

Report to the National Science Board  
on the  
National Science Foundation's  
Merit Review Process  
Fiscal Year 2003



May 2004

# FY 2003 Report on the NSF Merit Review System

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## HIGHLIGHTS

1. NSF took action on 40,075 competitively reviewed proposals, and provided funding to 10,844 of them during FY 2003. This resulted in an overall funding rate of 27 percent. The number of proposals reviewed increased by 14 percent, the largest annual percentage increase in over a decade.
2. In FY 2003, 77 percent of all proposals were processed within six months, compared to 74 percent in FY 2002. The agency exceeded its GPRA target goal of 70 percent. The success of this goal is particularly significant in light of the fact there was a 14 percent increase in the number of proposals submitted in FY 2003.
3. During FY 2003, 90 percent of all external reviews addressed aspects of both merit review criteria -- intellectual merit and broader impacts -- compared to 84 percent in FY 2002 and 69 percent in FY 2001.
4. Effective October 1, 2002, NSF returned without review proposals that failed to separately address both merit review criteria within the Project Summary. In FY 2003, NSF returned a total of 276 proposals without review due to the failure to address both merit review criteria.
5. In FY 2003, over 96 percent of NSF's research and education awards were selected through the competitive merit-review process.
6. Both the U.S. General Accounting Office and the NSF Office of Inspector General audited NSF's Committee of Visitors process during FY 2003 and found it a useful, highly effective evaluation practice.
7. The average annualized award amount for research grants in FY 2003 was \$135,609, an increase of 17 percent above the previous year. Adequate award size is important for attracting high quality proposals and for ensuring that proposed work can be accomplished as planned. However, increasing award size inevitably affects the success rate (see Item 1, above). The FY 2003 success rate was the lowest in 15 years.
8. The average award duration for FY 2003 research grants was 2.9 years. NSF's goal was to achieve 3.0 years. In the future, given adequate funding, NSF would like to increase the duration of research grants to at least four years. Again, there are implications for success rates.
9. Preliminary data from NSF's business analysis contractor indicate that program officers spend approximately 55 percent of their time on merit review alone, yet they are also responsible for award management and oversight, program planning, staff oversight, and other tasks.
10. In FY 2003, the number of proposals received by minority PIs increased by 12 percent. The funding rate for minority PIs was 27 percent, the same as the overall rate. During FY 2003, the number of proposals received from women PIs increased by 9 percent. The funding rate was 28 percent, slightly higher than the overall rate of 27 percent.
11. A large number of potentially fundable proposals are declined each year. In FY 2003, about \$1.44 billion of declined proposals were rated as high as the average rating for an NSF award. These declined proposals represent a rich portfolio of unfunded research and education opportunities.

# FY 2003 Report on the NSF Merit Review System

## 1. Introduction

The National Science Foundation (NSF) is responsible for advancing the progress of science and engineering in the United States across a broad and expanding frontier. It carries out its mission primarily by making merit-based grants to researchers, educators, and students at more than 2,000 U.S. colleges, universities and other institutions.

NSF supports fundamental research, education and infrastructure at colleges, universities, and other institutions throughout the country. Its broad support for research and education, particularly at U.S. academic institutions, provides funds for discovery in many fields and for developing the next generation of scientists and engineers.

NSF leads Federal agencies in funding research and education activities based upon merit review. This year NSF made more than 10,000 new awards from more than 40,000 competitive proposals submitted. Over 96 percent of NSF's research and education awards are selected through its competitive merit review process. All proposals for research and education projects are evaluated using two criteria: the *intellectual merit* of the proposed activity and its *broader impacts*, such as impacts on teaching, training and learning. Reviewers also consider how well the proposed activity fosters the integration of research and education and broadens opportunities to include a diversity of participants, particularly from underrepresented groups. The merit review system is at the very heart of NSF's selection of the projects through which its mission is achieved. Ensuring a credible, efficient system requires constant attention and openness to change.

This *FY 2003 Report on the NSF Merit Review System* responds to a National Science Board (NSB) policy endorsed in 1977 and amended in 1984, requesting that the NSF Director submit an annual report on the NSF proposal review system. The report provides summary information about levels of proposal and award activity and the process by which proposals are reviewed and awarded. While the report indicates several areas in which improvements are being made, the health and vitality of NSF's merit review process, and the S&E community's confidence in it, remains very strong.

## 2. Proposals and Awards

### Competitively Reviewed Proposals, Awards and Funding Rates

During FY 2003, NSF took action on 40,075 competitive, merit reviewed research and education proposals, as shown in **Text Figure 1**. This represents an increase of 14 percent from the previous year. This is the largest annual percentage increase for NSF in over a decade. Since 1999, the number of proposals processed by NSF has increased by 40 percent.

During FY 2003, NSF made 10,844 awards, resulting in an overall funding rate of 27 percent. As shown in **Appendix Table 1**, there are differences in the funding rates of the various NSF

directorates,<sup>1</sup> ranging from 21 percent for Engineering (ENG) to 36 percent for Geosciences (GEO). There are many reasons for these differences, such as the relative size and nature of the S&E disciplines and communities being served by the various directorates.

**Text Figure 1**  
**NSF Proposal, Award and Funding Rate Trends**

	<b>Fiscal Year</b>				
	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Proposals</b>	28,579	29,508	31,942	35,165	40,075
<b>Awards</b>	9,190	9,850	9,925	10,406	10,844
<b>Funding Rate</b>	32%	33%	31%	30%	27%

#### Types of Proposals and Awards

In general, NSF makes two kinds of competitive grants for the support of research and education:

**Standard grants** provide funding in a single fiscal year award to cover all of the proposed activities for the full duration (generally 1-5 years) of a project.

**Continuing grants** provide funds for an initial period (usually one year) of a multiple year project with a statement of intent to continue funding in yearly increments until completion of the project.

Of the 10,844 competitive awards made in FY 2003, 6,495, or 60 percent were standard grants. Since 1994 the number of standard grants has increased by 13 percent, while the number of continuing grants has only increased by 2 percent. In addition to these awards, NSF awarded 7,640 continuing grant increments (CGIs) based on proposals that had been competitively reviewed in earlier years.<sup>2</sup> As shown in Text Figure 2, NSF devotes 23 percent of its total budget to new standard grants and 21 percent to new continuing grants. The use of standard grants allows NSF the flexibility to make new awards each year without carrying a large burden of continuing grant obligations.

<sup>1</sup> The term “directorates” as used in this report, refers to NSF’s seven programmatic directorates and the Office of Polar Programs. See NSF Organization Chart in Appendix Table 15.

<sup>2</sup> While the original award is a competitive action, the CGI is a non-competitive renewal grant.

**Text Figure 2**  
**Percentage of NSF Budget by Type of Award**

	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>New Standard Grants</b>	23%	23%	25%	26%	23%
<b>New Continuing Grants</b>	18%	21%	19%	21%	21%
<b>Continuing Grant Increments</b>	43%	38%	38%	35%	36%
<b>Facilities/ Other Awards</b>	16%	18%	18%	18%	20%
<b>100% = \$Billion</b>	\$3.69	\$3.92	\$4.46	\$4.77	\$5.37

### Broadening Participation

NSF's Strategic Plan (FY 2003 – 2008) includes as a specific objective the promotion of greater diversity in the science and engineering workforce through increased participation of underrepresented groups and institutions in all NSF programs and activities. NSF is strongly committed to increasing the participation in all NSF activities of researchers, educators and students from groups currently underrepresented in the science and engineering enterprise. Funding rates over the last five fiscal years for all Principal Investigators (PIs), female and minority PIs<sup>3</sup>, and prior and new PIs<sup>4</sup> are shown in Text Figure 3 below. Proposals, awards and funding rates by PI characteristics are presented in Appendix Table 2.

**Text Figure 3**  
**Funding Rate by Fiscal Year and PI Characteristic**

	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>All</b>	32%	33%	31%	30%	27%
<b>Female</b>	32%	35%	32%	30%	28%
<b>Male</b>	32%	33%	31%	30%	27%
<b>Minority</b>	29%	32%	30%	29%	27%
<b>New</b>	23%	25%	24%	22%	19%
<b>Prior</b>	39%	40%	36%	35%	33%

During FY 2003, female PIs received 2,090 awards. This is a slight increase from FY 2002, but still represents 19 percent of the total NSF awards, as was true for the previous year. The funding rate for females fell from 30 to 28 percent, compared to the funding rate of 27 percent for males, which fell from 30 percent. The number of proposals received from female PIs increased by 9 percent in FY 2003 and by 38 percent from FY 1999.

In FY 2003, the number of awards to minority PIs increased to 569, a 4 percent increase over FY 2002. This is about five percent of the total number of NSF awards. The funding rate for minority PIs is 27 percent, the same as the overall funding rate. In FY 2003, minority PIs submitted 2,141 proposals, up 12 percent from last year and up 49 percent from FY 1999.

<sup>3</sup> Minority includes American Indian or Alaskan Native, Black, Hispanic, and Pacific Islander and excludes Asian and White, not of Hispanic Origin.

<sup>4</sup> A proposal is counted in the New PI category if the PI did not have an NSF award in the current or prior years.

**Appendix Table 3** provides a breakdown of funding rates by the race/ethnicity of the minority Principal Investigators.

There continues to be a wide disparity in the funding rates of *new PIs* and *prior PIs* (19 percent and 33 percent, respectively, in FY 2003). There are a number of likely reasons for this; for example, prior PIs are more likely to have established research agendas and are thus able to cite the results of previously funded projects in their subsequent proposals. In the case of new PIs who have conducted research, but are approaching NSF as a funding source for the first time, it may take more than one proposal submission to experience success. As indicated in Appendix Table 2, in FY 2003 new PIs submitted 17,584 proposals, up 17 percent from last year.

In FY 2003 and beyond, NSF will continue to make strong efforts to increase the number of proposals submitted by and awards made to scientists and engineers from underrepresented groups. A key element of NSF's strategy includes the use of information technology and connectivity to inform and engage under-served individuals, groups, institutions, and communities in science and engineering.

#### Distribution of Awards by Sector/Institution

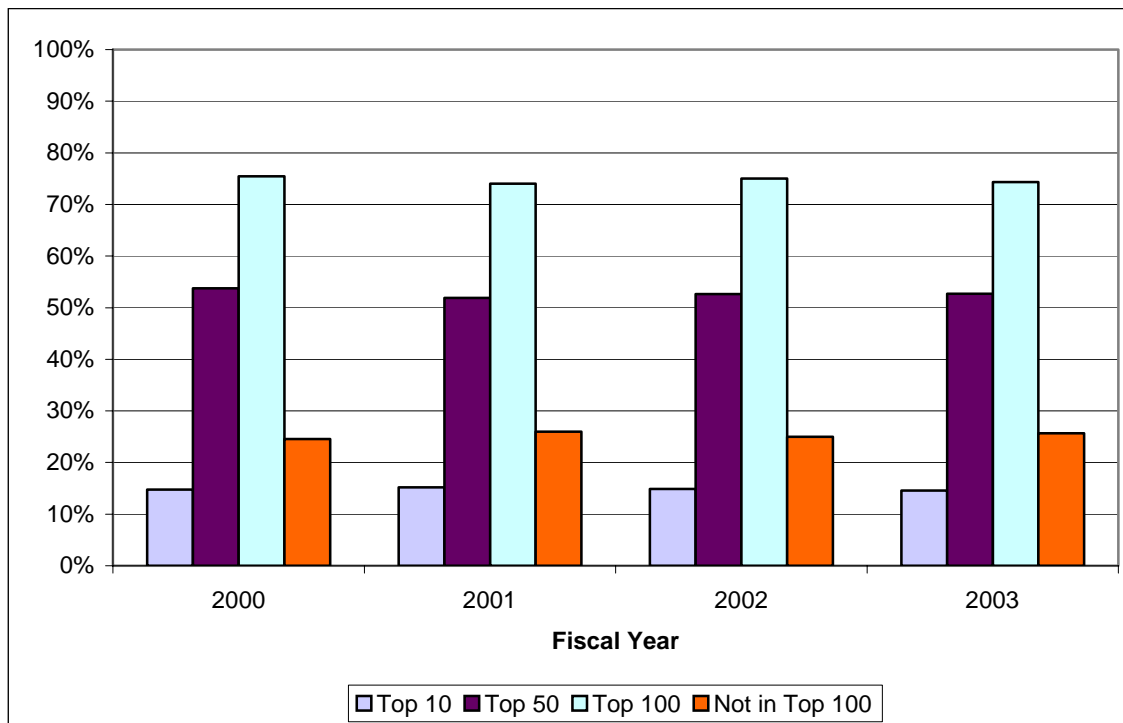
According to **Text Figure 4**, in FY 2003 NSF awarded 76 percent of its budget to academic institutions, 15 percent to non-profit and other institutions, 7 percent to for-profit businesses, and 2 percent to Federal agencies and laboratories. The overall distribution of funds by performer has remained fairly constant over the past three years.

**Text Figure 4**  
**Distribution of NSF Awards by Performer**

	Fiscal Year					
	2001		2002		2003	
Type of Performer	\$M	%	\$M	%	\$M	%
Federal	80	2%	89	2%	108	2%
Industry	284	7%	323	7%	337	7%
Academe	3,292	76%	3,489	76%	3,950	76%
Non-Profit & Other	665	15%	697	15%	762	15%
<b>TOTAL</b>	4,321	100%	4,599	100%	5,157	100%

According to **Text Figure 5**, the percent of NSF awards made to the top funded 10, top funded 50 and top funded 100 academic institutions has also remained within a narrow range over the past three years. In FY 2003, the top 10 funded institutions receive about 15 percent of NSF awards while 26 percent of NSF awards are made to institutions that are not in the top 100 funded schools.

**Text Figure 5**  
**Percent of Awards to Top Funded Academic Institutions**  
**Fiscal Year 2000 – 2003**



#### Award Amounts and Duration

Text Figure 6 indicates average and median NSF award amounts from FY 1996 to FY 2003. Detailed data from FY 1999-2003 are also presented in **Appendix Table 4**. The average annualized award amount for *research grants*<sup>5</sup> in FY 2003 was \$135,609, an increase of 17 percent from the previous year and 55 percent from FY 1999. The median award<sup>6</sup> was \$100,000, an increase of 16 percent over last year, and 48 percent over FY 1999.<sup>7</sup>

Adequate award size is important both to attracting high-quality proposals and to 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 writing and reviewing proposals. In addition, larger awards allow the participation of more students.

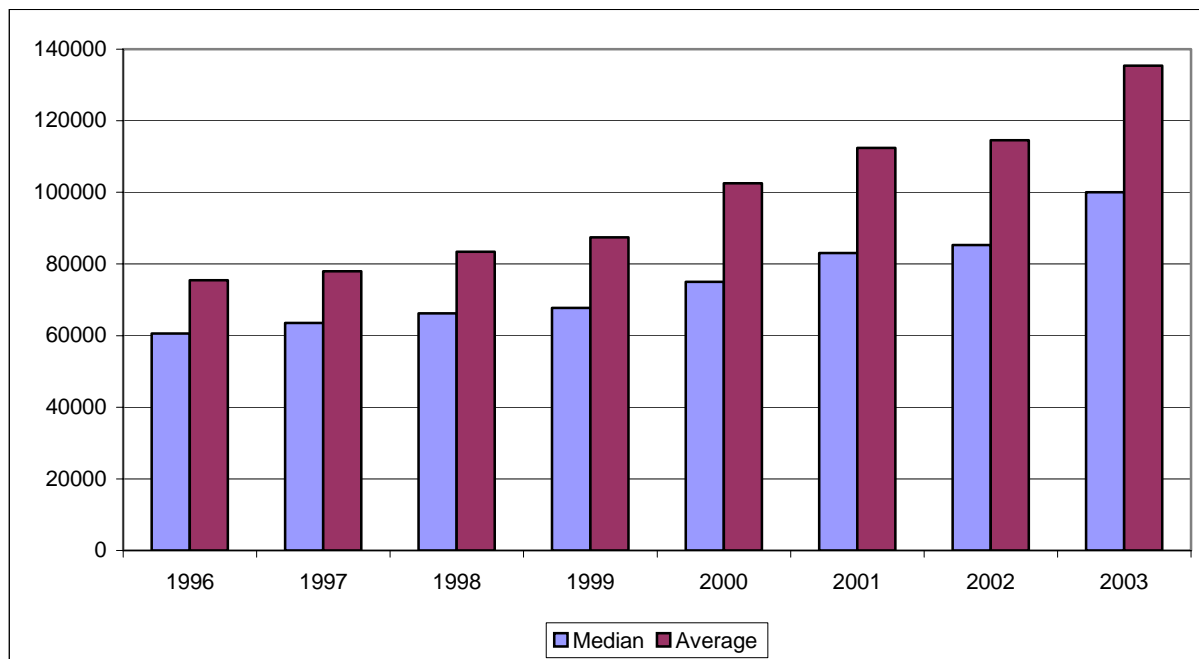
<sup>5</sup> *Research Grants* is a subset of total NSF awards associated primarily with individual investigator and group research projects.

<sup>6</sup> The difference between the median and average award amounts reflects the effect of numerous small awards on the median, and a few large awards on the average award amount.

<sup>7</sup> In FY 2003 collaborative awards in which participating institutions submitted separate proposals for the same project were consolidated for the purpose of determining award size. In FY 2002 collaborative proposals were counted as separate awards. Even if collaboratives were treated as separate awards, award size would still be increasing.



**Text Figure 6**  
**Award Amounts**  
**Competitively Reviewed Research Awards**



Longer award terms are important in increasing the effectiveness of principal investigators and graduate students. Less time is spent preparing proposals, and graduate students are able to have more time to do their thesis work. NSF's FY 2003 GPRA goal was to achieve an average award duration of 3.0 years for research grants. The actual result was 2.9 years. In the future, given adequate funding, NSF would like to increase the duration of research grants to at least four years; longer award terms allow graduate students to complete their work.

In FY 2001, NSF contracted with Mathematica Policy Research (MPR), Inc. to conduct a survey of principal investigators who received NSF awards in that fiscal year and a companion survey of institutions. The goals of these surveys were to determine the appropriate size and duration of an NSF grant and to identify specific areas within a principal investigator's body of research that would benefit from an increased grant size and/or duration.<sup>8</sup> Not surprisingly, the MPR report reveals a general consensus among principal investigators that both award size and duration should be increased. Student support was the top area slated by principal investigators to receive this additional funding, with about 80 percent of principal investigators reporting that they would increase the number and/or months of graduate support. Increased support for undergraduates and postdoctoral associates was also among the top areas of which additional funding would be directed.

<sup>8</sup>Mathematica Policy Research, Inc. 2002. *NSF Report on Efficiency of Grant Size and Duration*. Available at <http://www.nsf.gov/od/gpra/grantsize/contents.htm?gpraplan97>.

### Proposal Processing Efficiency – Dwell Time

It is very important for applicants to receive a timely funding decision (i.e., proposal dwell time). NSF's FY 2003 GPRA performance goal was, for at least 70 percent of proposals, to inform applicants whether their proposals have been declined or recommended for funding within six months of receipt. As indicated in **Text Figure 7**, NSF not only met this goal but surpassed it. In FY 2003, 77 percent of all proposals were processed within six months, compared to 74 percent in FY 2002 and 63 percent in FY 2001. The success of this goal is particularly significant because there was a 14 percent increase in the number of proposals submitted in FY 2003. This is the second year that NSF has achieved this goal since its establishment in FY 1999.

**Text Figure 7**  
**Proposal Dwell Time**  
**Percentage of Proposals Processed Within 6 Months**

<b>Fiscal Year</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Percentage</b>	58%	54%	63%	74%	77%

## **3. The Proposal Review Process**

The NSF proposal process starts with electronic receipt of the proposal, which is then forwarded electronically to the appropriate NSF program for review. All proposals are carefully reviewed by a scientist, engineer, or educator serving as an NSF program officer, and usually by three or more experts from outside NSF in the particular fields represented in the proposal. Care is exercised to assure that the external reviewers have no conflicts of interest.

Proposers are invited to suggest names of persons they believe are especially well qualified to review the proposal, along with persons who they believe should not review the proposal. These suggestions may serve as an additional source in the reviewer selection process, at the program officer's discretion. Program officers may obtain comments from assembled review panels or from site visits before recommending final action on proposals.

Senior NSF staff further review recommendations for awards and declines. When a decision has been made, verbatim copies of reviews, excluding the names of the reviewers, and summaries of review panel deliberations, if any, are provided to the proposer.

### Review Processes Used at NSF

The extensive use of knowledgeable experts from outside the Foundation is key to NSF's proposal review system. Expert judgments of which proposals best address the NSF-established merit review criteria inform NSF staff and influence funding recommendations. NSF programs obtain external peer review by three principal methods: (1) "mail-only," (2) "panel-only," and (3) "mail-plus-panel" review. In addition, site visits by NSF staff and external peers are often used to review proposals for facilities and centers. NSF program officers are given discretion in the specific use of review methods, subject to higher-level review.

In the “mail-only” review method, reviewers are sent proposals and asked to submit written comments to NSF through FastLane, NSF’s Web-based system for electronic proposal submission and review. These mail reviews are then used by the NSF program officer to support a recommendation for award or decline.

“Panel-only” review refers to the process of soliciting reviews only from those who meet in a panel review setting to discuss their reviews and provide advice directly to the program officer. Most programs that use this process provide proposals to panelists and receive their reviews before the panel meeting.

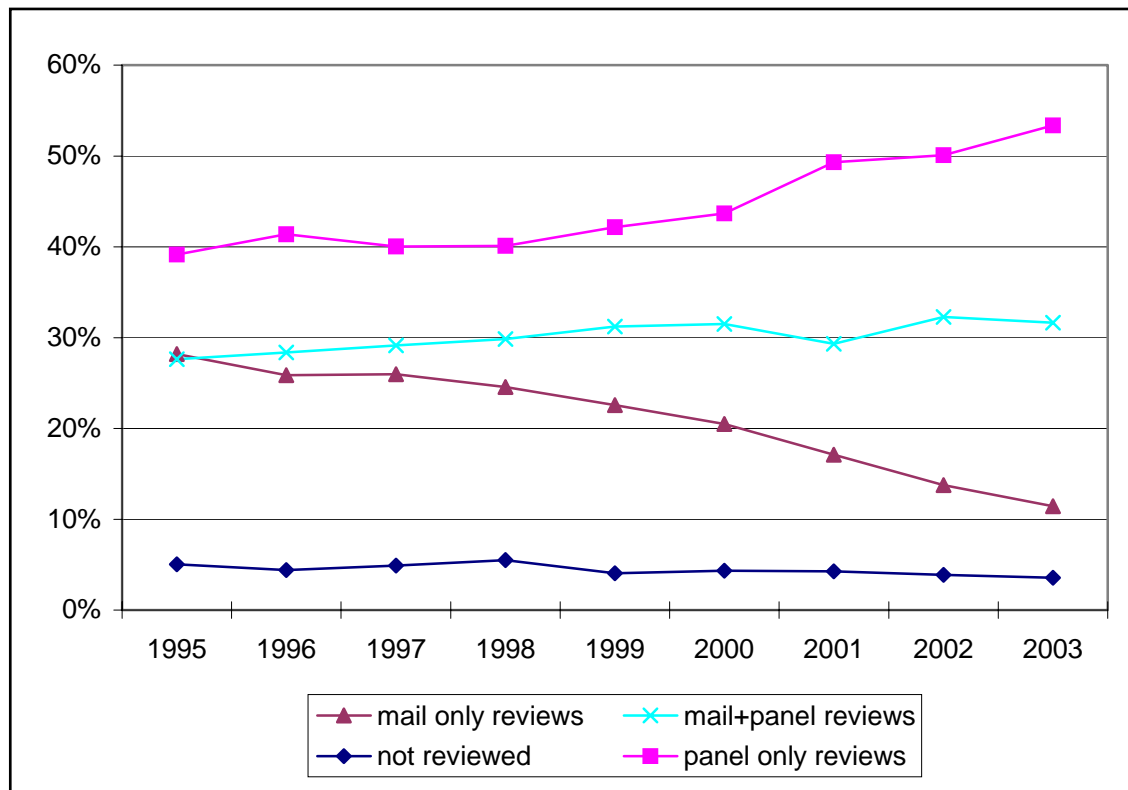
Many proposals submitted to NSF are reviewed using some combination of these two processes (“mail-plus-panel” review). Those programs that employ the mail-plus-panel review process have developed several different configurations, such as:

- A reviewer is asked to submit a written mail review and also serve as a panelist; and
- A reviewer is asked to participate only as a panelist, with responsibility only for reviewing and discussing mail reviews written by others and providing verbal and/or written advice to the program officer.

The use of various review methods has changed markedly over time, as shown in **Text Figure 8**, and the corresponding data in **Appendix Table 5**. Since 1995 the percentage of NSF proposals reviewed by panel-only has increased from 39 to 53 percent of all proposals. During the same period, there has been a steady decline in the use of mail-only review from 28 to 11 percent. The use of mail-plus-panel review increased from 28 to 32 percent.

There are a number of reasons for the trend toward panel review. For example, the panel review process permits proposals to be discussed and compared to one another. For this reason, panel review is the norm in evaluating proposals in response to program solicitations and announcements with proposal submission deadlines. The panel review process also has advantages in the evaluation of multidisciplinary proposals, because, unlike mail-only review, viewpoints representing several disciplines can be openly discussed and integrated. In a similar fashion, the panel review discussion facilitates evaluation of both merit review criteria. Finally, the panel review process usually requires fewer individual reviewers per proposal than the mail-only process. For example a panel of 25 reviewers could possibly review 200 proposals, while it may require several hundred requests for mail reviewers to review the same proposals. Also, using panels in the review process tends to reduce proposal processing time (time-to-decision), compared to mail-only reviews. For example, in FY 2003, 81 percent of all proposals reviewed by panel-only were processed within six months, compared to 74 percent for mail-plus-panel and 65 percent for mail-only.

**Text Figure 8**  
**FY 1995-2003 Trend, NSF Review Method**  
**(Percentage of Proposals)**



Mail review often takes more time because additional reviews must be requested when some of the reviewers in the first set decline to review the proposal. The chief advantages of mail review are: (1) the expertise of the reviewers can be more precisely matched to the proposal, and (2) it is less expensive (for example, there are no travel costs). The mail-plus-panel review process is used frequently because it combines the in-depth expertise of mail review with the more comparative analysis of panel review.

Some programs are combining the virtues of mail review and panel review by experimenting with “virtual panels,” in which panelists participate from their offices or homes and interact electronically using NSF’s Interactive Panel System (IPS), accompanied by a teleconference. Around 84 percent of panels, whether they assemble at NSF or virtually, are using IPS. A part of Fastlane, IPS permits the viewing of proposals, reviews, basic panel discussions, collaboration on panel summaries, and approval of the draft panel summary through the web. Some programs are making use of NSF’s videoconferencing facilities to enhance the participation of panelists whose schedules do not permit them to be physically present at the time of the panel. Videoconferencing is also employed in award management and oversight for large center-type project. NSF will continue its efforts to improve web-based and electronic means of communication to contribute to the quality of the merit review and award oversight processes.

Directorate-level data on the use of different review processes during FY 2003 are presented in **Appendix Table 6**. NSF Directorates vary widely in their use of proposal review methods. Mail-plus-panel review was the predominant review process used in the BIO, GEO, and SBE Directorates, while panel-only review was the predominant method in CISE, EHR, ENG and MPS. Mail-only review was the most common mode of review in the Office of Polar Programs (OPP).

### Reviews and Reviewers

NSF policy states that each recommendation for final action on a proposal must be accompanied by at least three external reviews, unless the requirement has been waived under special circumstances. The total numbers of reviews and the average numbers of reviews per proposal obtained by the three different review methods are presented in **Text Figure 9**. As expected, the mail-plus-panel method had the highest number of reviews per proposal. Directorate-level data for FY 2003 are presented in **Appendix Table 7**. The variation among directorates in the number of reviews per proposal reflects both their preferences for the different review methods, and differences in the way directorates count reviewers in the panel review process.

**Text Figure 9**  
**Reviews per Proposal, FY 2003**

	All Methods	Mail-plus-Panel	Mail-Only	Panel-Only
<b># of Reviews</b>	247,769	101,782	19,789	121,198
<b># of Proposals</b>	38,653	12,683	4,579	21,391
<b>Reviews per Proposal</b>	6.3	8.0	4.3	5.7

Diversity of the reviewer pool is an important feature of the merit review system. Reviewers from diverse backgrounds help ensure that a wide range of perspectives is taken into consideration in the review process. NSF emphasizes reviewer diversity through a variety of processes, including use of a large and expanding Foundation-wide reviewer database, explicit policy guidance, mandatory training for all program officers, and directorate-level initiatives.

NSF maintains a central electronic database of about 295,000 reviewers. Potential reviewers are identified from a variety of sources including applicant suggestions, references attached to proposals, published papers, scientific citation indexes and other similar databases, and input from mail reviewers, panelists, and visiting scientists. During FY 2003, 48,000 reviewers were sent one or more proposals for mail review and 11,000 reviewers served as panelists. In all, 54,000 individuals served on panels, were sent a proposal for mail review, or served in both functions. About 8,000 of these reviewers had never reviewed an NSF proposal before.

In FY 2001, NSF developed systems and policies to request demographic data electronically from all reviewers to determine the participation of underrepresented groups in the NSF reviewer pool. The goal was to establish a baseline for participation of underrepresented groups in NSF proposal review activities. In FY 2003, out of a total of 40,020 distinct reviewers who returned reviews, 5,336 provided demographic information. Out of the 5,336 who provided information, 1,818 (34%) indicated they were members of an underrepresented group. NSF cannot legally require reviewers to provide demographic information. Provision of such data is voluntary and, given the low response rate, there is not enough information to establish a baseline. In FY 2004,

NSF will continue to request demographic information and will adjust the Fastlane reviewer module to make it more convenient for reviewers to provide such information.

Meanwhile, NSF will continue efforts to identify additional reviewers from underrepresented groups through: expansion and enhancement of existing NSF Library resources; collection and sharing of potential reviewer data from associations and institutions serving groups that are underrepresented in science and engineering; and encouraging participation of members of underrepresented groups in activities such as NSF workshops or conferences.

Participation in the peer review process is voluntary. Panelists are reimbursed for expenses; mail reviewers receive no financial compensation. In FY 2003, 58 percent of requests for mail reviews elicited positive responses, the same percentage as in FY 2002. In FY 2001 the response rate was 60 percent.

### Merit Review Criteria

In FY 1998 the NSB approved the use of the two current NSF merit review criteria now in effect:

**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 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?

In FY 1999 NSF established annual GPRA performance goals to increase reviewer and program officer attention to both merit review criteria. Currently NSF Committees of Visitors and NSF Staff provide an annual evaluation of the Foundation's use of the merit review criteria. In NSB meeting discussions, members expressed concern that the broader impacts criterion was not being fully integrated into the review process, and that principal investigators and reviewers are unsure how it should be addressed. They agreed that efforts to ensure that both criteria are addressed in proposals and reviews should be continued and they asked staff to periodically report on these efforts.

Since then, NSF has completed the following actions to raise awareness of the importance and use of the merit review criteria:

- Developed a draft set of examples of activities that address the broader impacts criterion. NSF disseminates the set to proposers via a link embedded in the Grant Proposal Guide (GPG). In addition, the examples are available to proposers and reviewers via FastLane.
- Drafted revisions to the FastLane Proposal Preparation Guidelines and the standard language in the Program Information Management System (PIMS) that instructs proposers that they *must* clearly address broader impacts in the project summaries of their proposals.
- Revised its guidance to proposers in the GPG to stipulate that Principal Investigators (PIs) must address both merit review criteria in separate statements within the one page Project Summary. The GPG also reiterates that broader impacts resulting from the proposed project must be addressed in the project description and described as an integral part of the narrative. Effective October 1, 2002, NSF returned without review proposals that failed to separately address both merit review criteria within the project summary. For FY 2003, 276 proposals were returned without review due to the failure to address the merit review criteria in the summary.
- Revised guidance in the Proposal and Award Manual to require program officers to comment on both the intellectual merit and the broader impacts of the proposed activity as part of the review analysis of the proposal.
- Updated NSF's reviewer forms to provide the capability for reviewers to separately comment on both criteria in the review of a proposal.
- Evaluated reviewer utilization of the broader impacts criterion and concluded that 90 percent of sampled reviews provided evaluative comments regarding the broader impacts criterion, compared to 84 percent in FY 2002 and 69 percent in FY 2001.

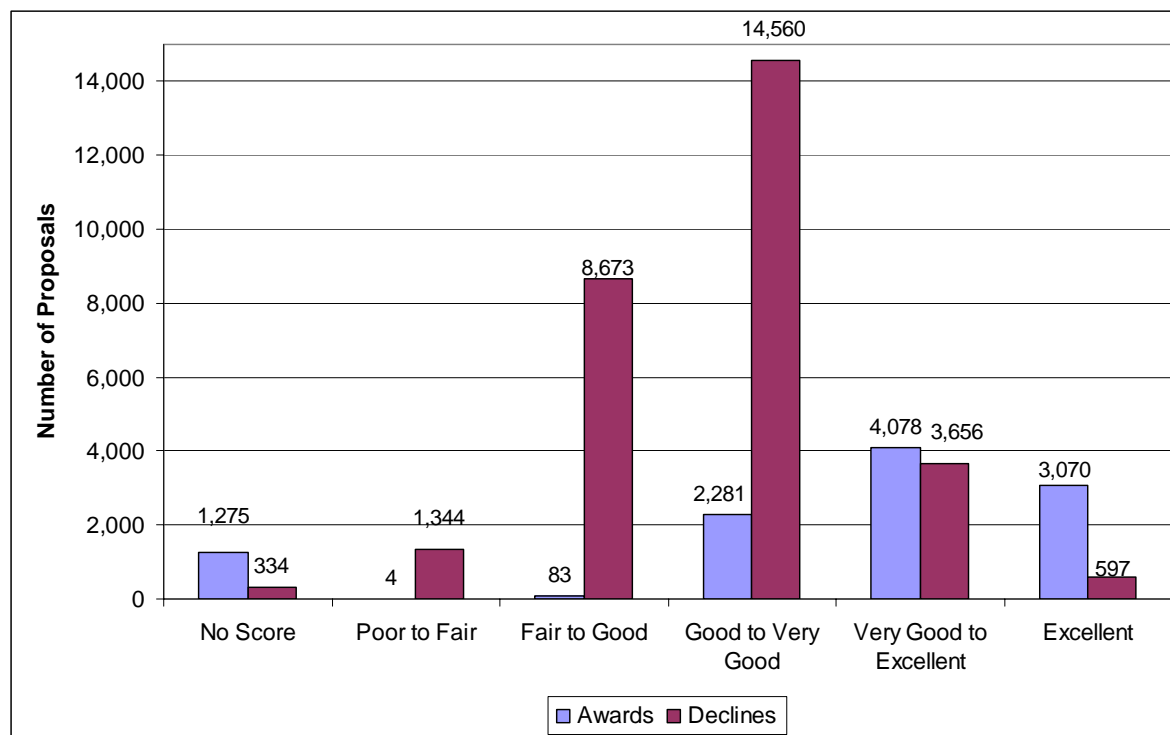
#### Reviewer Proposal Ratings

The distribution of average summary ratings<sup>9</sup> of reviews for awarded and declined proposals is provided in **Text Figure 10**.

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<sup>9</sup> The NSF merit review system emphasizes reviewer narratives in addition to summary ratings. Summary ratings are but one indicator of reviewer judgment of the proposal quality. The written narratives provided by reviewers, the deliberations by panel members, and the expert opinions provided by program officers are all important components of the merit review system. No one component is allowed to dominate over the others.

**Text Figure 10**  
**Distribution of Average Reviewer Ratings**

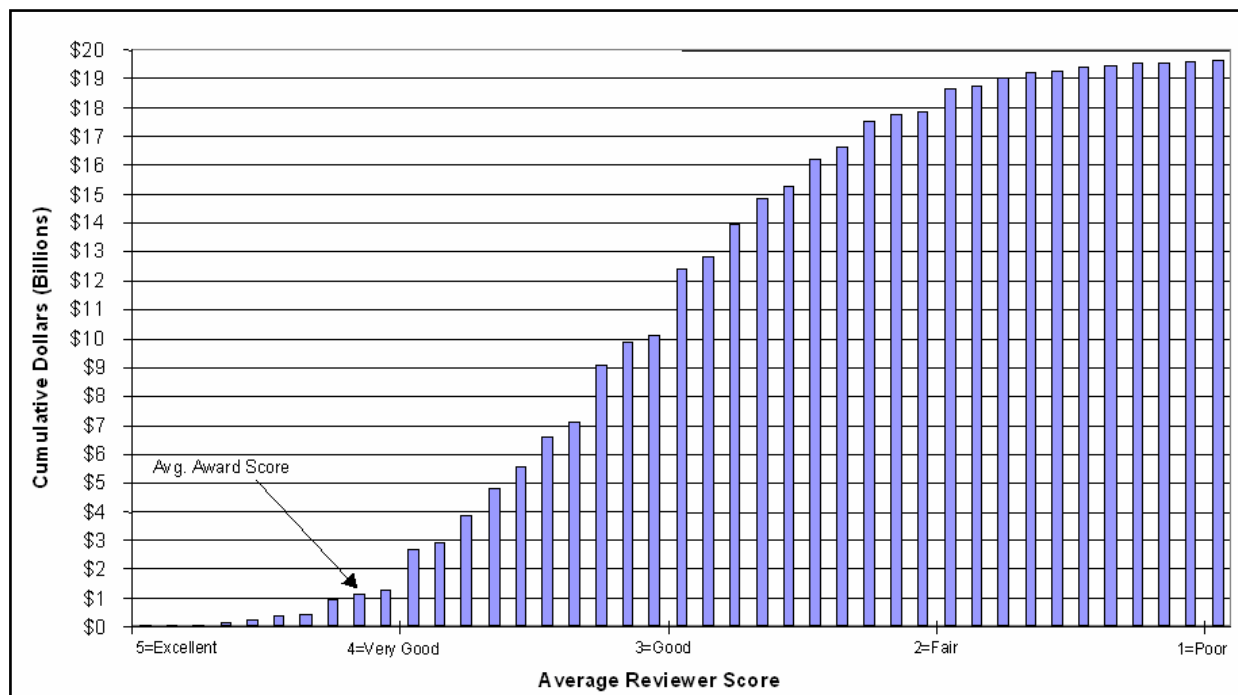


These data indicate considerable overlap among the average reviewer ratings of successful and unsuccessful proposals, most notably in the range of “very good” average ratings. **Appendix Tables 8-10** indicate that this overlap among the average reviewer ratings is present and similar in degree for each of the three proposal review methods used by NSF (panel-only, mail-only, and mail plus panel).

These data also indicate that a large number of potentially fundable proposals are declined each year. **Text Figure 11** indicates that in FY 2003, \$1.44 billion was requested for declined proposals that had received ratings at least as high as the average rating (4.1) for an awarded proposal. These declined proposals represent a rich portfolio of unfunded opportunities – fertile ground for learning and discovery that lies fallow. A comparison of **Text Figure 10** and **Text Figure 11** indicates that there may be a large number of proposals in the declined Good to Very Good range of proposals that, if supported, could produce substantial research and education benefits.



**Text Figure 11**  
**Cumulative Requested Amounts of Declined Proposals**  
**By Average Reviewer Score for FY 2003**



#### NSF Program Officer Recommendations

As noted above, the narrative comments and summary ratings provided by external reviewers are essential inputs that inform the judgment of the program officers who formulate award and decline recommendations to NSF's senior management.

NSF program officers produce and manage a portfolio of awards, which must be appropriately balanced among various issues and objectives. For example, in addition to information contained in the external proposal reviews, NSF program officers must consider issues such as:

- Potential impact on S&E human resources and infrastructure;
- Balance of research approaches to significant research questions;
- Support for “risky” proposals with potential for significant advances in a field;
- NSF core strategies, such as the integration of research and education;
- Achievement of special program objectives and initiatives, and
- Balance of the overall program portfolio
- Geographic distribution.

These issues are especially important in making difficult award/decline recommendations among proposals that are in the middle reviewer rating range (i.e. proposals with “very good” average ratings). Each program officer must use sound judgment in arriving at a well-balanced portfolio of research and education awards within a given program.

### Program Officer Characteristics and Workload

Both the number of proposals (40,075) and the number of program officers (380) increased in FY 2003 compared to the previous fiscal year, so the average number of proposals processed per program officer remained the same as in FY 2002, approximately 105 proposals per year. The distribution of these program officers by characteristics is presented in **Text Figure 12**.

**Text Figure 12**  
**Distribution of NSF Program Officers by Characteristics**  
**As of October 1, 2003**

<b>Program Officers</b>	<b>Total</b>	<b>Percent</b>
<b>Total</b>	<b>380</b>	<b>100%</b>
<i>Gender</i>		
<b>Male</b>	<b>220</b>	<b>66%</b>
<b>Female</b>	<b>114</b>	<b>34%</b>
<i>Race</i>		
<b>Minority</b>	<b>85</b>	<b>22%</b>
<b>White, Non-Hispanic</b>	<b>295</b>	<b>78%</b>
<i>Employment</i>		
<b>Permanent</b>	<b>183</b>	<b>48%</b>
<b>Visiting Scientists, Engineers &amp; Educators (VSEE)</b>	<b>33</b>	<b>9%</b>
<b>Temporary</b>	<b>47</b>	<b>12%</b>
<b>Intergovernmental Personnel Act (IPA)</b>	<b>117</b>	<b>31%</b>
Source: NSF Division of Human Resource Management Notes: VSEE: Individual employed as a Visiting Scientist, Engineer, or Educator (formerly termed "Rotator"). IPA: Individual employed under the Intergovernmental Personnel Act.		

Program Officers can be permanent NSF employees or non-permanent (includes VSEE, Temporary, and IPA categories) employees. About 52 percent of program officers fall into the non-permanent category. Some non-permanent program officers are "on loan" as visiting scientists, engineers, and educators (VSEEs) for up to three years from their host institutions. Others are employed through grants to the home institutions under the terms of the Intergovernmental Personnel Act (IPA). The number of IPA Program Officer positions has increased in recent years. Non-permanent employees provide NSF with new ideas and fresh science and engineering perspectives. They bring transformative knowledge of the most recent disciplinary and interdisciplinary developments to enhance NSF's responsiveness and agility.

In the last ten years, NSF's budget has nearly doubled, but the agency's staffing level has only increased by about four percent. To examine the needs and opportunities created by growth in workload and workload complexity, NSF is undertaking a major, multi-year business analysis, using an outside contractor (Booz Allen Hamilton). The results of the business analysis will enable NSF to respond to challenges such as merit review of proposals and management of awards involving increasingly multi-disciplinary and collaborative research and education.

Preliminary data from the contractor's ongoing analysis indicate that the increasing volume and complexity of proposals has had an impact on the effectiveness of program officers in performing their merit review and award management responsibilities. Currently a program officer manages an average of 90 competitive proposal actions, 82 active awards, and 67 post-award actions per year. Program officers spend approximately 55 percent of their time on merit review, yet they also are responsible for award management and oversight, program planning, staff oversight, and other tasks. For FY2003, NSF did not meet its GPRA goal of ensuring that, for at least 80 percent of decisions to fund or decline proposals, program officers will comment on aspects of both merit review criteria. NSF examined a sample of program officers' review analyses from FY 2003 and found that approximately 53 percent of the analyses contained elements of both criteria.

Through the business analysis, NSF will continue to monitor and respond to workload issues that have an impact on the merit review process. NSF has developed an overall human capital management plan as a result. In the meantime, NSF is taking steps to address the program officer workload issue. The addition of Science Assistant positions along with more program officers, for example, has helped to alleviate rising workloads. NSF had 37 Science Assistant positions in FY 2003, up from 20 Science Assistant positions last fiscal year. These staff members assist program officers in the proposal review and award process. Another step toward increased efficiency is the electronic jacket, or "eJacket." Currently under development, eJacket provides a single, web-based interface to process proposals electronically from receipt in Fastlane to Division Director concurrence in award or decline recommendations. NSF is developing eJacket in phases to allow for its experimental use and feedback by program staff.

#### Assuring Objectivity in the Merit Review Process

NSF program officers carefully check all proposals for potential conflict of interest and select expert outside reviewers with no apparent potential conflicts. All reviewers are provided guidance and instructed to declare potential conflicts. All program officers receive conflict-of-interest training annually.

Each program officer's recommendation to award or decline a proposal is subject to a programmatic review by a higher level reviewing official (usually the division director), and an administrative review by a grants officer in the Office of Budget, Finance, and Award Management (BFA). The Director's Review Board (DRB) reviews all award recommendations with an average annual award amount of 2.5 percent or more of a Division's annual budget. The National Science Board reviews and approves all recommended awards where the average annual award amount is 1 percent or more of the awarding Directorate's annual budget.<sup>10</sup>

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<sup>10</sup> Other items requiring NSB prior approval are new programs and major construction projects that meet certain specifications. In FY 2003, the Board reviewed and approved nine recommended awards.

Every applicant whose proposal undergoes merit review receives a letter stating the results, a panel summary explaining the rationale for the decision (if panel review was used), along with an anonymous verbatim copy of each review that was considered in the review process. An unsuccessful applicant may ask the program officer for additional clarification of the decision. If after considering this additional information the applicant is not satisfied that the proposal was fairly handled and reasonably reviewed, he or she may request formal reconsideration from the Assistant Director (AD). This request can be based on the applicant's perception of procedural errors or on disagreements over the substantive issues dealt with by reviewers. If the AD upholds the original action, the applicant's institution may request a second reconsideration from the Foundation's Deputy Director.

On average, NSF declines over 20,000 proposals a year but receives only 30-50 requests for formal reconsideration. Most program-level decisions are upheld in the reconsideration process. The number of requests for formal reconsideration and resulting decisions at both the AD and O/DD levels from FY 1999 through FY 2003 are displayed in **Appendix Table 11**. Out of the 177 requests for formal reconsideration of declined proposals during the past five years, 11 decisions have been reversed.

## 4. Other Issues Related to Merit Review

### Doing Business Efficiently and Effectively

NSF recently developed a strategic plan specifically for its investments in administration and management.<sup>11</sup> This increased emphasis on administration and management also speaks directly to NSF's efforts under the President's Management Agenda (PMA). The PMA launched a government-wide effort to improve the management, performance, and accountability of federal agencies. An Executive Management Scorecard is now issued quarterly by the Office of Management and Budget (OMB) to track the progress of agencies in meeting specific criteria under the initiatives that constitute the PMA. At year-end, NSF maintained its "green" successful status for both Financial Performance and E-Government. For FY 2003 NSF was the only federal agency to receive two green ratings for the PMA initiatives.<sup>12</sup>

In FY 2001, NSF established the Business and Operations Advisory Committee. The committee is composed of 12-15 members selected from the research administration, education management and business communities, including business professionals and academics in the field. The Committee is charged with providing advice on issues related to NSF's business practices and operations, including innovative approaches to the achievement of NSF's strategic goals.

In FY 2003 technological and business practices implemented in recent years continued to yield cost efficiencies for the agency. For example, in FY 2003, cost efficiencies realized from electronic dissemination of publications, decreasing postage costs, and the use of videoconferencing totaled nearly \$250,000.

<sup>11</sup> The Administration and Management Strategic Plan is available at: [www.nsf.gov/od/gpra/start.htm](http://www.nsf.gov/od/gpra/start.htm).

<sup>12</sup> For the current "Management Scorecard Update," please see [www.results.gov/agenda/scorecard.html](http://www.results.gov/agenda/scorecard.html).

NSF also focuses on enhancing customer service. In FY 2003, 99 percent of all NSF program announcements were available at least three months before the proposal due date and 77 percent of proposals were processed within six months of submission. Both results were significant accomplishments that represented multi-year efforts focused across the Foundation.

In recognition of NSF's innovative electronic capabilities to solicit, receive, review, select, award, manage, and report on the results of its research and education investments, NSF received the President's Award for Management Excellence in December 2003. The Presidential Award for Management Excellence is presented to organizations that have shown exemplary performance in strategic management of human capital, competitive sourcing, improved financial performance, expanded electronic government, and budget and performance integration.

### Performance Evaluation

Operating a credible, efficient merit review system is one of the four critical objectives in NSF's FY 2003-2008 Strategic Plan.<sup>13</sup> Performance evaluation, with respect to the operation of the merit review system, is currently supported with information obtained from the following activities:

- **Applicant and Grantee Information/Merit Review.** All applicants and grantees provide results from previous NSF support, information about existing facilities and equipment available to conduct the proposed research, biographical information on the primary investigators, other sources of support, and certifications specific to NSF. Such information is required at the time of application, at the time of an award, and in annual and final project reports. It is reviewed by NSF staff, used during merit review and included in the package of information available to external committees conducting performance assessment.
- **Program Evaluation by Committees of Visitors (COVs).** To ensure the highest quality in processing and recommending proposals for awards, NSF convenes Committees of Visitors (COVs), composed of qualified external evaluators, to review each program approximately every three years. This includes disciplinary programs in the various directorates and offices, and the cross-disciplinary programs managed across directorates. The COVs are comprised of independent, external experts from academia, industry, government, and nonprofit sectors. These experts assess the integrity and efficiency of the processes for proposal review and program decision-making and provide a retrospective assessment of the quality of results of NSF's programmatic investments. COV reports are submitted for review through Advisory Committees to the directorates and the NSF Director. The recommendations of COVs are reviewed by management and taken into consideration by NSF when evaluating existing programs and future directions for the Foundation.<sup>14</sup> In FY 2003, COVs evaluated about a third of NSF's programs. See **Appendix Table 12** for a schedule of future COV program evaluations.

<sup>13</sup> The NSF Strategic Plan, FY 2003 –2008, is available at [www.nsf.gov/od/gpra/start.htm](http://www.nsf.gov/od/gpra/start.htm).

<sup>14</sup> The COV reports and directorate responses are available electronically as a link from the NSF GPRA web page, [www.nsf.gov/od/gpra/start.htm](http://www.nsf.gov/od/gpra/start.htm).

The U.S. General Accounting Office (GAO) examined NSF's COV process in early 2003 and found that it demonstrated a high capacity for evaluation, the elements of which included an evaluation culture, data quality, analytic expertise, and collaborative partnerships.<sup>15</sup> Later in the year NSF's Office of Inspector General (OIG) reported on its audit of the COV process. The OIG found that NSF makes good use of the COV reports to better manage its science, engineering, and education programs. In addition, The OIG concluded that NSF relies on the COV reports as an important source of information in determining its performance to meet strategic goals under GPRA.<sup>16</sup> As a result of OIG recommendations to improve the COV process, NSF will require Directorates and Offices to document the implementation of accepted COV recommendations with a written record and provide COVs, prior to their meeting, with the written record of actions taken to implement or address the recommendations made by the previous COV.

- **Advisory Committee (AC) Reporting on Directorate/Office Performance.** Advisory committees advise the seven directorates and the Office of Polar Programs. They are typically composed of 18-25 experts who have broad experience in academia, industry and government. The role of the ACs is to provide advice on priorities, address program effectiveness, review COV reports, and examine directorate/office responses to COV recommendations. In FY 2001 and previous years, directorate/office advisory committees assessed directorate/office progress in achieving NSF-wide GPRA goals. With the advent of the AC/GPA (see below), advisory committees no longer assess directorate progress toward these goals.
- **Advisory Committee for GPRA Performance Assessment (AC/GPA)** During FY 2002, NSF determined that a more efficient and effective process for the assessment of agency performance with respect to GPRA strategic goals was to charge a single external committee of experts with review of all Foundation accomplishments. That decision resulted in the chartering of a new advisory committee on July 15, 2002. The committee's first meeting was held in September 2002, and a second meeting was convened in June 2003. The AC/GPA is comprised of about 18-25 independent external experts representing academia, industry, and government. The AC/GPA looks at Foundation-wide portfolios linked to the agency's strategic goals.
- **Government Performance and Results Act (GPRA).** Several of the investment process goals in the FY 2003 Performance and Accountability Report are focused on various aspects of the award selection process, such as the use of the merit review criteria, the need to keep the awards system open to new people and new ideas, and the time it takes to process a proposal. Some of these goals have been discussed in previous sections of this report. These goals and NSF's progress in meeting them are more fully described in **Appendix Table 13.**

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<sup>15</sup> U.S. General Accounting Office, *Program Evaluation: An Evaluation Culture and Collaborative Partnerships Help Build Agency Capacity*, GAO-03-454 (Washington, D.C.: May 2003), available at [www.gao.gov/cgi-bin/getrpt?GAO-03-454](http://www.gao.gov/cgi-bin/getrpt?GAO-03-454).

<sup>16</sup> *Audit of NSF's Committees of Visitors*, OIG 03-2-013, September 25, 2003. Available at [www.oig.nsf.gov/finalcov2003.pdf](http://www.oig.nsf.gov/finalcov2003.pdf).

- Assessment Utilizing the Program Assessment Rating Tool (PART).** The Program Assessment Rating Tool was developed by the Office of Management and Budget to assess program performance in four areas: Program Purpose and Design, Strategic Planning, Program Management, and Program Results / Accountability. For the purposes of PART assessment, each of the investment categories under the People, Ideas and Tools Strategic Goals is considered a "program." The PART instrument also is being used to assess the performance of each of the priority areas. In FY 2003, assessments were completed on the "Individuals" and "Facilities" programs and on the Information Technology Research and Nanoscale Science and Engineering priority areas. All four areas were rated "effective," the highest possible rating for the PART. NSF received the top three scores of all research and development programs assessed, and all four of the NSF programs were ranked in the top 20 out of the total 399 programs assessed across the government in FY 2003. Each year, additional programs will be assessed for the first time and previous assessments will be updated to reflect new information and actions taken to enhance program management and results. All NSF programs and current priority areas will be assessed by the end of FY 2006.

### Special Proposal and Grant Mechanisms

#### *Preliminary Proposals*

Some NSF programs invite the submission of preliminary proposals. The intent of preliminary proposals is to limit the burden imposed on proposers, reviewers and NSF staff. Normally, preliminary proposals require only enough information to make fair and reasonable decisions regarding encouragement/discouragement of a full proposal. Review practices for preliminary proposals vary widely, ranging from non-binding advice from program officers to proposers to formal recommendations from external reviewers or panels.<sup>17</sup> In FY 2003, NSF acted on 2,469 preliminary proposals, compared to 1,747 proposals in FY 2002, and 2,183 in FY 2001. For those proposals subject to non-binding advice, NSF encouraged the submission of full proposals in 669 cases and discouraged submission of a full proposal in 1,255 cases. For the proposals subject to binding advice through formal recommendations, NSF invited the submission of a full proposal in 152 cases, and did not invite the submission of a full proposal in 382 cases. A total of 11 preliminary proposals were withdrawn.

#### *Small Grants for Exploratory Research (SGER)*

Since the beginning of FY 1990, the Small Grants for Exploratory Research (SGER) option has permitted program officers throughout the Foundation to make small-scale grants *without formal external review*. Characteristics of activities that can be supported by an SGER award include: preliminary work on untested and novel ideas; ventures into emerging research and potentially transformative ideas; quick-response research on unanticipated events, such as natural disasters and infrequent phenomena; and similar efforts likely to catalyze rapid and innovative advances. For example, an engineering team received an SGER award to conduct post-disaster reconnaissance and collection of perishable data, particularly samples of steel structures,

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<sup>17</sup> A binding (invite/non-invite) decision is the type of mechanism used when the NSF decision made on the preliminary proposal is final, affecting the PI's eligibility to submit a full proposal. A non-binding (encourage/discourage) decision is the type of mechanism used when the NSF decision made on the preliminary proposal is advisory only. This means that submitters of both favorably and unfavorably reviewed proposals are eligible to submit full proposals (Source: NSF Proposal and Award Manual).

immediately after the September 11 terrorist attack. Following a wildfire that ravaged a biological field station, an ecology team used SGER support to quantify the fire's effects on ecosystem function, reestablishment, and erosion, and determine the impacts of fire on carbon transport and carbon fate.

Potential SGER applicants are encouraged to contact an NSF program officer before submitting an SGER proposal to determine its appropriateness for funding. Directorate-level data on SGER proposals and awards are presented in **Appendix Table 14**. In FY 2003, NSF made 344 SGER awards, compared to 228 awards in the previous year. The total amount awarded to SGERs in FY 2003 was \$23,424,191, about 0.4 percent of the operating budget for research and education. Last fiscal year the total amount awarded to SGERs was \$16,694,405, also representing about 0.4 percent of the operating budget for research and education.

The average size of SGER award in FY 2003 was around \$68,000, compared to \$60,000 in FY 2002. In September 2003 NSF raised the maximum SGER award threshold from \$100,000 to \$200,000. Program officers may obligate no more than five percent of their program budget per fiscal year for SGER awards.

#### *Accomplishment Based Renewals*

In an accomplishment-based renewal, the project description is replaced by copies of no more than six reprints of publications resulting from the research supported by NSF (or research supported by other sources that is closely related to the NSF-supported research) during the preceding three- to five-year period. In addition, a brief (not to exceed four pages) summary of plans for the proposed support period must be submitted. All other information required for NSF proposal submission remains the same. In 2003 there were 74 requests for accomplishment-based renewals, 40 of which were awarded.



**Appendix Table 1**  
**Competitively Reviewed Proposals, Awards and Funding Rates**  
**By Directorate, FY 1999 - 2003**

		Fiscal Year				
		1999	2000	2001	2002	2003
NSF	Proposals	28,578	29,508	31,942	35,165	40,075
	Awards	9,189	9,850	9,925	10,406	10,844
	Funding Rate	32%	33%	31%	30%	27%
BIO	Proposals	4,568	4,868	5,131	5,143	5,591
	Awards	1,347	1,430	1,431	1,400	1,448
	Funding Rate	29%	29%	28%	27%	26%
CSE	Proposals	2,314	3,022	3,866	4,540	5,612
	Awards	782	931	923	1,093	1,231
	Funding Rate	34%	31%	24%	24%	22%
EHR	Proposals	2,848	2,725	3,449	3,966	4,111
	Awards	819	950	1,157	1,044	890
	Funding Rate	29%	35%	34%	26%	22%
ENG	Proposals	5,424	6,022	5,983	6,883	9,076
	Awards	1,476	1,540	1,426	1,726	1,945
	Funding Rate	27%	26%	24%	25%	21%
GEO	Proposals	3,453	3,485	3,580	4,114	4,230
	Awards	1,321	1,367	1,417	1,450	1,515
	Funding Rate	38%	39%	40%	35%	36%
MPS	Proposals	5,207	5,287	5,692	5,996	6,694
	Awards	1,903	2,045	1,996	2,105	2,268
	Funding Rate	37%	39%	35%	35%	34%
SBE	Proposals	4,026	3,356	3,510	3,887	4,161
	Awards	1,221	1,268	1,300	1,265	1,267
	Funding Rate	30%	38%	37%	33%	30%
OPP	Proposals	639	675	634	572	557
	Awards	259	251	201	264	241
	Funding Rate	41%	37%	32%	46%	43%
Other	Proposals	99	68	97	64	12
	Awards	61	68	74	59	12
	Funding Rate	62%	100%	76%	92%	100%

Notes:

“Competitively reviewed” proposals and awards refer to proposal actions for research, education, and training which are processed through NSF’s external merit review system each year.

These figures do not include 7,640 second-year and later incremental awards during FY 2003 for “continuing grants” which are competitively reviewed in the first year of the award.

Also excluded are 3,718 supplements (not subject to external merit review), and 288 contracts which are reviewed with special criteria.

“Other” organizational units include Office of Integrative Activities.

Source: NSF Enterprise Information System, as of December 20, 2003.

**Appendix Table 2**  
**Competitively Reviewed Proposals, Awards and Funding Rates**  
**By PI Characteristics, FY 1996 - 2003**

		Fiscal Year							
		1996	1997	1998	1999	2000	2001	2002	2003
All PIs	Proposals	30,200	30,258	28,422	28,578	29,508	31,942	35,165	40,075
	Awards	9,116	9,936	9,381	9,189	9,850	9,925	10,406	10,844
	Funding Rate	30%	33%	33%	32%	33%	31%	30%	27%
Female PIs	Proposals	5,173	5,396	5,627	5,315	5,509	5,839	6,704	7,335
	Awards	1,676	1,950	1,938	1,682	1,949	1,894	2,012	2,090
	Funding Rate	32%	36%	34%	32%	35%	32%	30%	28%
Male PIs	Proposals	24,694	24,532	22,513	23,022	23,671	25,510	27,500	31,238
	Awards	7,324	7,859	7,323	7,428	7,778	7,867	8,203	8,495
	Funding Rate	30%	32%	33%	32%	33%	31%	30%	27%
Minority PIs	Proposals	1,525	1,452	1,410	1,434	1,480	1,728	1,906	2,141
	Awards	473	448	403	424	472	509	548	569
	Funding Rate	31%	31%	29%	30%	32%	29%	29%	27%
New PIs	Proposals	13,571	13,276	12,255	11,803	12,327	13,280	15,085	17,584
	Awards	3,033	3,314	3,117	2,689	3,024	3,136	3,329	3,390
	Funding Rate	22%	25%	25%	23%	25%	24%	22%	19%
Prior PIs	Proposals	16,629	16,982	16,167	16,775	17,181	18,662	20,080	22,511
	Awards	6,083	6,622	6,264	6,500	6,826	6,789	7,077	7,478
	Funding Rate	37%	39%	39%	39%	40%	36%	35%	33%

Notes:

“Competitively reviewed” proposals and awards refer to proposal actions for research, education, and training with are processed through NSF’s external merit review system each year.

“Gender” is based on self-reported information from the PI’s most recent proposal.

“Minority” is based on the PI’s ethnic/racial status as reported to NSF on the most recent proposal.

PIs can decline to report their ethnic/racial status. Includes American Indian, Alaska Native, Black, Hispanic, and Pacific Islander and excludes Asian and White-Not of Hispanic Origin.

Source: NSF Enterprise Information System, December 20, 2003.

**Appendix Table 3**  
**Competitively Reviewed Proposals, Awards and Funding Rates**  
**By Minority PI Ethnic/Racial Status, FY 1996 – 2003**

		Fiscal Year							
		1996	1997	1998	1999	2000	2001	2002	2003
American Indian/Alaska Native	Proposals	64	74	61	58	90	118	100	112
	Awards	13	17	17	19	34	52	30	28
	Funding Rate	20%	23%	28%	33%	38%	44%	30%	25%
Black/ African American	Proposals	614	581	541	539	522	668	748	822
	Awards	184	190	144	146	169	180	207	192
	Funding Rate	30%	33%	27%	27%	32%	27%	28%	23%
Hispanic or Latino	Proposals	820	762	779	807	854	955	1,041	1,191
	Awards	267	230	234	245	258	285	300	342
	Funding Rate	33%	30%	30%	30%	30%	30%	29%	29%
Native Hawaiian/ Pacific Island	Proposals	41	46	46	37	41	23	32	37
	Awards	7	14	14	13	19	6	7	12
	Funding Rate	17%	30%	30%	35%	46%	26%	22%	32%

Source: NSF Enterprise Information System, as of February 28, 2004

**Appendix Table 4**  
**Median and Average Award Amounts by Directorate,**  
**Research Awards FY 1998 – 2003**

		Fiscal Year					
		1998	1999	2000	2001	2002	2003
NSF	Median	\$ 66,667	\$ 70,254	\$ 75,810	\$ 84,387	\$ 85,839	\$ 100,000
	Average	\$ 84,361	\$ 89,776	\$ 104,905	\$ 113,833	\$ 115,656	\$ 135,609
BIO	Median	\$ 83,333	\$ 89,333	\$ 99,854	\$ 108,333	\$ 110,000	\$ 126,000
	Average	\$ 97,824	\$ 111,208	\$ 117,378	\$ 143,512	\$ 136,509	\$ 177,305
CSE	Median	\$ 71,100	\$ 78,284	\$ 100,000	\$ 95,330	\$ 97,828	\$ 116,193
	Average	\$ 92,068	\$ 106,367	\$ 153,840	\$ 133,250	\$ 141,018	\$ 160,156
ENG	Median	\$ 70,306	\$ 74,250	\$ 75,000	\$ 80,946	\$ 83,965	\$ 99,997
	Average	\$ 80,703	\$ 83,881	\$ 87,601	\$ 99,506	\$ 102,060	\$ 119,470
GEO	Median	\$ 66,666	\$ 65,000	\$ 72,828	\$ 76,667	\$ 80,168	\$ 102,667
	Average	\$ 82,320	\$ 82,120	\$ 94,920	\$ 98,917	\$ 103,439	\$ 146,475
MPS	Median	\$ 67,749	\$ 74,960	\$ 75,100	\$ 86,243	\$ 83,319	\$ 100,000
	Average	\$ 90,429	\$ 94,832	\$ 108,804	\$ 114,421	\$ 111,617	\$ 128,585
SBE	Median	\$ 33,778	\$ 36,338	\$ 41,632	\$ 50,000	\$ 50,130	\$ 52,547
	Average	\$ 49,241	\$ 50,295	\$ 49,456	\$ 65,992	\$ 63,770	\$ 67,072
OPP	Median	\$ 68,071	\$ 80,000	\$ 72,729	\$ 77,789	\$ 81,517	\$ 126,143
	Average	\$ 103,235	\$ 115,209	\$ 141,221	\$ 113,164	\$ 130,343	\$ 144,392

Source: NSF Enterprise Information System, as of December 20, 2003.

**Appendix Table 5  
Methods of NSF Proposal Review  
FY 1993 - 2003**

FY	Total	Mail + Panel		Mail-Only		Panel-Only		Not Reviewed	
	Proposals	Proposals	Percent	Proposals	Percent	Proposals	Percent	Proposals	Percent
2003	40,075	12,683	32%	4,579	11%	21,391	53%	1,388	3%
2002	35,164	11,346	32%	4,838	14%	17,616	50%	1,364	4%
2001	31,942	9,367	29%	5,460	17%	15,751	49%	1,364	4%
2000	29,507	9,296	32%	6,048	20%	12,886	44%	1,277	4%
1999	28,579	8,918	31%	6,452	23%	12,046	42%	1,163	4%
1998	28,422	8,486	30%	6,974	25%	11,396	40%	1,566	6%
1997	30,258	8,812	29%	7,855	26%	12,109	40%	1,482	5%
1996	30,199	8,562	28%	7,812	26%	12,490	41%	1,335	4%
1995	30,432	8,400	28%	8,581	28%	11,912	39%	1,539	5%
1994	30,336	7,059	23%	8,687	29%	12,986	43%	1,604	5%
1993	30,038	7,032	23%	8,886	30%	12,338	41%	1,782	6%

Note:

Panel-Only includes cases where panel was mailed proposal for review prior to panel.

Source: NSF Enterprise Information System, as of December 20, 2003.

**Appendix Table 6  
Methods of NSF Proposal Review, By Directorates  
FY 2003**

Directorate	Total	Mail + Panel		Mail-Only		Panel-Only		Not Reviewed	
	Proposals	Proposals	Percent	Proposals	Percent	Proposals	Percent	Proposals	Percent
<b>NSF</b>	<b>40,075</b>	<b>12,683</b>	<b>32%</b>	<b>4,579</b>	<b>11%</b>	<b>21,391</b>	<b>53%</b>	<b>1,388</b>	<b>3%</b>
BIO	5,591	4,314	77%	80	1%	1,000	18%	197	4%
CSE	5,610	407	7%	44	1%	4,982	89%	177	3%
EHR	4,111	96	2%	163	4%	3,814	93%	38	1%
ENG	9,075	494	5%	432	5%	7,828	86%	321	4%
GEO	4,230	3,025	72%	819	19%	217	5%	169	4%
MPS	6,694	1,823	27%	2,000	30%	2,613	39%	258	4%
SBE	4,161	2,356	57%	733	18%	887	21%	185	4%
OPP	569	168	30%	308	54%	50	9%	43	8%

Note:

Panel-Only includes cases where panelist was mailed proposal for review prior to panel.

Source: NSF Enterprise Information System, as of December 20, 2003.

**Appendix Table 7**  
**Average Number of Reviews per Proposal**  
**By Method & Directorate, FY 2003**

		Methods of Review				Not Reviewed *
		All Methods	Mail + Panel	Mail-Only	Panel-Only	
<b>NSF</b>	Reviews	242,769	101,782	19,789	121,198	1,388
	Proposals	38,653	12,683	4,579	21,391	
	Rev/Prop	6.3	8.0	4.3	5.7	
<b>BIO</b>	Reviews	34,427	29,697	382	4,348	197
	Proposals	5,394	4,314	80	1,000	
	Rev/Prop	6.4	6.9	4.8	4.3	
<b>CSE</b>	Reviews	31,979	3,112	157	28,710	177
	Proposals	5,433	407	44	4,982	
	Rev/Prop	5.9	7.6	3.6	5.8	
<b>EHR</b>	Reviews	25,955	580	513	24,862	38
	Proposals	4,073	96	163	3,814	
	Rev/Prop	6.4	6.0	3.1	6.5	
<b>ENG</b>	Reviews	45,200	3,133	1,974	40,093	321
	Proposals	8,754	494	432	7,828	
	Rev/Prop	5.2	6.3	4.6	5.1	
<b>GEO</b>	Reviews	38,798	33,380	4,205	1,213	169
	Proposals	4,061	3,025	819	217	
	Rev/Prop	9.6	11.0	5.1	5.6	
<b>MPS</b>	Reviews	41,863	15,355	8,708	17,800	258
	Proposals	6,436	1,823	2,000	2,613	
	Rev/Prop	6.5	8.4	4.4	6.8	
<b>SBE</b>	Reviews	21,758	15,207	2,614	3,937	185
	Proposals	3,976	2,356	733	887	
	Rev/Prop	5.5	6.5	3.6	4.4	
<b>OPP</b>	Reviews	2,789	1,318	1,236	235	43
	Proposals	526	168	308	50	
	Rev/Prop	5.3	7.8	4.0	4.7	

Notes:

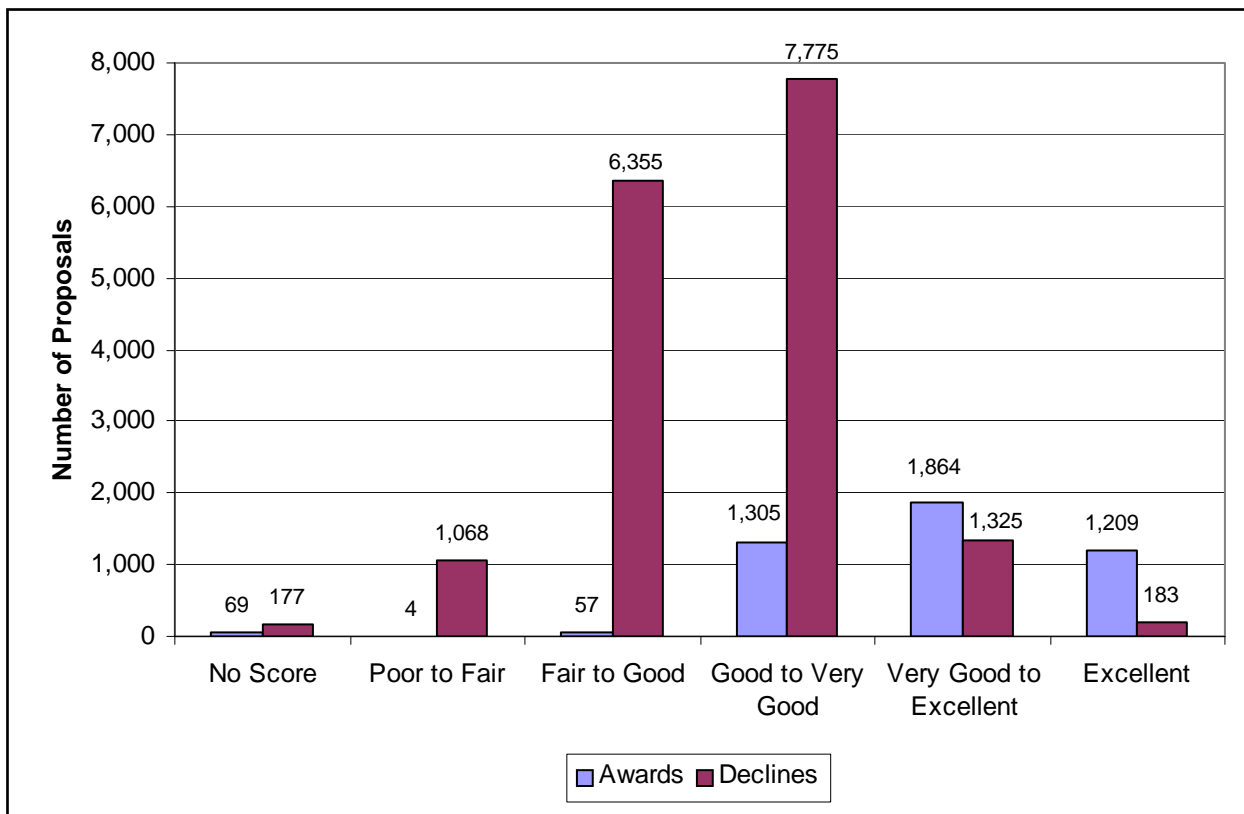
\* The proposal totals shown in the "All Methods" category do not include the proposals shown in the "Not Reviewed" category. Proposals which are not reviewed include SGERs and grants for travel and symposia.

Panel reviews include panel summaries. There were 35,255 panel summaries in FY 2003.

Peers participating as both a mail and a panel reviewer for the same proposal are counted as one review in this table.

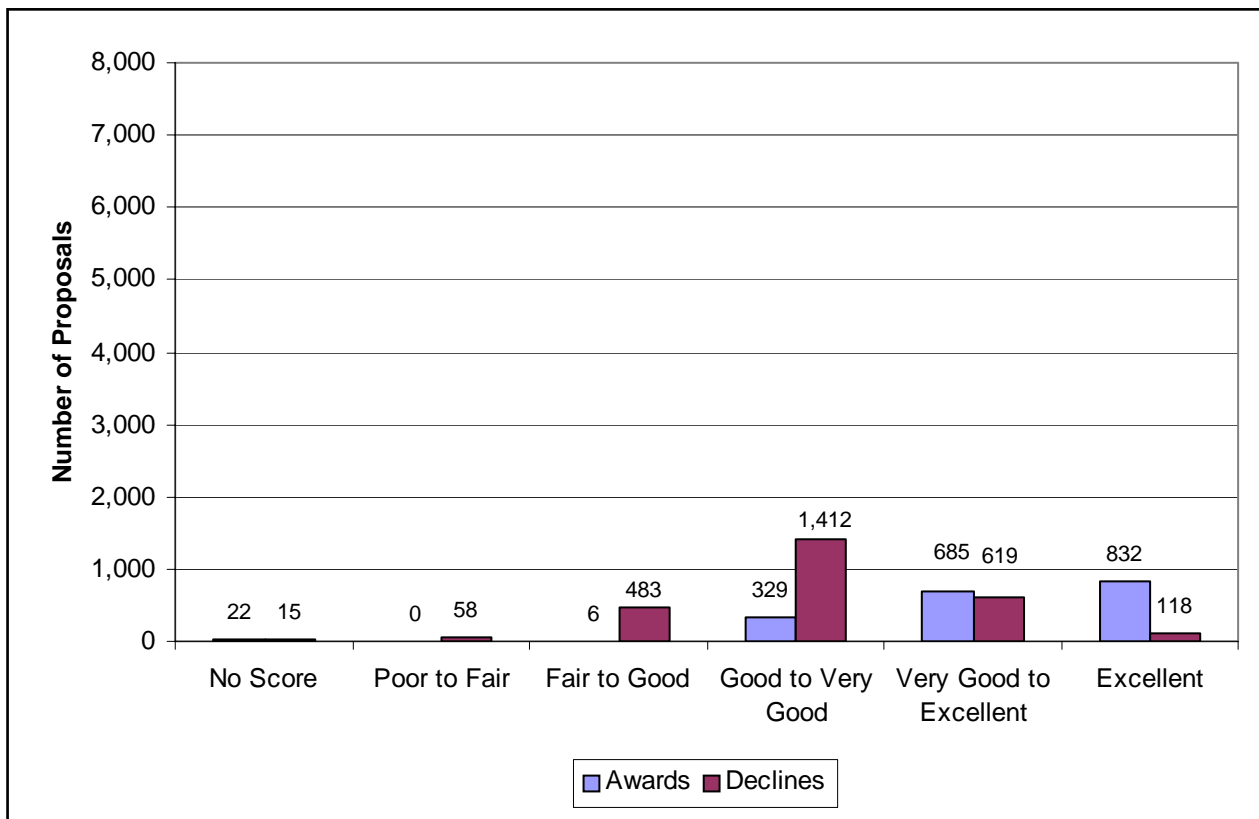
Source: NSF Enterprise Information System, as of February 16, 2004

**Appendix Table 8**  
**Distribution of Average Reviewer Ratings**  
**Panel-Only Reviewed**



Note:  
 Number of FY 2003 Proposals – 16,883 Declines, 4,508 Awards

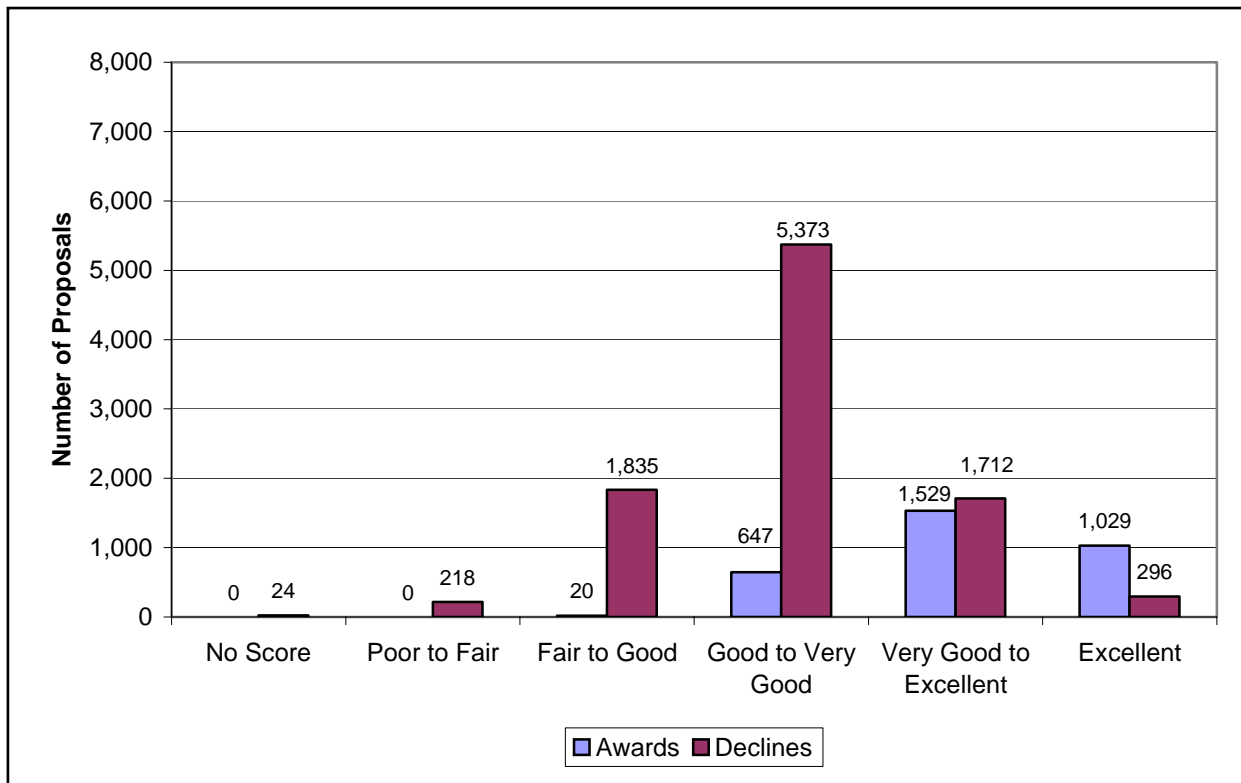
**Appendix Table 9**  
**Distribution of Average Reviewer Ratings,**  
**Mail-Only Reviewed**



Note:

Number of FY 2003 Proposals – 2,705 Declines, 1,874 Awards

**Appendix Table 10**  
**Distribution of Average Reviewer Ratings**  
**Mail and Panel Reviewed**



Note:

Number of FY 2003 Proposals – 9,458 Declines, 3,225 Awards



**Appendix Table 11**  
**Requests for Formal Reconsideration of Declined Proposals**  
**By Directorate, FY 1999-2003**

		Fiscal Year				
		1999	2000	2001	2002	2003
First Level Reviews (by Assistant Directors):						
BIO	Request	4	0	8	4	4
	- Upheld	4	0	6	4	4
	- Reversed	0	0	2	0	0
CISE	Request	1	2	1	1	1
	- Upheld	1	1	1	0	0
	- Reversed	0	0	0	0	1
EHR	Request	3	4	4	2	3
	- Upheld	3	4	3	2	3
	- Reversed	0	0	1	0	0
ENG	Request	4	6	1	2	2
	- Upheld	4	6	1	2	2
	- Reversed	0	0	0	0	0
GEO	Request	2	2	2	1	4
	- Upheld	1	2	2	1	4
	- Reversed	0	0	0	0	0
MPS	Request	20	18	24	15	4
	- Upheld	19	17	22	15	4
	- Reversed	0	1	2	0	0
SBE	Request	0	1	2	1	2
	- Upheld	1	1	1	0	2
	- Reversed	0	0	1	1	0
Other	Request	0	0	0	0	1
	- Upheld	0	0	0	0	0
	- Reversed	0	0	0	0	1
Second Level Reviews (by Deputy Director):						
O/DD	Request	2	6	2	4	5
	- Upheld	1	5	1	4	4
	- Reversed	0	1	0	0	1
<b>Total Reviews First &amp; Second Level</b>						
NSF	<b>Request</b>	<b>36</b>	<b>41</b>	<b>44</b>	<b>30</b>	<b>26</b>
	<b>- Upheld</b>	<b>34</b>	<b>38</b>	<b>37</b>	<b>29</b>	<b>24</b>
	<b>- Reversed</b>	<b>0</b>	<b>2</b>	<b>6</b>	<b>1</b>	<b>2</b>

Note:

The number of decisions (upheld or reversed) may not equal the number of requests in each year due to carryover of pending reconsideration request.

Source: Office of the Director

**Appendix Table 12**  
**Committee of Visitors Meetings**  
**By Directorate**

(COV meetings held during FY 2003 are highlighted in bold font)

DIRECTORATE <i>Division</i> Program	Fiscal Year of Most Recent COV	Fiscal Year of Next COV
<b>BIOLOGICAL SCIENCES</b>		
<i>Biological Infrastructure</i>	2000	2004
Instrument Related Activities	2002	2004
<b>Research Resources</b>	<b>2003</b>	2004
<b>Training</b>	<b>2003</b>	2004
Plant Genome	2001	2004
<i>Environmental Biology</i>	2003	2006
Ecological Studies	2002	2006
Thematic Review	2001	2006
Systematic and Population Biology	2000	2006
<i>Integrative Biology and Neuroscience</i>	2001	2005
<b>Neuroscience</b>	<b>2003</b>	2005
Developmental Mechanisms	2000	2005
Physiology and Ethnology	2002	2005
<i>Molecular and Cellular Biosciences</i>	2002	2005
Biomolecular Structure and Function	2000	2005
Biomolecular Processes	2000	2005
Cell Biology	2001	2005
<b>Genetics</b>	<b>2003</b>	2005
<i>Emerging Frontiers (new in '03)</i>	N/A	2006

Appendix Table 12 (cont.)

<b>COMPUTER AND INFORMATION SCIENCE AND ENGINEERING</b>			
Please note that CISE programs and divisions were reorganized in FY 2003.			
<i>Computing &amp; Communication Foundations (CCF)</i>	<b>2003</b>	2006	
Emerging Models & Technologies for Computation		2006	
Formal & Mathematical Foundations		2006	
Foundations of Computing Processes & Artifacts		2006	
<i>Computer &amp; Network Systems (CNS)</i>		2006	
Emerging Models & Technologies for Computation		2006	
Formal & Mathematical Foundations		2006	
Foundations of Computing Processes & Artifacts		2006	
<i>Information &amp; Intelligent Systems (IIS)</i>	<b>2003</b>	2006	
Data, Inference & Understanding		2006	
Science & Engineering Informatics		2006	
<i>Information Technology Research (ITR) (new in '00)</i>		2004	
<i>Shared Cyberinfrastructure (SCI)</i>	<b>2003</b>	2006	
High-Performance Computational Infrastructure		2006	
Advanced Networking Technologies & Infrastructure		2006	
Advanced Services and Cybertools		2006	
<b>EDUCATION AND HUMAN RESOURCES</b>			
<i>Educational Systemic Reform</i>			
Statewide Systemic Initiatives		2001	2004
Urban Systemic Initiatives		2001	2004
Rural Systemic Initiatives	2001	2004	
<i>Office of Innovation Partnerships</i>			
EPSCoR		2000	2005
<i>Elementary, Secondary and Informal Education</i>			
Informal Science Education		2001	2005
<b>Teacher Enhancement</b>		<b>2003</b>	2006
Instructional Materials Development		2002	2005
Centers for Learning and Teaching (new in '01)		N/A	2004
<i>Undergraduate Education</i>			
Teacher Preparation		2000	2004
<b>Advanced Technological Education</b>		<b>2003</b>	2006
<b>NSF Computer, Science, Engineering and Mathematics</b>		<b>2003</b>	2006
Scholarships (new in '01)			

Appendix Table 12 (cont.)

Distinguished Teaching Scholars (new in '02)	N/A	2004
Scholarship for Service (new in '01)	N/A	2005
National SMETE Digital Library (new in '01)	2002	2005
<b>Course, Curriculum, and Laboratory Improvement</b>	<b>2003</b>	2006
Undergraduate Assessment (new in '02)	N/A	2004
The STEM Talent Expansion Program (STEP)	N/A	2005
<i>Graduate Education</i>		
<b>Graduate Research Fellowships</b>	<b>2003</b>	2006
NATO Post doctorate Fellowships	2001	2004
IGERT (new in '97)	2002	2005
GK-12 Fellows (new in '99)	2002	2005
<i>Human Resource Development</i>		
The Louis Stokes Alliances for Minority Participation	2001	2005
Centers for Research Excellence in Science and Technology (CREST)	2001	2005
<b>Programs for Gender Equity (PGE)</b>	<b>2003</b>	2006
<b>Programs for Persons with Disabilities (PPD)</b>	<b>2003</b>	2006
Alliances for Graduate Education and the Professoriate (AGEP)	2001	2005
Tribal Colleges Program (TCP) (new in '01)	N/A	2005
Historically Black Colleges and Universities (HBCU)	2001	2005
Distinguished Teaching Scholars (new in '02)	N/A	2004
Scholarship for Service (new in '01)	N/A	2005
National SMETE Digital Library (new in '01)	2002	2005
<b>Course, Curriculum, and Laboratory Improvement</b>	<b>2003</b>	2006
Undergraduate Assessment (new in '02)	N/A	2004
The STEM Talent Expansion Program (STEP)	N/A	2005
<i>Research, Evaluation &amp; Communications</i>		
REPP/ROLE (new in '96)	2002	2005
<b>Evaluation</b>	<b>2003</b>	2006
Interagency Education Research Initiative (IERI) (new in '01)	2002	2005
<i>Other</i>		
H-IB VISA K-12	N/A	2004
Math and Science Partnership (MSP) (new in '02)	N/A	2005

Appendix Table 12 (cont.)

ENGINEERING		
<i>Bioengineering and Environmental Systems</i>	2002	2005
Biochemical Engineering	2002	2005
Biotechnology	2002	2005
Biomedical Engineering	2002	2005
Research to Aid the Disabled	2002	2005
Environmental Engineering	2002	2005
Environmental Technology	2002	2005
<i>Civil and Mechanical Systems</i>	2001	2004
Dynamic System Modeling, Sensing and Control	2001	2004
Geotechnical and GeoHazard Systems	2001	2004
Infrastructure and Information Systems	2001	2004
Solid Mechanics and Materials Engineering	2001	2004
Structural Systems and Engineering	2001	2004
Network for Earthquake Engineering Simulation	2001	2004
<i>Chemical and Transport Systems</i>		2006
<b>Chemical Reaction Processes</b>	<b>2003</b>	2006
<b>Interfacial, Transport and Separation Processes</b>	<b>2003</b>	2006
<b>Fluid and Particle Processes</b>	<b>2003</b>	2006
<b>Thermal Systems</b>	<b>2003</b>	2006
Design, Manufacture and Industrial Innovation		
<b>-Engineering Decision Systems Programs (new in '02)</b>	<b>2003</b>	2006
<b>Engineering Design</b>	<b>2003</b>	2006
<b>Manufacturing Enterprise Systems (new in '02)</b>	<b>2003</b>	2006
<b>Service Enterprise Systems (new in '02)</b>	<b>2003</b>	2006
<b>Operations Research</b>	<b>2003</b>	2006
<b>-Manufacturing Processes and Equipment Systems</b>	<b>2003</b>	2006
<b>Materials Processing and Manufacturing</b>	<b>2003</b>	2006
<b>Manufacturing Machines and Equipment</b>	<b>2003</b>	2006
<b>Nanomanufacturing (new in '02)</b>	<b>2003</b>	2006
<b>-Industrial Innovation Programs Cluster</b>		
Small Business Innovation Research (SBIR)	2001	2004
<b>Innovation and Organizational Change</b>	<b>2003</b>	2006
<b>Grant Opportunities for Academic Liaison with Industry</b>	<b>2003</b>	2006
Small Business Technology Transfer	2001	2004
<i>Electrical and Communications Systems</i>		
Electronics, Photonics and Device Technologies	2002	2005
Control, Networks, and Computational Intelligence	2002	2005
Integrative Systems (new in '02)	2002	2005

Appendix Table 12 (cont.)

<i>Engineering, Education and Centers</i>	2001	2004
Engineering Education	2001	2004
Engineering Research Centers	2001	2004
Earthquake Engineering Research Centers	2001	2004
Human Resource Development	2001	2004
State/Industry/University Cooperative Research Centers	2001	2004
Industry/University Cooperative Research Centers	2001	2004
Innovation Partnership Activities (new in '01)	N/A	2004
<b>GEOSCIENCES</b>		
<i>Atmospheric Sciences</i>		
-Lower Atmosphere Research Section		
Atmospheric Chemistry	2001	2004
Climate Dynamics	2001	2004
Mesoscale Dynamic Meteorology	2001	2004
Large-scale Dynamic Meteorology	2001	2004
Physical Meteorology	2001	2004
Paleoclimate	2001	2004
-Upper Atmosphere Research Section		
Magnetospheric Physics	2002	2005
Aeronomy	2002	2005
Upper Atmospheric Research Facilities	2002	2005
Solar Terrestrial Research	2002	2005
-UCAR and Lower Atmospheric Facilities Oversight Section		
Lower Atmospheric Observing Facilities	<b>2003</b>	2006
UNIDATA	<b>2003</b>	2006
NCAR/UCAR	<b>2003</b>	2006
<i>Earth Sciences</i>		
Instrumentation and Facilities	2001	2004
-Research Support		
Tectonics	2002	2005
Geology and Paleontology	2002	2005
Hydrological Sciences	2002	2005
Petrology and Geochemistry	2002	2005
Geophysics	2002	2005
Continental Dynamics	2002	2005

Appendix Table 12 (cont.)

<i>Ocean Sciences</i>		
-Integrative Programs Section		
Oceanographic Technical Services	2002	2005
Ship Operations	2002	2005
Oceanographic Instrumentation	2002	2005
Ship Acquisitions and Upgrades (new in '02)	2002	2005
Shipboard Scientific Support Equipment (new in '02)	2002	2005
<b>Oceanographic Tech and Interdisciplinary Coordination</b>	<b>2003</b>	2006
<b>Ocean Science Education and Human Resources</b>	<b>2003</b>	2006
-Marine Geosciences Section		
<b>Marine Geology and Geophysics</b>	<b>2003</b>	2006
<b>Ocean Drilling</b>	<b>2003</b>	2006
-Ocean Section		
<b>Chemical Oceanography</b>	<b>2003</b>	2006
<b>Physical Oceanography</b>	<b>2003</b>	2006
<b>Biological Oceanography</b>	<b>2003</b>	2006
<i>Other Programs</i>		
<b>Global Learning and Observation to Benefit the Environment</b>	<b>2003</b>	2006
<b>Opportunities to Enhance Diversity in the Geosciences</b>	<b>2003</b>	2006
<b>Geoscience Education</b>	<b>2003</b>	2006

MATHEMATICAL AND PHYSICAL SCIENCES		
<i>Astronomical Sciences</i>	2002	2005
Planetary Astronomy	2002	2005
Stellar Astronomy and Astrophysics	2002	2005
Galactic Astronomy	2002	2005
Education, Human Resources and Special Programs	2002	2005
Advanced Technologies and Instrumentation	2002	2005
Electromagnetic Spectrum Management	2002	2005
Extragalactic Astronomy and Cosmology	2002	2005
-Facilities Cluster		
Gemini Observatory	2002	2005
National Radio Astronomy Observatory (NRAO)	2002	2005
National Optical Astronomy Observatories (NOAO)	2002	2005
National Solar Observatory (NSO)	2002	2005
National Astronomy and Ionosphere Center (NAIC)	2002	2005
Atacama Large Millimeter Array (ALMA)	N/A	2005

Appendix Table 12 (cont.)

<i>Chemistry</i>	2001	2004
Office of Special Projects	2001	2004
Chemistry Research Instrumentation and Facilities (CRIF)	2001	2004
Organic Chemical Dynamics	2001	2004
Organic Synthesis	2001	2004
Chemistry of Materials	2001	2004
Theoretical and Computational Chemistry	2001	2004
Experimental Physical Chemistry	2001	2004
Inorganic, Bioinorganic and Organometallic Chemistry	2001	2004
Analytical and Surface Chemistry	2001	2004
<i>Materials Research</i>	2002	2005
-Base Science Cluster		
Condensed Matter Physics	2002	2005
Solid-State Chemistry	2002	2005
Polymers	2002	2005
-Advanced Materials and Processing Cluster		
Metals	2002	2005
Ceramics	2002	2005
Electronic Materials	2002	2005
-Materials Research and Technology Enabling Cluster		
Materials Theory	2002	2005
Instrumentation for Materials Research	2002	2005
National Facilities	2002	2005
Materials Research Science and Engineering Centers	2002	2005
-Office of Special Programs (new in '03)	N/A	2005
<i>Mathematical Sciences</i>	2001	2004
Applied Mathematics	2001	2004
Topology and Foundations	2001	2004
Computational Mathematics	2001	2004
Infrastructure	2001	2004
Geometric Analysis	2001	2004
Analysis	2001	2004
Algebra, Number Theory, and Combinatorics	2001	2004
Statistics and Probability	2001	2004
<i>Physics</i>	<b>2003</b>	
<b>Atomic, Molecular, Optical and Plasma Physics</b>	<b>2003</b>	2006
<b>Elementary Particle Physics</b>	<b>2003</b>	2006
<b>Theoretical Physics</b>	<b>2003</b>	2006
<b>Particle and Nuclear Astrophysics (new in '00)</b>	<b>2003</b>	2006
<b>Nuclear Physics</b>	<b>2003</b>	2006



Appendix Table 12 (cont.)

<b>Education and Interdisciplinary Research (new in '00)</b>	<b>2003</b>	2006
<b>Gravitational Physics</b>	<b>2003</b>	2006
<i>Office of Multidisciplinary Research</i>	<b>2003</b>	2006
<b>SOCIAL, BEHAVIORAL, AND ECONOMIC SCIENCES</b>		
<i>Office of International Science and Engineering (INT)</i>	2002	2005
<i>Science Resource Statistics (SRS)</i>	2000	
Human Resources Statistics	2002	
Research and Development Statistics	2000	2004
<i>Behavioral and Cognitive Sciences (BCS)</i>		
<b>Cultural Anthropology</b>	<b>2003</b>	2006
<b>Linguistics</b>	<b>2003</b>	2006
<b>Social Psychology</b>	<b>2003</b>	2006
<b>Physical Anthropology</b>	<b>2003</b>	2006
<b>Geography and Regional Sciences</b>	<b>2003</b>	2006
<b>Cognitive Neuroscience (new in '01)</b>	<b>2003</b>	2006
<b>Developmental and Learning Sciences (formally Child Learning &amp; Development)</b>	<b>2003</b>	2006
<b>Perception, Action, and Cognition (formally Human Cognition &amp; Perception)</b>	<b>2003</b>	2006
<b>Archaeology</b>	<b>2003</b>	2006
<b>Archaeometry (formally part of Archaeology)</b>	<b>2003</b>	2006
<b>Environmental Social and Behavioral Science (new in '99)</b>	<b>2003</b>	2006
<i>Social and Economic Sciences (SES)</i>		
Decision, Risk, and Management Sciences	2000	2004
Political Science	2000	2004
Law and Social Science	2000	2004
Innovation and Organizational Change	2000	2004
Methodology, Measurement and Statistics	2000	2004
Science and Technology Studies	2000	2004
Societal Dimensions of Engineering, Science, and Technology	2000	2004
Economics	2000	2004
Sociology	2000	2004
<i>ADVANCE (Cross-Directorate Program, new in FY01/FY02)</i>		2005
<i>Science of Learning Centers (new in FY03/FY04)</i>		2007

Appendix Table 12 (cont.)

OFFICE OF POLAR PROGRAMS		
<i>Polar Research Support</i>	2001	2004
<i>Antarctic Sciences</i>	<b>2003</b>	2006
<b>Antarctic Aeronomy and Astrophysics</b>	<b>2003</b>	2006
<b>Antarctic Biology and Medicine</b>	<b>2003</b>	2006
<b>Antarctic Geology and Geophysics</b>	<b>2003</b>	2006
<b>Antarctic Glaciology</b>	<b>2003</b>	2006
<b>Antarctic Ocean and Climate Systems</b>	<b>2003</b>	2006
<i>Arctic Sciences</i>		
<b>Arctic Sciences</b>	<b>2003</b>	2006
<b>Arctic Research Opportunities</b>	<b>2003</b>	2006
<b>Arctic Research and Policy</b>	<b>2003</b>	2006
<b>Arctic System Sciences</b>	<b>2003</b>	2006
<b>Arctic Natural Sciences</b>	<b>2003</b>	2006
<b>Arctic Social Sciences</b>	<b>2003</b>	2006
OFFICE OF INTEGRATIVE ACTIVITIES		
Major Research Instrumentation (MRI)	2000*	
Science and Technology Centers (STC)	1996*	2007
NSF PRIORITY AREAS		
NSF Nanoscale Science and Engineering Priority Area	N/A	2004
*External Evaluations		

**Appendix Table 13**  
**Annual Performance Goals for NSF's Management**

Performance Area	FY 2003 Annual Performance Goal	Results for National Science Foundation																
<b>Proposal and Award Processes</b>																		
Use of Merit Review	<p><b><u>Performance Goal IV-1:</u></b>            At least 85 percent of basic and applied research funds will be allocated to projects that undergo merit review.</p> <table border="0"> <tr><td>FY 2000 Goal</td><td>80%</td></tr> <tr><td>FY 2000 Result</td><td>87%</td></tr> <tr><td>FY 2001 Goal</td><td>85%</td></tr> <tr><td>FY 2001 Result</td><td>88%</td></tr> <tr><td>FY 2002 Goal</td><td>85%</td></tr> <tr><td>FY 2002 Result</td><td>88%</td></tr> <tr><td>FY 2003 Goal</td><td>85%</td></tr> <tr><td><u>FY 2003 Result</u></td><td>89%</td></tr> </table>	FY 2000 Goal	80%	FY 2000 Result	87%	FY 2001 Goal	85%	FY 2001 Result	88%	FY 2002 Goal	85%	FY 2002 Result	88%	FY 2003 Goal	85%	<u>FY 2003 Result</u>	89%	<p><b>FY 1999:</b> NSF successful for related goal</p> <p><b>FY 2000:</b> NSF successful</p> <p><b>FY 2001:</b> NSF successful</p> <p><b>FY 2002:</b> NSF successful</p> <p><b>FY 2003:</b> NSF is successful for goal IV-1</p>
FY 2000 Goal	80%																	
FY 2000 Result	87%																	
FY 2001 Goal	85%																	
FY 2001 Result	88%																	
FY 2002 Goal	85%																	
FY 2002 Result	88%																	
FY 2003 Goal	85%																	
<u>FY 2003 Result</u>	89%																	
Implementation of Merit Review Criteria - Reviewers	<p><b><u>Performance Goal IV-2:</u></b>            At least 70 percent of reviews with written comments will address aspects of both generic review criteria.</p> <table border="0"> <tr><td>FY 2001 Result</td><td>69%</td></tr> <tr><td>FY 2002 Result</td><td>84%</td></tr> <tr><td>FY 2003 Goal</td><td>70%</td></tr> <tr><td><u>FY 2003 Result</u></td><td>90%</td></tr> </table>	FY 2001 Result	69%	FY 2002 Result	84%	FY 2003 Goal	70%	<u>FY 2003 Result</u>	90%	<p><b>FY 2001:</b> NSF not successful for related goal</p> <p><b>FY 2002:</b> NSF successful for related goal</p> <p><b>FY 2003:</b> NSF is successful for goal IV-2.</p>								
FY 2001 Result	69%																	
FY 2002 Result	84%																	
FY 2003 Goal	70%																	
<u>FY 2003 Result</u>	90%																	

Source: FY 2003 Performance and Accountability Report, pp II - 47-49.

Appendix Table 13 (cont.)

Performance Area	FY 2003 Annual Performance Goal	Results for National Science Foundation
<b>Proposal and Award Processes</b>		
Implementation of Merit Review Criteria – Program Officers	<p><b><u>Performance Goal IV-3:</u></b> For at least 80 percent of decisions to fund or decline proposals, program officers will comment on aspects of both generic review criteria.</p> <p>FY 2001 Result: Program reports prepared by external experts during FY 2001 GPRA reporting led NSF to conclude it was successful in implementation of both merit review criteria by program managers.</p> <p>FY 2002 Result: A statistically determined sample of FY 2002 review analyses was evaluated by NSF staff to determine the extent of Program Officer usage of both review criteria. It was determined that approximately 78% of review analyses commented on aspects of both merit review criteria.</p> <p><u>FY 2003 Result:</u> NSF staff evaluated a statistically determined sample of FY 2003 review analyses to determine the extent of Program Officer usage of both review criteria. It was determined that approximately 53% of review analyses commented on aspects of both merit review criteria.</p> <p>To improve performance in the future, the issue of what constitutes program officer comments on aspects of both generic review criteria will be examined and clarified.</p>	<p><b>FY 2001:</b> NSF successful for related goal</p> <p><b>FY 2002:</b> NSF successful for related goal</p> <p><b>FY 2003: NSF is not successful for goal IV-3.</b></p>

Source: FY 2003 Performance and Accountability Report, pp II - 47-49.

Appendix Table 13 (cont.)

Performance Area	FY 2003 Annual Performance Goal	Results for National Science Foundation																				
<b>Proposal and Award Processes</b>																						
Customer Service – Time to Prepare Proposals	<p><b><u>Performance Goal IV-4:</u></b> Ninety-five percent of program announcements will be publicly available at least three months prior to the proposal deadline or target date.</p> <table data-bbox="492 743 846 1108"> <tr><td>FY 1998 Baseline</td><td>66%</td></tr> <tr><td>FY 1999 Result</td><td>75%</td></tr> <tr><td>FY 2000 Goal</td><td>95%</td></tr> <tr><td>FY 2000 Result</td><td>89%</td></tr> <tr><td>FY 2001 Goal</td><td>95%</td></tr> <tr><td>FY 2001 Result</td><td>100%</td></tr> <tr><td>FY 2002 Goal</td><td>95%</td></tr> <tr><td>FY 2002 Result</td><td>94%</td></tr> <tr><td>FY 2003 Goal</td><td>95%</td></tr> <tr><td><u>FY 2003 Result</u></td><td>99%</td></tr> </table> <p><u>FY 2003 Result:</u> In FY 2003, 99% (119 of 120) of program announcements and solicitations were made available at least 90 days before the proposal deadline or target date.</p>	FY 1998 Baseline	66%	FY 1999 Result	75%	FY 2000 Goal	95%	FY 2000 Result	89%	FY 2001 Goal	95%	FY 2001 Result	100%	FY 2002 Goal	95%	FY 2002 Result	94%	FY 2003 Goal	95%	<u>FY 2003 Result</u>	99%	<p><b>FY 1999:</b> NSF not successful</p> <p><b>FY 2000:</b> NSF not successful</p> <p><b>FY 2001:</b> NSF successful</p> <p><b>FY 2002:</b> NSF not successful</p> <p><b>FY 2003:</b> NSF is successful for IV-4.</p>
FY 1998 Baseline	66%																					
FY 1999 Result	75%																					
FY 2000 Goal	95%																					
FY 2000 Result	89%																					
FY 2001 Goal	95%																					
FY 2001 Result	100%																					
FY 2002 Goal	95%																					
FY 2002 Result	94%																					
FY 2003 Goal	95%																					
<u>FY 2003 Result</u>	99%																					

Source: FY 2003 Performance and Accountability Report, pp II - 47-49.

Appendix Table 13 (cont.)

Performance Area	FY 2003 Annual Performance Goal	Results for National Science Foundation																				
<b>Proposal and Award Processes</b>																						
Customer Service – Time to Decision	<p><b><u>Performance Goal IV-5:</u></b> For 70 percent of proposals, be able to inform applicants whether their proposals have been declined or recommended for funding within six months of receipt.</p> <table data-bbox="492 743 846 1108"> <tr><td>FY 1998 Baseline</td><td>59%</td></tr> <tr><td>FY 1999 Result</td><td>58%</td></tr> <tr><td>FY 2000 Goal</td><td>70%</td></tr> <tr><td>FY 2000 Result</td><td>54%</td></tr> <tr><td>FY 2001 Goal</td><td>70%</td></tr> <tr><td>FY 2001 Result</td><td>62%</td></tr> <tr><td>FY 2002 Goal</td><td>70%</td></tr> <tr><td>FY 2002 Result</td><td>74%</td></tr> <tr><td>FY 2003 Goal</td><td>70%</td></tr> <tr><td><u>FY 2003 Result</u></td><td>77%</td></tr> </table>	FY 1998 Baseline	59%	FY 1999 Result	58%	FY 2000 Goal	70%	FY 2000 Result	54%	FY 2001 Goal	70%	FY 2001 Result	62%	FY 2002 Goal	70%	FY 2002 Result	74%	FY 2003 Goal	70%	<u>FY 2003 Result</u>	77%	<p><b>FY 1999:</b> NSF not successful</p> <p><b>FY 2000:</b> NSF not successful</p> <p><b>FY 2001:</b> NSF successful</p> <p><b>FY 2002:</b> NSF successful</p> <p><b>FY 2003:</b> NSF is successful for IV-5.</p>
FY 1998 Baseline	59%																					
FY 1999 Result	58%																					
FY 2000 Goal	70%																					
FY 2000 Result	54%																					
FY 2001 Goal	70%																					
FY 2001 Result	62%																					
FY 2002 Goal	70%																					
FY 2002 Result	74%																					
FY 2003 Goal	70%																					
<u>FY 2003 Result</u>	77%																					

Source: FY 2003 Performance and Accountability Report, pp II - 47-49.

Appendix Table 13 (cont.)

Performance Area	FY 2003 Annual Performance Goal	Results for National Science Foundation																		
Award Portfolio																				
Award Size	<p><b><u>Performance Goal IV-6:</u></b> NSF will increase the average annualized award size for research grants to a level of \$125,000, compared to a goal of \$113,000 in FY 2002.</p> <table data-bbox="493 667 927 995"> <tr><td>FY 1998 Baseline</td><td>\$90,000</td></tr> <tr><td>FY 1999 Result</td><td>\$94,000</td></tr> <tr><td>FY 2000 Result</td><td>\$105,800</td></tr> <tr><td>FY 2001 Goal</td><td>\$110,000</td></tr> <tr><td>FY 2001 Result</td><td>\$113,601</td></tr> <tr><td>FY 2002 Goal</td><td>\$113,000</td></tr> <tr><td>FY 2002 Result</td><td>\$115,666</td></tr> <tr><td>FY 2003 Goal</td><td>\$125,000</td></tr> <tr><td><u>FY 2003 Result</u></td><td>\$135,609</td></tr> </table> <p><u>FY 2003 Result:</u> NSF sought a very ambitious one-year increase of over 10% in average annualized award size – from \$113,000 to \$125,000. In contrast to previous years, in FY 2003 collaborative proposals submitted as individual proposals from the collaborating institutions were counted as a single proposal for review and award/decline decisions. If such collaborative proposals were counted individually, the average annualized award size for FY 2003 is \$121,380.</p>	FY 1998 Baseline	\$90,000	FY 1999 Result	\$94,000	FY 2000 Result	\$105,800	FY 2001 Goal	\$110,000	FY 2001 Result	\$113,601	FY 2002 Goal	\$113,000	FY 2002 Result	\$115,666	FY 2003 Goal	\$125,000	<u>FY 2003 Result</u>	\$135,609	<p><b>FY 2001: NSF successful</b></p> <p><b>FY 2002 NSF successful</b></p> <p><b>FY 2003: NSF is successful for IV-6.</b></p>
FY 1998 Baseline	\$90,000																			
FY 1999 Result	\$94,000																			
FY 2000 Result	\$105,800																			
FY 2001 Goal	\$110,000																			
FY 2001 Result	\$113,601																			
FY 2002 Goal	\$113,000																			
FY 2002 Result	\$115,666																			
FY 2003 Goal	\$125,000																			
<u>FY 2003 Result</u>	\$135,609																			

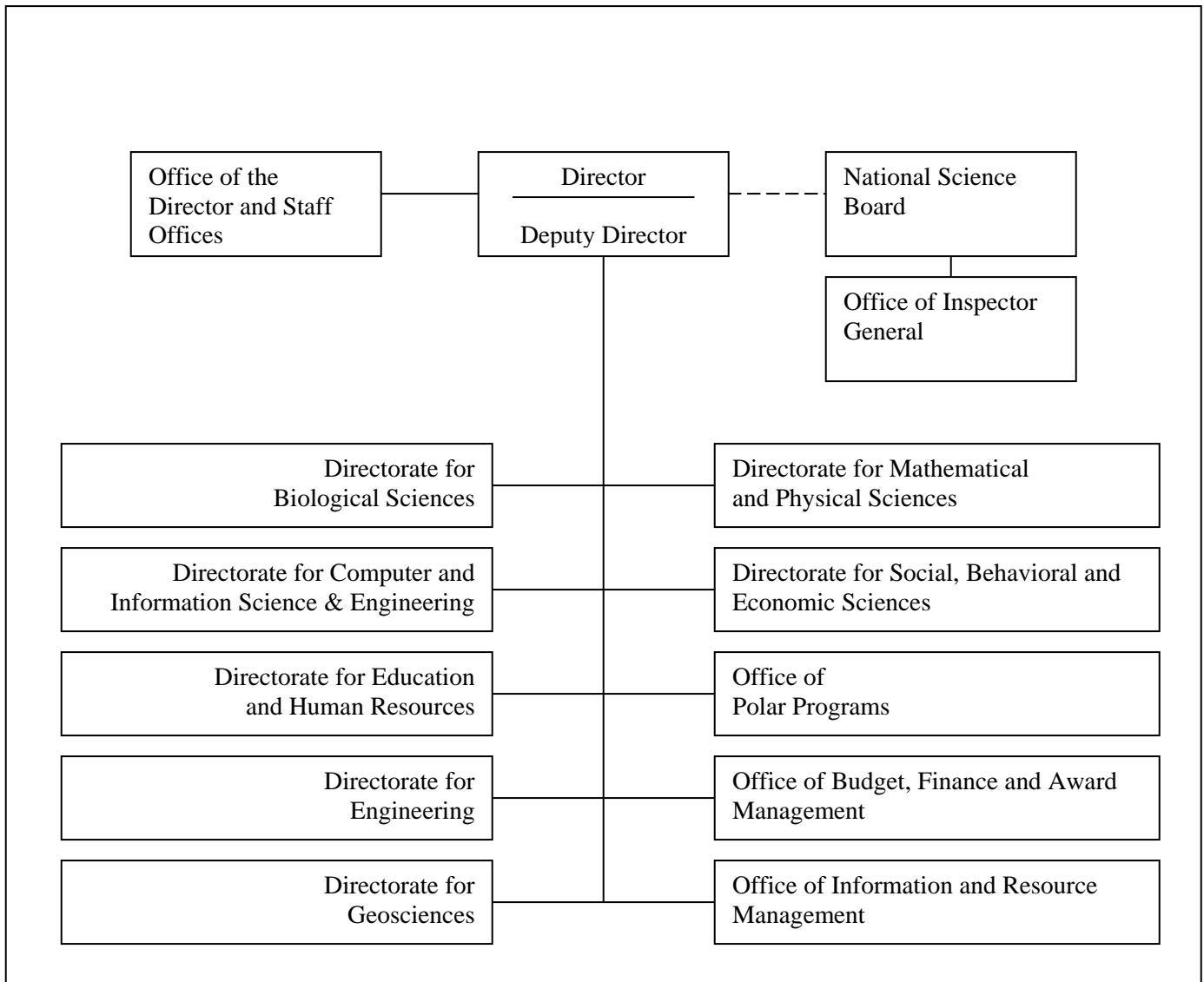
Source: FY 2003 Performance and Accountability Report, pp II-49.

**Appendix Table 14**  
**Small Grants for Exploratory Research (SGER)**  
**Funding Trends by Directorate, FY 2003**

		Fiscal Year		
		2001	2002	2003
<b>NSF</b>	Proposals	301	323	435
	Awards	256	278	344
	Total \$	\$15,403,521	\$16,694,405	\$23,424,191
	% of Obligations	0.4%	0.4%	0.4%
	Average \$	\$60,170	\$60,052	\$68,094
<b>BIO</b>	Proposals	59	58	52
	Awards	40	40	48
	Total \$	\$2,747,298	\$2,737,377	\$3,417,138
	% of Obligations	0.5%	0.5%	0.6%
	Average \$	\$68,682	\$68,434	\$71,190
<b>CSE</b>	Proposals	25	26	59
	Awards	21	24	51
	Total \$	\$1,571,733	\$1,844,149	\$3,984,783
	% of Obligations	0.3%	0.4%	0.6%
	Average \$	\$74,844	\$76,840	\$78,133
<b>EHR</b>	Proposals	13	14	6
	Awards	13	10	5
	Total \$	\$1,021,456	\$976,897	\$418,335
	% of Obligations	0.1%	0.1%	0.1%
	Average \$	\$78,574	\$97,690	\$83,667
<b>ENG</b>	Proposals	84	88	128
	Awards	79	83	110
	Total \$	\$5,121,146	\$5,671,667	\$7,522,161
	% of Obligations	1.1%	1.1%	1.3%
	Average \$	\$64,825	\$68,333	\$68,383
<b>GEO</b>	Proposals	50	46	62
	Awards	49	43	60
	Total \$	\$2,276,175	\$1,514,791	\$2,915,587
	% of Obligations	0.4%	0.2%	0.4%
	Average \$	\$46,453	\$35,228	\$48,593
<b>MPS</b>	Proposals	25	32	97
	Awards	12	21	43
	Total \$	\$802,671	\$1,796,448	\$3,820,670
	% of Obligations	0.1%	0.2%	0.3%
	Average \$	\$66,889	\$85,545	\$88,853
<b>SBE</b>	Proposals	28	42	17
	Awards	27	41	14
	Total \$	\$1,195,763	\$1,437,333	\$664,430
	% of Obligations	0.7%	0.8%	0.3%
	Average \$	\$44,288	\$35,057	\$47,459
<b>OPP</b>	Proposals	17	17	14
	Awards	15	16	13
	Total \$	\$667,279	\$715,743	\$681,087
	% of Obligations	0.2%	0.2%	0.2%
	Average \$	\$44,485	\$44,734	\$52,391



**Appendix Table 15  
National Science Foundation Organization Chart**



## Terms & Acronyms

<u>Acronym</u>	<u>Definition</u>
A&M	Administration and Management
AC	Advisory Committee
AD	Assistant Director
BFA	Office of Budget, Finance and Award Management
BIO	Directorate for Biological Sciences
CAREER	Faculty Early Career Development Program
CGI	Continuing Grant Increments
CISE	Directorate for Computer and Information Science and Engineering
COV	Committee of Visitors
EHR	Directorate for Education and Human Resources
EIS	Enterprise Information System
ENG	Directorate for Engineering
EPSCoR	Experimental Program to Stimulate Competitive Research
FFRDC	Federally Funded Research and Development Center
FTE	Full-Time Equivalent
FY	Fiscal Year
GPRA	Government Performance and Results Act
IA	Integrative Activities
IPA	Intergovernmental Personnel Act (appointee)
IPERS	Integrated Personnel System
MPR	Mathematica Policy Research
MPS	Directorate for Mathematical and Physical Sciences
NSF	National Science Foundation
ODS	Online Document System
OIG	Office of Inspector General
OMB	Office of Management and Budget
OPP	Office of Polar Programs
PARS	Proposal, PI and Reviewer System
PI	Principal Investigator
R&D	Research and Development
R&RA	Research and Related Activities (account)
S&E	Science and Engineering
S&E	Salaries and Expenses (account)
SBE	Directorate for Social, Behavioral and Economic Sciences
SGER	Small Grant for Exploratory Research
VSEE	Visiting Scientists, Engineers and Educators