years	✖ **2.9 years**[21]	

Average Award Duration (in Years)

	ACTUAL	GOAL
FY 1998	2.7	
FY 1999	2.8	2.8
FY 2000	2.8	
FY 2001	2.9	3.0
FY 2002	2.9	3.0

WHY WE DID NOT ACHIEVE THIS GOAL: Sufficient resources were not available to achieve both the award size and award duration goals for FY 2002. NSF focused its efforts on increasing average annualized award size.

STEPS WE WILL TAKE IN FY 2003 TO ACHIEVE THIS GOAL: Progress on this goal is budget dependent. Program Directors must balance competing requirements: increasing award size, increasing duration of awards, and/or making more awards. NSF will continue to focus on increasing award size and duration in order to improve the efficiency of the research process.

IMPLICATIONS FOR THE FY 2003 PERFORMANCE PLAN: We will maintain the FY 2002 goal of 3.0 years for the average duration for research and education grants.

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[20] The award size and duration performance goals are applicable only to competitive research grants (a subset of awards that focuses on awards to individual investigators and small groups).

[21] IBM Business Consulting Services reviewed the data collection, maintenance, processing, and reporting procedures used in this goal. They concluded that the procedures related to this goal were sufficient and adequate and yielded valid results. We provide the Executive Summary of their entire report, as well as a table listing their conclusions as to whether the processes we used for selected goals we report were verifiable and the results valid, in Appendix III.

E. AWARD OVERSIGHT AND MANAGEMENT

AWARD OVERSIGHT

Goal IV-8 – Risk Assessment/Risk Management
✓ Goal Achieved

Goal IV-8: NSF will develop and initiate a risk assessment / risk management plan for awards.

   Performance Indicators:
   - **Development of an appropriate risk assessment model.**
   - **Development of an effort analysis to determine necessary resource allocation (personnel, travel and training).**
   - **Completion of a pilot program testing the risk assessment monitoring tools at several high-risk awardee institutions.**
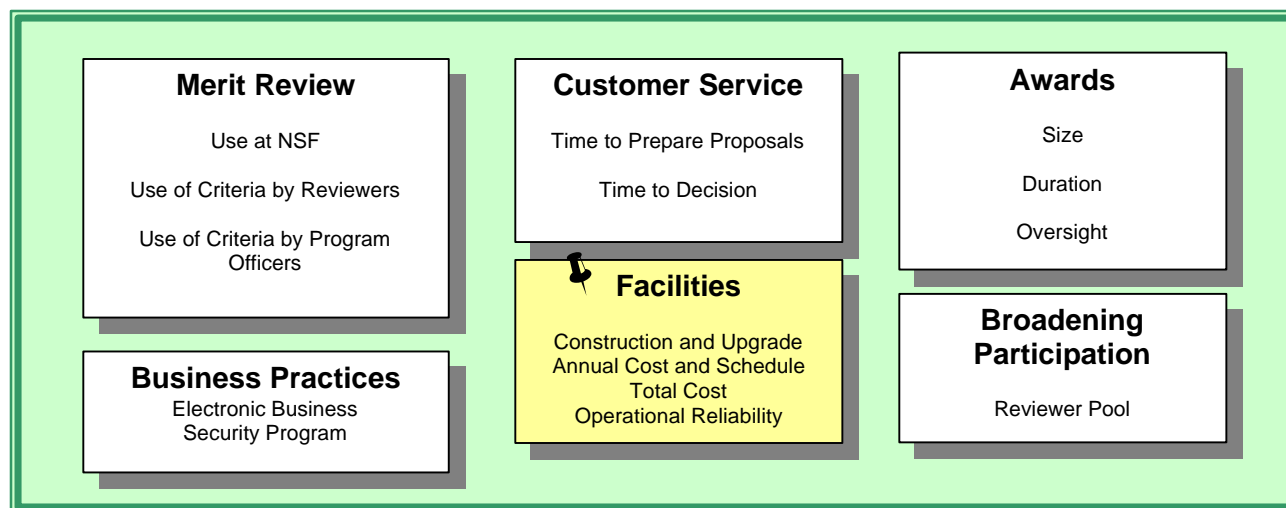
The emphasis of this performance area is on award monitoring and oversight. At any given time, NSF has approximately 30,000 active awards in its portfolio, including grants, cooperative agreements, and interagency activities. Of this number, the agency makes 10,000 new awards annually. The volume of awards and increases in the agency's budget require improvement in the management of effective award monitoring.

NSF's current internal control activities on awards include grant policy reviews, awardee and staff assistance outreach, and both desk and on-site monitoring reviews. All controls are aimed at reducing potential problems through the pre-award, award and post-award administration continuum.

In FY 2002, to better focus award-monitoring efforts, NSF's goal was the development and initiation of a risk assessment/risk management protocol focused towards on-site monitoring efforts. A new position was created to provide a focus for award monitoring. A primary responsibility of the incumbent in this position is to develop a risk-based review approach for all NSF awardees and projects. NSF's intent is to maximize the effectiveness of available award monitoring resources by focusing on awards identified as having significant risk.

RESULTS: We were successful in achieving this goal. NSF collected information on post-award monitoring activities of other federal grant-making agencies. This information was modified to fit NSF needs and a risk framework was developed. A pilot test effort involving 15 NSF-supported organizations was conducted. A risk assessment approach was developed and a pilot test effort initiated. In parallel with these efforts NSF developed the *Risk Assessment and Award Monitoring Guide*.

IMPLICATIONS FOR THE FY 2003 PERFORMANCE PLAN: Although there is no risk management goal for FY 2003, a series of activities to further enhance risk assessment and management is planned.

Merit Review	Customer Service	Awards
Use at NSF	Time to Prepare Proposals	Size
Use of Criteria by Reviewers	Time to Decision	Duration
Use of Criteria by Program Officers		Oversight

Facilities

Construction and Upgrade
Annual Cost and Schedule
Total Cost
Operational Reliability

Business Practices	Broadening Participation
Electronic Business Security Program	Reviewer Pool

AWARD OVERSIGHT AND MANAGEMENT

F. FACILITIES

NSF has responsibility for supporting the operation of multiple user facilities that provide state-of-the-art equipment with unique capabilities. In addition, we put a high premium on initial planning for construction and upgrade of facilities. Planning for unique, state-of-the-art facilities must take into account the exploratory nature of the facilities themselves as such facilities test the limits of technological capability.

In FY 2002 24% of our budget was allocated to the support of "Tools." Within Tools, FY 2002 funding for the Major Research Equipment and Facilities Construction (MREFC) account was approximately $139 million, an increase of $20 million over FY 2001.

Although we have done well in the past in keeping large projects on schedule and within budget, OMB asked us to develop a plan for costing, approval, and oversight of major facility projects. In response, we have completed a Large Facility Projects Management and Oversight Plan that was submitted to OMB in September 2001. This new facilities plan has four major foci:

- Enhance organizational and staff capabilities to improve coordination, collaboration, and shared learning among our staff and external partners;
- Implement comprehensive guidelines and procedures for all aspects of facilities planning, management, and oversight;
- Improve the process for reviewing and approving Large Facility Projects; and
- Practice coordinated and proactive oversight of all facility projects to ensure success.

Further development and implementation of the plan is continuing.

We have established a new position–Deputy, Large Facility Projects–to enable the efficient and effective evolution of our large facility projects from their pre-formulation through operations. This position will be filled in on a permanent basis in FY 2003. An Interim Deputy was appointed in FY 2002.

In order to report on the government performance goals related to Facility Operations and Construction and Upgrades, we initiated, in FY 1999, development of a Facilities Reporting System. This is linked to the Performance Reporting System, a module of the existing FastLane system. The module is used to collect information on operations and construction from Facilities Managers external to NSF. As is the case with any new data collection effort, we expect the quality of the information provided to improve as NSF's Program Officers and external facilities managers gain experience with gathering and reporting the required data.

In FY 2001[22] and FY 2002 NSF engaged IBM Business Consulting Services to review the process for collection and reporting of GPRA data for the facilities goals. IBM Business Consulting Services' recommendations, along with NSF's own review of the facilities goals and associated data collection methods, were further examined by NSF staff in FY 2002. Necessary changes to data collection systems and procedures have been identified and will be implemented starting in FY 2003.

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[22] In FY 2001 the firm we engaged was PricewaterHouse Coopers, LLP. The unit that conducted the review has been sold to IBM and is now part of IBM Business Consulting Services.

Goal IV-9a – Annual Construction and Upgrade Expenditures
✓ Goal Achieved

Goal IV-9a: For 90 percent of facilities, keep construction and upgrades within annual expenditure plan, not to exceed 110 percent of estimates.

In FY 2000 100% of facilities were required to meet the goal for NSF to be considered successful. In FY 2001 the goal was revised so that we were considered successful if at least 90% of facilities kept construction and upgrade expenditures within 110% of their estimates. This change was made because state-of-the-art projects being supported stretch the limits of technological capability and there may be unforeseen expenditures. Nevertheless, we expect that the vast majority of our projects will be within budget. To assure that we have realistic and achievable goals, we reestablished the target level of success at 90% of the facilities for FY 2001 and beyond.

RESULTS: We were successful in achieving this goal. Of the 28 construction and upgrade projects supported by NSF, 26 (93%) were within 110% of annual expenditure plans.

ANNUAL CONSTRUCTION AND UPGRADE EXPENDITURES					
	FY 1999	**FY 2000**	**FY 2001**	**FY 2002**	**FY 2003**
Goal	Keep within annual expenditure plan, not to exceed 110% of estimates.	Keep within annual expenditure plan, not to exceed 110% of estimates.	For 90% of facilities, keep within annual expenditure plan, not to exceed 110% of estimates.	For 90% of facilities, keep within annual expenditure plan, not to exceed 110% of estimates.	New goal developed for FY 2003; see discussion on implications for FY 2003.
Actual	Majority of projects were within 110% of estimates.	11 of 11 (100%) projects were within 110% of estimates.	✓24 of 25 (96%) projects were within 110% of estimates.	✓**26 of 28 (93%) projects were within 110% of estimates**[23].	

IMPLICATIONS FOR THE FY 2003 PERFORMANCE PLAN: The lessons learned from several years of experience reporting GPRA results for this performance area led to a comprehensive internal review in FY 2001 and FY 2002 of the facilities goals. In FY 2003, NSF will improve the construction goals by combining cost and schedule performance into a single goal. The revised goals are calculated using the Earned Value technique, a widely accepted project management tool for measuring progress that recognizes that cost or schedule data alone can lead to distorted perceptions of performance.

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[23] IBM Business Consulting Services recalculated the results for this goal. We provide the Executive Summary of their entire report, as well as a table listing their conclusions as to whether the processes we used for selected goals were verifiable and the results valid, in Appendix III.

Goal IV-9b – Meeting Annual Schedule Milestones
✖ Goal Not Achieved

Goal IV-9b: Ninety percent of facilities will meet all annual schedule milestones.

In FY 2001, for NSF to be considered successful, 90% of facilities were required to meet all annual schedule milestones by the end of the reporting period. In FY 2002 this was changed to having at least 90% of facilities meet all major schedule milestones.

RESULTS: For FY 2002, of the 27 construction and upgrade projects we supported, 13 (48%) met all annual schedule milestones.

ANNUAL SCHEDULE MILESTONES					
	FY 1999	**FY 2000**	**FY 2001**	**FY 2002**	**FY 2003**
Goal	Construction and upgrades within annual schedule, time required for major components within 110% of estimates.	Construction and upgrades within annual schedule, time required for major components within 110% of estimates.	90% of facilities will meet all major annual schedule milestones by the end of the reporting period.	90% of facilities will meet all major annual schedule milestones.	New goal developed for FY 2003; see discussion on implications for FY 2003.
Actual	Majority of projects were within 110% of estimates.	7 of 11 (64%) projects were within 110% of estimates.	✖21 of 25 (84%) projects met all major annual schedule milestones by the end of the reporting period.	✖**13 of 27 (48%) projects met all major annual schedule milestones[24].**	

WHY WE DID NOT ACHIEVE THIS GOAL: In FY 2001, milestones reached at any time within the fiscal year were considered successful. In FY 2002, milestones had to be reached by the specified date determined during project development. In some instances contract negotiations caused project delays.

STEPS WE WILL TAKE IN FY 2003 TO ACHIEVE THIS GOAL: NSF program staff will continue to work with project managers to identify obstacles to successful performance and to ensure that progress will be made toward the achievement of this goal in FY 2003.

IMPLICATIONS FOR THE FY 2003 PERFORMANCE PLAN: As discussed in Goal V-9a, this goal will be combined with the annual cost goal.

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[24] IBM Business Consulting Services recalculated the results for this goal. We provide the Executive Summary of their entire report, as well as a table listing their conclusions as to whether the processes we used for selected goals were verifiable and the results valid, in Appendix III.

Goal IV-9c – Total Cost
✓ Goal Achieved

Goal IV-9c: For all construction and upgrade projects initiated after 1996, when current planning processes were put in place, keep total cost within 110 percent of estimates made at the initiation of construction.

We recognize that construction and upgrade projects may experience both cost and schedule overruns. Our goal, since FY 1999, is that all construction and upgrade projects will keep within 110% of their initial estimated total costs.

RESULTS: We were successful in achieving this goal. Two projects were completed in FY 2002, one of which had been initiated prior to 1996.

	CONSTRUCTION AND UPGRADE TOTAL COST				
	FY 1999	**FY 2000**	**FY 2001**	**FY 2002**	
Goal	For all construction and upgrade projects initiated after 1996, keep total cost within 110% of estimates made at the initiation of construction.	For all construction and upgrade projects initiated after 1996, keep total cost within 110% of estimates made at the initiation of construction.	For all construction and upgrade projects initiated after 1996, keep total cost within 110% of estimates made at the initiation of construction.	For all construction and upgrade projects initiated after 1996, keep total cost within 110% of estimates made at the initiation of construction.	New goal developed for FY 2003; see discussion on implications for FY 2003.
Actual	No projects completed.	No projects completed.	✓ One project was completed.	✓ **Two projects were completed.** [25]	

IMPLICATIONS FOR THE FY 2003 PERFORMANCE PLAN: The many lessons learned from several years of experience reporting GPRA results for this performance area led to a comprehensive internal review of the goals that focused on how best to measure success in constructing and operating facilities. The review led to revised goals for facilities construction that more accurately capture NSF's performance. In FY 2003, NSF will improve the construction goals by combining cost and schedule performance into a single goal. The revised goals are calculated using the Earned Value technique, a widely accepted project management tool for measuring progress that recognizes that cost or schedule data alone can lead to distorted perceptions of performance.

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[25] IBM Business Consulting Services recalculated the results for this goal. We provide the Executive Summary of their entire report, as well as a table listing their conclusions as to whether the processes we used for selected goals were verifiable and the results valid, in Appendix III.

Goal IV-10 – Operating Time
✖ Goal Not Achieved

Performance Goal IV-10: For 90 percent of facilities, keep operating time lost due to unscheduled downtime to less than 10 percent of the total scheduled operating time.

To provide the flexibility necessary for NSF to report realistic goals, we maintained the level deemed "successful" at 90% of the facilities.

RESULTS: We were not successful in achieving this goal. Of the 31 reporting facilities, 26 (84%) met the goal of keeping unscheduled downtime to below 10% of the total scheduled operating time.

OPERATING TIME					
	FY 1999	**FY 2000**	**FY 2001**	**FY 2002**	**FY 2003**
Goal	Keep operating time lost due to unscheduled downtime to less than 10% of the total scheduled operating time.	Keep operating time lost due to unscheduled downtime to less than 10% of the total scheduled operating time.	For 90% of facilities, keep operating time lost due to unscheduled downtime to less than 10% of the total scheduled operating time.	For 90% of facilities, keep operating time lost due to unscheduled downtime to less than 10% of the total scheduled operating time.	For 90% of operational facilities, keep scheduled operating time lost to less than 10%.
Actual	Majority of facilities successful.	22 of 26 (85%) reporting facilities met goal.	✖ 25 of 29 (86%) reporting facilities met goal.	✖ **26 of 31 (84%) reporting facilities met goal[26].**	

WHY WE DID NOT ACHIEVE THIS GOAL: Some causes of unscheduled downtime in excess of 10% of total scheduled operating time were outside the control of the facility manager, such as unfavorable weather or electric power supply interruption. Other causes of failure were related to technical problems such as sub-par performance of new instrumentation early in its commissioning stage.

In FY 2003, NSF will continue to work with awardees to identify obstacles to successful performance and develop plans to avoid or mitigate their consequences in the future. NSF is also modifying this goal statement to improve clarity.

STEPS WE WILL TAKE IN FY 2003 TO ACHIEVE THIS GOAL: NSF program staff will continue to work with project managers to identify obstacles to successful performance and to ensure that progress will be made toward the achievement of this goal in FY 2003.

IMPLICATIONS FOR THE FY 2003 PERFORMANCE PLAN: An internal review of the facilities goals has led to a slight rewording of the goal for clarity. This goal will be continued in FY 2003.

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[26] IBM Business Consulting Services recalculated the results for this goal. We provide the Executive Summary of their entire report, as well as a table listing their conclusions as to whether the processes we used for selected goals were verifiable and the results valid, in Appendix III.

Business Practices	NSF Staff
Electronic Business Security Program	Diversity NSF Academy Workforce Requirements Work Environment

G. BUSINESS PRACTICES

Goal IV-11 – Electronic Business
✓ Goal Achieved

Goal IV-11: NSF will continue to advance the role of "e-business" in review, award, and management processes.

> **Performance Indicator: NSF will double the FY 2001 number of paperless projects that manage the competitive review process in an electronic environment**.

NSF's multi-year initiative to create a paperless environment within the Foundation's grant-making process is aggressively moving forward, and incremental success continues to be achieved annually. In FY 2001 a pilot program was initiated to illustrate whether the competitive *review process* could be accomplished electronically. The initial pilot was successful. For FY 2002, the target level doubled (from ten to twenty pilot projects), and additional criteria (e-signatures) were added.

RESULTS: NSF is successful for this goal. *Thirty-one* programs within five Directorates participated in the pilot and successfully managed the review process electronically.[27] The success of the pilot further demonstrates the benefits of a paperless review process within NSF.

IMPLICATIONS FOR THE FY 2003 PERFORMANCE PLAN: The FY 2002 goal doubled the number of projects, included more directorates and divisions, and incorporated a new module. At this point, 83% (6 out of 7) of our Directorates have participated in, and successfully completed the paperless review pilot over the past two years. As a result, we will not monitor this effort as a separate goal in FY 2003. With nearly 100% of proposals now submitted electronically and the successful completion of the paperless review pilot, the capability and benefits of an internal paperless process have been successfully demonstrated.

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[27] IBM Business Consulting Services reviewed the data collection, maintenance, processing, and reporting procedures used to calculate results for this goal. They concluded that the procedures related to this goal were sufficient and adequate and yielded valid results. We provide the Executive Summary of their entire report, as well as a table listing their conclusions as to whether the processes we used for selected goals were verifiable and the results valid, in Appendix III.

Goal IV-12 – Security Program
✓ Goal Achieved

Goal IV-12: NSF will implement an agency-wide security program in response to the Government Information Security Reform Act. (New Goal)

 Performance Indicators:
- **Risk assessments and certification to operate will be documented and retained**
- **Policies will be developed and disseminated**
- **Security management structure will be implemented**
- **Security related changes to personnel policies (as necessary) will be documented**

This was a new goal in FY2002 developed in-line with requirements mandated by the Government Information Security Reform Act (Security Act or GISRA). The Security Act addresses program management and evaluation aspects of security, and was designed to ensure proper management and security for the information resources supporting Federal operations and assets.

RESULTS: NSF is successful for this goal. During the past year, NSF initiated actions to meet the requirements of the Security Act, OMB Circular A-130, and the National Institute of Standards and Technology Security Self-Assessment Guide for Information Technology Systems[28].

NSF's information security (IS) program encompasses all aspects of information security, including policy and procedures, risk assessments, security reviews, security plans, contingency plans, managed intrusion detection services, vulnerability assessments, and technical and management security controls. NSF's Security Program focuses on assuring that the NSF infrastructure and critical assets are appropriately protected while maintaining an open and collaborative environment for scientific research and discovery.

IMPLICATIONS FOR FY 2003 PERFORMANCE PLAN: Information security is an on-going goal. Based on progress achieved during FY 2002 enhancements will be made to strengthen the program and align it more closely with GISRA and OMB requirements. The FY 2003 goal will be expanded to include all NSF major applications, general support applications, and non-major applications.

NSF has a comprehensive plan for continued improvement of its IT security program and has taken action on ten findings and recommendations identified in the June 2002 GISRA audit conducted by the Office of Inspector General. NSF agreed with audit recommendations, but did not agree that three of the findings contained within the audit constitute a reportable condition.

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[28] IBM Business Consulting Services reviewed the data collection, maintenance, processing, and reporting procedures used in this goal. They concluded that the procedures related to this goal were sufficient and adequate and yielded valid results. We provide the Executive Summary of their entire report, as well as a table listing their conclusions as to whether the processes we used for selected goals we report were verifiable and the results valid, in Appendix III.

H. HUMAN RESOURCES AND WORKPLACE

Goal IV-13 – Staff Diversity
✓ Goal Achieved

Goal IV-13: NSF will show an increase over FY 2000 in the total number of hires to NSF science and engineering positions from underrepresented groups.

The NSF Strategic Plan notes that a diverse, capable, and motivated staff is one of the critical factors for our success. We are committed to diversifying our staff of scientists and engineers (S&E) in both permanent and visiting positions.

RESULTS: NSF is successful for this goal. FY 2002 is the third year we exceeded our goal. The following table illustrates the progress that has been achieved since the diversity goal was established.

APPOINTMENTS TO SCIENCE & ENGINEERING POSITIONS FROM UNDERREPRESENTED GROUPS					
	FY 1999	**FY 2000**	**FY 2001**	**FY 2002**	**FY 2003**
Baseline					
Goal	Efforts to attract underrepresented groups	More than 16 Female, 15 Minority	More than 16 Female, 15 Minority	More than 35 Female, 19 Minority	Being Revised
Actual	Achieved[29]	35 Female 19 Minority	38 Female 22 Minority	✓**41 Female**[30] **27 Minority**[31]	

IMPLICATIONS FOR THE FY 2003 PERFORMANCE PLAN: For FY 2003 we will expand the scope of our reporting to include additional S&E positions in the agency. Broadening the base will allow us to measure our efforts throughout all professional recruitment opportunities, including Intergovernmental Personnel Act (IPA) assignments and executive hiring. The baseline to be used will be total S&E hires from underrepresented groups in FY 2000.

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[29] In FY 1999, our goal was "In FY 1999, as all appointments for scientists and engineers are considered, the recruiting organization will demonstrate efforts to attract applications from groups that are underrepresented in the science and engineering staff as compared to their representation among Ph.D. holders in their fields."

[30] Includes 1 Female hired by OPP. FY 2001 is the first time OPP data is included.

[31] IBM Business Consulting Services reviewed the data collection, maintenance, processing, and reporting procedures used to calculate results for this goal. They concluded that the procedures related to this goal were sufficient and adequate and yielded valid results.

Goal IV-14 – NSF Academy
✓ Goal Achieved

Goal IV-14: NSF will establish an internal NSF Academy to promote continuous learning for NSF staff. (New Goal)

> **Performance Indicator: Availability of new or revised courses that contribute to an organized curriculum for NSF staff.**

This is a new goal for FY 2002 and reflects the Foundation's commitment to cultivate a world-class staff to sustain the level of excellence required to fulfill the NSF mission.

Originally conceived in September 2000, the Academy is evolving in incremental steps. Consolidation of training functions commenced in FY 2001, initial seed money was provided in FY 2002, and more substantive funding has been requested for FY 2003 to initiate a broader curriculum and expanded programs. Once fully operational, the Academy will serve as the central locus of learning, and provide continual learning opportunities for NSF staff. Development of new and revised courses reflected the needs and requirements of NSF staff.

RESULTS: NSF is successful for this goal. Development of new or revised courses that contributed to an organized curriculum for NSF staff was the criteria by which success was measured in FY 2002[32].

The Academy's courses are now organized in 5 curricula areas:
1. Business and Administrative,
2. Program and Project Management,
3. Leadership and Supervisory Skills,
4. Communication and Personal Effectiveness, and
5. Distance Learning and Technology.

During FY 2002, 76 courses were offered, 30 of which were new. In addition, 3 courses were revised to be more responsive to the needs and requirements of our staff. The FY 2003 Performance Plan contains a goal related to the NSF Academy.

IMPLICATIONS FOR THE FY 2003 PERFORMANCE PLAN: NSF has contracted with Booz Allen Hamilton for a comprehensive review of workforce competencies and skill mix. The results of this study will affect the direction the Academy takes in developing and offering new and revised curricula in the identified areas.

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[32] IBM Business Consulting Services reviewed the data collection, maintenance, processing, and reporting procedures used in this goal. They concluded that the procedures related to this goal were sufficient and adequate and yielded valid results. We provide the Executive Summary of their entire report, as well as a table listing their conclusions as to whether the processes we used for selected goals we report were verifiable and the results valid, in Appendix III.

Goal IV-15 – Strategic Business Analysis
✓ Goal Achieved

Goal IV-15: NSF will initiate a strategic business analysis to provide a comprehensive perspective on its future workforce requirements.

Performance Indicators:
- **Request for Proposals to perform the strategic business analysis will be released.**
- **Skill mix/competencies of the current NSF workforce will be examined.**

NSF requires a multi-year strategic business analysis effort to assess its core business processes and supporting human capital and technology requirements in order to prepare for anticipated budget growth and an accompanying increase in the complexity of the NSF portfolio and to address new and existing management challenges presented by the President's Management Agenda and identified by NSF, the NSF Inspector General, the General Accounting Office, and others.

RESULTS: We were successful in achieving this goal[33]. A Request for Proposals was released in March 2002. A contract to conduct the business analysis was awarded to Booz Allen Hamilton in June 2002. An Initial Review of Workforce Competencies and Skill Mix was completed and delivered to NSF by Booz Allen Hamilton on September 30, 2002.

The initial review of workforce competencies and skill mix includes an initial workforce supply analysis as well as an initial competency modeling effort. In FY 2003 the workforce supply analysis will be completed and the NSF workforce will be benchmarked against comparable organizations. The competency model will be fully developed and will serve as the foundation for NSF's human capital management plan.

IMPLICATIONS FOR THE FY 2003 PERFORMANCE PLAN: This goal was for one-time performance and will not be maintained in FY 2003. Other performance goals related to the development of a human capital management plan as part of an integrated assessment of business processes, human capital and technology requirements will be included in the FY 2003 plan.

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[33] IBM Business Consulting Services reviewed the data collection, maintenance, processing, and reporting procedures used in this goal. They concluded that the procedures related to this goal were sufficient and adequate and yielded valid results. We provide the Executive Summary of their entire report, as well as a table listing their conclusions as to whether the processes we used for selected goals we report were verifiable and the results valid, in Appendix III.

Goal IV-16 – Work Environment
✓ Goal Achieved

Goal IV-16: NSF will establish various baselines that will enable management to better assess the quality of worklife and work environment within the Foundation.

Performance Indicator: Development of an employee survey

This is a continuation of a goal established last year, which NSF was unable to accomplish during FY 2001. The goal highlights the importance NSF places on its human resources, and reflects awareness that relevant data is needed in order to promote a more efficient workplace and ensure that the needs of our staff are being addressed.

Success in this goal was measured by the development of an employee survey. During FY 2002, the goal was achieved.

In lieu of designing an agency specific survey as originally planned, NSF participated in an Office of Personnel Management survey of the 24 Federal agencies comprising the President's Management Council. The survey addressed issues such as employee selection, retention and development, leadership, performance management, diversity on the extent to which workforce planning supports the agency's mission. NSF reviewed, commented and customized the draft survey to address agency specific needs. The U.S. Office of Personnel Management (OPM) distributed the survey electronically to a random selection of approximately 75% of NSF employees in May 2002. The Chief Information Officer (CIO) actively promoted employee participation in the voluntary survey.

Although results from the survey were expected during FY 2002, at this point OPM does not expect to release the results until the end of the calendar year. Data from the survey will provide agency specific information as well as comparative data against the other participating Federal agencies.

RESULTS: NSF was successful for this goal[34].

IMPLICATIONS FOR THE FY 2003 PERFORMANCE PLAN: Development of a future goal is predicated on the results from the survey. Once received, the survey data will be analyzed and the information will be used to inform the agency's human capital strategic planning efforts.

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[34] IBM Business Consulting Services reviewed the data collection, maintenance, processing, and reporting procedures used in this goal. They concluded that the procedures related to this goal were sufficient and adequate and yielded valid results. We provide the Executive Summary of their entire report, as well as a table listing their conclusions as to whether the processes we used for selected goals we report were verifiable and the results valid, in Appendix III.