Introduction and NSF Overview

NSF Regional Grants Conference

October 10 – 11, 2005

Tampa, FL

Hosted by: The University of South Florida

Main Topics

- Origins of NSF
- The National Science Foundation
- The NSF FY 2006 Budget Request
  - NSF Initiatives
- Current Proposal, Award and Funding Trends

Origins of NSF

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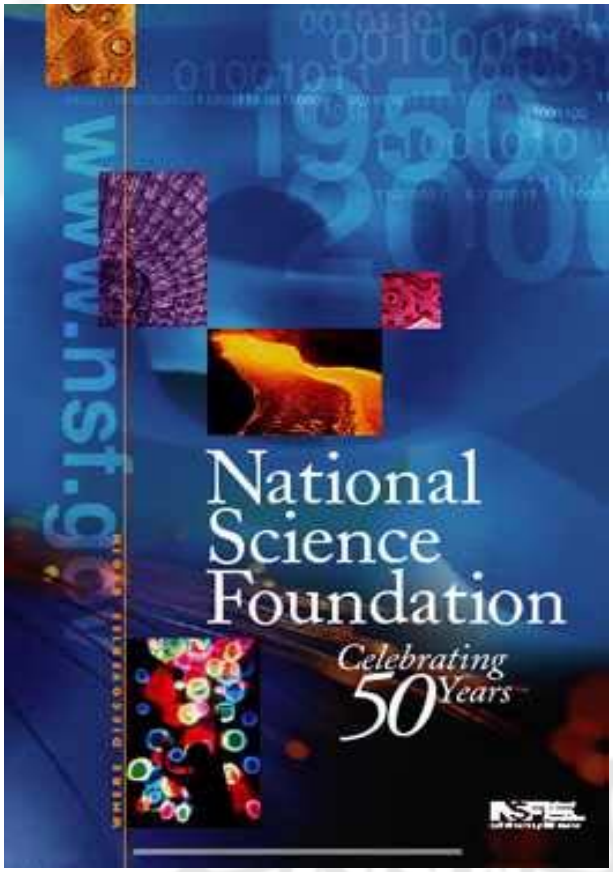
- "The Government should accept new responsibilities for promoting the flow of scientific knowledge and the development of scientific talent in our youth."
  - Science, The Endless Frontier, 1945
- 1947: Congress Approves, Truman Vetoes: Agencies created in the meantime
- 1950: Compromise Bill Approved & Signed by Truman



NSF Act of 1950

- “To promote the progress of science...”
- NSB (24) and 1 Director, appointed by the President
- Encourage & develop a national policy for the promotion of basic research and education in the math, physical, medical,biological, engineering and other sciences
- Initiate & support basic scientific research in the sciences
- Evaluate the science research programs undertaken by agencies of the Federal government
- Provide information for S&E policy formation

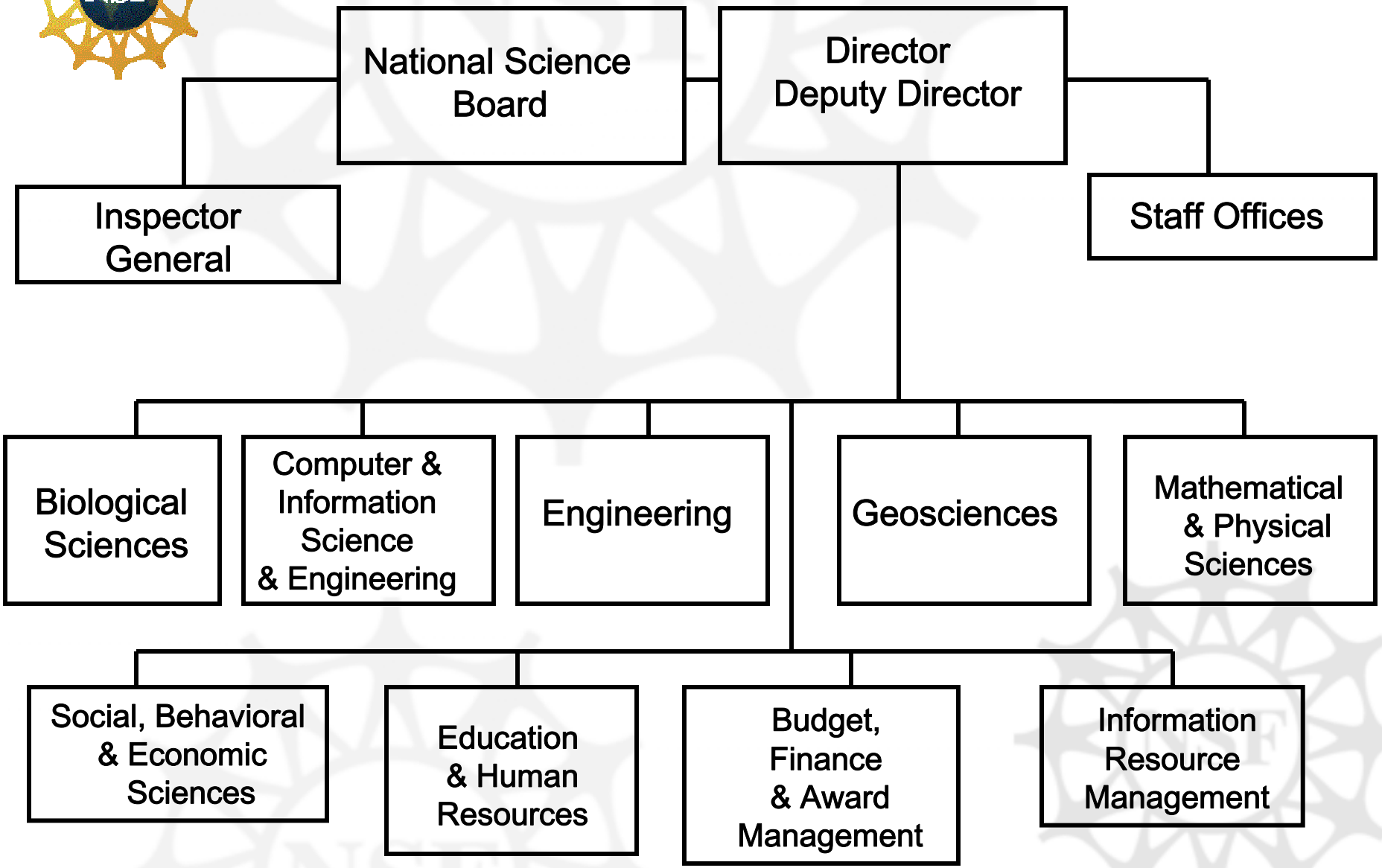
NSF Vision

Enabling the nation's future through discovery, learning and innovation.

NSF in a Nutshell

- Independent Agency
- Supports basic research & education
- Uses grant mechanism
- Low overhead; highly automated
- Discipline-based structure
- Cross-disciplinary mechanisms
- Use of Rotators/IPAs
- National Science Board

National Science Foundation



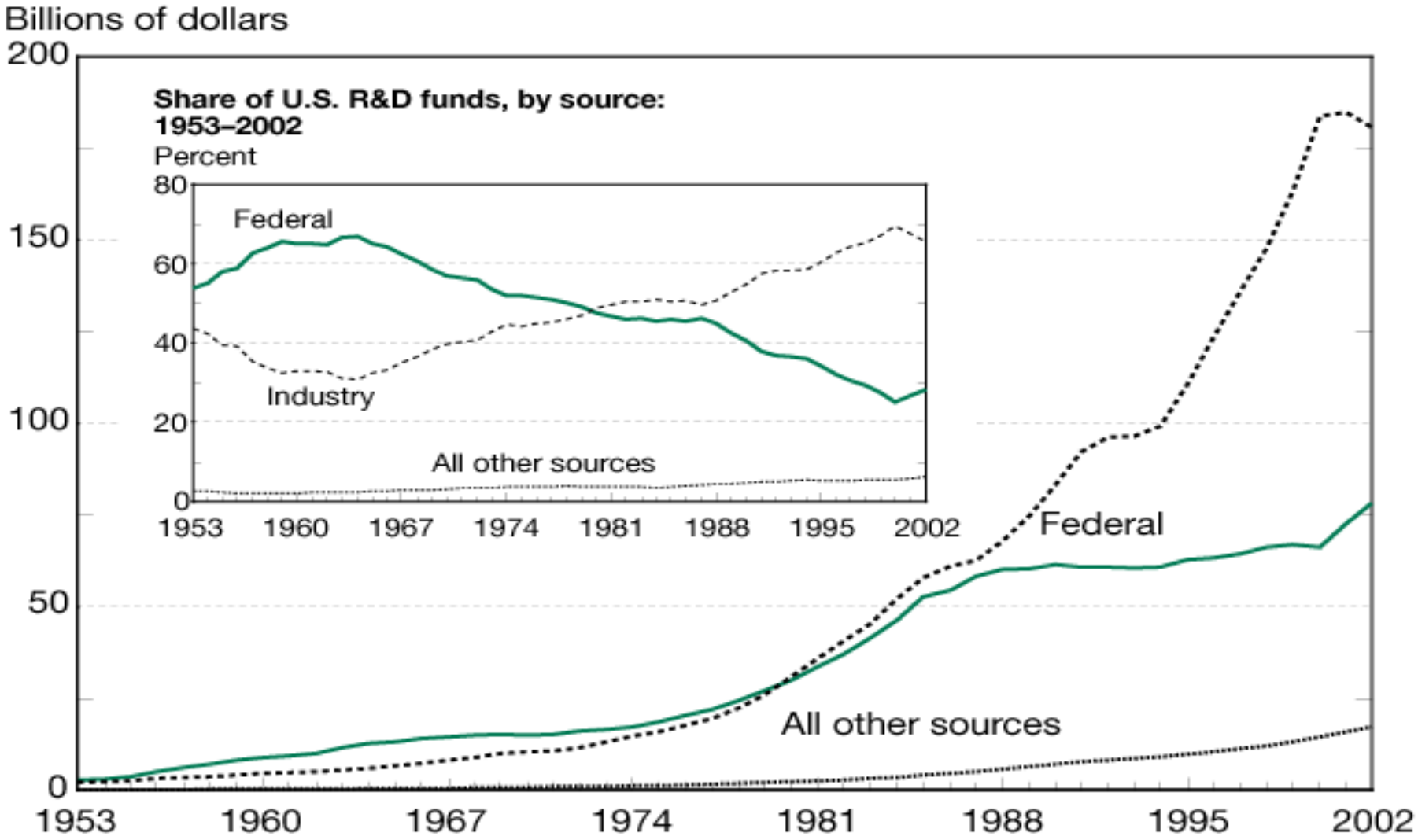
NSF: Recent Personnel Changes

- Joseph Bordogna resigned as Deputy Director in June 2005 after nine years in the position
- Kathie Olson nominated as Deputy Director and confirmed by the Senate
- Dr. Richard Buckius, Division Director of the Chemical and Transport Systems, serving as Acting Assistant Director for the Engineering Directorate
- David Lightfoot named Assistant Director of Social, Behavioral and Economic Sciences (SBE)
- James Collins of Arizona State University named Assistant Director of Biological Sciences (BIO)
- Office of Cyberinfrastructure, formerly known as the Division of Shared Cyberinfrastructure, is now in the NSF Office of the Director
- Search for new EHR Assistant Director ongoing

FY 2006 Federal Budget

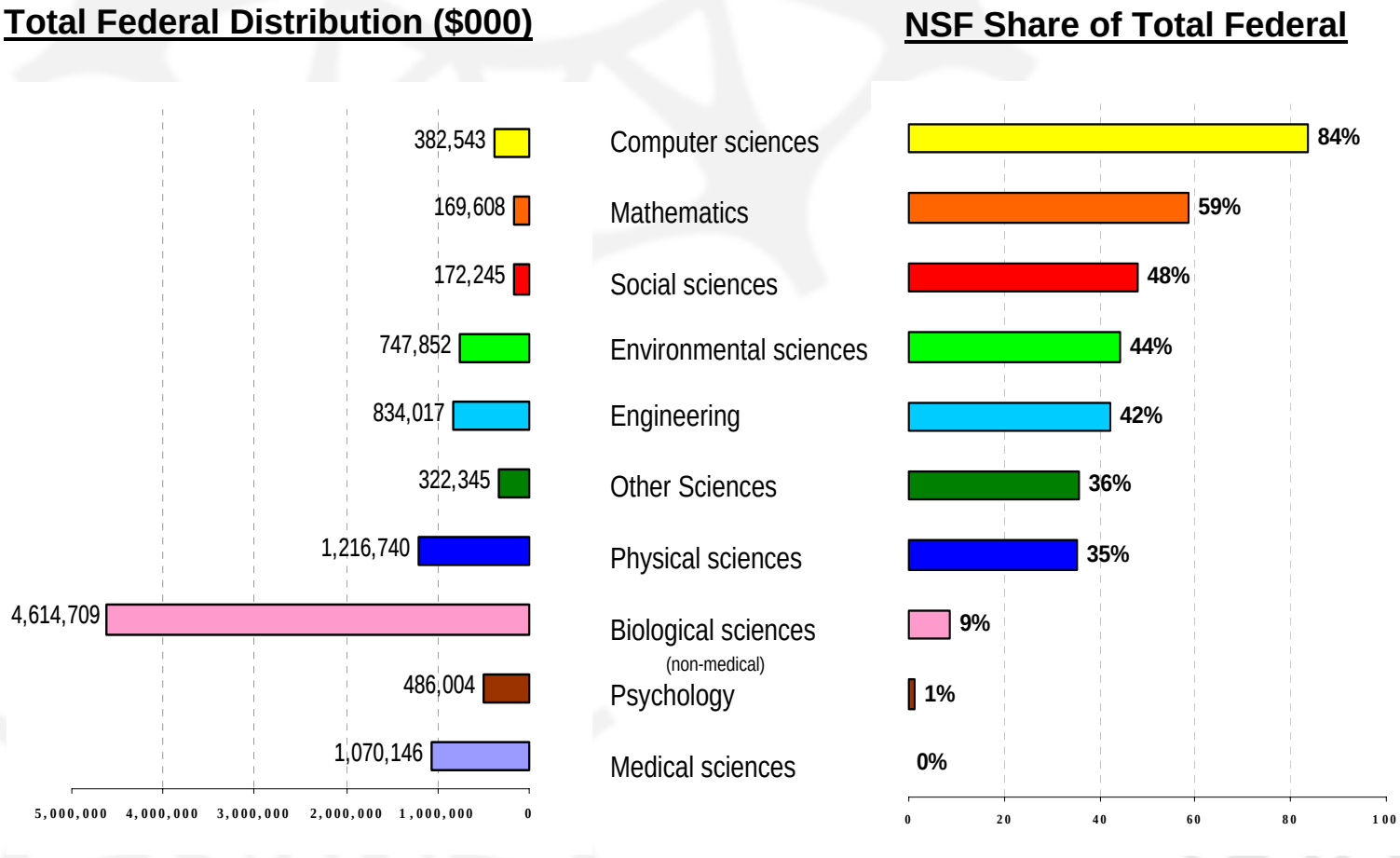
NSF (and other agencies) currently under a Continuing Resolution until…

U.S. R&D, by source of funds: 1953–2002



NOTE: Other sources include nonprofit, academic, and non-Federal government.

Federal Obligations for Basic Research at Academic Institutions, FY 2002



NSF FY 2006 Budget Appropriations: House and Senate Marks

(Dollars in Millions)

Activity/Program	FY 2005 Current Plan	FY 2006 Budget Request	FY 2006 House Mark	FY 2006 Senate Mark
Research amd Related	$4,220.55	$4,333.49	$4,377.52	$4,345.21
BIO	$576.61	$581.79		
CISE	$613.72	$620.56		
ENG	$561.30	$580.68		
GEO	$694.16	$709.10		
MPS	$1,069.86	$1,086.23		
SBE	$196.90	$198.79		
OISE	$33.73	$34.51		$34.51
OPP	$344.36	$386.93		$386.93
IA	$129.91	$134.90		
MREFC	$173.65	$250.01	$193.35	$193.35
Education & Human Resources	$841.42	$737.00	$807.00	$747.00
Salaries & Expenses	$223.20	$269.00	$250.00	$229.90
Office of Inspector General	$10.03	$11.50	$11.50	$11.50
National Science Board	$3.97	$4.00	$4.00	$4.00
NSF TOTAL	$5,472.82	$5,605.00	$5,643.37	$5,530.96

NSF FY 2006 Request by Account
(Dollars in Millions)

	FY 2005 Current	FY 2006 Request	Amount Change	Percent Change
Research & Related Activities	$4,220.55	$4,333.49	$112.94	2.7%
Major Research Equipment & Facilities Construction	173.65	250.01	76.36	44.0%
Education & Human Resources	841.42	737	-104.42	-12.4%
Salaries & Expenses	223.20	269.00	45.8	20.5%
National Science Board	3.97	4	0.03	0.8%
Office of Inspector General	10.03	11.5	1.47	14.7%
Total, NSF	$5,472.82	$5,605.00	$132.18	2.4%

NSF FY 2006 Research & Related Activities Request by Directorates (Dollars in Millions)

	FY 2005 Current	FY 2006 Request	Amount Change	Percent Change
Biological Sciences	$576.61	$581.79	$5.18	0.9%
Computer & Information Science & Engineering	613.72	620.56	6.84	1.1%
Engineering	561.3	580.68	19.38	3.5%
Geosciences	694.16	709.1	14.94	2.2%
Mathematical & Physical Sciences	1,069.86	1086.23	16.37	1.5%
Social, Behavioral & Economic Sciences	196.9	198.79	1.89	1.0%
Office of International Science & Engineering	33.73	34.51	0.78	2.3%
U.S. Polar Research Programs	276.84	319.41	42.57	15.4%
U.S. Antarctic Logistical Support Activities	67.52	67.52	0	0.0%
Integrative Activities	129.91	134.9	4.99	3.8%
Total, R&RA	$4,220.55	$4,333.49	$112.94	2.7%

NSF Priority Areas

Biocomplexity in the Environment

http://www.nsf.gov/news/priority_areas/biocomplexity/index.jsp

Fiscal year 2006 Areas of Emphasis:

- Earth Systems, Cycles and Pathways;
- Dynamics of Coupled Natural and Human Systems;
- Materials Use: Science, Engineering and Society;
- Microbial Genome Sequencing; and
- Ecology of Infectious Diseases.

Cyberinfrastructure

http://www.nsf.gov/news/priority_areas/cyberinfrastructure/index.jsp

FY 2006 Areas of Emphasis:

- NSF's current cyberinfrastructure investments are guided by three principles:
  - Science and engineering opportunities must drive cyberinfrastructure investments;
  - Development of intellectual capital to develop, sustain and effectively utilize cyberinfrastructure is critical; and
  - Unwavering attention to interoperability and sustainability will provide economies of scale and scope as well as guard against the balkanization of science.

Human & Social Dynamics

http://www.nsf.gov/news/priority_areas/humansocial/index.jsp

Fiscal Year 2006 Areas of Emphasis:

- **Agents of Change** – focuses on large-scale change in humanity and society (e.g., industrial globalization, disease epidemics and how we influence technological change);
- **Dynamics of Human Behavior** – applies state-of-the-art methods and cross-disciplinary approaches to better understand the dynamics that influence human behavior and action; and
- **Decision-Making, Risk and Uncertainty** – improve decision-making by studying risk perception and response to stimuli such as hazards and extreme events and the role of educational systems in that response.

Mathematical Sciences

http://www.nsf.gov/news/priority_areas/mathematics/index.jsp

Fiscal Year 2006 Areas of Emphasis:

- Fundamental Mathematical and Statistical Sciences;
- Advancing Interdisciplinary Science and Engineering;
- Mathematical and Statistical Challenges Posed by Large Data Sets;
- Managing and Modeling Uncertainty;
- Modeling Complex Nonlinear Systems; and
- Advancing Mathematical Sciences Education.

Nanoscale Science & Engineering

http://www.nsf.gov/news/priority_areas/nano/index.jsp

Fiscal Year 2006 Areas of Emphasis:

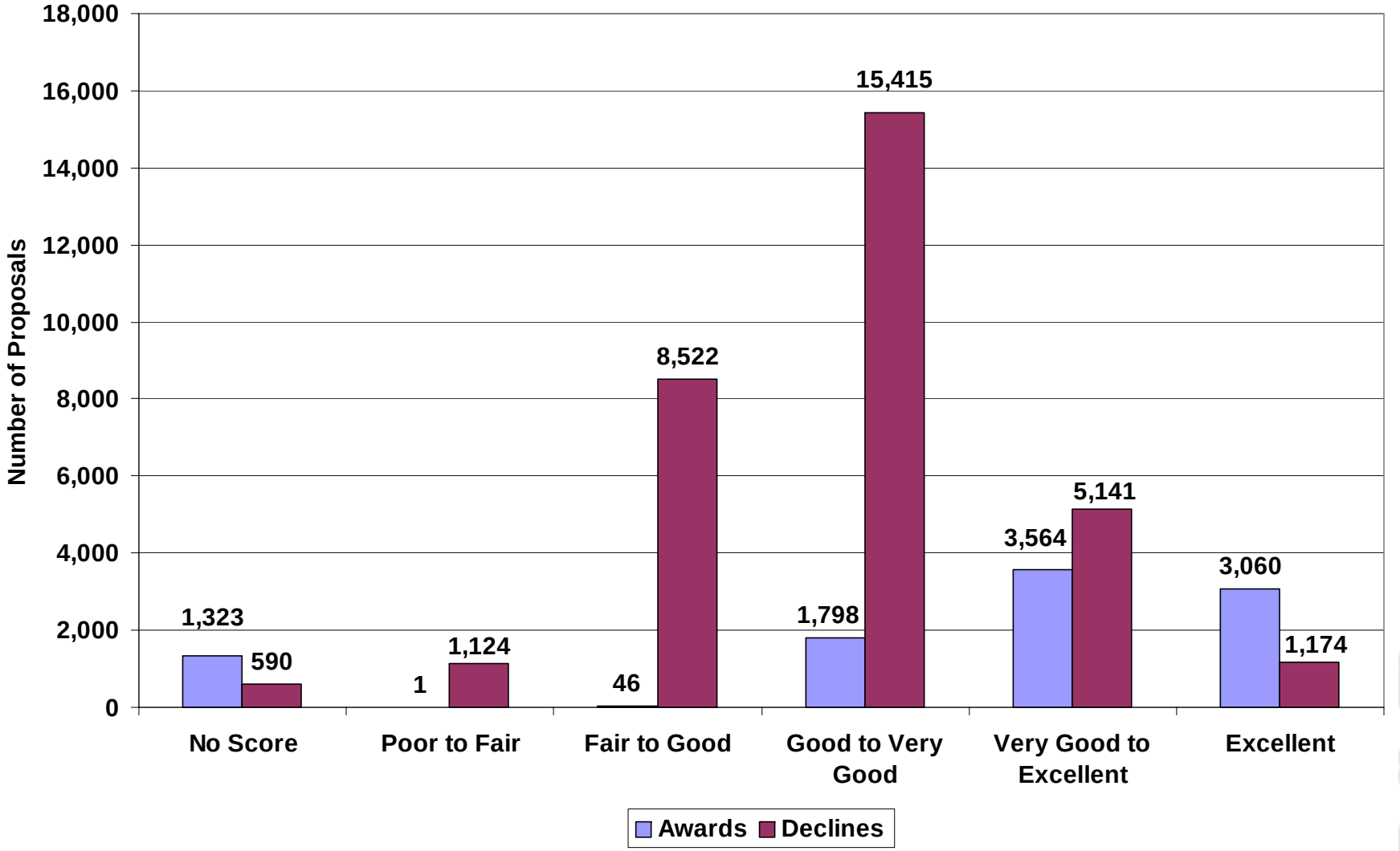
- Understanding and controlling the assembly of nanoscale materials;
- Research enabling nanoscale as the most efficient manufacturing domain, including fabrication of nanostructured materials and catalysts;
- Nanobiotechnology and nanobiomedicine;
- Innovative nanotechnology solutions for explosives detection and protection;
- Understanding and potential application of quantum effects and other nanoscale phenomena;
- Nanoelectronics beyond complementary metal-oxide superconductors and nanophotonics;
- New instrumentation and standards development; and
- Education and training regarding nanotechnology.

Current Proposal, Award and Funding Trends

NSF Recent Trends: FY 2001 to FY 2005

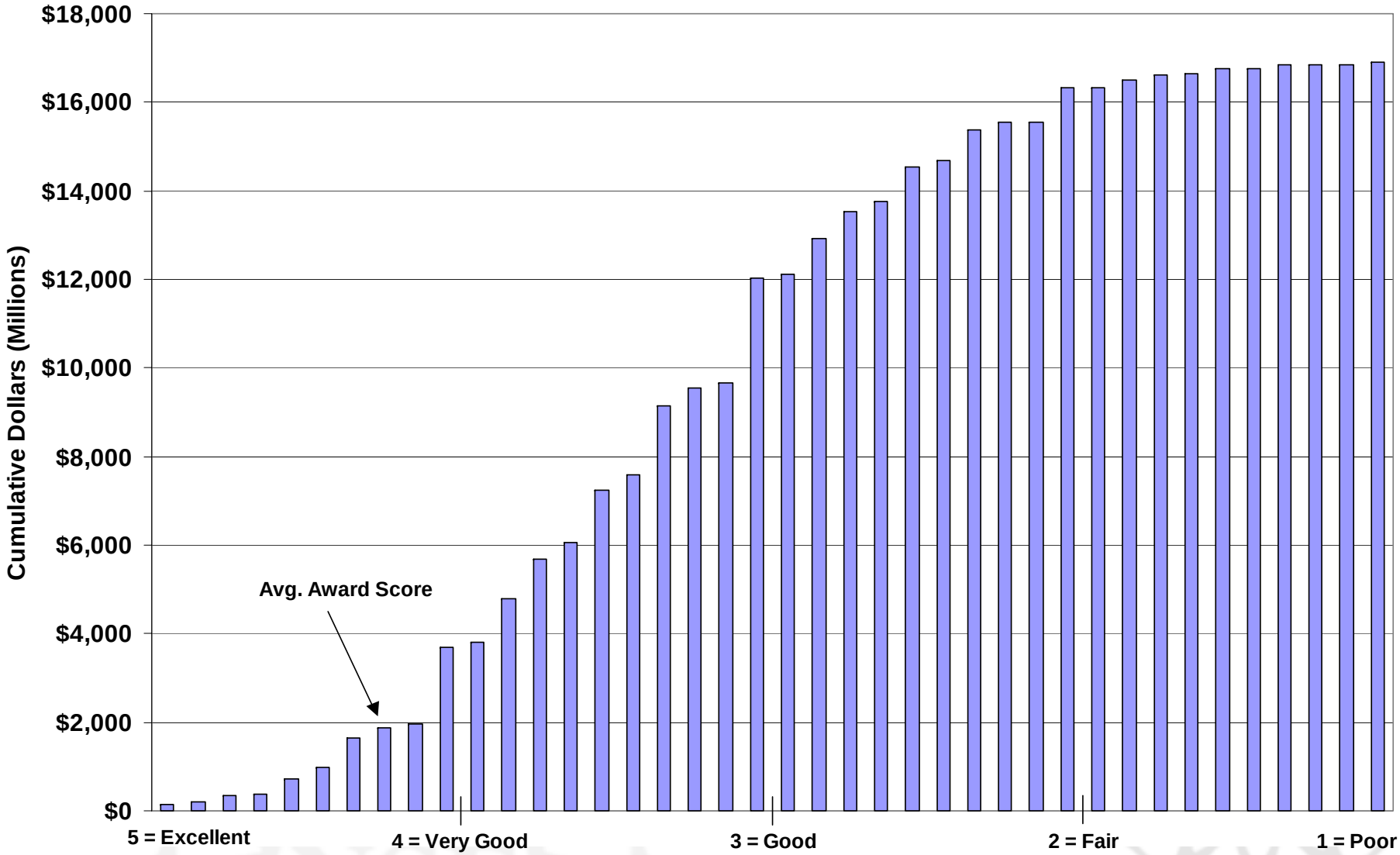
	FY01	FY02	FY03	FY04	FY05	Change from FY01 to FY05
Budget Obligations (Millions of Dollars)	$4,532	$4,774	$5,369	$5,656	N/A	N/A
Admin & Mgmt	$214	$231	$251	$291	N/A	N/A
# of Employees	1,220	1,242	1,244	1,301	N/A	N/A
# of Competitive Proposals	31,942	35,164	40,075	43,759	41,760	31%
# of Competitive Awards	9,925	10,406	10,844	10,380	9,794	-1%
Aver. Annual Res. Grant Size	$113,601	$115,666	$135,609	$139,000	$143,669	26%
Aver. Research Grant Duration (years)	2.9	2.9	2.9	2.9	2.9	-

Distribution of Average Reviewer Ratings
FY 2005

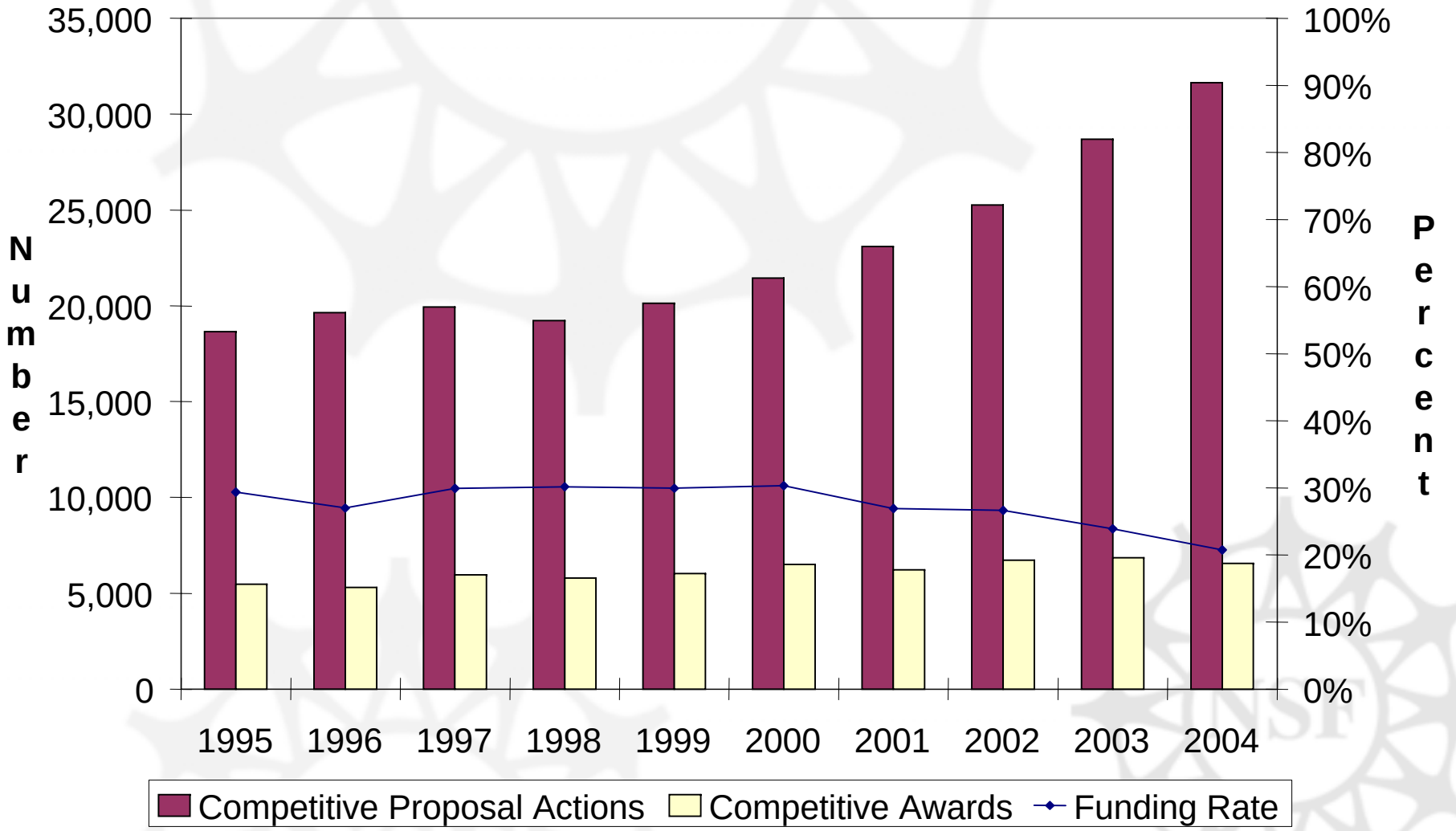


Number of Proposals: 31,966 Declines, 9,792 Awards

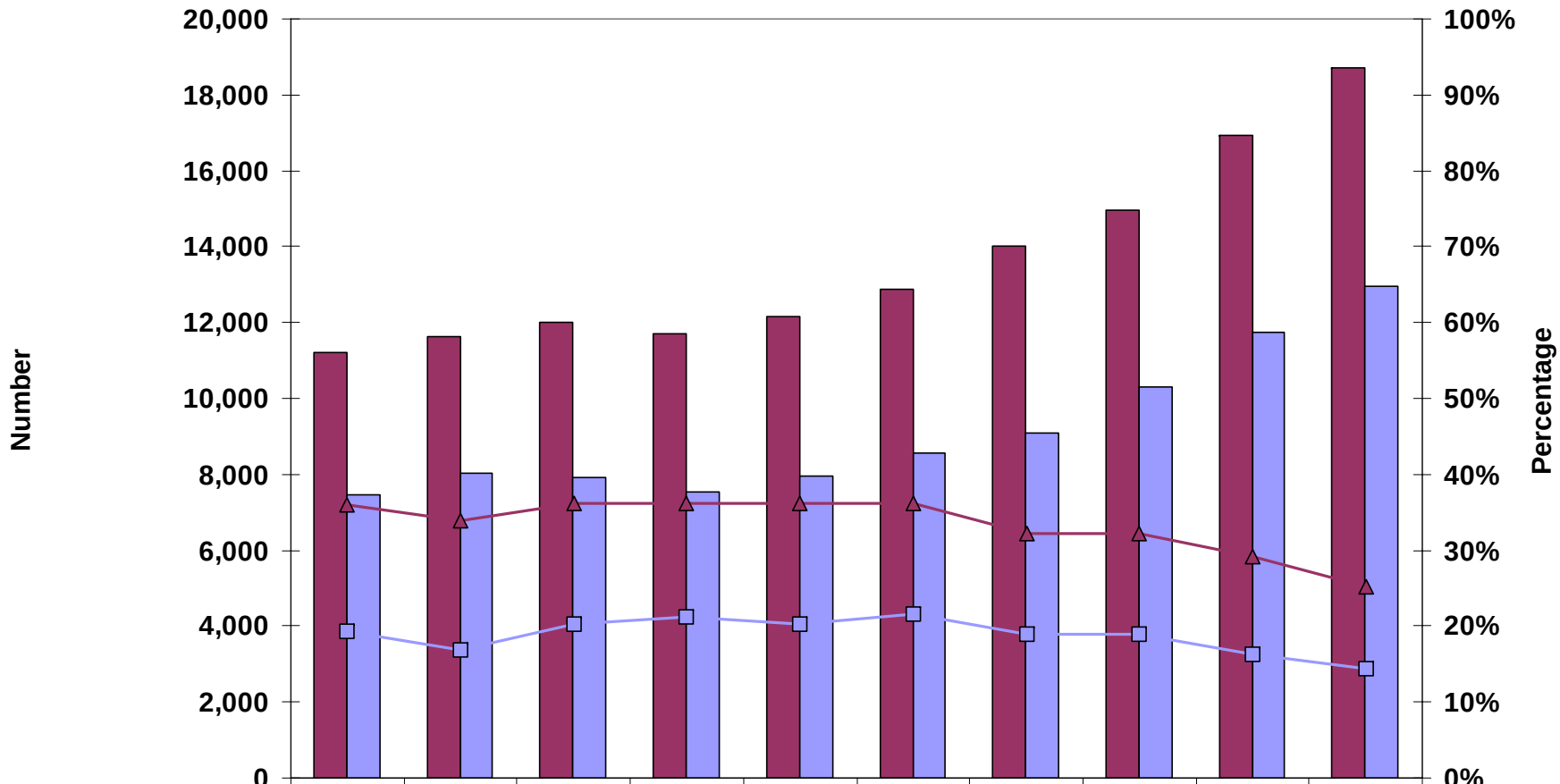
Cumulative Requested Amounts for Declined Proposals by Average Reviewer Score for FY 2005



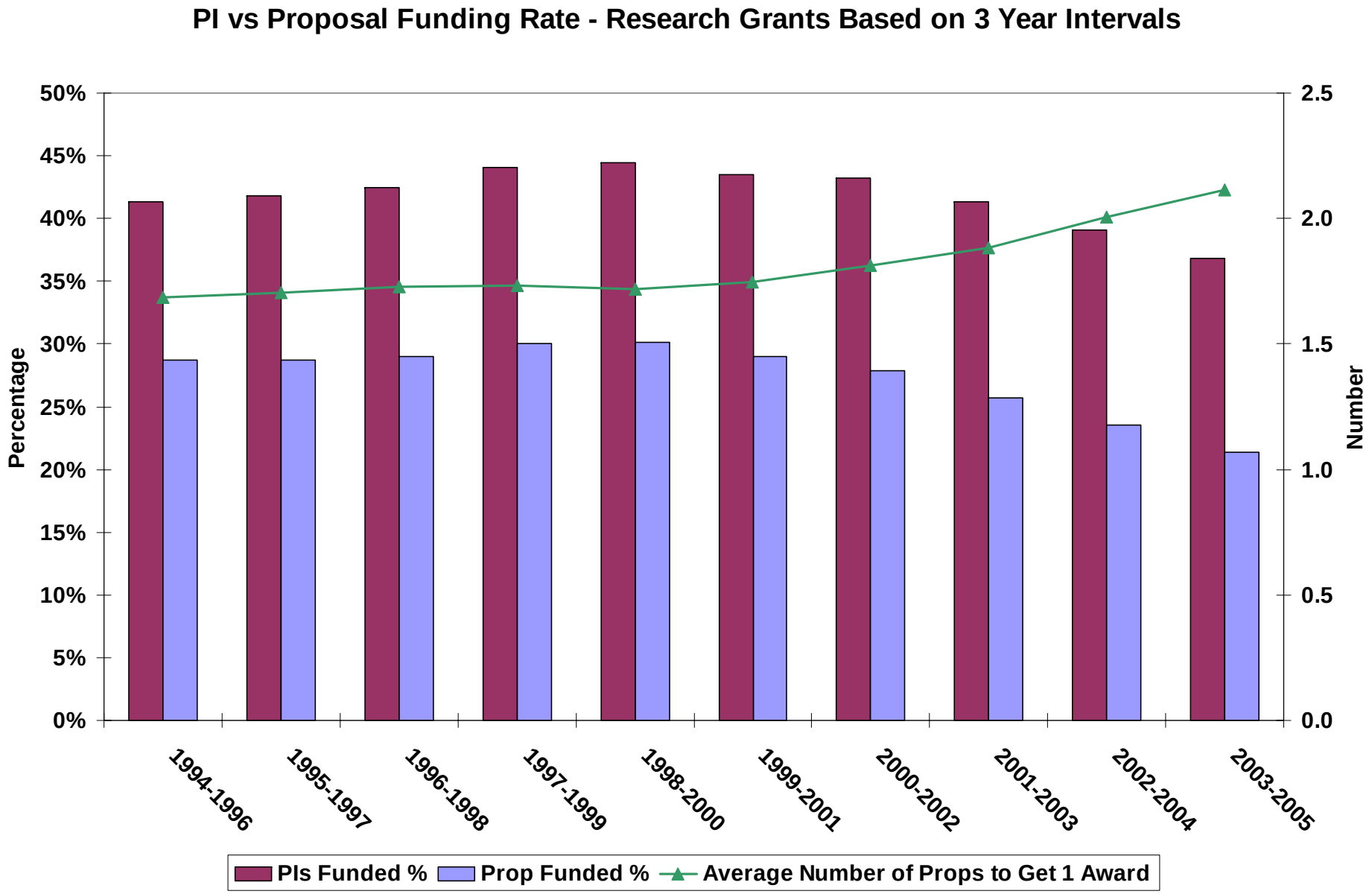
NSF Funding Rate for Competitive Awards - Competitive Research Grants



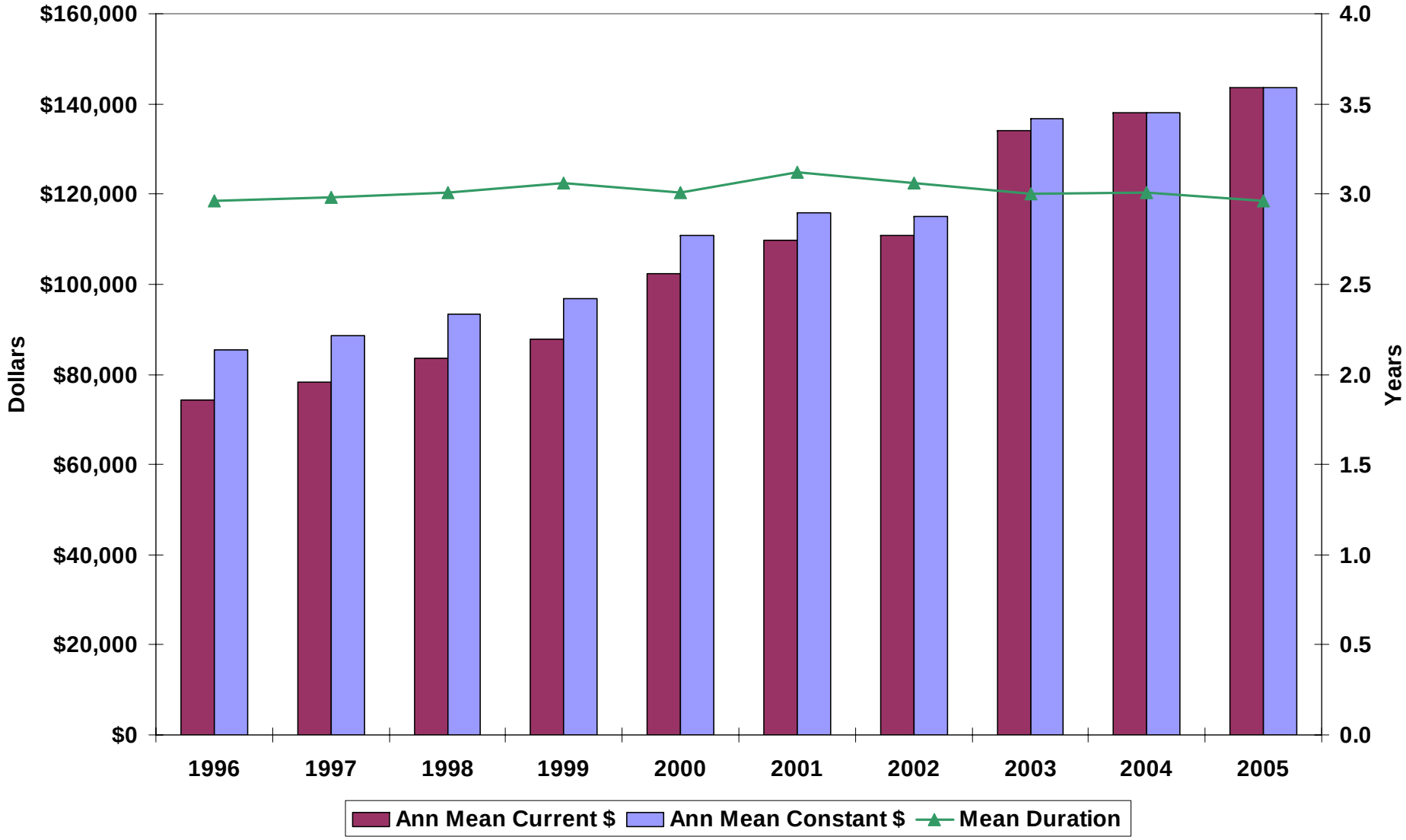
Research Grant Proposals by PI Type



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Proposals - Prior PI	11,203	11,635	12,026	11,693	12,172	12,885	14,013	14,965	16,944	18,700
Proposals - New PI	7,446	8,013	7,910	7,526	7,951	8,561	9,084	10,286	11,752	12,941
Funding Rate - Prior PI	36%	34%	36%	36%	36%	36%	32%	32%	29%	25%
Funding Rate - New PI	19%	17%	20%	21%	20%	22%	19%	19%	16%	14%


PI vs Proposal Funding Rate - Research Grants Based on 3 Year Intervals
Percentage
Number
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
2.5
2.0
1.5
1.0
0.5
0.0
1994-1996
1995-1997
1996-1998
1997-1999
1998-2000
1999-2001
2000-2002
2001-2003
2002-2004
2003-2005
PIs Funded %
Prop Funded %
Average Number of Props to Get 1 Award

NSF Competitive Award Size and Duration - Research Grants



*Based on estimated 2003-2004 Deflators

Key Documents

- FY 2006 NSF Budget Request
  - http://www.nsf.gov/about/budget/fy2006/
- Grant Proposal Guide (NSF 04-23)
  - http://www.nsf.gov/publications/pub_summ.jsp?ods_key=GPG
- Science and Engineering Indicators
  - http://www.nsf.gov/sbe/srs/seind04/start.htm
- When in doubt –
  - http://www.nsf.gov/