NSB-12-28

Report to the National Science Board

on the

National Science Foundation's

Merit Review Process

Fiscal Year 2011

May 2012

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APPENDICES

FY 2011 Report on the NSF Merit Review Process

I. Executive Summary

This Annual report to the National Science Board (NSB) includes data and other information relative to the National Science Foundation (NSF or the Foundation) Merit Review Process for fiscal year (FY) 2011.

In FY 2011, NSF received a total of 51,562 proposals. This is a decrease of about 7% from the number of proposals received in FY 2010, but an increase of over 61% from the number of proposals received in FY 2001.

The Foundation made 11,192 awards in 2011, resulting in a 22% funding rate. As indicated by data in **Appendix 1**, the average funding rate varies by NSF directorate. Although not included in this report, there is an even greater variation of funding rate by program.

The Foundation exceeded its "time to decision" goal of informing at least 70% of Principal Investigators (PIs) of funding decisions within six months of receipt of their proposals. In FY 2011 78% of all proposals were processed within six months.

Proposals are externally reviewed by three methods: panel only, mail + panel, and mail only. In FY 2011, 62% were reviewed by panel only, 28% by mail + panel, and 7% by mail only. These percentages have remained fairly constant over the last several years. In addition, about 3% of proposals are not reviewed externally (these include, for example, proposals for travel, symposia, Early Concept Grants for Exploratory Research, and Grants for Rapid Response Research).

Because of space constraints, printed versions of this report include, in most cases, data for only eight years. However, one can access additional historical data through the electronic version of the report that is posted on the NSB website (http://www.nsf.gov/nsb/).

II. Introduction

The National Science Foundation Act of 1950 directs the Foundation "to initiate and support basic scientific research and programs to strengthen scientific research potential and science education programs at all levels."[1] NSF achieves its unique mission by making merit-based awards to researchers, educators, and students at approximately 2,700 U.S. colleges, universities and other institutions.

All proposals are evaluated using the two NSB-approved criteria: *intellectual merit* and *broader impacts*. As stated in the NSF *Grant Proposal Guide*[2], consideration is also given to how well the proposed activity 1) fosters the integration of research and education, and 2) broadens opportunities to include a diversity of participants, particularly from underrepresented groups. Additional criteria, as stated in the program announcement or solicitation, may be required to highlight the specific objectives of certain programs or activities. About 97% of NSF's proposals are evaluated by external reviewers as well as by NSF staff. The remaining proposals fall under special categories that are, by NSF policy, exempt from external review and may be internally reviewed only, such as Early-concept Grants for Exploratory Research (EAGERs) and Grants for Rapid Response Research (RAPIDs) (see section E9 and **Appendix 10**).

This *FY 2011 Report on the NSF Merit Review Process* 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 merit review process. Section III provides information about ARRA, NSF policies and priorities in selecting proposals for ARRA support, and the distribution of ARRA award funding. Section IV of the report provides summary data about proposals, awards, and funding rates. Longitudinal data are given to provide a long-term perspective. In most cases, the data provided are for only eight years due to space constraints; however, additional historical data are available through the electronic version of the report that is posted on the NSB website (http://www.nsf.gov/nsb/).

[1] 42 CFR 16 §1862, available at http://www4.law.cornell.edu/uscode/html/uscode42/usc_sec_42_00001862----000-.html

[2] NSF *Grant Proposal Guide* (GPG) available at: http://www.nsf.gov/pubs/policydocs/pappguide/nsf08_1/gpg_index.jsp

III. Proposals and Awards

A. Proposals, Awards, and Funding Rates

Table 1 shows the change in the number of proposals, number of awards, and funding rates through time. Note that a proposal is included in a given year based on whether the action (award or decline) was taken that year, not whether the proposal was received in that year. NSF received 51,562 proposals in FY 2011 resulting in 11,192 awards. In 2011 the funding rate was 22%. **Appendix 1** provides proposal, award, and funding rate data by NSF directorate and office.

Table1
NSF Proposal, Award, and Funding Rate Trends

	2004	2005	2006	2007	2008	2009	2010	2011
Proposals	43,851	41,722	42,352	44,577	44,428	45,181	55,542	51,562
Awards	10,380	9,757	10,425	11,463	11,149	14,595	12,996	11,192
Funding Rate	24%	23%	25%	26%	25%	32%	23%	22%

Source: NSF Enterprise Information System 10/01/11.

In addition to the full proposals in Table 1, in FY 2011 NSF also received 965 preliminary proposals, which are required for some NSF programs. See **Appendix 2** for additional data and information on preliminary proposals.

Table 2 provides data on proposal, award, and funding rates by PI characteristics (gender, minority status, new and prior PI status).

Table 2
Competitively Reviewed Proposals, Awards and Funding Rates
By PI Characteristics

		2004	2005	2006	2007	2008	2009	2010	2011
All PIs	Proposals	43,851	41,722	42,352	44,577	44,428	45,181	55,542	51,562
	Awards	10,380	9,757	10,425	11,463	11,149	14,595	12,996	11,192
	Omnibus						*9,975*	*12,547*	
	ARRA						*4,620*	*449*	
	Funding Rate	24%	23%	25%	26%	25%	32%	23%	22%
Female PIs	Proposals	8,427	8,266	8,510	9,197	9,431	9,727	11,903	11,488
	Awards	2,118	2,107	2,233	2,493	2,556	3,297	2,982	2,602
	Omnibus						*2,247*	*2,887*	
	ARRA						*1,050*	*95*	
	Funding Rate	25%	25%	26%	27%	27%	34%	25%	23%

		2004	2005	2006	2007	2008	2009	2010	2011
Male PIs	Proposals	33,300	31,456	31,482	32,650	32,074	32,091	38,695	35,211
	Awards	7,923	7,305	7,765	8,451	7,986	10,437	9,080	7,739
	Omnibus						*7,169*	*8,760*	
	ARRA						*3,268*	*320*	
	Funding Rate	24%	23%	25%	26%	25%	33%	23%	22%
Minority PIs	Proposals	2,551	2,468	2,608	2,798	2,762	2,945	3,613	3,441
	Awards	597	569	638	713	670	889	812	735
	Omnibus						*649*	*790*	
	ARRA						*240*	*22*	
	Funding Rate	23%	23%	24%	25%	24%	30%	22%	21%
New PIs	Proposals	19,052	17,660	18,061	18,971	18,989	19,044	24,116	21,703
Former	Awards	3,256	3,001	3,240	3,660	3,622	4,706	4,024	3,322
Definition[*]	*Omnibus*						*2,967*	*3,868*	
	ARRA						*1,739*	*156*	
	Funding Rate	17%	17%	18%	19%	19%	25%	17%	15%
New PIs	Proposals	16,723	15,467	15,877	16,445	16,483	16,840	21,545	19,238
Revised	Awards	2,881	2,687	2,842	3,151	3,132	4,174	3,620	2,976
Definition[*]	*Omnibus*						*2,613*	*3,487*	
	ARRA						*1,561*	*133*	
	Funding Rate	17%	17%	18%	19%	19%	25%	17%	15%
Prior PIs	Proposals	24,799	24,062	24,294	25,606	25,439	26,137	31,426	29,835
Former	Awards	7,124	6,756	7,185	7,803	7,527	9,889	8,972	7,849
Definition[*]	*Omnibus*						*7,008*	*8,679*	
	ARRA						*2,881*	*293*	
	Funding Rate	29%	28%	30%	30%	30%	38%	29%	26%
Prior PIs	Proposals	26,765	26,130	26,172	27,660	27,424	28,341	33,997	32,324
Revised	Awards	7,373	7,070	7,475	8,202	7,892	10,421	9,376	8,216
Definition[*]	*Omnibus*						*7,362*	*9,060*	
	ARRA						*3,059*	*316*	
	Funding Rate	28%	27%	29%	30%	29%	37%	28%	25%
PIs with	Proposals	525	454	434	448	448	470	545	543
Disabilities	Awards	121	95	107	104	109	149	108	107
	Omnibus						*105*	*105*	
	ARRA						*44*	*3*	
	Funding Rate	23%	21%	25%	23%	24%	32%	20%	20%

Source: NSF Enterprise Information System 10/01/11.

[*] In FY 2009, in conjunction with NSF's implementation of the ARRA, NSF revised its definition of a new PI. The revised definition is "A new PI is an individual who has not served as the PI or co-PI on any award from NSF (with the exception of doctoral dissertation awards, graduate or postdoctoral fellowships, research planning grants, or conferences, symposia and workshop grants.)" Previously, a new PI was considered to be any individual who had not previously been a PI on any NSF award. Historical data shown for the revised definition is based on the NSF Enterprise Information System, as of October 1, 2011.

Gender and minority status is based on self-reported information in proposals, with about 89% of PIs providing gender information and 88% providing minority status information. Minority status includes American Indian, Alaska Native, Black, Hispanic, and Pacific Islander and excludes Asian and White-Not of Hispanic Origin. **Appendix 3** provides proposal, award, and funding rate information by PI race and ethnicity. **Appendix 4** provides funding rate information by new PI and prior PI status by directorate

B. Types of Awards

NSF uses three kinds of funding mechanisms: grants, cooperative agreements, and contracts. Most of NSF's projects support or stimulate scientific and engineering research and education, and are funded using grants or cooperative agreements. A grant is the primary funding mechanism used by NSF. A grant can be funded as either a standard award (in which funding for the full duration of the project, generally 1-5 years, is awarded in a single fiscal year) or a continuing award (in which funding of a multi-year project is usually provided in annual increments). For continuing grants, the initial funding increment is accompanied by a statement of intent to continue funding the project in yearly increments (called "continuing grant increments" or CGIs)[3] until the project is completed. The continued funding is subject to NSF's judgment of satisfactory progress, availability of funds, and receipt and approval of required annual reports. Cooperative agreements are used when the project requires substantial agency involvement during the project performance period (e.g., research centers, multi-user facilities). Contracts are used to acquire products, services and studies (e.g., program evaluations) required primarily for NSF or other government use.

As shown below in **Table 3**, in FY 2011, NSF devoted 34% of its total budget to new standard grants and 11% to new continuing grants. The use of standard and continuing grants allows NSF flexibility in balancing current and future obligations, and managing funding rates. Note: ARRA[4] awards were made as standard grants.

Table 3
Percentage of NSF Awards by Funding Mechanism

CATEGORY	2004	2005	2006	2007	2008	2009	2010	2011
Standard Grants	25%	23%	25%	26%	28%	44%	37%	34%
New Continuing	14%	14%	13%	14%	13%	8%	13%	11%
CGIs and Supplements	28%	29%	28%	26%	26%	18%	18%	23%
Cooperative Agreements	24%	24%	23%	22%	23%	21%	23%	23%
Other*	9%	10%	11%	11%	11%	9%	9%	9%

Source: NSF Enterprise Information System 12/17/11. Percentages may not sum to 100 due to rounding.

[3] While the original award is a competitive action, the Continuing Grant Increment (CGI) is a non-competitive grant. Continued incremental funding is based on NSF review of annual project reports and additional oversight mechanisms established by specific programs.

[4] Pub.L. 111-5, available at: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_public_laws&docid=f:publ005.111 On February 17, 2009, President Obama signed the American Recovery and Reinvestment Act of 2009 (ARRA) into law. One of the principal purposes of the law is to "provide investments needed to increase economic efficiency by spurring technological advances in science and health." ARRA supplemented NSF fiscal year 2009 allocation by $3 billion.

* Other includes contracts, fellowships, interagency agreements, and IPA agreements.

C. Awards by Sector/Institution

In FY 2011, NSF awarded approximately 77% of its budget to academic institutions, 13% to non-profit and other organizations, 6% to for-profit businesses, and 5% to Federal agencies and laboratories[5]. This overall distribution of funds by type of organization has remained fairly constant over the past five years as shown in **Table 4**.

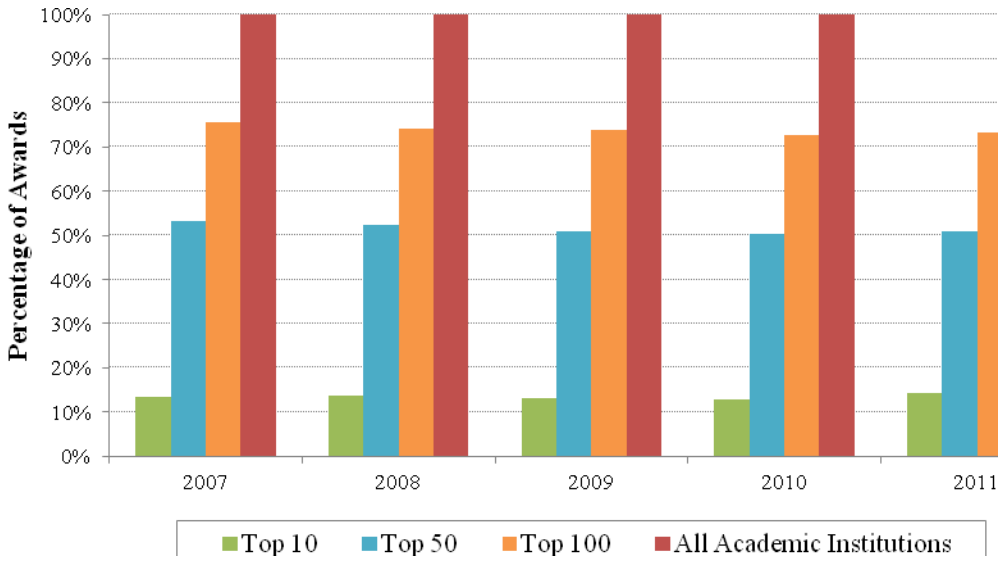
Table 4
Distribution of Funds by Type of Organization

Sector/Institution	2004	2005	2006	2007	2008	2009	2010	2011
Academic Institutions	76%	76%	76%	76%	76%	76%	77%	77%
Non-Profit and Other Organizations	15%	15%	15%	15%	13%	13%	11%	13%
For-Profit	7%	7%	7%	7%	8%	6%	6%	6%
Federal Agencies and Laboratories	2%	2%	2%	3%	3%	4%	5%	5%

Source: NSF Enterprise Information System 10/01/11. Percentages may not sum to 100 due to rounding.

For **Figure 1**, academic institutions are categorized according to the proportion of NSF funding received (i.e., those receiving the largest proportion of NSF funding – the top 10, 50, and 100 academic institutions).

Figure 1
Percentage of Awards to Academic Institutions
(By Proportion of Funds Received)



Source: NSF Enterprise Information System 10/01/11.

The Foundation tracks funding rates for different types of academic institutions. For FY 2011, the average funding rate was 25% for the top 100 (classified according to the amount of FY 2011 funding received) Ph.D.-granting institutions. In comparison, the rate was 16% for Ph.D.-granting institutions that are not in the top 100 NSF-funded category. The funding rates for four-year institutions was 19% and for two-year

[5] Numbers do not total to 100% due to rounding.

institutions was 22% in FY 2011. For minority-serving institutions, the FY 2011 funding rate was 17%.

The Foundation also promotes geographic diversity of the participants in its programs. For example, the mission of the Experimental Program to Stimulate Competitive Research (EPSCoR) is to assist the NSF in its statutory function "to strengthen research and education in science and engineering throughout the United States and to avoid undue concentration of such research and education."[6] The EPSCoR program was designed for those jurisdictions that have historically received lesser amounts of NSF Research and Development (R&D) funding. In FY 2011, 27 states, the Commonwealth of Puerto Rico and the U.S. Virgin Islands were eligible to participate in the program. **Appendix 9** has data on proposals, awards, and funding rates for the EPSCoR jurisdictions.

NSF made numerous outreach presentations to diverse institutions across the country in an effort to help increase their participation and success in NSF programs:

- Two Regional Grants Conferences were held in FY 2011. These conferences were organized by the NSF Policy Office, and hosted by Vanderbilt University in Nashville, TN; and University of Utah and Utah State University in Salt Lake City, UT.

- 11 "NSF Days" organized by the Office of Legislative and Public Affairs, were held throughout the year in FY 2011 in Kansas, California (2) New Jersey, Louisiana, Kentucky, Texas, New Mexico, Oregon, South Carolina, and Pennsylvania. (3).

Representatives from most of NSF's directorates and offices attended each of these conferences. They held separate focus sessions for faculty on program opportunities in specific disciplines in addition to providing general information about proposal preparation and the merit review process.

NSF also hosted several informational booths at scientific meetings such as the annual meeting of the American Association for the Advancement of Science (AAAS). In addition to these larger NSF-wide organized efforts, outreach workshops were sponsored by several of the individual directorates, as well as EPSCoR, the Small Business Innovation Research (SBIR) program, and other NSF-wide programs. Finally, Program Officers frequently conduct outreach when visiting institutions or participating in scientific meetings. NSF outreach to scientists and engineers from underrepresented groups includes efforts such as workshops for tribal colleges and minority-serving institutions, including historically black colleges and universities.

D. Time to Decision (Proposal Dwell Time)

It is important for applicants to receive a timely funding decision. The Foundation's FY 2011 GPRA performance goal calls for informing at least 70% of PIs of funding

[6] 42 CFR 16 §1862, available at http://www4.law.cornell.edu/uscode/html/uscode42/usc_sec_42_00001862----000-.html

decisions (i.e. award or decline) within six months of deadline, target date, or proposal receipt date, whichever is later. In 2011 NSF exceeded the dwell time goal with 78% of applicants informed within 6 months. Note that NSF has consistently exceeded its time to decision goal with the exception of 2009 when the NSF dwell time performance measure was suspended for the second through the fourth quarters to delay processing proposals that would have been declined due to lack of funding so that some of these proposals could be funded with the ARRA allocation.

Table 5
Proposal Dwell Time
Percentage of Proposals Processed Within 6 Months

2004	2005	2006	2007	2008	2009*	2010	2011
77%	76%	78%	77%	78%	61%	75%	78%

Source: NSF Enterprise Information System 10/01/11.

E. Data on Research Grants

The purpose of this section is to provide data on what is referred to as "research grants." The term research grant is used by NSF to represent what could be considered a typical research award, particularly with respect to the award size. Education research grants are included in this category. Excluded are large awards such as centers and facilities, equipment and instrumentation grants, grants for conferences and symposia, grants in the Small Business Innovation Research program, Small Grants for Exploratory Research, Early-concept Grants for Exploratory Research, Grants for Rapid Response Research, and education and training grants.

E1. Research Proposal, Grant, & Funding Rate Trends

Table 6 provides the proposal, grant, and funding rate trends for NSF research grants. The number of awards made in 2011 (7,759) was substantially lower than what was possible in 2009 (10,011) with ARRA funding, but higher than the number of awards in 2008 pre-ARRA (6,999).

Table 6
Research Grant Proposal, Grant & Funding Rate Trends

	2004	2005	2006	2007	2008	2009	2010	2011
Proposals	31,553	31,574	31,514	33,705	33,643	35,609	42,225	41,840
Awards	6,509	6,258	6,708	7,415	6,999	10,011	8,639	7,759
Omnibus						6,346	8,613	
ARRA						3,665	26	
Funding Rate	21%	20%	21%	22%	21%	28%	20%	19%

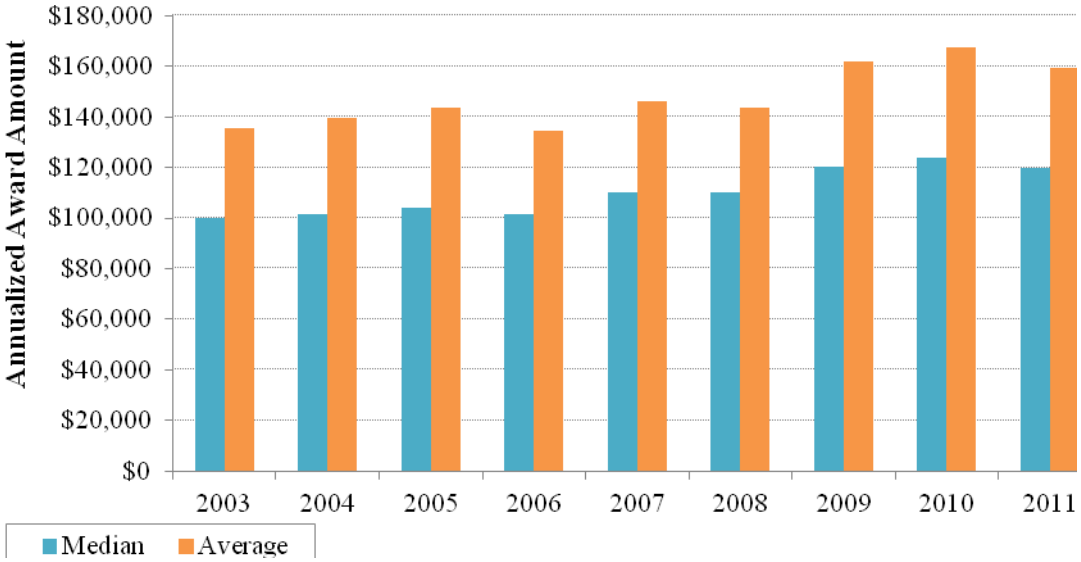
Source: NSF Enterprise Information System 10/01/11.

E2. Research Grant Size and Duration

Adequate award size and duration are important for enabling science of the highest quality and ensuring that proposed work can be accomplished as planned. Larger award size and longer award duration may also permit the participation of more students and allow investigators to devote a greater portion of their time to conducting research.

As indicated in **Figure 2**. In 2011 the annualized median award size was $120,000 and the average annualized award amount was $159,290.

Figure 2
Annualized Award Amounts for Research Grants



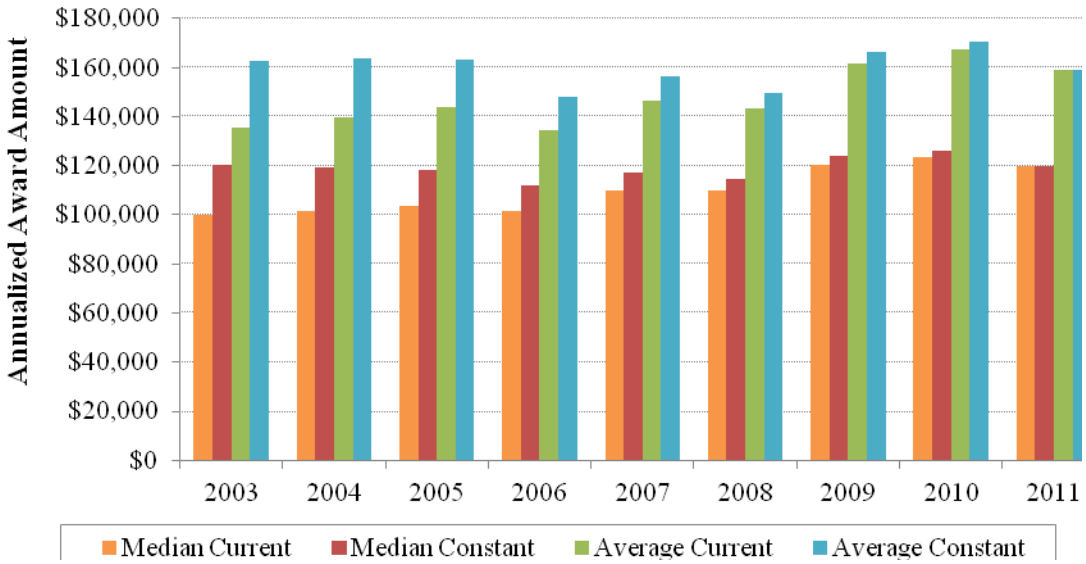
Source: NSF Enterprise Information System 10/01/11.

Data on award size and duration organized by NSF directorate for the last five years are presented in **Appendix 5**.

As indicated in **Figure 3,** the average annual award size has increased by 18% from FY 2003 to FY 2011, while the average annual award size in constant dollars[7] has decreased slightly by 2%. It should be noted that there was a significant increase in average annual award size in FY 2009 made possible by the ARRA allocation. NSF may not be able to sustain the increase in future years.

[7] Constant dollars were calculated with the Gross Domestic Product (GDP) Deflator, which is the GDP (chained) Price Index. The deflator is updated by the Office of Management and Budget in the President's Budget and is based on the U.S. Government Fiscal Year, which begins on October 1 and ends on September 30. For this chart, the FY 2011 is the reference year (one FY 2011 dollar equals one constant dollar). This GDP deflator can be used from 1940, up to estimates through 2011.

Figure 3
Annualized Award Amounts for Research Grants in Constant Dollars



Source: NSF Enterprise Information System 10/01/11.

As indicated in **Table 7**, the average award duration has remained relatively constant.[8] Program officers must balance competing requirements, such as increasing award size, increasing duration of awards, or making more awards.

Table 7
Average Award Duration for Research Grants

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Duration (Years)	2.9	3.0	3.0	2.9	2.9	3.0	3.0	2.9	*2.9*

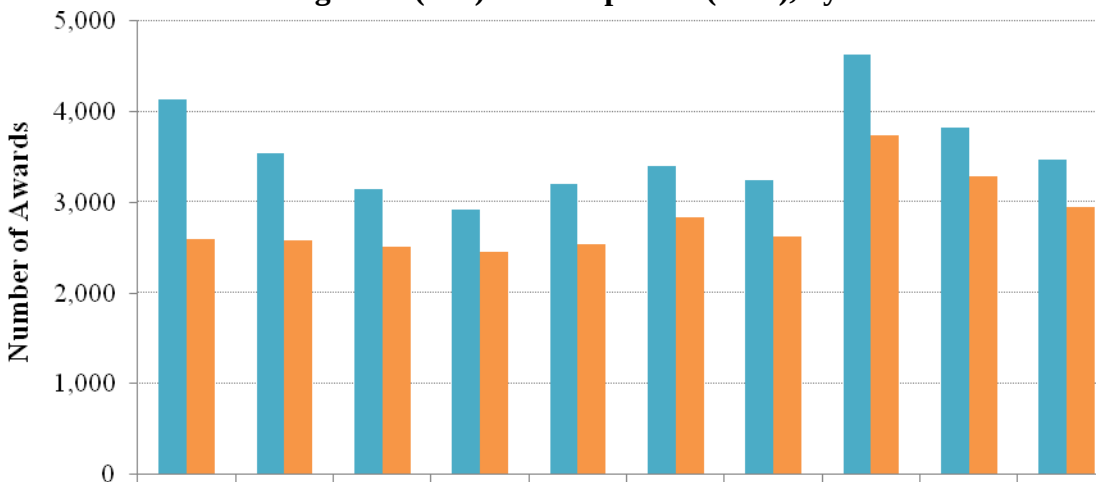
Source: NSF Enterprise Information System 10/01/11.

E3. Number of Investigators per Research Grant

Figure 4 shows the number of research grants made to single PIs (SPI) compared to the number of research grants to projects with multiple PIs (MPI). The number of SPI grants remains greater than the number of MPI grants.

[8] Although the number of years is rounded to one decimal place, the variations do not indicate significant changes since 0.1 years represents only about five weeks. In addition, this duration rate is the initial duration for new awards made in FY 2011. The rate does not take into account no-cost extensions.

Figure 4
Research Grants to Single PIs (SPI) & Multiple PIs (MPI), by Number of Awards

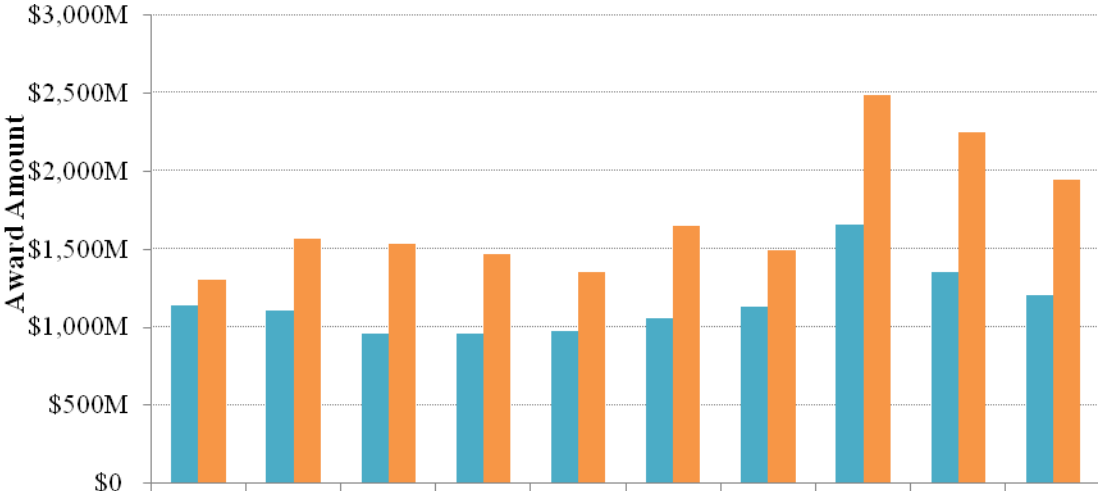


	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
By # SPI	4,131	3,539	3,143	2,920	3,203	3,395	3,252	4,627	3,822	3,478
By # MPI	2,593	2,575	2,508	2,458	2,533	2,841	2,625	3,745	3,284	2,945

Source: NSF Enterprise Information System 10/01/11.

Figure 5 indicates the total amount of funds awarded to SPI research grants in comparison to the amount of funds awarded to MPI research grants.

Figure 5
Research Grants for Single PIs (SPI) & Multiple PIs (MPI), by Dollar Amount

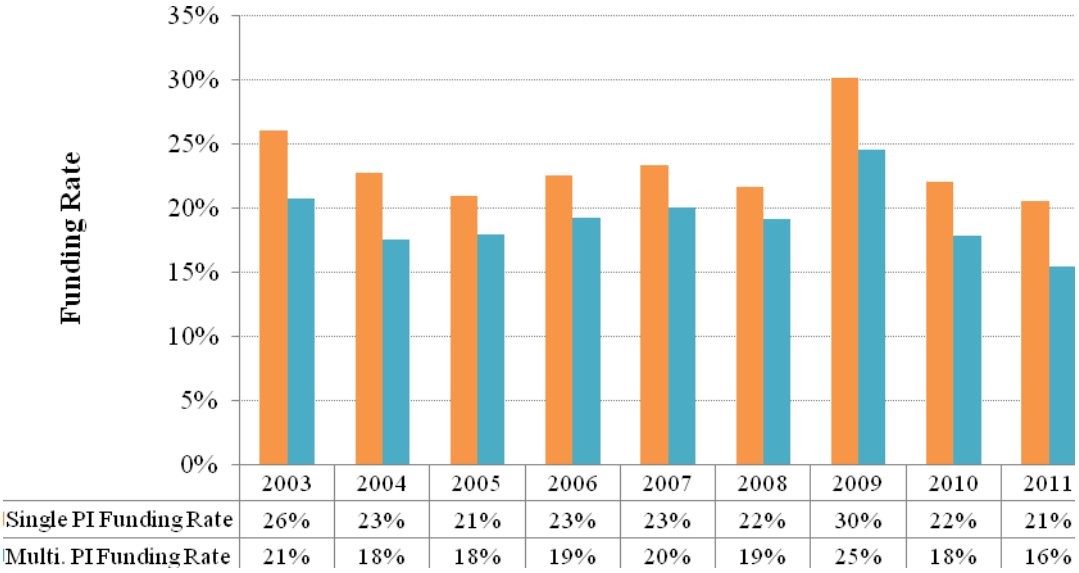


	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
SPI in $M	$1,140M	$1,104M	$962M	$961M	$979M	$1,059M	$1,131M	$1,659M	$1,352M	$1,209M
MPI in $M	$1,305M	$1,567M	$1,537M	$1,465M	$1,352M	$1,645M	$1,489M	$2,490M	$2,247M	$1,947M

Source: NSF Enterprise Information System 10/01/11.

Figure 6 indicates the funding rates for SPI and MPI research proposals. The difference between the SPI and MPI funding rate has varied over the last nine years, but the SPI funding rate has been consistently higher.

Figure 6
Funding Rates for Single-PI & Multiple-PI Research Proposals



	2003	2004	2005	2006	2007	2008	2009	2010	2011
Single PI Funding Rate	26%	23%	21%	23%	23%	22%	30%	22%	21%
Multi. PI Funding Rate	21%	18%	18%	19%	20%	19%	25%	18%	16%

Source: NSF Enterprise Information System 10/01/11.

E4. Number of Research Grants per PI

Table 8 indicates the average number of active research grants per PI during the indicated time period. These percentages have remained relatively unchanged from previous years.

Table 8
Number of Grants per PI

Fiscal Years	One	Two	Three	Four or More
2009-2011	80%	16%	3%	1%
2009-2011, Excluding ARRA	82%	14%	3%	1%

Source: NSF Enterprise Information System 10/01/11. Percentages may not sum to 100 due to rounding.

E5. Number of People Supported on Research Grants

Table 9 provides the number of graduate students, postdoctoral associates, and senior personnel supported on NSF research grants awarded in FY 2011. These data were extracted from the budget details of research grants active in the year indicated.

Table 9
Number of People Supported on NSF Research Grants, by Recipient Type

	2004	2005	2006	2007	2008	2009	2010	2011	% Change, 2005- 2011
Senior Personnel Supported	21,711	22,255	23,186	26,176	26,494	33,536	33,650	35,523	60%
Postdocs Supported	4,399	4,068	4,023	4,034	3,909	5,580	4,653	4,751	17%
Graduate Students Supported	21,105	20,442	20,949	22,777	22,936	33,371	24,554	24,855	22%

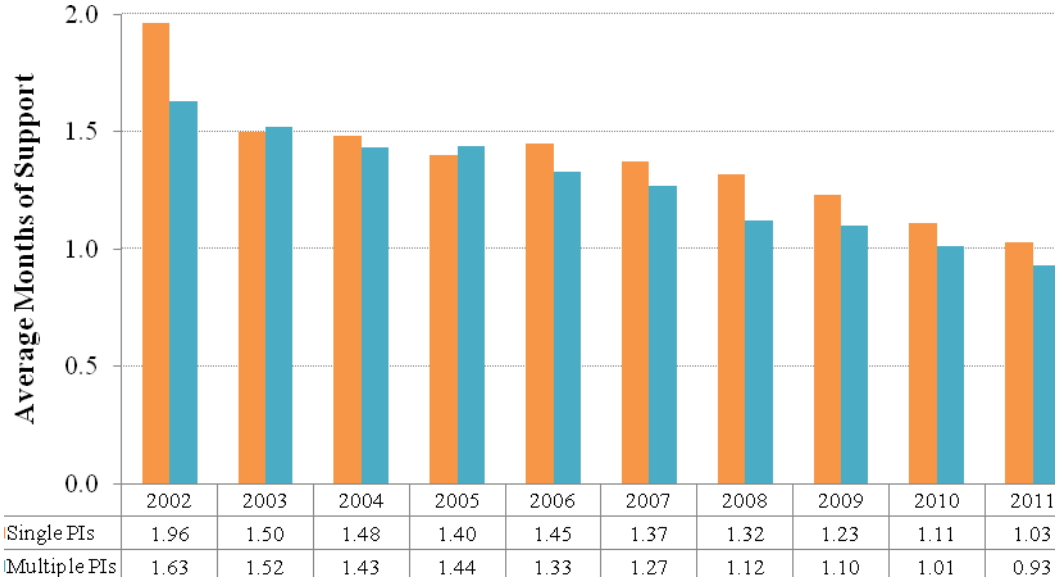
Source: NSF Enterprise Information System 10/01/11.

Appendix 7 provides data on the estimated number of individuals involved in NSF activities supported by all NSF active awards, including senior researchers, postdoctoral associates, teachers, and students across all educational levels.

E6. Average Number of Months of Salary Support for Single- & Multiple-PI Research Grants

Figure 7 indicates the average number of months of salary support per individual on single PI and multiple PI research grants. Months of salary support are for PIs and Co-PIs only. Since FY 2002, the average number of months of support has generally decreased for both single and multiple PIs. Multiple PIs consistently averaged fewer months of support than single PIs (see **Appendix 6** for directorate or office level data on months of support).

Figure 7
Average Number of Months of Salary for Single- & Multiple-PI Research Grants



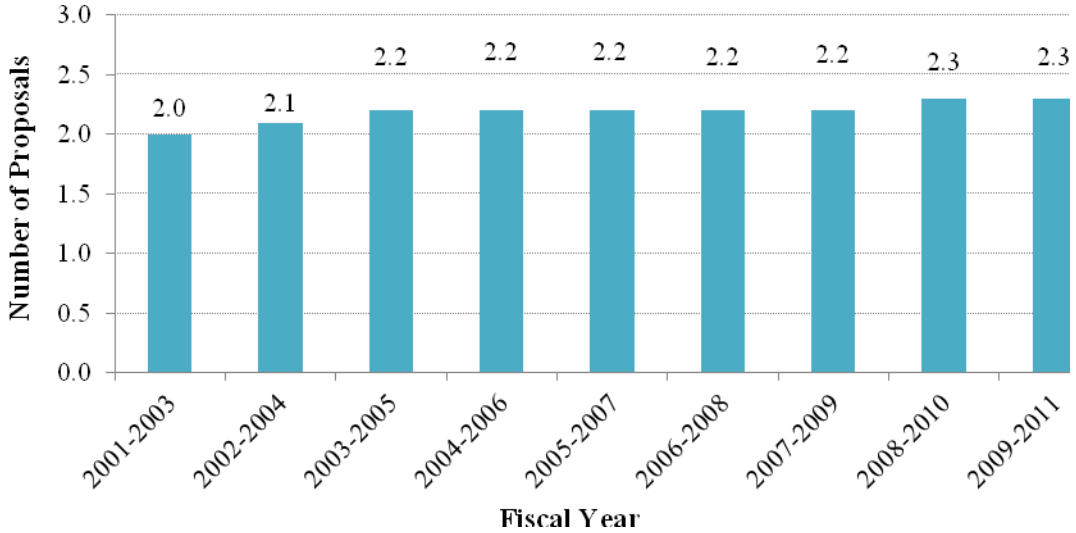
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Single PIs	1.96	1.50	1.48	1.40	1.45	1.37	1.32	1.23	1.11	1.03
Multiple PIs	1.63	1.52	1.43	1.44	1.33	1.27	1.12	1.10	1.01	0.93

Source: NSF Enterprise Information System 10/01/11.

E7. Investigator Submission and Funding Rates

Figure 8 shows that on average the number of proposals an investigator submits before receiving an award has stayed relatively constant in recent years. This average is calculated across all PIs, including both new and previous PIs. **Appendix 8** provides a directorate level breakout of the average number of research proposals per PI before receiving one award.

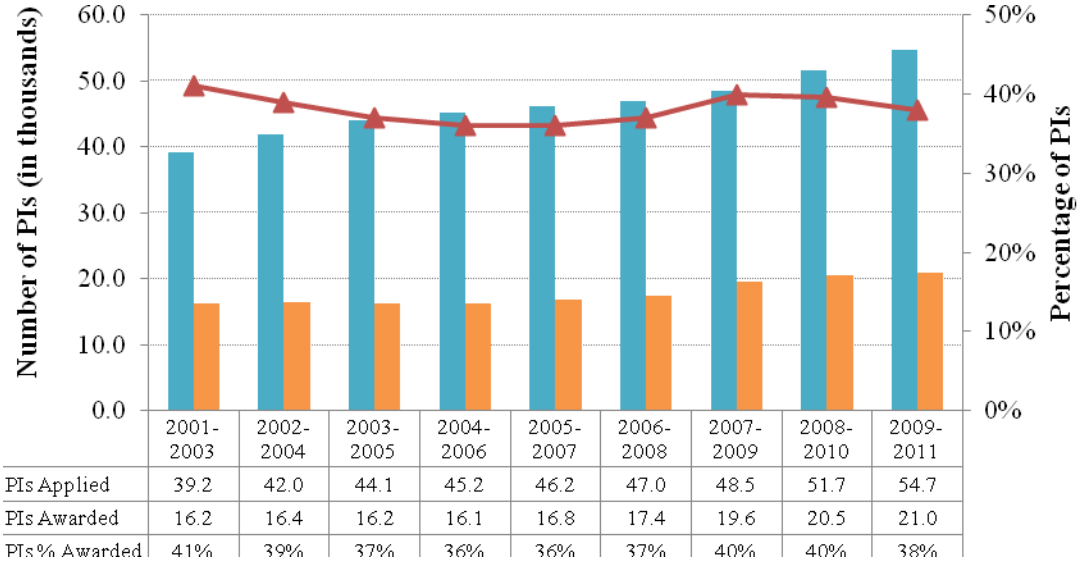
Figure 8
Average Number of Research Proposals per PI before Receiving One Award



Source: NSF Enterprise Information System 10/01/11.

Figure 9 provides the funding rate for investigators (the number of investigators receiving a grant divided by the number of investigators submitting proposals).

Figure 9
NSF PI Funding Rates for Research Grants



	2001-2003	2002-2004	2003-2005	2004-2006	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011
PIs Applied	39.2	42.0	44.1	45.2	46.2	47.0	48.5	51.7	54.7
PIs Awarded	16.2	16.4	16.2	16.1	16.8	17.4	19.6	20.5	21.0
PIs % Awarded	41%	39%	37%	36%	36%	37%	40%	40%	38%

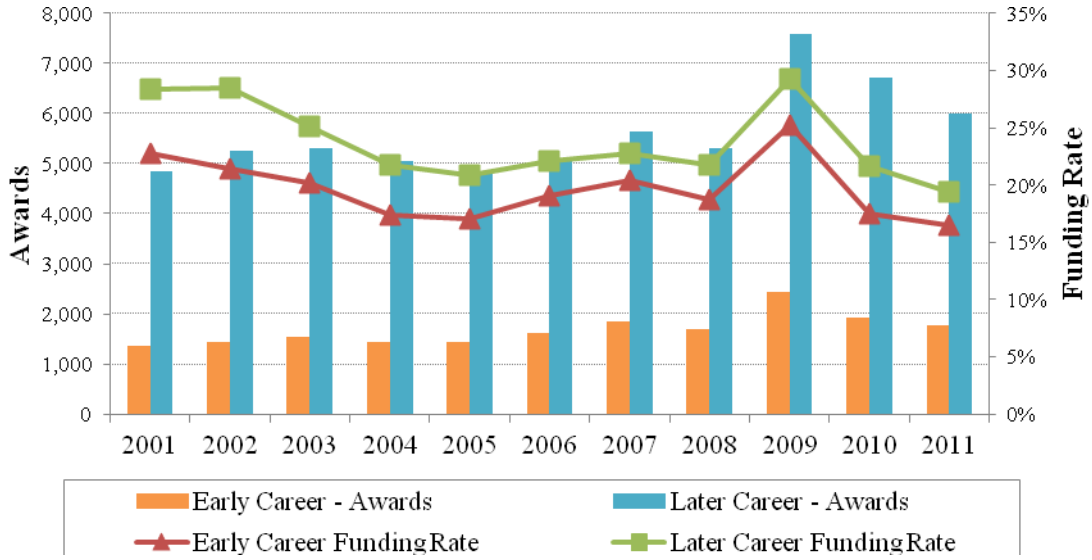
Source: NSF Enterprise Information System 10/01/11.

E8. Early and Later Career PIs

Figure 10 indicates the percentage of NSF PIs that are in the early or later stage of their career. An early career PI is defined as someone within seven years of receiving their last degree at the time of the award. For the purposes of this report, PIs who received their last degree more than seven years before the time of their first NSF award are considered later career PIs.

Since FY 2003, the percentage of early career PIs has remained relatively constant at about 23% and the percentage of later career PIs has also remained relatively constant at about 77%.

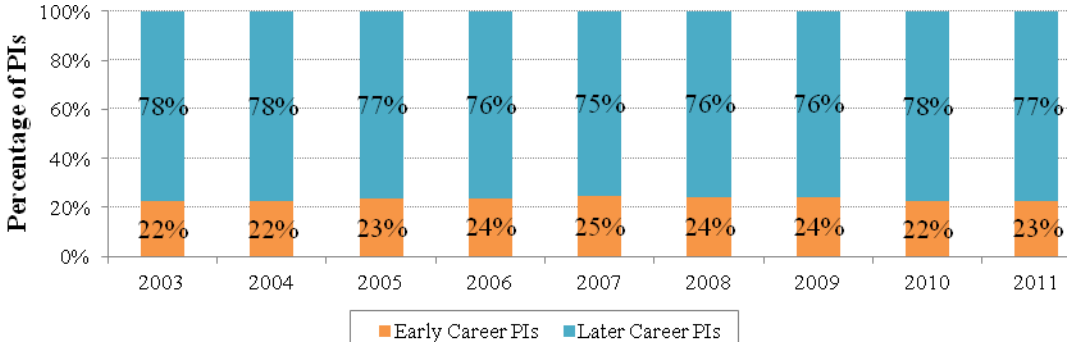
Figure 10
Percentage of PIs in Early & Later Stages of Career and Research Grant Funding Rates



Source: NSF Enterprise Information System 10/01/11.

Figure 11 shows the percentage of PIs in early or later stage of career as they relate to FY 2003 to FY 2011.

Figure 11
Percentage of PIs in Early and Later Stage of Career



Source: NSF Enterprise Information System 10/01/11.

E 9. Small Grants for Exploratory Research (SGER), Early-concept Grants for Exploratory Research (EAGER), and Grants for Rapid Response Research (RAPID)

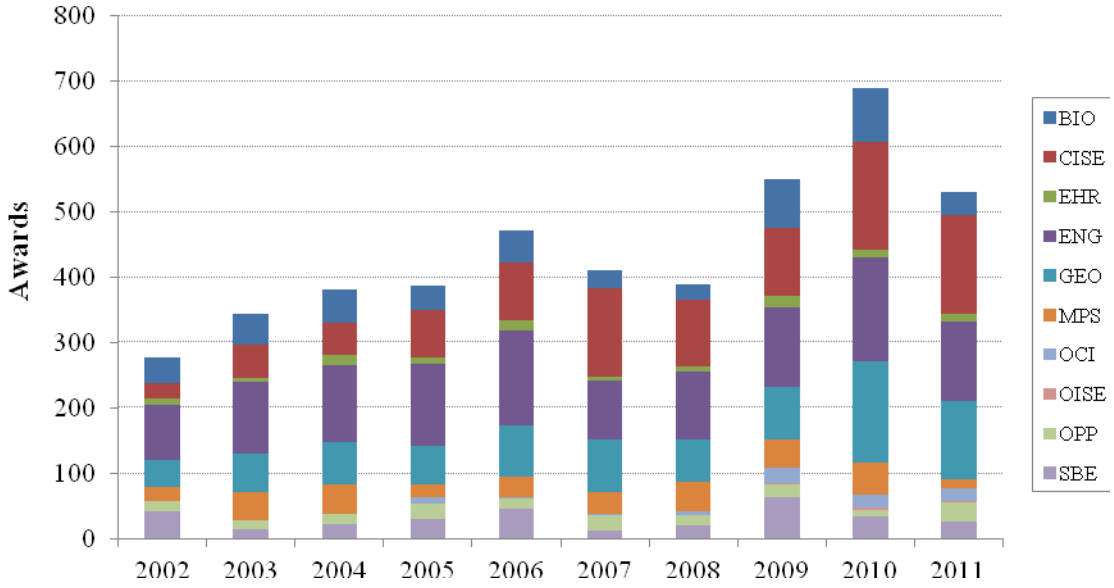
Since the beginning of FY 1990, the Small Grants for Exploratory Research (SGER) option has permitted program officers throughout the Foundation to make small-scale grants without formal external review. Effective January 2009, the SGER funding mechanism was replaced by two funding mechanisms EAGER and RAPID, in part to emphasize the importance of funding of both potentially transformative research and research requiring an urgent response:

- **EArly-concept Grants for Exploratory Research (EAGER)**
  The EAGER funding mechanism is used to support exploratory work in its early stages on untested, but potentially transformative, research ideas or approaches. The work may be considered especially "high risk-high payoff" in the sense that it, for example, involves radically different approaches, applies new expertise, or engages novel disciplinary or interdisciplinary perspectives. Requests may be for up to $300 thousand and up to two years duration.
- **Grants for Rapid Response Research (RAPID)**
  The RAPID funding mechanism is used for proposals having a severe urgency with regard to availability of, or access to data, facilities or specialized equipment, including quick-response research on natural or anthropogenic disasters and similar unanticipated events. Requests may be for up to $200 thousand and of one year duration.

Only internal merit review is required for EAGER and RAPID proposals. Program officers may elect to obtain external reviews to inform their decision. If external review is to be obtained, then the PI is so informed in the interest of maintaining the transparency of the review and recommendation process.

Figure 12 Shows the change in SGERs, EAGERs and RAPIDs from 2002 to 2011 by Directorate. In 2009 the total number of SGERs, RAPIDs and EAGERs was 550, which is similar to previous years (see Appendix 10 for a comparison with SGERs since 2002). However, the total number of EAGERs and RAPIDs decreased slightly to 531 in 2011.

Figure 12
SGER, EAGER and RAPID Awards by Directorate



Source: NSF Enterprise Information System 12/21/11.

Additional information on SGERS, RAPIDs, and EAGERs can be found in Appendix 10.

IV. The NSF Merit Review Process

A. Merit Review Criteria

In FY 1998, the National Science Board approved the use of the two current NSF merit review criteria, and, in FY 2007, modified the criteria to promote potentially transformative research. The two criteria now in effect are:

Intellectual Merit. 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, original, or potentially transformative concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

Broader Impacts. 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?

Careful consideration is also given to the following in making funding decisions: 1) *Integration of Research and Education* and 2) *Integrating Diversity into NSF Programs, Projects, and Activities*, as is indicated in the *Grant Proposal Guide*[9]**.** Programs may have additional review criteria specific to the goals and objectives of the program. All relevant review criteria are described in the program announcement or solicitation.

Effective October 1, 2002, NSF returned without review proposals that failed to separately address both merit review criteria within the Project Summary. The number of proposals returned without review for failing to address both NSB merit review criteria had been steadily decreasing since 2003. There was a departure from that trend in 2008 and 2009, with a slight increase in the number of proposals returned without review for failing to address both merit review criteria. However, in the last two fiscal years the number of proposals returned without review has decreased with fewer than one quarter of one percent of proposals returned without review.

Table 10
Proposals Returned Without Review for Failing to Address both Merit Review Criteria

Fiscal Year	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Number of Proposals	176	134	117	124	147	131	116
Percent of all Proposals Decisions	0.42%	0.32%	0.26%	0.28%	0.33%	0.24%	0.22%

Source: NSF Enterprise Information System 10/01/11.

B. Transformative Research

The March 2007 NSB report *Enhancing Support of Transformative Research at the National Science Foundatio*n (NSB 07-32) has been instrumental in informing NSF's efforts to promote and support potentially transformative research. The statement of the Intellectual Merit review criteria was modified effective January 5, 2008 to reference explicitly transformative research. An Important Notice No. 130 was sent on September 24, 2007 from the NSF Director to presidents of universities and colleges and heads of other NSF grantee organizations to inform the community of the changes in the merit review criteria and NSF's effort to promote and support potentially transformative concepts.

All NSF programs encourage and support potentially transformative research proposals. NSF also has several mechanisms particularly developed to promote the support of potentially transformative research. These include EArly-Concept Grants for Exploratory Research (EAGER), Creativity Extensions, and Accomplishment-Based Renewals. See **Section E9** and **Appendix 17** for a description of these mechanisms. NSF continues to develop new approaches to promote and support potentially transformative research. In FY2011 a new working group, INSPIRE (Integrated NSF Support Promoting Interdisciplinary Research and Education) was charged with developing new mechanisms

[9]The National Science Foundation *Grant Proposal Guide* can be accessed online at: http://www.nsf.gov/pubs/policydocs/pappguide/nsf08_1/gpg_index.jsp.

to fund interdisciplinary transformative research. The first INSPIRE award mechanism called CREATIV (Creative Research Awards for Transformative Interdisciplinary Ventures), will result in awards in FY 2012.

C. Description of NSF Merit Review Process

The NSF merit review process includes the steps listed below and is depicted in **Figure 13**:

- The proposal arrives electronically and is assigned to the appropriate program(s) for review. Some programs also include preliminary proposals as part of the application process. See **Appendix 2** for more information about preliminary proposals. Proposals that do not comply with NSF regulations, as stated in the *Grant Proposal Guide*, may be returned without review.

- The review process is overseen by a division director, or other appropriate NSF official.

- The program officer (or team of program officers) is responsible for the following:

    - Reviewing the proposal and determining the appropriate level of review. NOTE: Some proposals do not require external review. These include, for example, EAGERs, RAPIDs and proposals for small conferences, workshops, or symposia.

    - Selecting reviewers and panel members. Selection may be based on program officer's knowledge, references listed in the proposal, individuals cited in recent publications or relevant journals, presentations at professional meetings, reviewer recommendations, bibliographic and citation databases, or proposal author's suggestions.

    - Checking for conflicts of interest. In addition to checking proposals and selecting reviewers with no apparent potential conflicts, NSF staff provides reviewers guidance and instruct them how to identify and declare potential conflicts-of-interest. All NSF program officers receive annual conflict of interest training.

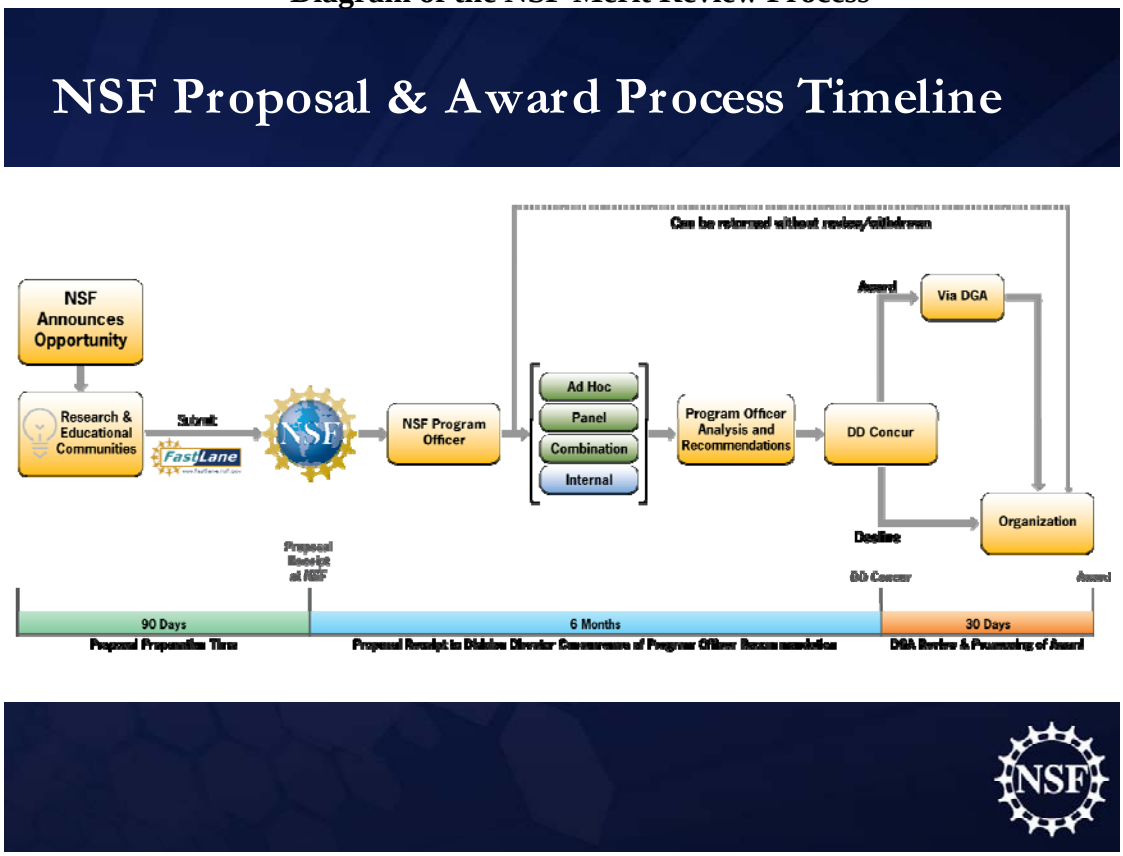
    - Synthesizing the comments of the reviewers and panel (if reviewed by a panel), as provided in the individual reviewer analyses and panel summaries.

    - Recommending action to award or decline the proposal, taking into account external reviews, panel discussion, and other factors such as portfolio balance and amount of funding available.

The division director, or other appropriate NSF official, reviews all program officer recommendations. Large awards may receive additional review. The Director's Review Board examines award recommendations with an average annual award amount of 2.5%

or more of the awarding division's annual budget. The National Science Board (NSB) reviews recommended awards with an annual award amount of one percent or more of the awarding Directorate's prior year current plan or $6,000,000, whichever is greater.[10] In FY 2011, NSB approved 9 funding items that included 7 awards, and two increases in funding authorization. Once approved, a grants and agreements officer in the Office of Budget, Finance, and Award Management performs an administrative review of award recommendations.

Figure 13
Diagram of the NSF Merit Review Process



NSF has several oversight and advisory mechanisms relevant to the merit review process:

- An external Committee of Visitors (COV), whose membership is comprised of scientists, engineers, and educators, assesses each major NSF program every 3-5 years. COVs examine the integrity and efficiency of merit review processes and the results from the programmatic investments.

- NSF directorates and offices have advisory committees (comprised of scientists, engineers, and educators). One of the tasks of these advisory committees is to review COV reports and staff responses in order to provide guidance to the Foundation. The COV reports and NSF responses are publically available on the NSF website.

[10] Other items requiring NSB prior approval include new programs, major construction projects that meet certain specifications, as well as programs and awards involving policy issues.

- An external contractor performs an independent verification and validation of the programmatic performance measurements, which include aspects of the merit review process.

Additional information about COVs, and NSF Advisory Committees, is provided in **Appendix 11**.

D. Program Officer Award/Decline Recommendations

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

NSF program officers are experts themselves in the scientific areas that they manage. They have advanced educational training (e.g., a Ph.D. or equivalent credentials) in science or engineering and relevant experience in research, education, and/or administration. They are expected to produce and manage a balanced portfolio of awards that addresses a variety of considerations and objectives. When making funding recommendations, in addition to information contained in the external proposal reviews, NSF program officers evaluate proposals in the larger context of their overall portfolio and consider issues such as:

- Support for potentially transformative advances in a field;
- Novel approaches to significant research questions;
- Capacity building in a new and promising research area;
- Potential impact on the development of human resources and infrastructure;
- NSF core strategies, such as 1) the integration of research and education and 2) broadening participation;
- Achievement of special program objectives and initiatives;
- Other available funding sources; and
- Geographic distribution.

E. Review Information to Proposer and Appeal Process

Proposers receive notification of the award/decline decision, copies of all reviews used in the decision with reviewer-identifying information redacted, and a copy of the panel summary (if panel review was conducted). A "context statement" is also sent that explains the broader context under which any given proposal was reviewed. Program officers are also expected to provide additional communication (either in writing or by phone) to proposers in the case of a decline recommendation if the basis for the decision is not provided in the panel summary.

If, after receiving the reviews and other documentation of the decision, an unsuccessful proposer would like additional information, he or she may ask the program officer for further clarification. If, after considering the additional information, the applicant is not satisfied that the proposal was fairly handled and reasonably reviewed, he or she may

request formal reconsideration. Information about the reconsideration process is included in all decline notifications.[11] A reconsideration 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 relevant NSF assistant director or office director upholds the original action, the applicant's institution may request a second reconsideration from the Foundation's Deputy Director.

NSF declines approximately 30,000 proposals a year but receives only 30-50 annual requests for formal reconsideration. The number of requests for formal reconsideration and resulting decisions at both the Assistant Director and Director levels from FY 2004 through FY 2011 are displayed in **Appendix 12**. NSF received 33 formal reconsideration requests in FY 2011; 29 decline decisions were upheld and 4 were reversed.

F. Methods of External Review

The Foundation's merit review process relies on extensive use of knowledgeable experts from outside NSF. As stated in the *Grant Proposal Guide* (GPG), proposals usually receive at least three external reviews. Under certain circumstances the requirement for external review can be waived.[12]

NSF programs obtain external peer review by three principal methods: (1) "mail-only," (2) "panel-only," and (3) "mail + panel" 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.

"Panel-only" refers to the process of soliciting reviews from panelists who convene to discuss their reviews and provide advice to the program officer.

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

- A reviewer submits a mail review and also serves as a panelist.
- A reviewer submits a mail review, but does not serve on the panel.
- A reviewer does not submit a mail review, but participates as a panelist. Panelists discuss the proposal and mail reviews to formulate advice for the program officer.

[11] Please note that certain types of proposals are not eligible for reconsideration. See NSF *Grant Proposal Guide* (GPG) at http://www.nsf.gov/pubs/policydocs/pappguide/nsf08_1/gpg_4.jsp#IVD

[12] Exemptions that program officers may choose to exercise, for example, include proposals for EAGER and RAPID proposals and certain categories of workshop and symposia proposals. See **Appendix 10** for more information about EAGER and RAPID proposals.

The total numbers of reviews and the average numbers of reviews per proposal obtained by the three different review methods are presented in **Table 11**.

Table 11
Reviews per Proposal, FY 2011

	All Methods	Mail + Panel	Mail-Only	Panel-Only
Reviews	261,976	91,675	13,725	156,576
Proposals	49,824	14,594	3,325	31,878
Rev/Prop	5.3	6.3	4.1	4.9

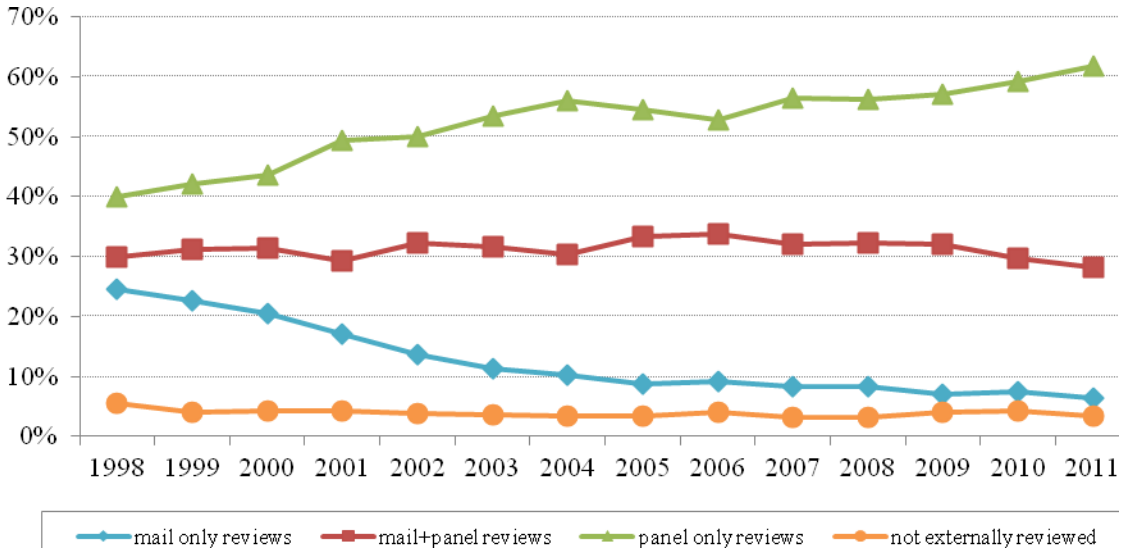
Source: NSF Enterprise Information System 10/01/11.

The mail-plus-panel method had the highest number of reviews per proposal, averaging 6.3, while the mail-only method averaged 4.1. Directorate-level data for FY 2011 are presented in **Appendix 13.**

In addition, site visits (on-site and reverse-site) by NSF staff and external members of the community 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 approval by the division director or other NSF official.

The use of various review methods has changed markedly over time, as shown in **Figure 14.** The data for **Figure 14** are provided in **Appendix 14** and **Appendix 15** provides data on review methods by directorate and office.

Figure 14
FY 1998-2011 Trend, NSF Review Method



Source: NSF Enterprise Information System 10/01/11.

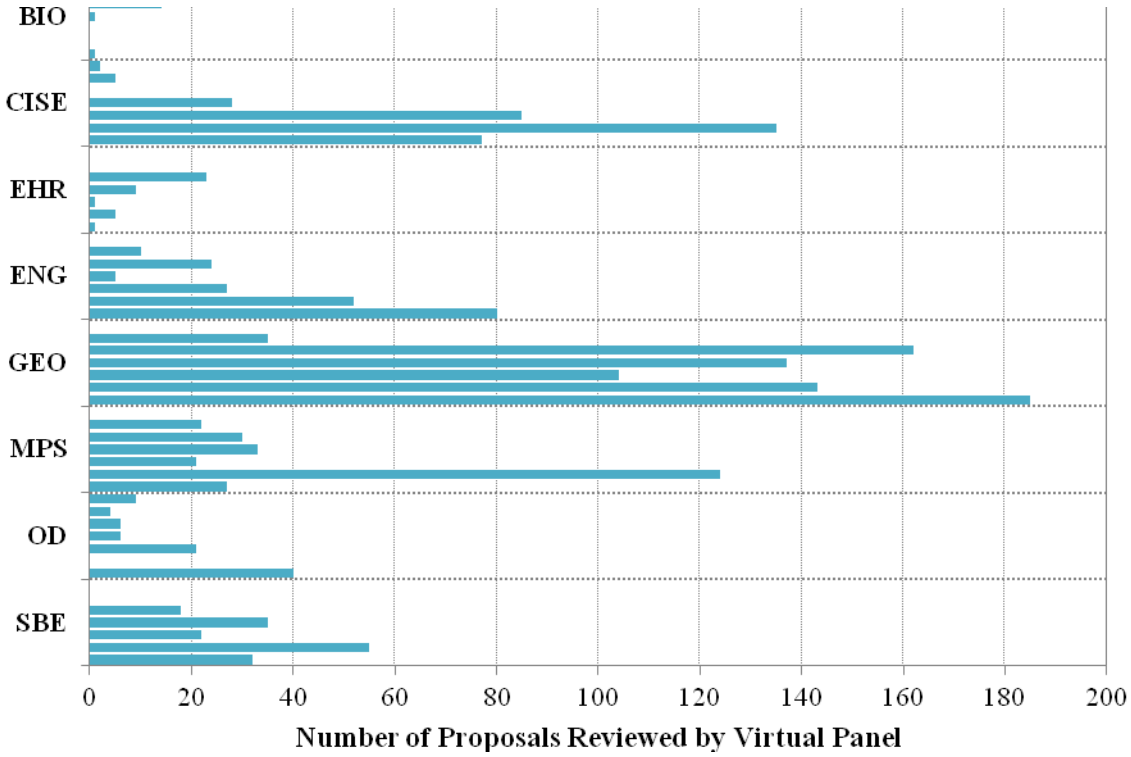
There are a number of reasons for the trend away from mail-review only. Panels allow reviewers to discuss and compare proposals. Panels tend to be used for programs that have deadlines and target dates, as opposed to unrestricted submission windows. The panel review process has the advantage that different perspectives can be discussed and integrated if appropriate. 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 2011, 81% of all proposals reviewed by panel-only were processed within six months, compared to 73% for mail + panel and 63% for mail-only.

A chief advantage of mail review is that the expertise of the reviewers can be more precisely matched to the proposal. The mail + panel review process is used frequently because it combines the in-depth expertise of mail review with the comparative analysis of panel review.

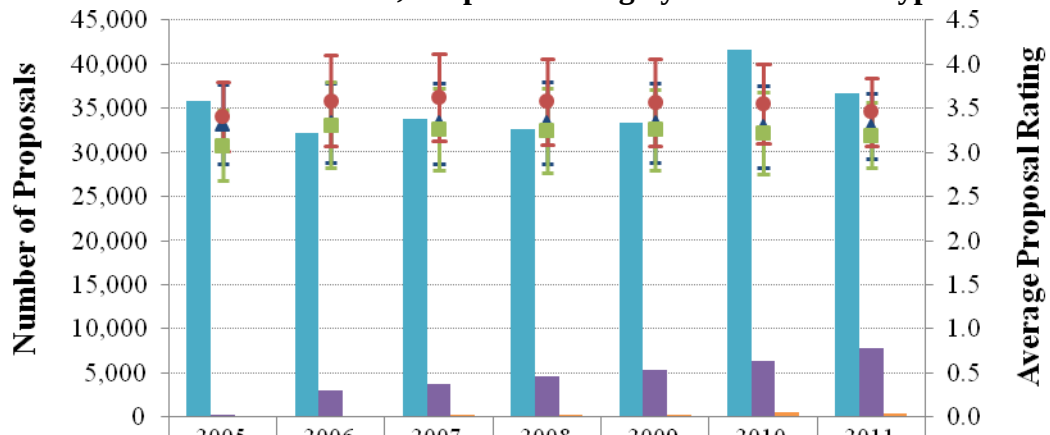
Some programs use "virtual panels." In virtual panels, panelists participate from their remote locations and interact using NSF's Interactive Panel System (IPS), accompanied by a teleconference. **Figure 15** shows the number of proposal reviewed by virtual panel since 2005. **Figure 16** shows the proposal ratings by panel review type (in person, virtual, and mixed). There has been an increase in the use of "Mixed" panels since 2005, but a leveling off in recent years. Although virtual panels have a slightly higher reviewer ratings, they do not differ significantly form other panel types.

Figure 15
FY 2005-2011 Trend, Number of Proposals Reviewed by Virtual Panel



Source: NSF Enterprise Information System 12/22/11. Each Division/Office is divided into fiscal years 2005 – 2011.

Figure 16
FY 2005-2011 Trend, Proposal Rating by Panel Review Type



	2005	2006	2007	2008	2009	2010	2011
In-Person	35,844	32,187	33,877	32,630	33,425	41,636	36,698
Mixed	225	3,029	3,752	4,578	5,387	6,325	7,825
Virtual	11	76	277	254	281	514	443
In-Person Avg. Proposal Rating	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Mixed Avg. Proposal Rating	3.1	3.3	3.3	3.3	3.3	3.2	3.2
Virtual Avg. Proposal Rating	3.4	3.6	3.6	3.6	3.6	3.6	3.5

Source: NSF Enterprise Information System 12/22/11.

Nearly 100% of panels, whether they assemble at NSF, offsite at a common location, or virtually, are now using the Interactive Panel System (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.

NSF's videoconferencing facilities are used by some programs 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 projects. The Foundation is continuing its efforts to improve web-based and electronic means of communication to contribute to the quality of the merit review and award oversight processes.

G. Data on Reviewers

The Foundation maintains a central electronic database of more than 390,000 reviewers who can potentially be drawn on to participate in mail or panel reviews. Program officers identify potential reviewers using a variety of sources including their own knowledge of the discipline, applicant suggestions, references attached to proposals, published papers, scientific citation indexes and other similar databases, and input from other reviewers.

During FY 2011, approximately 14,750 individuals served on panels. An additional 27,580 individuals conducted a mail review for one or more proposals. Approxmately

3,743 of the individuals who served on panels also served as mail reviewers during the year. About 7,795 or 18% of these reviewers had never reviewed an NSF proposal before. The reviewers were from all 50 states in addition to the District of Columbia, Puerto Rico, Virgin Islands, and other U.S. jurisdictions. More than 5,519 reviewers were from outside of the United States by address of record. Moreover, reviewers were from a range of institutions, including two-year and four-year colleges and universities, Master's level and Ph.D.-granting universities, industry, profit and non-profit institutions, K-12 systems, informal science institutions, and government. NSF also maintains data on numbers of reviewers from each state, territory, and country as well as by type of institution.

In FY 2011, out of a total of 42,343 distinct reviewers who returned reviews, 15,047 (36%) provided demographic information. Of those reporting their demographic data, 5,814 (39%) indicated they are members of a group underrepresented in science and engineering. In particular, of the reviewers who reported their demographic data, 4,811 (32%) reported female, 1,584 (11%) reported from an underrepresented race or ethnic minority, and 297 (2%) reported a disability. Of the 1,584 reviewers that reported they are from an underrepresented race or ethnic group, 945 (60%) reported Hispanic or Latino, 595 (38%) reported Black or African American, 52 (3%) reported American Indian or Alaskan Native, and 10 (1%) reported Hawaiian or Pacific Islander.

NSF has seen a modest increase in the proportion of reviewers providing demographic information. However, provision of demographic data is voluntary and the low response rate remains a challenge that the Foundation continues to address.

The NSF library continually updates its resources to help NSF staff identify reviewers. This includes the collection and sharing of potential reviewer data from associations that work with underrepresented groups in science and engineering. Frequent tutorials on finding reviewers are also available for program officers.

Reviewers are also identified through literature searches and professional activities such as workshops and conferences. Some NSF divisions actively solicit new reviewers through their web pages and outreach activities. To increase transparency, Chapter III.B of the *Grant Proposal Guide* describes how reviewers are selected by the NSF program officers.

Participation in the peer review process is voluntary. It brings with it increased familiarity with NSF programs, knowledge of the state of research and education nationally, and increased awareness of elements of a competitive proposal. Panelists are reimbursed for expenses, but mail reviewers receive no financial compensation. For proposals received in FY 2011, NSF requested 88,854 mail reviews, of which there were 31,398 positive responses. This 35% response rate in FY 2011 is a sharp decline in response rate relative to recent years. The response rate does vary by program.

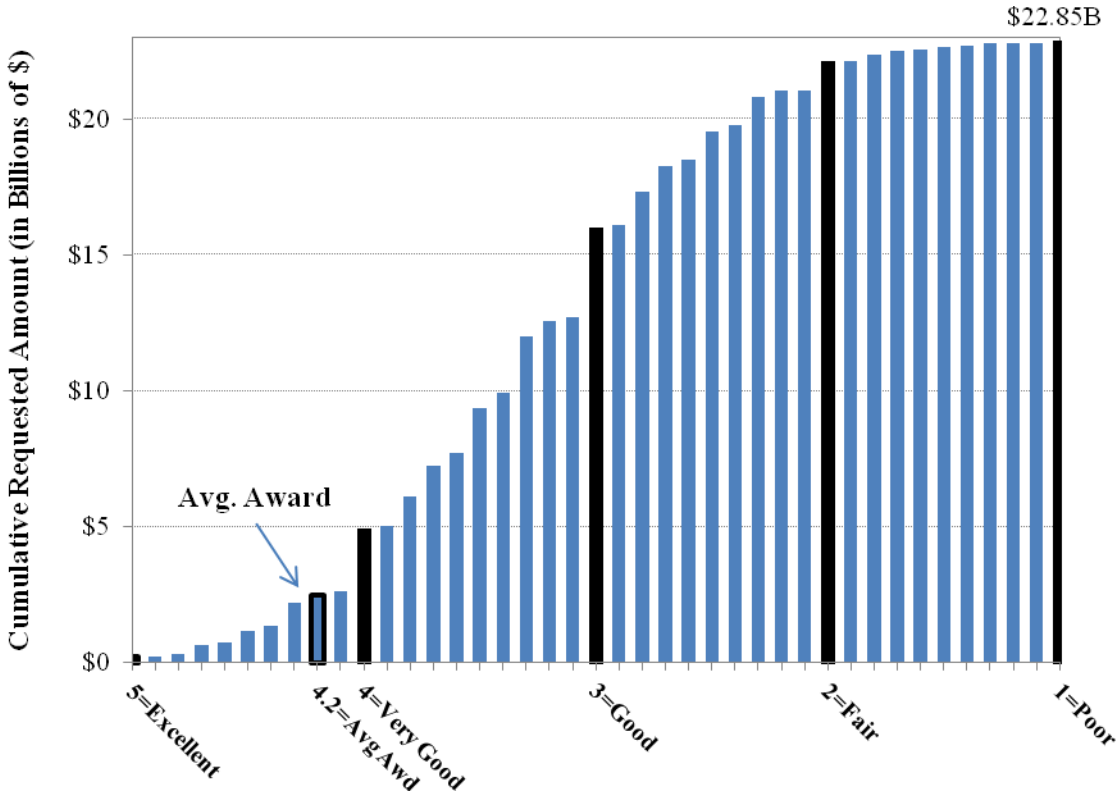
H. Reviewer Proposal Ratings and Impact of Budget Constraints

All funded proposals are determined to be highly meritorious based on a combination of individual reviews, panel deliberations and program officer evaluations. On average, NSF proposals are reviewed by 4-6 reviewers, depending on the type of review. Each of the reviewers are chosen for specific types of expertise and add different points of view to the decision making process. The reviewers provide written reviews that describe the strengths and weaknesses of proposals in the context of the NSB merit review criteria. As explained in the previous section, most proposals are reviewed by a panel of experts. The panel ranks proposals based on a thorough discussion of the proposal. These in-depth discussions can uncover weaknesses that might not have been reflected in the initial reviews or clarify perceived weakness of proposals that might not have been ranked highly by the initial reviewers.

The expertise of the NSF Program Officer making the final recommendation is also an important voice in the process. Program Officers take into consideration other factors that might not have been considered by expert reviewers. For example, proposals for innovative new ideas often use unproven methods or techniques that might be considered risky by reviewers and panelists. Risky proposals often result in transformative research that accelerates the pace of discovery. Although Program Officers consider concerns about risk expressed by panels, they also see the value of funding potentially transformative research. Proposals that do not review well at panel because the methods are unproven or risky, can be given small awards to allow enough work for a "proof of concept". Program Officers will also consider broader impacts that might not be obvious to reviewers, such as an infrastructure need that will serve a large number of people. There are also many dimensions of portfolio balance that influence the final recommendation. Program Officers strive to fund proposals from diverse institution types across all 50 states, from both young and experienced investigators.

A large number of potentially fundable proposals are declined each year. As shown in **Figure 17**, approximately $2.50 billion was requested for declined proposals that had received ratings at least as high as the average rating (4.2 out of 5.0) for all awarded proposals. In FY 2002, the ratio of awards to highly rated declines was 6.5:1; in FY 2011, that ratio was 3.5:1. These declined proposals represent a rich portfolio of unfunded opportunities, proposals that if funded may have produced substantial research and education benefits.

Figure 17
Cumulative Requested Amounts for Declined Proposals by Average Reviewer Rating for FY 2011 (dollars in billions)



Source: NSF Enterprise Information System 10/01/11.

I. Program Officer Characteristics and Workload

The number of program officers increased from 487 in FY 2010 to 492 in FY 2011, a 1.0% increase. Program officers can be permanent NSF employees or non-permanent employees. As indicated in **Table 12**, 53% are permanent program officers and 47% are in 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 supported through grants to the home institutions under the terms of the Intergovernmental Personnel Act (IPA). In FY2011 the number of permanent program officers increased by one program officer relative to FY2010. Whether they are hired as temporary or permanent, incoming NSF program officers receive training in the merit review process.

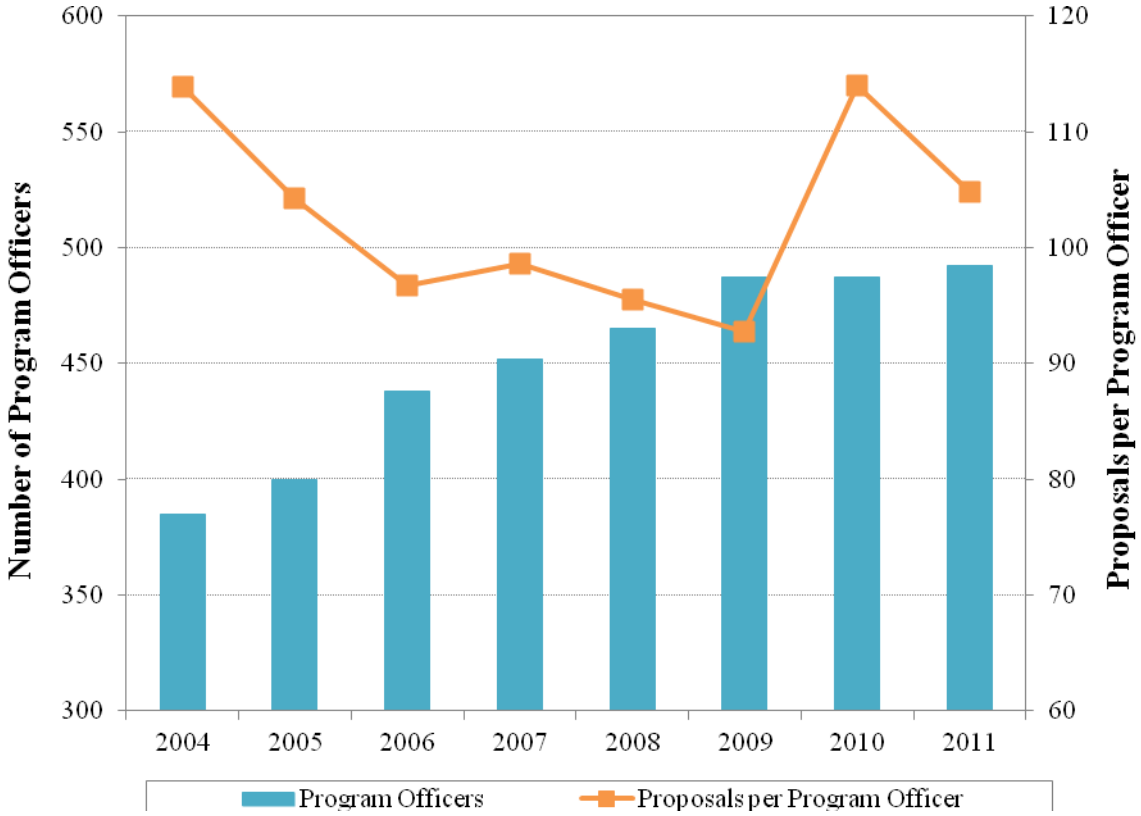
Table 12
Distribution of NSF Program Officers by Characteristics

Program Officers	Total	Percent
Total	**492**	**100%**
Gender		
Male	289	59%
Female	203	41%
Race		
Minority	106	22%
White, Non-Hispanic	386	78%
Employment		
Permanent	262	53%
Visiting Scientists, Engineers & Educators (VSEE)	38	8%
Temporary	38	8%
Intergovernmental Personnel Act (IPA)	149	30%
Intermittent	5	1%

Source: NSF Division of Human Resource Management.

In spite of the decrease in the number of Program Officers in 2011, the number of proposals processed per program officer decreased as a result of lower proposal pressure. Note that not all Program Officers process proposals, so this average is an underestimate of actual workload per Program Officer. In addition to the growing emphasis on interdisciplinary and cross-directorate programs, program officers are also tasked with an increasing number of programmatic activities, e.g., increased program accountability, outreach, mentoring new staff.

Figure 18
Proposals per Program Officer



Source: NSF Enterprise Information System 10/01/11.

NSF has revitalized its professional development opportunities for program staff, offering in-house courses in project management, leadership, and communication through the NSF Academy. New NSF program staff attend the NSF Program Manager Seminar, which is an orientation to NSF and the merit review process.

Appendices

Appendix 1

Proposals, Awards and Funding Rates by Directorate and Office

		Fiscal Year							
		2004	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
NSF	Proposals	43,851	41,722	42,352	44,577	44,428	45,181	55,542	51,562
	Awards	10,380	9,757	10,425	11,463	11,149	14,595	12,996	11,192
	Omnibus						*9,975*	*12,547*	*0*
	ARRA						*4,620*	*449*	*11,192*
	Funding Rate	24%	23%	25%	26%	25%	32%	23%	22%
BIO	Proposals	6,063	6,475	6,617	6,728	6,598	6,578	8,059	7,439
	Awards	1,432	1,355	1,202	1,303	1,291	1,823	1,556	1,310
	Omnibus						*1,261*	*1,476*	
	ARRA						*562*	*80*	
	Funding Rate	24%	21%	18%	19%	20%	28%	19%	18%
CSE	Proposals	6,276	5,238	4,843	5,744	5,567	5,664	6,487	5,996
	Awards	1,017	1,088	1,280	1,631	1,352	1,734	1,586	1,376
	Omnibus						*1,355*	*1,567*	
	ARRA						*379*	*19*	
	Funding Rate	16%	21%	26%	28%	24%	31%	24%	23%
EHR	Proposals	4,644	3,699	3,254	4,248	3,887	3,699	5,055	4,660
	Awards	925	736	824	903	1,111	1,009	930	807
	Omnibus						*919*	*908*	
	ARRA						*90*	*22*	
	Funding Rate	20%	20%	25%	21%	29%	27%	18%	17%
ENG	Proposals	8,994	8,692	9,423	9,574	9,643	10,611	13,226	12,314
	Awards	1,753	1,493	1,730	1,955	1,966	2,688	2,375	2,064
	Omnibus						1,771	*2,321*	
	ARRA						917	*54*	
	Funding Rate	19%	17%	18%	20%	20%	25%	18%	17%
GEO	Proposals	4,267	4,676	4,603	4,367	4,237	4,136	4,816	4,508
	Awards	1,419	1,315	1,418	1,341	1,328	1,810	1,686	1,409
	Omnibus						1,039	*1,642*	
	ARRA						771	*44*	
	Funding Rate	33%	28%	31%	31%	31%	44%	35%	31%
MPS	Proposals	7,184	7,083	7,466	7,315	7,837	7,883	9,411	8,796
	Awards	2,175	2,071	2,221	2,360	2,269	3,122	2,669	2,352
	Omnibus						2,004	*2,529*	
	ARRA						1,118	*140*	
	Funding Rate	30%	29%	30%	32%	29%	40%	28%	27%

		2004	2005	2006	2007	2008	2009	2010	2011
OCI	Proposals	220	116	130	304	500	337	830	706
	Awards	47	75	42	68	97	192	169	151
	Omnibus						97	*156*	
	ARRA						95	*13*	
	Funding Rate	21%	65%	32%	22%	19%	57%	20%	21%
OISE	Proposals	851	822	712	776	910	781	1,042	1,214
	Awards	386	333	319	353	357	428	395	404
	Omnibus						339	*395*	
	ARRA						89	*0*	
	Funding Rate	45%	41%	45%	45%	39%	55%	38%	33%
OPP	Proposals	689	816	775	1,200	864	855	798	679
	Awards	268	281	238	370	235	416	284	296
	Omnibus						113	*275*	
	ARRA						303	*9*	
	Funding Rate	39%	34%	31%	31%	27%	49%	36%	44%
SBE	Proposals	4,619	4,089	4,520	4,284	4,364	4,525	5,618	5,112
	Awards	939	1,004	1,144	1,143	1,126	1,337	1,257	998
	Omnibus						1,056	*1,249*	
	ARRA						281	*8*	
	Funding Rate	20%	25%	25%	27%	26%	30%	22%	20%
Other*	Proposals	44	16	9	37	21	112	200	138
	Awards	19	6	7	36	17	36	89	25
	Omnibus						21	*29*	
	ARRA						15	*60*	
	Funding Rate	43%	38%	78%	97%	81%	32%	45%	18%

Source: NSF Enterprise Information System 10/01/11.

*The majority of the proposals included in the 'Other' category are managed by the Office of Integrated Activities (OIA). In FY 2007, management of the EPSCoR program was transferred from EHR to OIA. The following are not included in the above statistics: 6,957 Continuing Grant Increments, 3405 Supplements, and 583 Contracts.

Appendix 2

Preliminary Proposals

Several NSF programs utilize preliminary proposals in an effort to limit the workload of PIs and to increase the quality of full proposals. The annual number of preliminary proposals varies considerably as a result of competitions being held in a given year. For some programs, preliminary proposals are externally reviewed; other programs provide internal review only.

Decisions regarding preliminary proposals may be non-binding or binding. Non-binding decisions regarding preliminary proposals are recommendations. A PI may choose to submit a full proposal even if it has been discouraged. Binding decisions, however, are restrictive in that non-invited PIs are not allowed to submit a full proposal.

Number of Preliminary Proposals and Subsequent Actions

Fiscal Year	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Total # Preliminary Proposals	2,310	2,120	1,874	2,842	3,203	3,856	2,883	965
Non-Binding (NB) Total*	1,412	1,302	1,279	1,540	669	1,140	1,384	357
NB Encouraged	544	512	509	662	333	519	636	128
NB Discouraged	868	790	770	878	336	621	748	229
Binding Total*	892	816	594	1,301	2,534	2,500	1,273	572
Binding Invite	221	246	136	252	572	685	372	245
Binding Non-invite	671	570	458	1,049	1,962	1,815	901	327

Source: NSF Enterprise Information System 10/01/11.

* Non-binding and binding totals do not include withdrawn preliminary proposals

Appendix 3

Proposals, Awards and Funding Rates by PI Race and Ethnicity

		Fiscal Year							
		2004	2005	2006	2007	2008	2009	2010	2011
American Indian/Alaska Native	Proposals	93	94	93	80	82	77	97	95
	Total Awards	23	24	30	28	21	27	22	28
	Omnibus						*19*	*22*	
	ARRA						*8*	*0*	
	Funding Rate	25%	26%	32%	35%	26%	35%	23%	29%
Black/ African American	Proposals	900	813	881	992	965	1,005	1,241	1,162
	Total Awards	208	193	197	234	239	291	264	234
	Omnibus						*227*	*256*	
	ARRA						*64*	*8*	
	Funding Rate	23%	24%	22%	24%	25%	29%	21%	20%
Hispanic or Latino	Proposals	1,432	1,436	1,483	1,591	1,590	1,726	2,050	1,996
	Total Awards	347	322	374	418	381	530	469	433
	Omnibus						*372*	*458*	
	ARRA						*158*	*11*	
	Funding Rate	24%	22%	25%	26%	24%	31%	23%	22%
Native Hawaiian/ Pacific Islander	Proposals	47	21	25	24	30	21	30	34
	Total Awards	4	4	7	4	7	8	8	8
	Omnibus						*5*	*7*	
	ARRA						*3*	*1*	
	Funding Rate	9%	19%	28%	17%	23%	38%	27%	24%
Asian	Proposals	7,618	7,253	7,821	8,622	8,847	9,396	11,454	10,722
	Total Awards	1,382	1,278	1,507	1,776	1,762	2,433	2,090	1,896
	Omnibus						*1,674*	*2,038*	
	ARRA						*759*	*52*	
	Funding Rate	18%	18%	19%	21%	20%	26%	18%	18%
White, Not of Hispanic Origin	Proposals	30,251	28,752	28,645	29,318	28,842	28,525	34,396	31,628
	Total Awards	7,713	7,305	7,568	8,103	7,815	10,031	8,866	7,477
	Omnibus						*6,818*	*8,527*	
	ARRA						*3,213*	*339*	
	Funding Rate	25%	25%	26%	28%	27%	35%	26%	24%

Source: NSF Enterprise Information System 10/01/11.

Appendix 4

Funding Rates of New PIs and Former PIs by Directorate

		2004	2005	2006	2007	2008	2009	2010	2011
New PIs	BIO	18%	15%	14%	14%	15%	23%	14%	12%
Former	CISE	13%	15%	18%	22%	18%	24%	18%	17%
Definition	EHR	15%	16%	21%	17%	23%	21%	14%	13%
	ENG	15%	13%	15%	17%	16%	21%	14%	13%
	GEO	26%	22%	23%	23%	24%	32%	25%	21%
	MPS	21%	20%	19%	20%	19%	29%	17%	17%
	OCI	19%	59%	24%	22%	20%	45%	15%	20%
	OISE	35%	39%	42%	43%	36%	55%	37%	30%
	OPP	29%	31%	25%	20%	19%	33%	31%	41%
	SBE	15%	18%	18%	20%	20%	21%	16%	14%
New PIs	BIO	17%	15%	14%	14%	15%	23%	14%	12%
Revised	CISE	13%	15%	18%	22%	18%	25%	19%	18%
Definition[1]	EHR	14%	15%	20%	16%	22%	20%	13%	12%
	ENG	15%	14%	15%	17%	16%	21%	13%	13%
	GEO	26%	21%	23%	23%	23%	31%	25%	22%
	MPS	21%	20%	19%	20%	19%	29%	18%	17%
	OCI	25%	53%	9%	18%	19%	41%	12%	18%
	OISE	35%	39%	42%	44%	35%	55%	37%	30%
	OPP	29%	28%	23%	18%	19%	29%	32%	42%
	SBE	15%	18%	18%	21%	20%	22%	17%	14%
Prior PIs	BIO	28%	25%	21%	24%	23%	32%	23%	21%
Former	CISE	19%	25%	32%	32%	28%	34%	27%	25%
Definition	EHR	23%	24%	29%	25%	35%	34%	23%	22%
	ENG	23%	20%	21%	23%	24%	29%	22%	20%
	GEO	36%	30%	34%	33%	34%	48%	39%	35%
	MPS	36%	35%	37%	40%	35%	47%	36%	33%
	OCI	26%	70%	35%	23%	19%	63%	23%	22%
	OISE	58%	44%	51%	52%	54%	55%	42%	43%
	OPP	42%	36%	33%	35%	30%	54%	37%	45%
	SBE	26%	32%	32%	35%	32%	39%	30%	26%
Prior PIs	BIO	28%	25%	21%	23%	23%	31%	23%	21%
Revised	CISE	18%	24%	31%	31%	27%	32%	26%	25%
Definition[1]	EHR	23%	24%	28%	24%	34%	33%	22%	21%
	ENG	23%	19%	21%	23%	23%	28%	21%	19%
	GEO	35%	30%	33%	33%	34%	47%	38%	34%
	MPS	35%	34%	36%	39%	34%	46%	35%	32%
	OCI	23%	71%	37%	24%	20%	63%	23%	23%
	OISE	57%	43%	50%	51%	55%	55%	40%	42%
	OPP	41%	37%	33%	35%	30%	54%	37%	44%
	SBE	25%	32%	32%	33%	32%	38%	29%	25%

Source: NSF Enterprise Information System 10/01/11.

Appendix 5

Median and Average Award Amounts for Research Grants By Directorate or Office (in Thousands)*

		Fiscal Year								
		2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
NSF	Median	$100	$102	$104	$102	$110	$110	$120	$124	$120
	Average	$136	$140	$144	$135	$146	$143	$162	$167	$159
BIO	Median	$126	$133	$140	$140	$142	$150	$161	$171	$178
	Average	$177	$171	$184	$191	$182	$180	$200	$222	$226
CSE	Median	$113	$113	$112	$117	$115	$117	$150	$150	$150
	Average	$159	$167	$151	$146	$139	$165	$188	$200	$183
ENG	Median	$100	$97	$97	$90	$100	$100	$100	$100	$100
	Average	$119	$120	$117	$110	$116	$112	$120	$122	$119
GEO	Median	$103	$115	$116	$110	$120	$118	$124	$123	$127
	Average	$146	$150	$148	$149	$154	$150	$175	$159	$159
MPS	Median	$100	$100	$100	$100	$106	$105	$113	$115	$111
	Average	$129	$130	$135	$120	$130	$133	$138	$150	$141
OCI	Median	$134	$365	$161	$253	$450	$179	$200	$209	$128
	Average	$160	$402	$315	$287	$512	$217	$568	$318	$174
OISE	Median	$10	$10	$15	$33	$47	$30	$25	$50	$49
	Average	$21	$15	$91	$59	$157	$29	$33	$198	$60
OPP	Median	$126	$141	$122	$132	$167	$148	$175	$150	$147
	Average	$144	$204	$180	$150	$238	$187	$218	$187	$184
SBE	Median	$77	$78	$84	$85	$94	$100	$101	$100	$98
	Average	$89	$90	$110	$103	$115	$116	$114	$116	$113

Source: NSF Enterprise Information System 10/1/11.

*EHR is not included in this appendix since the number of awards included in the "research grant" category is small relative to the number of education awards managed by that directorate.

Appendix 6

Average Number of Months of Salary Support for Single- and Multi-PI Research Grants, by Directorate or Office

Directorate or Office	Type of Award	2003	2004	2005	2006	2007	2008	2009	2010	2011
NSF	Single PI Grants	1.5	1.5	1.4	1.5	1.4	1.3	1.2	1.1	1.0
	Multi-PI Grants	1.5	1.4	1.4	1.3	1.3	1.1	1.1	1.0	0.9
	NSF Average	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.1	1.0
BIO	Single PI Grants	1.8	1.8	1.9	1.6	2.0	1.8	1.3	1.2	1.3
	Multi-PI Grants	2.1	1.7	2.3	2.0	2.0	1.7	1.6	1.2	1.1
	BIO Average	1.9	1.7	2.0	1.7	2.0	1.8	1.4	1.2	1.2
CSE	Single PI Grants	1.2	1.2	1.1	1.3	0.9	0.8	0.9	0.9	0.8
	Multi-PI Grants	1.0	1.0	1.0	0.8	0.8	0.7	0.8	0.9	0.9
	CSE Average	1.1	1.1	1.1	1.1	0.9	0.8	0.9	0.9	0.8
EHR	Single PI Grants	1.6	3.0	2.0	1.5	1.6	2.0	1.6	1.9	1.7
	Multi-PI Grants	2.2	1.9	2.0	1.8	1.5	1.2	1.6	1.8	2.2
	EHR Average	1.9	2.2	2.0	1.7	1.5	1.5	1.6	1.8	2.1
ENG	Single PI Grants	1.1	1.1	1.0	1.2	1.2	0.9	0.9	0.4	0.4
	Multi-PI Grants	1.2	0.9	0.9	0.7	0.8	0.7	0.7	0.4	0.3
	ENG Average	1.2	1.0	1.0	1.0	1.0	0.8	0.8	0.4	0.4
GEO	Single PI Grants	1.6	1.5	1.4	1.6	1.5	1.3	1.3	1.2	1.0
	Multi-PI Grants	1.9	1.7	1.8	1.8	1.7	1.6	1.4	1.4	1.1
	GEO Average	1.7	1.6	1.5	1.7	1.5	1.4	1.3	1.2	1.1
MPS	Single PI Grants	1.4	1.4	1.4	1.4	1.3	1.3	1.5	1.3	1.3
	Multi-PI Grants	1.6	2.0	1.4	1.5	1.5	1.4	1.5	1.2	1.2
	MPS Average	1.5	1.6	1.4	1.4	1.3	1.4	1.5	1.3	1.3
OCI	Single PI Grants	2.0	2.3	1.3	0.8	2.4	1.3	0.8	0.7	1.2
	Multi-PI Grants	1.9	2.4	1.3	0.8	2.2	1.2	1.6	0.7	0.7
	OCI Average	1.9	2.4	1.3	0.8	2.3	1.2	1.2	0.7	0.9
OISE	Single PI Grants	3.3	1.1	N/A	2.9	0.5	N/A	1.0	0.3	2.2
	Multi-PI Grants	0.9	4.0	1.1	0.6	0.9	1.0	0.9	1.8	0.8
	OISE Average	2.2	1.8	1.1	2.2	0.9	1.0	1.0	1.4	1.1
OPP	Single PI Grants	1.6	2.4	1.7	1.6	1.7	2.0	1.3	1.6	1.1
	Multi-PI Grants	1.6	2.1	1.8	2.2	1.5	1.5	1.1	1.3	1.1
	OPP Average	1.6	2.3	1.7	1.8	1.6	1.9	1.2	1.5	1.1
SBE	Single PI Grants	2.2	1.7	1.7	1.9	1.6	2.0	1.5	1.7	1.2
	Multi-PI Grants	1.7	1.1	1.3	1.4	1.4	1.1	1.0	1.3	0.9
	SBE Average	2.0	1.5	1.6	1.7	1.5	1.7	1.4	1.6	1.1

Source: NSF Enterprise Information System 10/01/11.

Appendix 7

Number of People Involved in NSF Activities[13]

In FY 2011, an estimated 275,000 senior researchers, post-doctoral associates, teachers and students across all levels were directly involved in NSF research and education programs and activities.

	FY 2011 Actual Estimate
Senior Researchers	53,073
Other Professionals	14,441
Postdoctorates	6,855
Graduate Students	40,163
Undergraduate Students	27,039
K-12 Teachers	48,086
K-12 Students Teachers	86,225
Total Number of People	**275,882**

Source: NSF FY 2013 Budget Request.

In addition, NSF programs indirectly impact many millions of people. These programs reach K-12 students, K-12 teachers, the general public, and researchers. Outreach activities include workshops, activities at museums, television, educational videos, journal articles, and dissemination of improved curriculum and teaching methods.

[13] These data are based on the budget details of awards active in the year indicated, with modifications made as appropriate based on additional information provided by the managing directorates or offices.

Appendix 8

Average Number of Research Proposals per PI before Receiving One Award by Directorate/Office

	2002-2004	2003-2005	2004-2006	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011
NSF	**2.1**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.3**	**2.3**
BIO	1.8	2.0	2.0	2.2	2.2	2.1	2.1	2.1
CISE	2.5	2.5	2.6	2.4	2.4	2.5	2.6	2.5
EHR	1.2	1.3	1.3	1.4	1.3	1.4	1.4	1.4
ENG	2.2	2.3	2.4	2.6	2.5	2.5	2.6	2.7
GEO	2.1	2.1	2.2	2.2	2.2	2.1	2.0	1.9
MPS	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.6
OCI	1.2	1.2	1.2	1.2	1.2	1.4	1.5	1.5
OISE	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2
OPP	1.6	1.6	1.8	1.8	1.9	1.9	1.7	1.6
SBE	1.6	1.7	1.7	1.6	1.6	1.6	1.6	1.6

Source: NSF Enterprise Information System 10/01/11.

Appendix 9

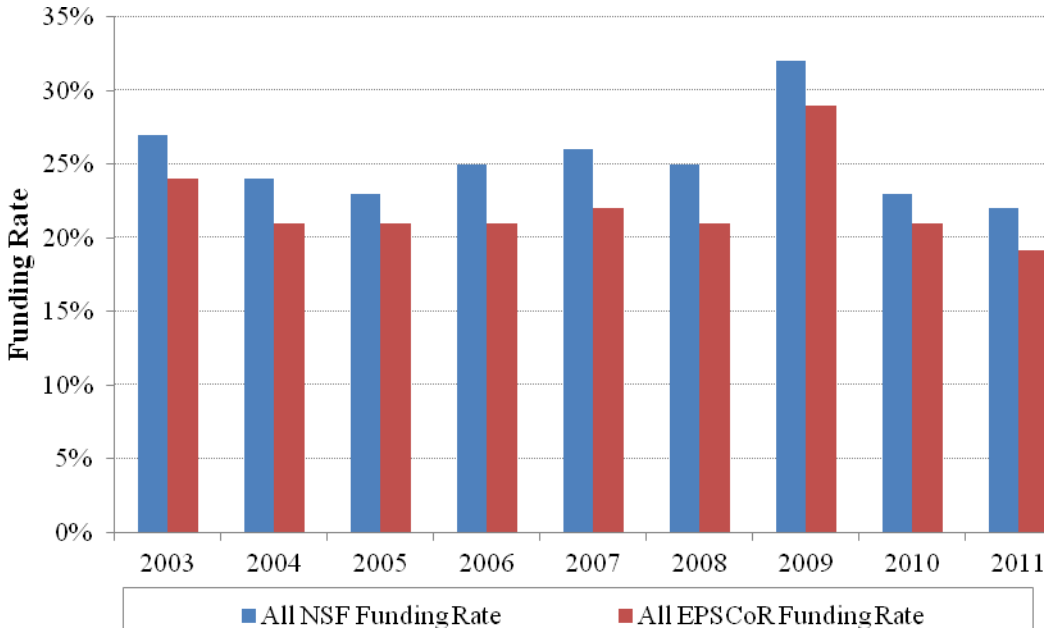
EPSCoR: Jurisdictions, Proposal, Award, and Funding Data

Twenty-seven states, the Commonwealth of Puerto Rico, and the U.S. Virgin Islands were eligible to compete in the NSF EPSCoR program in FY 2011. The states are: Alabama, Alaska, Arkansas, Delaware, Hawaii, Idaho, Iowa, Kansas, Kentucky, Louisiana, Maine, Mississippi, Montana, Nebraska, Nevada, New Hampshire, New Mexico, North Dakota, Oklahoma, Rhode Island, South Carolina, South Dakota, Tennessee, Utah, Vermont, West Virginia, and Wyoming.

Figure 9.1 shows the change over time for the funding rate of EPSCoR jurisdictions relative to the overall funding rate for all of the United States.

Figure 9.1

Overall Funding Rates for EPSCoR Jurisdictions and Overall NSF Funding Rates

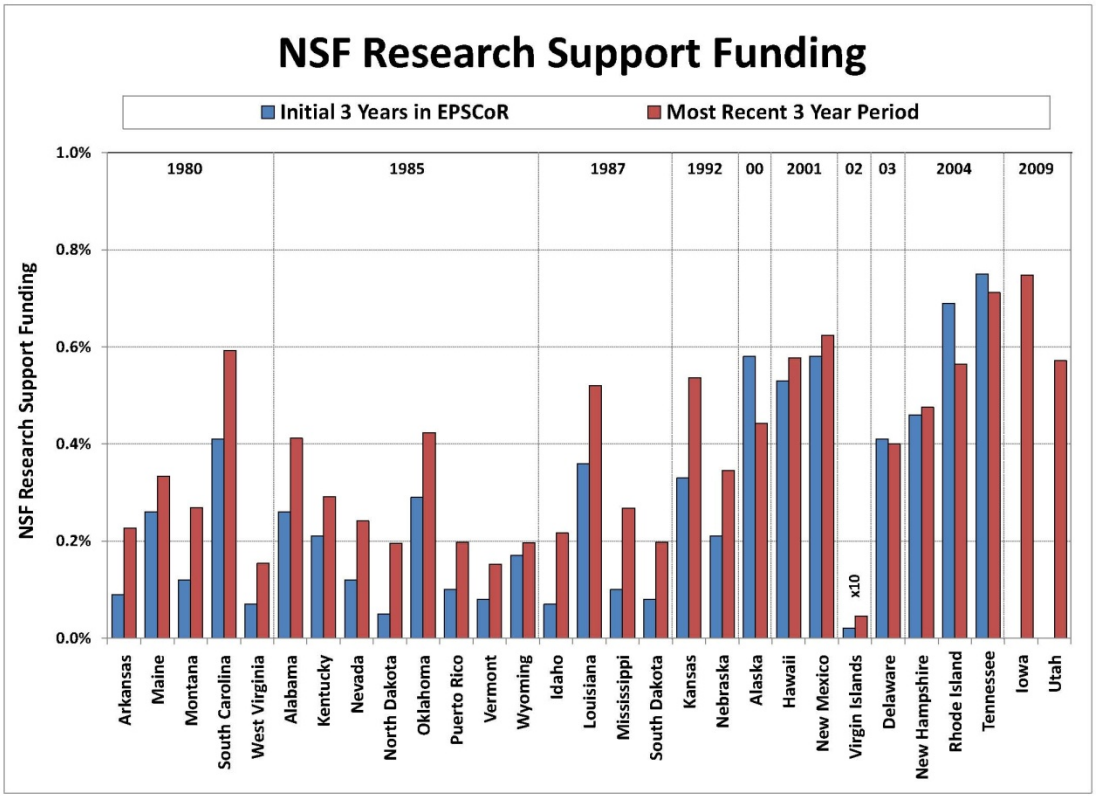


Source: NSF Budget Internet Information System (BIIS).

Figure 9.2 shows the funding data for each EPSCoR jurisdiction in its initial three years in the EPSCoR program, and the most recent three year period, FY 2009 to FY 2011.

Figure 9.2

Funding to EPSCoR Jurisdictions as Percentage of the NSF Budget: Initial 3 Years in EPSCoR and Most Recent (FY 2009-11) 3-Year Period



Source: NSF Budget Internet Information System (BIIS) and NSF Report Database.

Table 9.3 shows the number of proposals, awards, and funding rate for EPSCoR jurisdictions. Below the name of the EPSCoR jurisdiction is the year that that jurisdiction joined EPSCoR.

Table 9.3

Funding Rates by EPSCoR Jurisdiction
(Date under the state name is year state joined EPSCoR)

		2004	2005	2006	2007	2008	2009	2010	2011
All NSF	Awards	10,367	9,772	10,450	11,484	11,162	14,641	12,996	11,192
	Proposals	43,816	41,723	42,374	44,593	44,438	45,181	55,542	51,562
	Funding Rate	24%	23%	25%	26%	25%	32%	23%	22%
All EPSCoR Jurisdictions	Awards	1,454	1,433	1,489	1,653	1,564	2,474	2,171	1,846
	Proposals	6,815	6,802	7,037	7,392	7,349	8,476	10,513	7,794
	Funding Rate	21%	21%	21%	22%	21%	29%	21%	19%
Alabama	Awards	99	78	84	86	85	148	119	98
-1985	Proposals	488	483	530	508	489	606	708	614
	Funding Rate	20%	16%	16%	17%	17%	24%	17%	16%
Alaska	Awards	63	52	63	75	52	77	65	71
-2000	Proposals	211	203	209	246	204	186	235	213
	Funding Rate	30%	26%	30%	30%	25%	41%	28%	33%
Arkansas	Awards	45	29	47	58	36	41	60	40
-1980	Proposals	236	191	209	244	197	194	276	246
	Funding Rate	19%	15%	22%	24%	18%	21%	22%	16%
Delaware	Awards	50	54	50	67	68	77	80	70
-2003	Proposals	266	254	247	283	283	244	295	292
	Funding Rate	19%	21%	20%	24%	24%	32%	27%	24%
Hawaii	Awards	66	89	77	74	73	109	99	80
-2001	Proposals	252	265	240	276	276	277	379	285
	Funding Rate	26%	34%	32%	27%	26%	39%	26%	28%
Idaho	Awards	24	31	29	34	44	44	35	37
-1987	Proposals	148	140	148	161	201	168	199	202
	Funding Rate	16%	22%	20%	21%	22%	26%	18%	18%
Iowa	Awards	118	106	109	99	132	142	136	114
-2009	Proposals	545	501	524	491	524	564	661	613
	Funding Rate	22%	21%	21%	20%	25%	25%	21%	19%
Kansas	Awards	70	88	76	78	82	88	92	88
-1992	Proposals	388	367	393	404	387	399	464	423
	Funding Rate	18%	24%	19%	19%	21%	22%	20%	21%
Kentucky	Awards	72	62	52	60	62	78	71	64
-1985	Proposals	337	307	293	330	300	356	429	437
	Funding Rate	21%	20%	18%	18%	21%	22%	17%	15%
Louisiana	Awards	107	100	117	96	98	132	149	102
-1987	Proposals	517	514	548	495	471	483	715	621
	Funding Rate	21%	19%	21%	19%	21%	27%	21%	16%

		2004	2005	2006	2007	2008	2009	2010	2011
Maine	Awards	41	50	36	58	65	60	58	42
-1980	Proposals	197	192	181	200	199	172	190	209
	Funding Rate	21%	26%	20%	29%	33%	35%	31%	20%
Mississippi	Awards	43	32	48	40	34	76	72	42
-1987	Proposals	238	226	293	251	271	301	358	287
	Funding Rate	18%	14%	16%	16%	13%	25%	20%	15%
Montana	Awards	54	43	52	61	57	78	51	35
-1980	Proposals	194	193	242	238	232	207	251	222
	Funding Rate	28%	22%	21%	26%	25%	38%	20%	16%
Nebraska	Awards	52	41	59	51	54	64	56	60
-1992	Proposals	242	226	238	250	255	248	324	309
	Funding Rate	21%	18%	25%	20%	21%	26%	17%	19%
Nevada	Awards	31	40	42	50	43	61	39	37
-1985	Proposals	159	203	200	231	261	232	295	263
	Funding Rate	19%	20%	21%	22%	16%	26%	13%	14%
New Hampshire	Awards	53	64	53	60	58	108	76	61
-2004	Proposals	232	280	243	240	230	251	311	282
	Funding Rate	23%	23%	22%	25%	25%	43%	24%	22%
New Mexico	Awards	90	80	91	104	102	115	105	91
-2001	Proposals	378	352	348	401	444	389	506	416
	Funding Rate	24%	23%	26%	26%	23%	30%	21%	22%
North Dakota	Awards	20	19	22	15	19	31	35	23
-1985	Proposals	140	154	170	139	158	141	171	161
	Funding Rate	14%	12%	13%	11%	12%	22%	20%	14%
Oklahoma	Awards	65	55	74	66	67	112	74	79
-1985	Proposals	338	327	342	338	378	420	457	460
	Funding Rate	19%	17%	22%	20%	18%	27%	16%	17%
Puerto Rico	Awards	20	16	19	32	24	37	34	19
-1985	Proposals	106	119	140	153	148	183	203	163
	Funding Rate	19%	13%	14%	21%	16%	20%	17%	12%
Rhode Island	Awards	128	117	140	127	129	176	148	131
-2004	Proposals	340	334	353	390	357	350	442	400
	Funding Rate	38%	35%	40%	33%	36%	50%	33%	33%
South Carolina	Awards	80	90	86	122	87	152	136	108
-1980	Proposals	452	453	464	523	470	527	671	650
	Funding Rate	18%	20%	19%	23%	19%	29%	20%	17%

		2004	2005	2006	2007	2008	2009	2010	2011
South Dakota	Awards	12	21	14	21	20	31	33	24
-1987	Proposals	93	101	97	97	116	132	184	162
	Funding Rate	13%	21%	14%	22%	17%	23%	18%	15%
Tennessee	Awards	102	113	99	145	124	183	133	138
-2004	Proposals	540	585	564	642	633	608	759	709
	Funding Rate	19%	19%	18%	23%	20%	30%	18%	19%
U.S. Virgin Islands	Awards	2	2	1	0	2	0	1	3
-2002	Proposals	6	5	6	4	5	1	3	11
	Funding Rate	33%	40%	17%	0%	40%	0%	33%	27%
Utah	Awards	105	106	94	95	111	135	129	115
-2009	Proposals	444	474	466	449	492	464	595	596
	Funding Rate	24%	22%	20%	21%	23%	29%	22%	19%
Vermont	Awards	21	22	16	26	27	42	23	22
-1985	Proposals	111	129	119	129	144	120	126	121
	Funding Rate	19%	17%	13%	20%	19%	35%	18%	18%
West Virginia	Awards	17	16	19	21	25	33	27	21
-1980	Proposals	105	100	121	128	119	130	160	151
	Funding Rate	16%	16%	16%	16%	21%	25%	17%	14%
Wyoming	Awards	27	29	23	26	27	44	35	31
-1985	Proposals	101	99	99	91	121	123	146	122
	Funding Rate	27%	29%	23%	29%	22%	36%	24%	25%

Source: NSF Budget Internet Information System (BIIS).

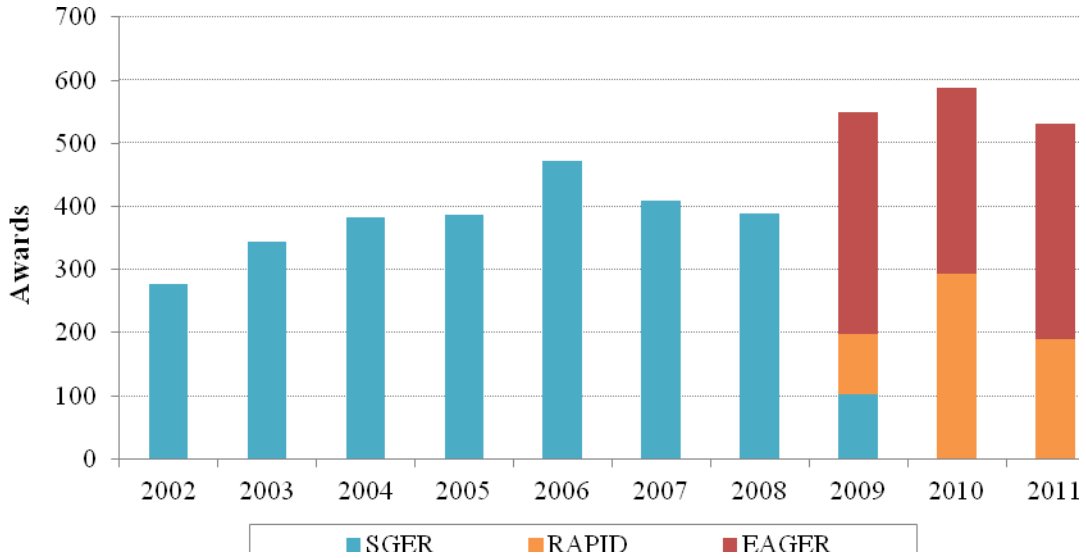
Appendix 10

Small Grants for Exploratory Research (SGER), Early-concept Grants for Exploratory Research (EAGER) and Grants for Rapid Response Research (RAPID)

Table 10.1 and Figure 10.1 provide funding trends for EAGERs and RAPIDs, as well as that for SGERs.

Figure 10.1

Small Grants for Exploratory Research (SGER), Early-concept Grants for Exploratory Research (EAGER) and Grants for Rapid Response Research (RAPID) Awards by Funding Mechanism



Source: NSF Enterprise Information System 12/21/11.

Table 10.1

Small Grants for Exploratory Research (SGER), Early-concept Grants for Exploratory Research (EAGER) and Grants for Rapid Response Research (RAPID) Funding Trends by Directorate or Office

		Fiscal Year								
		2007	2008	2009			2010		2011	
				SGER	*RAPID*	*EAGER*	*RAPID*	*EAGER*	*RAPID*	*EAGER*
NSF	Proposals	469	438	119	99	363	341	440	237	360
	Awards	410	389	102	95	353	294	395	190	341
	Total $ (In Millions)	$34.8	$34.2	$9.3	$8.7	$52.7	$27.4	$53.2	$12.3	$49.3
	% of Obligations	0.6%	0.6%	0.1%	0.1%	0.6%	0.4%	0.7%	0.2%	0.7%
	Average $ (In Thousands)	$85	$88	$91	$91	$149	$93	$135	$65	$145

		2007	2008	2009			2010		2011	
				SGER	*RAPID*	*EAGER*	*RAPID*	*EAGER*	*RAPID*	*EAGER*
BIO	Proposals	29	29	17	13	53	52	45	10	34
	Awards	26	23	13	10	51	41	41	8	27
	Total $ (In Millions)	$2.7	$2.3	$1.4	$0.9	$10.2	$5.1	$8.3	$0.9	$5.8
	% of Obligations	0.4%	0.4%	0.1%	0.1%	1.1%	0.7%	1.1%	0.1%	0.8%
	Average $ (In Thousands)	$104	$98	$108	$87	$200	$124	$202	$107	$214
CISE	Proposals	136	104	12	1	92	8	178	25	130
	Awards	136	102	12	1	92	8	157	22	129
	Total $ (In Millions)	$14.6	$10.4	$1.5	$0.0	$14.4	$1.1	$20.4	$1.1	$19.2
	% of Obligations	2.7%	1.9%	0.2%	0.0%	1.8%	0.2%	3.2%	0.2%	3.0%
	Average $ (In Thousands)	$107	$102	$124	$26	$157	$137	$130	$49	$149
EHR	Proposals	7	9	1	9	7	13	2	9	4
	Awards	7	9	1	9	7	12	0	8	4
	Total $ (In Millions)	$0.9	$1.7	$0.2	$1.3	$1.8	$1.9	$0.2	$1.5	$1.2
	% of Obligations	0.1%	0.2%	0.0%	0.1%	0.2%	0.2%	0.0%	0.2%	0.1%
	Average $ (In Thousands)	$129	$188	$200	$140	$258	$162	N/A	$184	$303
ENG	Proposals	134	125	28	3	104	95	96	62	92
	Awards	89	104	21	3	98	66	92	35	88
	Total $ (In Millions)	$5.8	$7.6	$1.4	$0.2	$10.7	$5.0	$9.1	$1.9	$8.9
	% of Obligations	0.9%	1.1%	0.1%	0.0%	1.1%	0.6%	1.1%	0.2%	1.1%
	Average $ (In Thousands)	$65	$73	$67	$65	$109	$76	$99	$53	$101
GEO	Proposals	85	67	21	32	29	113	44	92	37
	Awards	81	64	20	32	29	112	43	86	34
	Total $ (In Millions)	$4.8	$3.5	$1.1	$2.1	$2.9	$10.0	$4.1	$4.8	$3.5
	% of Obligations	0.6%	0.5%	0.1%	0.1%	0.2%	1.0%	0.4%	0.5%	0.4%
	Average $ (In Thousands)	$59	$55	$55	$66	$99	$89	$95	$56	$102
MPS	Proposals	39	58	15	2	32	19	41	2	14
	Awards	34	45	11	2	30	16	34	2	12
	Total $ (In Millions)	$3.5	$5.4	$2.1	$0.2	$3.9	$1.6	$6.7	$0.2	$2.2
	% of Obligations	0.3%	0.4%	0.1%	0.0%	0.2%	0.1%	0.4%	0.0%	0.2%
	Average $ (In Thousands)	$103	$121	$191	$90	$131	$98	$197	$125	$183

		2007	2008	2009			2010		2011	
				SGER	*RAPID*	*EAGER*	*RAPID*	*EAGER*	*RAPID*	*EAGER*
OCI	Proposals	1	7	0	0	23	5	19	3	18
	Awards	1	7	0	0	23	4	15	2	16
	Total $ (In Millions)	$0.2	$1.0	$0.0	$0.0	$6.3	$0.3	$2.6	$0.4	$3.5
	% of Obligations	0.1 %	0.5%	0.0%	0.0%	2.2%	0.1%	1.2%	0.1%	1.1%
	Average $ (In Thousands)	$200	$140	N/A	N/A	$275	N/A	$176	$195	$217
OISE	Proposals*	0	0	0	0	3	0	5	1	2
	Awards	0	0	0	0	3	0	4	1	2
	Total $ (In Millions)	$0.1	$0.1	$0.0	$0.0	$0.9	$0.5	$0.6	$0.3	$0.8
	% of Obligations	0.2 %	0.2%	0.0%	0.1%	1.4%	1.1%	1.2%	0.1%	0.2%
	Average $ (In Thousands)	N/A	N/A	N/A	N/A	$294	N/A	$143	$261	$376
OPP	Proposals	23	17	9	0	10	6	5	7	23
	Awards	23	15	8	0	10	6	5	7	23
	Total $ (In Millions)	$1.2	$1.0	$0.6	$0.2	$0.7	$0.3	$0.7	$0.4	$3.4
	% of Obligations	0.3 %	0.2%	0.1%	0.0%	0.1%	0.1%	0.1%	0.1%	0.8%
	Average $ (In Thousands)	$52	$67	$76	N/A	$71	N/A	$134	$54	$147
SBE	Proposals	15	21	16	39	10	30	5	26	6
	Awards	13	20	16	38	10	29	4	19	6
	Total $ (In Millions)	$1.0	$1.2	$1.0	$3.8	$0.9	$1.6	$0.6	$0.9	$1.0
	% of Obligations	0.4 %	0.5%	0.3%	1.1%	0.3%	0.6%	0.2%	0.4%	0.4%
	Average $ (In Thousands)	$77	$59	$64	$101	$87	$56	$139	$50	$172

Source: NSF Enterprise Information System 12/21/11.

*Although a directorate or office may have no proposals reported in this table, the unit may have obligations from split-funding awards that are managed by other directorates or offices. Only the SGER program was active in FYs 2002-2008.

Appendix 11

Oversight and Advisory Mechanisms

- **Committees of Visitors.**
  To ensure the highest quality in processing and recommending proposals for awards, NSF convenes external groups of experts, called Committees of Visitors (COVs), to review each major program approximately every three-to-five years. This includes disciplinary programs in the various directorates and offices, and the cross-disciplinary programs managed across directorates. The COVs (comprised of scientists, engineers and educators from academia, industry, and government) convene at NSF for a two-to-three day assessment. These experts evaluate the integrity and efficiency of the processes used for proposal review and program decision-making. In addition, the COVs provide a retrospective assessment of the quality of results of NSF's programmatic investments. The COV reports, written as answers and commentary to specific questions, are submitted for review through Advisory Committees to the directorates and the NSF Director. Questions include aspects of the program portfolio, such as the balance of high-risk, multidisciplinary, and innovative projects. The recommendations of COVs are reviewed by management and taken into consideration by NSF when evaluating existing programs and future directions for the Foundation.[14]

- **Advisory Committee (AC) Reporting on Directorate/Office Performance.**
  Advisory committees regularly provide community perspectives to the research and education directorates, Office of Cyberinfrastructure, Office of International Science and Engineering, and Office of Polar Programs. They are typically composed of 15-25 experts who have experience relevant to the programs under review and are broadly drawn from academia, industry, and government. Advisory Committees, as part of their mission, regularly review COV reports and staff responses.

[14] The COV reports and directorate responses are available electronically as a link from the NSF GPRA web page, http://www.nsf.gov/about/performance/.

Appendix 12

Requests for Formal Reconsideration of Declined Proposals

		Fiscal Year							
		2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
First Level Reviews (Assistant Directors):									
BIO	Request	4	3	2	4	2	5	3	1
	- Upheld	4	3	2	4	2	5	3	1
	- Reversed	0	0	0	0	0	0	0	0
CISE	Request	1	2	3	1	1	0	0	2
	- Upheld	0	2	3	1	1	0	0	2
	- Reversed	1	0	0	0	0	0	0	0
EHR	Request	3	2	7	4	6	7	2	2
	- Upheld	3	2	7	4	6	7	2	2
	- Reversed	0	0	0	0	0	0	0	0
ENG	Request	2	3	3	6	3	3	3	11
	- Upheld	2	3	3	6	3	3	3	9
	- Reversed	0	0	0	0	0	0	0	2
GEO	Request	4	4	0	0	2	0	2	3
	- Upheld	4	4	0	0	2	0	1	3
	- Reversed	0	0	0	0	0	0	1	0
MPS	Request	4	24	15	16	16	14	9	14*
	- Upheld	4	24	15	15	15	14	7	12
	- Reversed	0	0	0	1	1	0	2	0
SBE	Request	3	3	3	4	0	2	1	1
	- Upheld	2	3	3	4	0	2	1	1
	- Reversed	1	0	0	0	0	0	0	0
Other*	Request	0	0	0	0	3	0	1	0
	- Upheld	0	0	0	0	3	0	0	0
	- Reversed	0	0	0	0	0	0	1	0
Second Level Reviews (Deputy Director):									
O/DD	Request	5	7	2	0	1	3	2	3
	- Upheld	4	7	2	0	1	3	2	3
	- Reversed	1	0	0	0	0	0	0	0
Total Reviews First & Second Level									
NSF	Request	26	48	35	35	34	34	23	37*
	- Upheld	24	48	35	34	33	34	19	33
	- Reversed	2	0	0	1	1	0	4	2

Source: Office of the Director.

*Other category includes OCI, OIA, OPP, and OISE. The number of decisions (upheld or reversed) may not equal the number of requests in each year due to the carryover of the pending reconsideration request.

Appendix 13

Average Number of Reviews per Proposal, By Method and Directorate or Office, FY 2011

		Methods of Review						
		All Methods	**Mail + Panel**	**Mail-Only**	**Panel-Only**	**Not Reviewed***	**Returned without Review**	**Withdrawn Proposals**
NSF	Reviews	261,976	91,675	13,725	156,576			
	Proposals	49,824	14,594	3,352	31,878	1,738	35	322
	Rev/Prop	5.3	6.3	4.1	4.9			
BIO	Reviews	40,827	27,452	410	12,965			
	Proposals	7,268	4,424	101	2,743	171	5	26
	Rev/Prop	5.6	6.2	4.1	4.7			
CISE	Reviews	29,273	3,111	305	25,857			
	Proposals	5,660	493	80	5,087	336	3	48
	Rev/Prop	5.2	6.3	3.8	5.1			
EHR	Reviews	28,279	1,430	316	26,533			
	Proposals	4,619	225	78	4,316	41	4	11
	Rev/Prop	6.1	6.4	4.1	6.1			
ENG	Reviews	56,906	3,594	337	52,975			
	Proposals	11,945	623	88	11,234	369	6	29
	Rev/Prop	4.8	5.8	3.8	4.7			
GEO	Reviews	25,356	20,897	3,065	1,394			
	Proposals	4,292	3,280	734	278	216	4	55
	Rev/Prop	5.9	6.4	4.2	5.0			
MPS	Reviews	39,456	9,502	6,821	23,133			
	Proposals	8,469	1,616	1,608	5,245	327	5	89
	Rev/Prop	4.7	5.9	4.2	4.4			
OCI	Reviews	3,403	207	250	2,946			
	Proposals	659	37	78	544	47	1	12
	Rev/Prop	5.2	5.6	3.2	5.4			
OISE	Reviews	4,635	1,247	1,044	2,344			
	Proposals	1,111	231	298	582	103	1	23
	Rev/Prop	4.2	5.4	3.5	4.0			
OPP	Reviews	3,512	2,905	391	216			
	Proposals	616	475	87	54	63	2	9
	Rev/Prop	5.7	6.1	4.5	4.0			
SBE	Reviews	29,378	21,253	764	7,361			
	Proposals	5,049	3,178	195	1,676	63	3	20
	Rev/Prop	5.8	6.7	3.9	4.4			
Other	Reviews	951	77	22	852			
	Proposals	136	12	5	119	2	1	0
	Rev/Prop	7.0	6.4	4.4	7.2			

Source: NSF Enterprise Information System 10/01/11.

* 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. The "Not Reviewed" category includes award and decline actions which were not reviewed, while the "Returned without Review" and "Withdrawn Proposal" categories reflect proposals which were neither awarded nor declined. There were 48,524 panel summaries in FY 2011. Reviewers participating as both a mail and a panel reviewer for the same proposal are counted as one review in this table. Withdrawn proposals include only those that underwent merit review.

Appendix 14

Methods of NSF Proposal Review

FY	Total Proposals	Mail + Panel		Mail Only		Panel Only*		Not Externally Reviewed	
		Proposals	Percent	Proposals	Percent	Proposals	Percent	Proposals	Percent
2011	51,562	14,594	28%	3,352	7%	31,878	62%	1,738	3%
2010	55,542	16,483	30%	3,853	7%	32,859	59%	2,347	4%
2009	45,181	14,262	32%	3,370	7%	25,835	57%	1,714	4%
2008	44,428	14,355	32%	3,662	8%	24,966	56%	1,445	3%
2007	44,577	14,292	32%	3,737	8%	25,135	56%	1,413	3%
2006	42,352	14,349	34%	3,895	9%	22,384	53%	1,724	4%
2005	41,722	13,919	33%	3,656	9%	22,735	54%	1,412	3%
2004	43,851	13,345	30%	4,496	10%	24,553	56%	1,457	3%
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%

Source: NSF Enterprise Information System 10/01/11.

Appendix 15

Methods of NSF Proposal Review by Directorate or Office, FY 2011

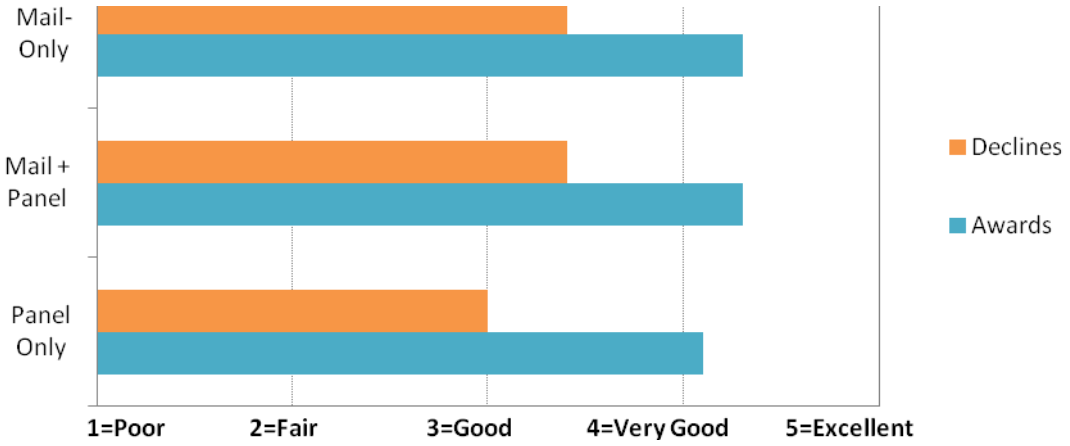
Directorate	Total Proposals	Mail + Panel		Mail-Only		Panel-Only		Not Reviewed	
		Proposals	Percent	Proposals	Percent	Proposals	Percent	Proposals	Percent
NSF	**51,562**	**14,594**	**28%**	**3,352**	**7%**	**31,878**	**62%**	**1,738**	**3%**
BIO	7,439	4,424	59%	101	1%	2,743	37%	171	2%
CISE	5,996	493	8%	80	1%	5,087	85%	336	6%
EHR	4,660	225	5%	78	2%	4,316	93%	41	1%
ENG	12,314	623	5%	88	1%	11,234	91%	369	3%
GEO	4,508	3,280	73%	734	16%	278	6%	216	5%
MPS	8,796	1,616	18%	1,608	18%	5,245	60%	327	4%
OCI	706	37	5%	78	11%	544	77%	47	7%
OISE	1,214	231	19%	298	25%	582	48%	103	8%
OPP	679	475	70%	87	13%	54	8%	63	9%
SBE	5,112	3,178	62%	195	4%	1,676	33%	63	1%
Other	138	12	9%	5	4%	119	86%	2	1%

Source: NSF Enterprise Information System 10/01/11.

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

Appendix 16

Average Reviewer Ratings by Method of Review FY 2011



Source: NSF Enterprise Information System 10/01/11.

Appendix 17

Accomplishment-Based Renewals and Creativity Extensions

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. The proposals undergo merit review in the tradition of the specific program. In 2011, there were 62 requests for accomplishment-based renewals; 19 of which were awarded.

Creativity Extensions

A program officer may recommend the extension of funding for certain research grants beyond the initial period for which the grant was awarded for a period of up to two years. The objective is to offer the most creative investigators an extension to address opportunities in the same general research area, but not necessarily within the scope covered by the original/current proposal. Awards eligible for such an extension are generally three-year continuing grants. Special Creativity Extensions are usually initiated by the NSF program officer based on progress during the first two years of a three-year grant. In FY 2011, there were 16 Special Creativity Extensions granted.

Appendix 18

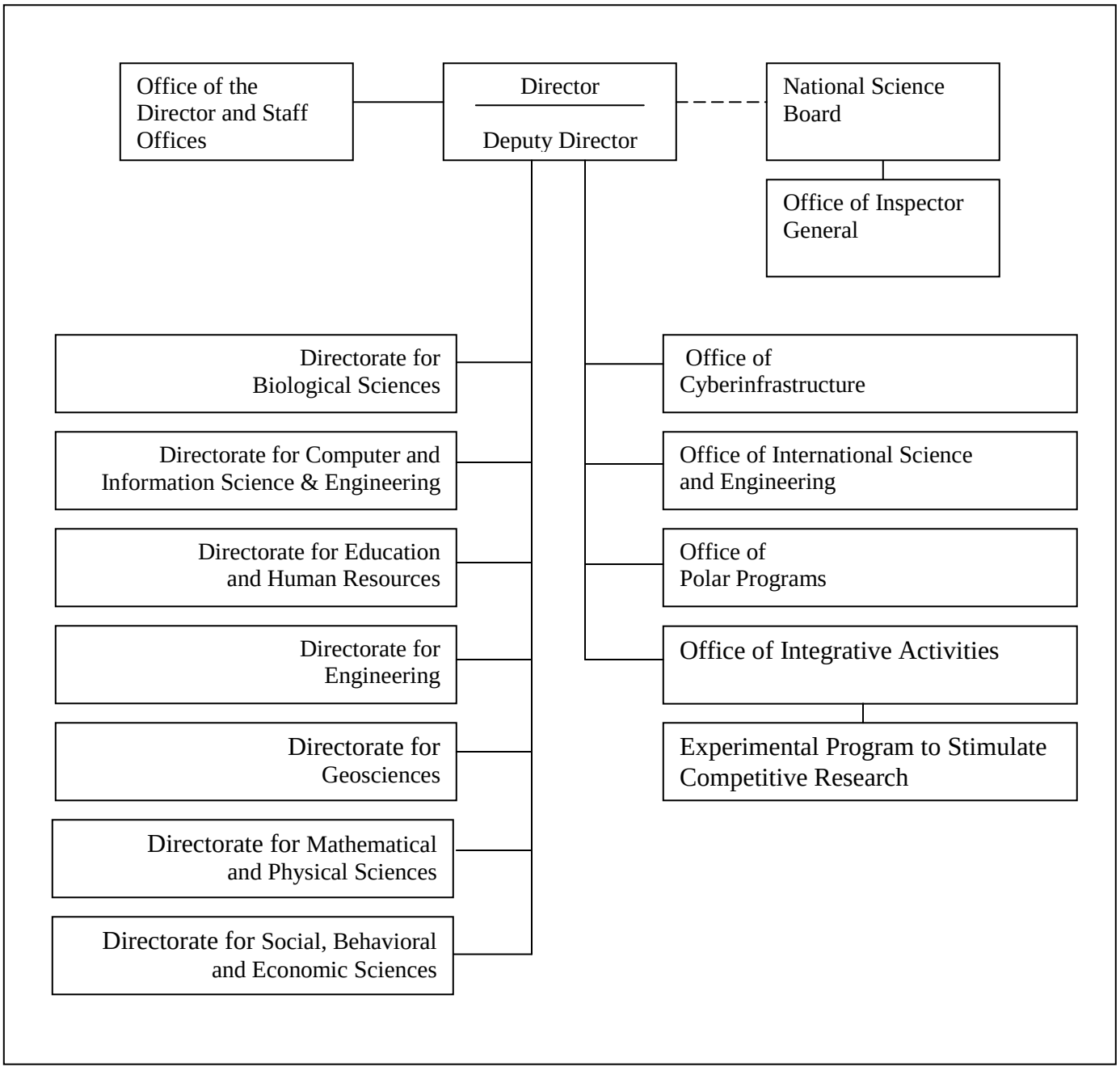
Accomplishment-Based Renewals by Directorate

Directorate or Office	Award vs Decline	2005	2006	2007	2008	2009	2010	2011
NSF	Award	28	32	27	28	40	34	19
	Decline	73	70	70	51	54	52	43
	Avg Annual Award	$173,988	$116,263	$174,137	$196,551	$285,422	$180,755	$254,424
BIO	Award	6	5	4	3	5	8	3
	Decline	15	20	25	13	16	11	6
	Avg Annual Award	$177,830	$128,260	$98,410	$125,556	$134,862	$174,666	$462,026
CSE	Award	1	1	1	1	1	1	0
	Decline	1	2	3	1	0	2	1
	Avg Annual Award	$160,140	$83,333	$50,000	$100,017	$274,923	$363,279	N/A
EHR	Award	2	2	2	2	3	3	1
	Decline	4	14	6	3	7	6	5
	Avg Annual Award	$597,667	$167,348	$142,410	$493,450	$403,539	$379,113	$100,057
ENG	Award	1	3	2	1	1	1	2
	Decline	17	14	13	6	13	7	5
	Avg Annual Award	$94,833	$69,589	$83,542	$103,293	$249,954	$203,310	$120,798
GEO	Award	8	7	8	7	9	8	4
	Decline	7	3	3	2	3	8	4
	Avg Annual Award	$122,595	$132,370	$107,295	$132,682	$478,109	$164,462	$145,360
MPS	Award	9	7	10	12	16	11	8
	Decline	25	13	16	19	12	13	15
	Avg Annual Award	$151,720	$143,631	$287,206	$237,542	$207,374	$143,423	$305,468
OCI	Award	N/A	N/A	N/A	N/A	1	N/A	0
	Decline	N/A	N/A	N/A	N/A	0	N/A	1
	Avg Annual Award	N/A	N/A	N/A	N/A	$521,556	N/A	N/A
OISE	Award	0	N/A	N/A	N/A	N/A	1	0
	Decline	1	N/A	N/A	N/A	N/A	2	1
	Avg Annual Award	-	N/A	N/A	N/A	N/A	$50,000	N/A
OPP	Award	0	1	0	1	1	N/A	N/A
	Decline	1	0	1	1	0	N/A	N/A
	Avg Annual Award	-	$117,500	-	$136,611	$609,026	N/A	N/A
SBE	Award	1	6	0	1	3	1	1
	Decline	2	4	3	6	3	3	5
	Avg Annual Award	$11,969	$59,712	-	$102,657	$85,178	$101,052	$81,136

Source: NSF Enterprise Information System 10/01/11. "N/A" = No accomplishment-based renewals requested.

Appendix 19

National Science Foundation Organization Chart



Appendix 20

Terms & Acronyms

Acronym	Definition
AC	Advisory Committee
AC/GPA	Advisory Committee for GPRA Performance Assessment
AD	NSF Assistant director
ARRA	American Recovery and Reinvestment Act of 2009
BFA	Office of Budget, Finance and Award Management
BIO	Directorate for Biological Sciences
BIIS	NSF Budget Internet Information System
CAREER	Faculty Early Career Development Program
CGI	Continuing Grant Increments
CISE	Directorate for Computer and Information Science and Engineering
COV	Committee of Visitors
EAGER	Early-concept Grants for Exploratory Research
EHR	Directorate for Education and Human Resources
EIS	Enterprise Information System
ENG	Directorate for Engineering
EPSCoR	Experimental Program to Stimulate Competitive Research
FTE	Full-Time Equivalent
FY	Fiscal Year
GEO	Directorate for Geosciences
GPRA	Government Performance and Results Act
IPAs	Temporary employees hired through Intergovernmental Personnel Act
IPAMM	Impact of Proposal & Award Management Mechanisms
IPS	Interactive Panel System
MPS	Directorate for Mathematical and Physical Sciences
NSB	National Science Board
NSF	National Science Foundation
OCI	Office of Cyberinfrastructure
OD	Office of the Director
ODS	Online Document System
OIA	Office of Integratative Activities
OIG	Office of Inspector General
OISE	Office of International Science & Engineering
OMB	Office of Management and Budget
OPP	Office of Polar Programs
PARS	Proposal, PI and Reviewer System
PART	Program Assessment Rating Tool
PI	Principal Investigator
RAPID	Grants for Rapid Response Research
R&RA	Research and Related Activities
SBE	Directorate for Social, Behavioral and Economic Sciences
SGER	Small Grants for Exploratory Research
VSEE	Visiting Scientists, Engineers and Educators