

Introduction and NSF Overview

NSF Regional Grants Conference

March 13-14, 2006

Boulder, CO

Hosted by: **The University of Colorado at Boulder**

Main Topics

- Origins of NSF
- The National Science Foundation
- The NSF FY 2007 Budget Request
 - NSF Initiatives
- Current Proposal, Award and Funding Trends

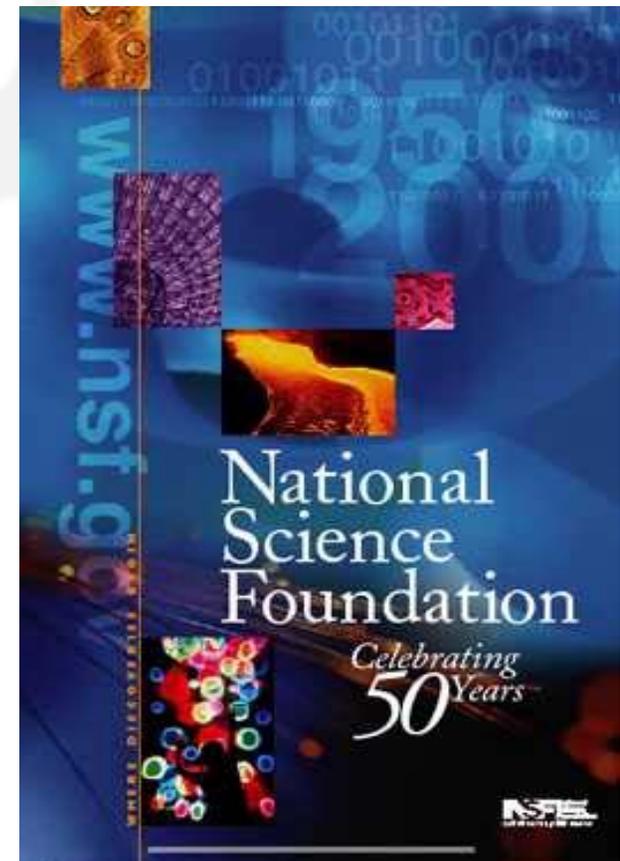


Origins of NSF



Origins of NSF

- “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.*

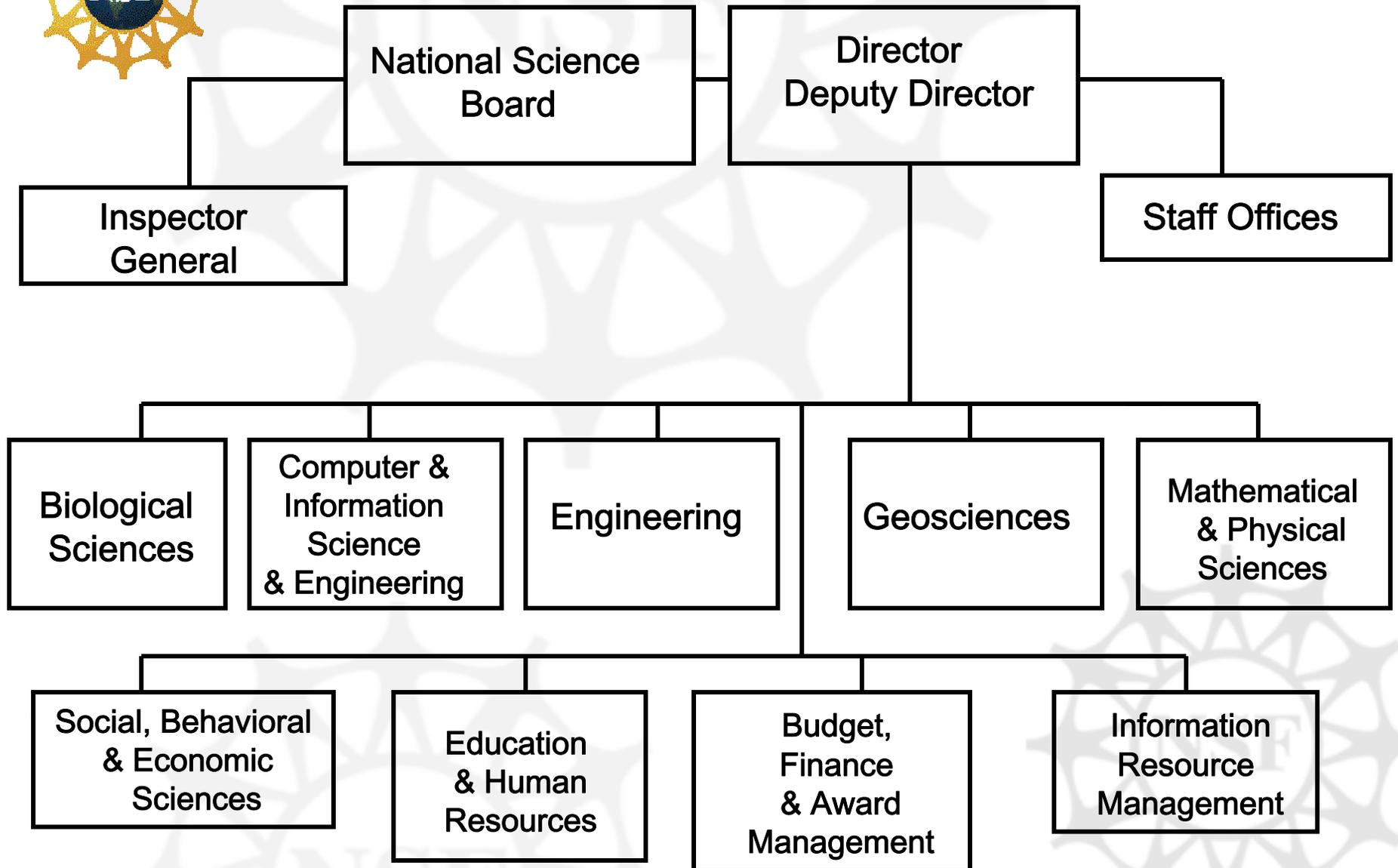


NSF in a Nutshell

- 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



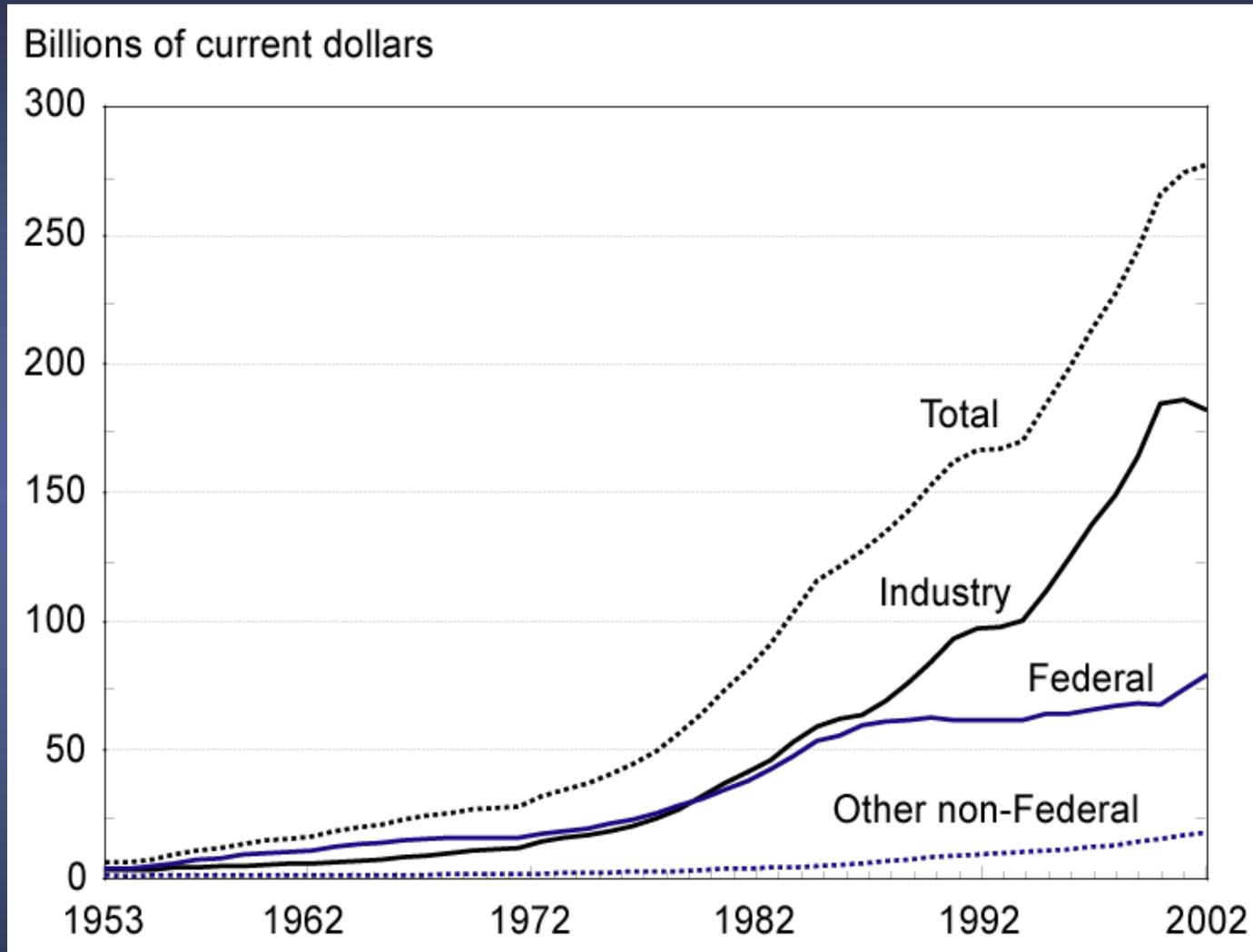
NSF: Recent Personnel Changes

- Kathie Olson became Deputy Director in August 2005
- Dr. Thomas Weber named Director of the Office of International Science & Engineering (OISE)
- 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)
- Dr. Daniel Atkins named Director of the newly created Office of Cyberinfrastructure
- Search for new EHR Assistant Director ongoing



FY 2007 Budget

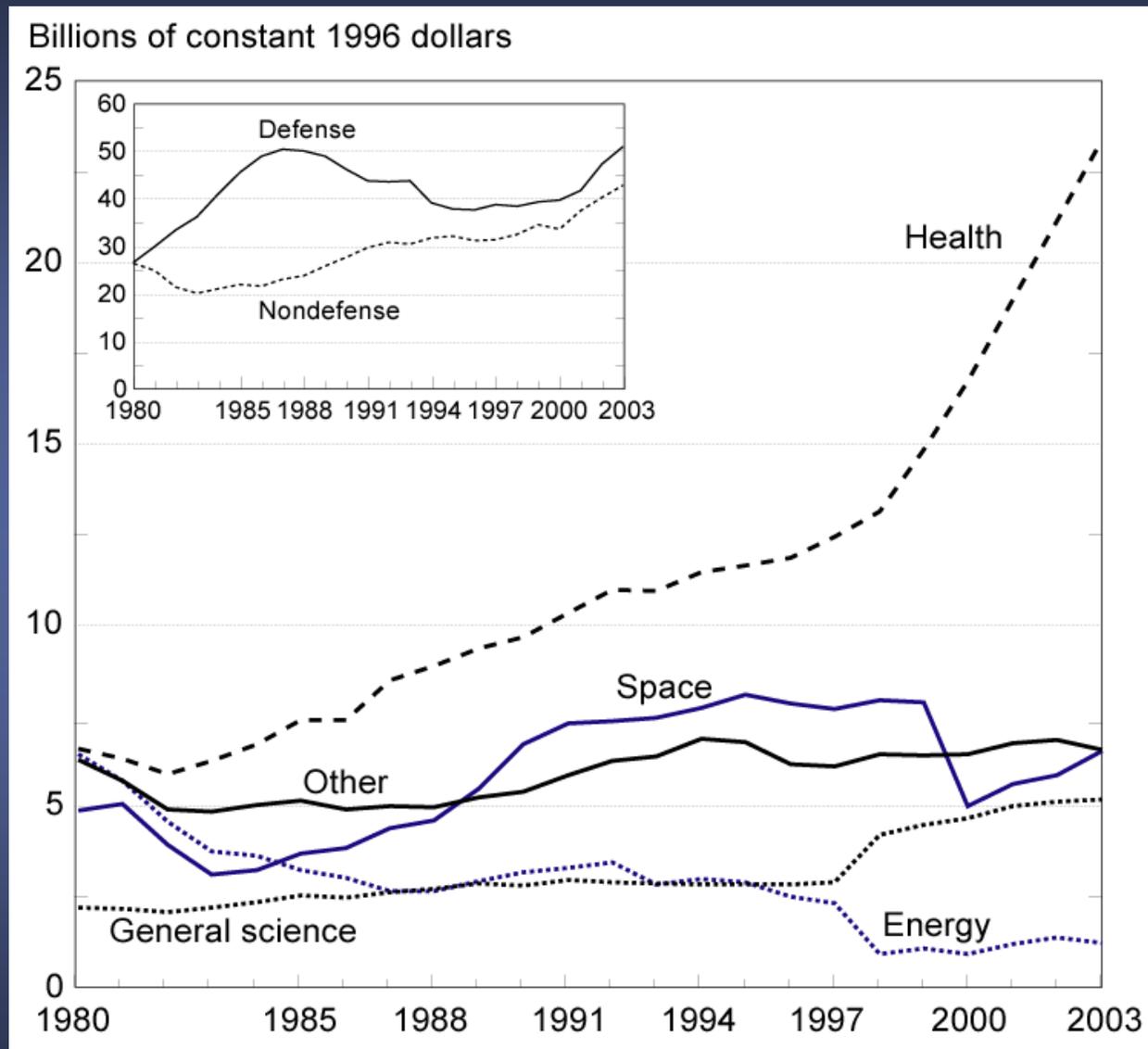
National R&D funding, by source



SOURCE: *Science and Engineering Indicators - 2004*



Federal R&D budget authority, by budget function

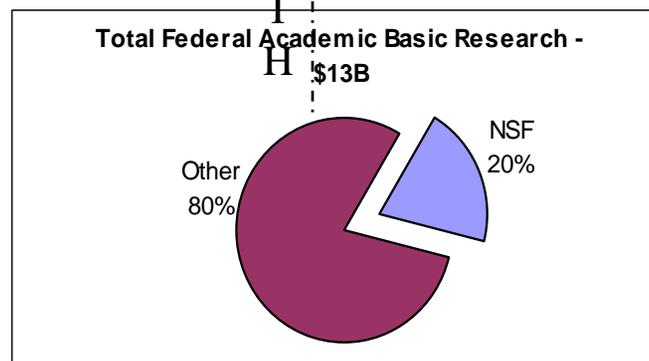
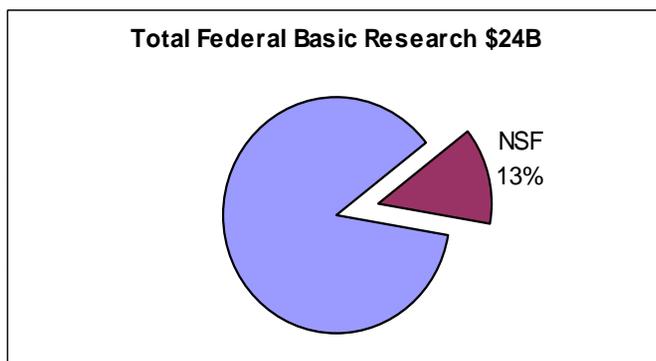
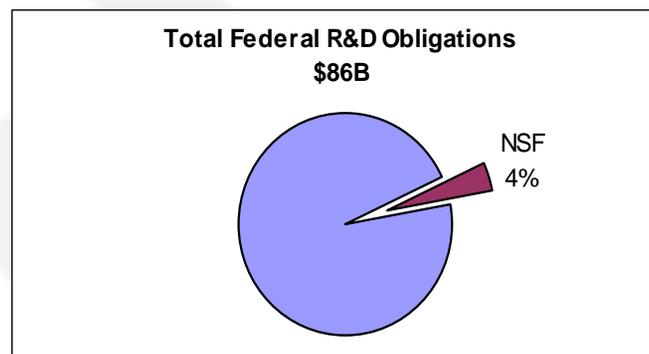
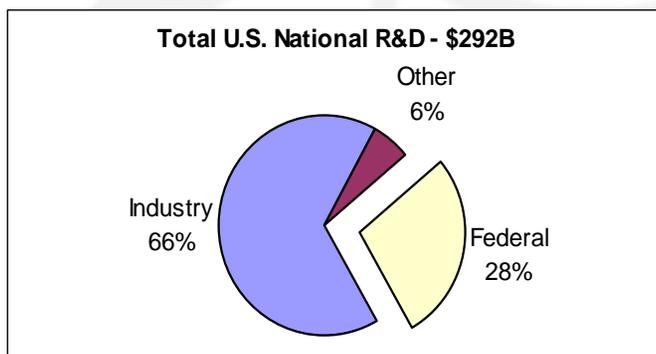


SOURCE: *Science and Engineering Indicators - 2004*



NSF Role in Research and Development

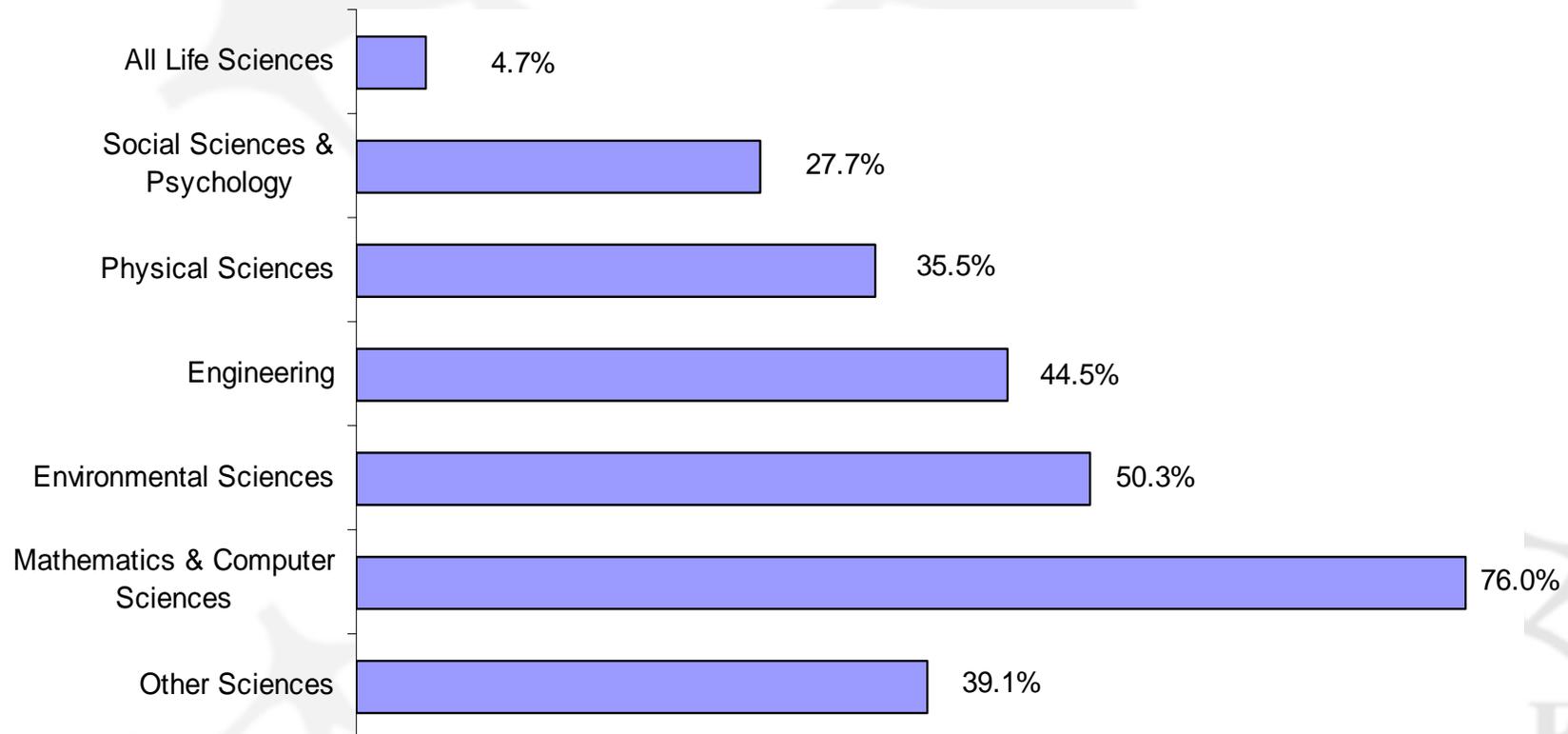
Fiscal Year 2002



Latest complete data currently available

NSF Support for Basic Research at Academic Institutions

Share of Total Federal Support - FY 2003 Preliminary



President's American Competitiveness Initiative



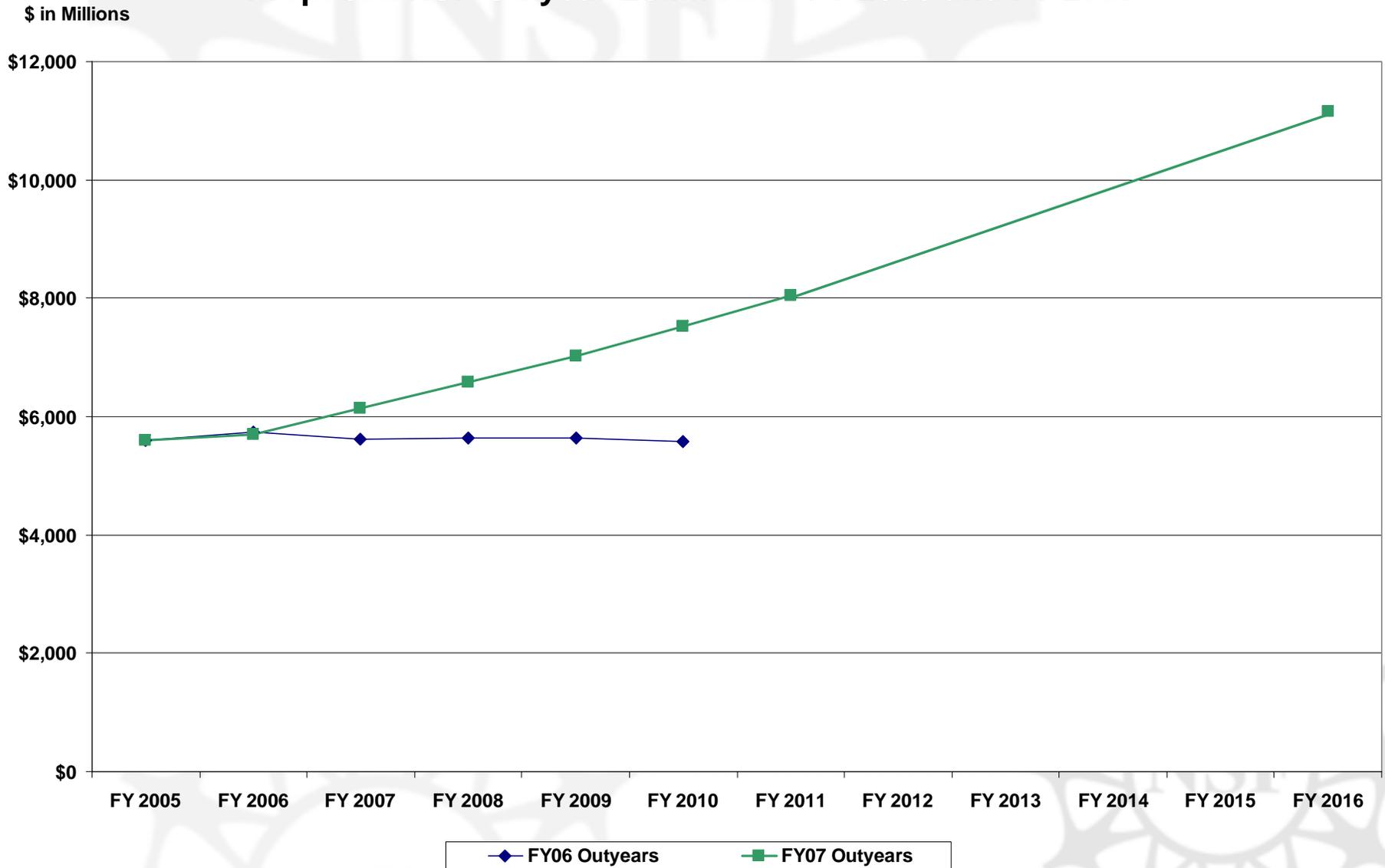
2007
BUDGET
REQUEST

**Double the
NSF budget
over 10 years**

National Science Foundation

FY 2007 BUDGET REQUEST TO CONGRESS

Proposed NSF Outyear Estimates - FY 2006 and FY 2007



NSF FY 2007

Budget Request Total



2007

BUDGET
REQUEST

\$6.02 billion

(Increase from FY 2006: \$439 million, 7.9%)

NSF FY 2007 Budget



NSF Funding by Account

(Dollars in Millions)

| | FY 2005 Actual | FY 2006 | | Change over FY 2006 | |
|---|-------------------|-------------------|--------------------|------------------------|-------------|
| | | Current Plan | FY 2007 Request | Amount | Percent |
| Research and Related Activities | \$4,234.82 | \$4,331.48 | \$4,665.95 | \$334.47 | 7.7% |
| Education and Human Resources | 843.54 | 796.69 | 816.22 | 19.53 | 2.5% |
| Major Research Equipment and Facilities Construction | 165.14 | 190.88 | 240.45 | 49.57 | 26.0% |
| Salaries and Expenses | 223.45 | 246.81 | 281.82 | 35.01 | 14.2% |
| National Science Board | 3.65 | 3.95 | 3.91 | -0.04 | -1.0% |
| Office of Inspector General | 10.17 | 11.36 | 11.86 | 0.50 | 4.4% |
| Total, NSF | \$5,480.78 | \$5,581.17 | \$6,020.21 | \$439.04 | 7.9% |

NSF FY 2007 Budget



Research and Related Activities by Directorate (Dollars in Millions)

| | FY 2005 Actual | FY 2006 Current Plan | FY 2007 Request | Change over FY 2006 | |
|--|-------------------|----------------------------|--------------------|------------------------|-------------|
| | | | | Amount | Percent |
| Biological Sciences | \$576.78 | \$576.69 | \$607.85 | \$31.16 | 5.4% |
| Computer and Information Science and Engineering | 490.20 | 496.41 | 526.69 | 30.28 | 6.1% |
| Engineering | 557.09 | 580.92 | 628.55 | 47.63 | 8.2% |
| Geosciences | 697.17 | 702.83 | 744.85 | 42.02 | 6.0% |
| Mathematical and Physical Sciences | 1,069.36 | 1,085.45 | 1,150.30 | 64.85 | 6.0% |
| Social, Behavioral and Economic Sciences | 196.80 | 199.91 | 213.76 | 13.85 | 6.9% |
| Office of Cyberinfrastructure | 123.40 | 127.12 | 182.42 | 55.30 | 43.5% |
| Office of International Science and Engineering ¹ | 43.38 | 34.52 | 40.61 | 6.09 | 17.6% |
| U.S. Polar Research Programs | 278.27 | 322.68 | 370.58 | 47.90 | 14.8% |
| U.S. Antarctic Logistical Support Activities | 70.26 | 66.66 | 67.52 | 0.86 | 1.3% |
| Integrative Activities | 130.92 | 137.12 | 131.37 | -5.75 | -4.2% |
| Arctic Research Commission | 1.19 | 1.17 | 1.45 | 0.28 | 23.9% |
| Total, Research and Related Activities | \$4,234.82 | \$4,331.48 | \$4,665.95 | \$334.47 | 7.7% |

Totals may not add due to rounding.

¹ OISE FY 2005 Actual includes \$9.42 million provided to NSF by the U.S. Department of State for an award to the U.S. Civilian Research and Development Foundation.

NSF FY 2007 Budget



Education and Human Resources Funding by Division

(Dollars in Millions)

| | FY 2006 | | | Change over | |
|--|-------------------|-----------------|--------------------|-------------------|--------------------|
| | FY 2005 Actual | Current Plan | FY 2007 Request | FY 2006 Amount | FY 2006 Percent |
| Experimental Program to Stimulate Competitive Research (EPSCoR) | \$93.35 | \$98.72 | \$100.00 | \$1.28 | 1.3% |
| Research on Learning in Formal and Informal Settings (DRL) | 238.76 | 215.16 | 215.00 | -0.16 | -0.1% |
| Undergraduate Education (DUE) ¹ | 237.52 | 211.71 | 196.80 | -14.91 | -7.0% |
| Graduate Education (DGE) | 154.75 | 153.02 | 160.57 | 7.55 | 4.9% |
| Human Resource Development (HRD) ¹ | 119.16 | 118.08 | 143.85 | 25.77 | 21.8% |
| Total, EHR ² | \$843.54 | \$796.69 | \$816.22 | \$19.53 | 2.5% |

Totals may not add due to rounding.

¹ FY 2005 Actual and FY 2006 Current Plan reflect proposed FY 2007 structure of programs. See text for additional detail.

² Excludes \$25.95 million in obligations in FY 2005, and an estimated \$100.0 million in FY 2006 and FY 2007 from H-1B Nonimmigrant Petitioner Fees.

NSF FY 2007 Budget



Major Research Equipment and Facilities Construction (MREFC) Account

(Dollars in Millions)

| | FY 2005 Actual | FY 2006 Current Plan | FY 2007 Request | FY 2008 Estimate | FY 2009 Estimate | FY 2010 Estimate | FY 2011 Estimate | FY 2012 Estimate |
|-------------------------|-------------------|----------------------------|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Ongoing Projects | | | | | | | | |
| ALMA | 49.30 | 45.14 | 47.89 | 47.07 | 37.37 | 20.98 | | |
| EarthScope | 44.80 | 46.40 | 27.40 | | | | | |
| IceCube | 48.10 | 46.25 | 28.65 | 22.38 | 11.33 | 0.95 | | |
| NEON | | | 12.00 | 12.00 | 20.00 | 30.00 | 26.00 | |
| SODV | 6.08 | 53.09 | 42.88 | | | | | |
| SPSM | 16.86 | | 9.13 | | | | | |
| DOJ Judgment | | | 3.00 | | | | | |
| New Starts | | | | | | | | |
| ARRV | | | 56.00 | 42.00 | | | | |
| OOI | | | 13.50 | 48.00 | 77.00 | 78.00 | 53.00 | 40.00 |
| AdvLIGO | | | - | 28.48 | 42.81 | 46.31 | 36.25 | 22.90 |
| Totals | \$165.14 | \$190.88 | \$240.45 | \$199.93 | \$188.51 | \$176.24 | \$115.25 | \$62.90 |

NSF FY 2007 Budget



National Science and Technology Council Crosscuts

(Dollars in Millions)

| | FY 2005 Actual | FY 2006 | | Change over FY 2006 | |
|---------------------------------------|-------------------|-----------------|--------------------|------------------------|---------|
| | | Current Plan | FY 2007 Request | Amount | Percent |
| National Nanotechnology Initiative | \$334.99 | \$343.77 | \$373.18 | \$29.41 | 8.6% |
| Climate Change Science Program | 197.88 | 196.88 | 205.25 | 8.37 | 4.3% |
| Networking and Information Technology | 810.67 | 810.33 | 903.74 | 93.41 | 11.5% |
| Homeland Security | 341.40 | 341.82 | 384.21 | 42.39 | 12.4% |

Sensors for the Detection of Explosives



2007
BUDGET
REQUEST



\$20
million

International Polar Year 2007-2008



2007
BUDGET
REQUEST

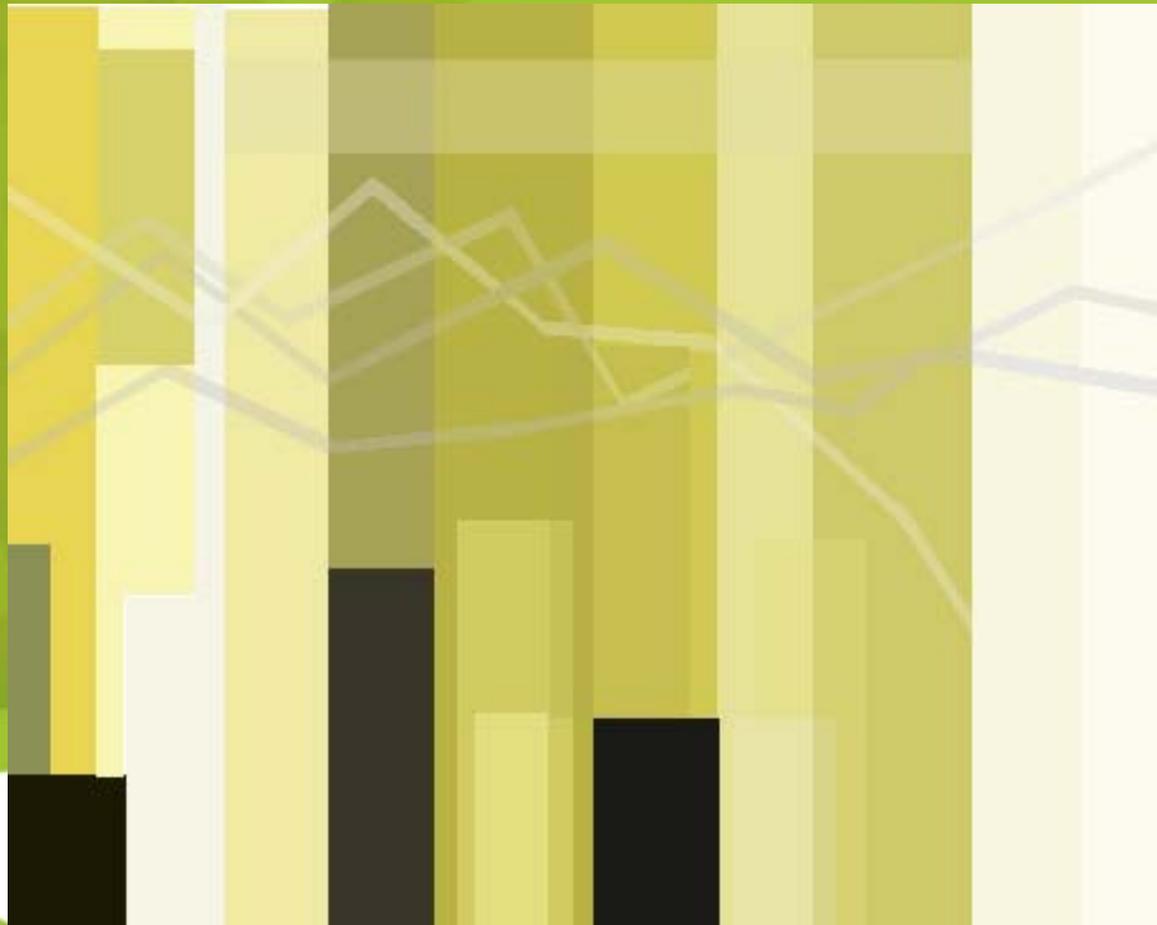


\$62
million

Science Metrics



2007
BUDGET
REQUEST



\$6.8
million

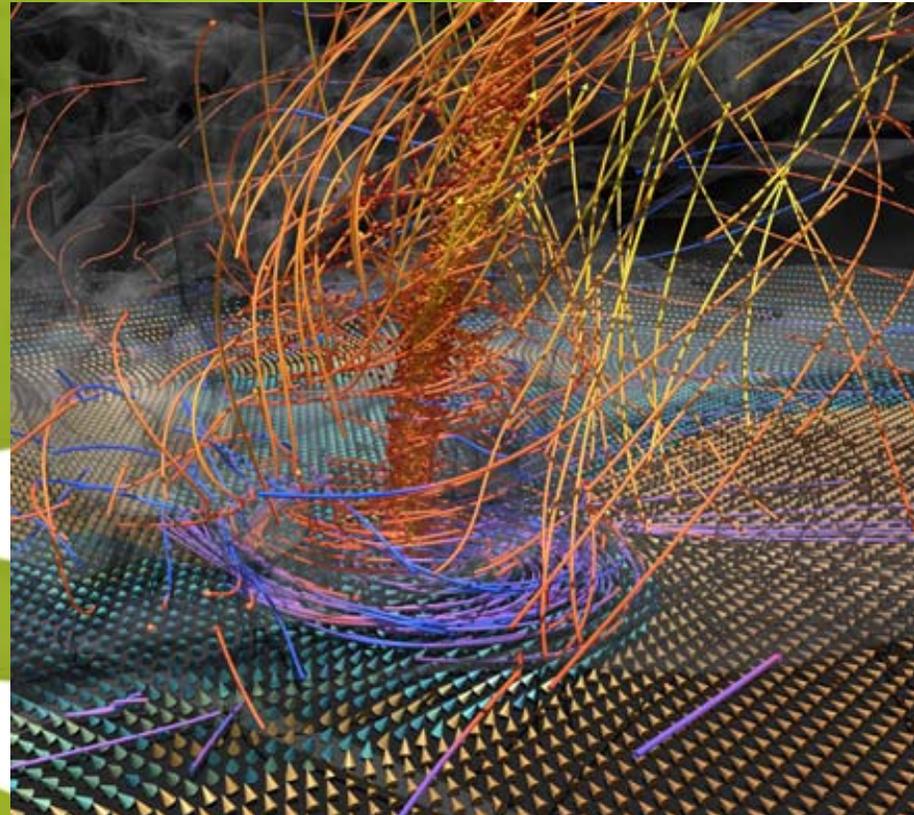
Cyberinfrastructure

\$597 million



2007
BUDGET
REQUEST

Petascale Computing
\$50 million



Bolstering K-12 Education



2007
BUDGET
REQUEST

Discovery Research K-12 \$104 M
Grand Challenges

**Developing effective
science and mathematics
assessments for K-12**

**Improving science
teaching and learning in
the elementary grades**

**Introducing cutting-edge
discoveries into K-12
classrooms**



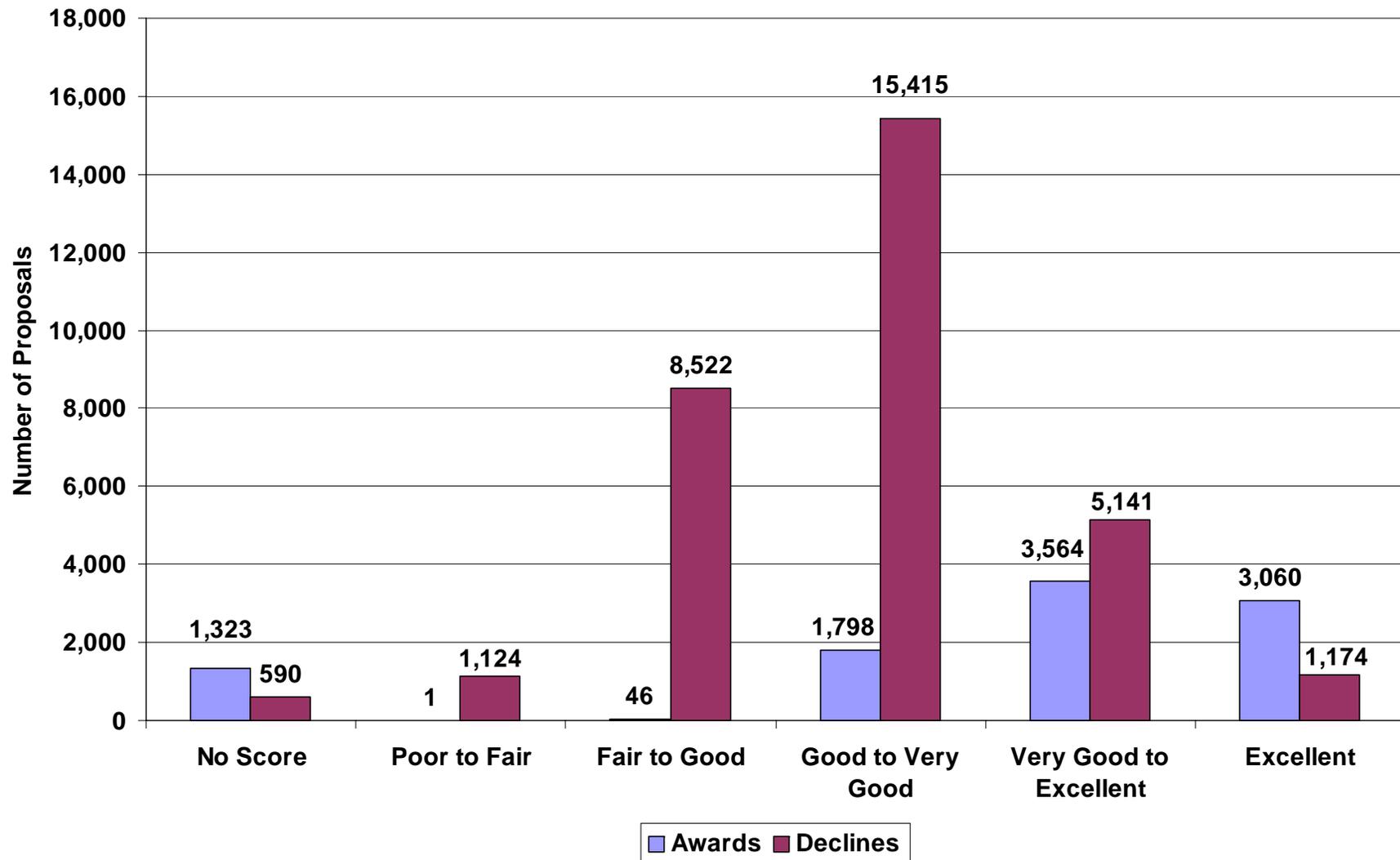


Current Proposal, Award and Funding Trends

NSF Recent Trends: FY 2002 to FY 2005

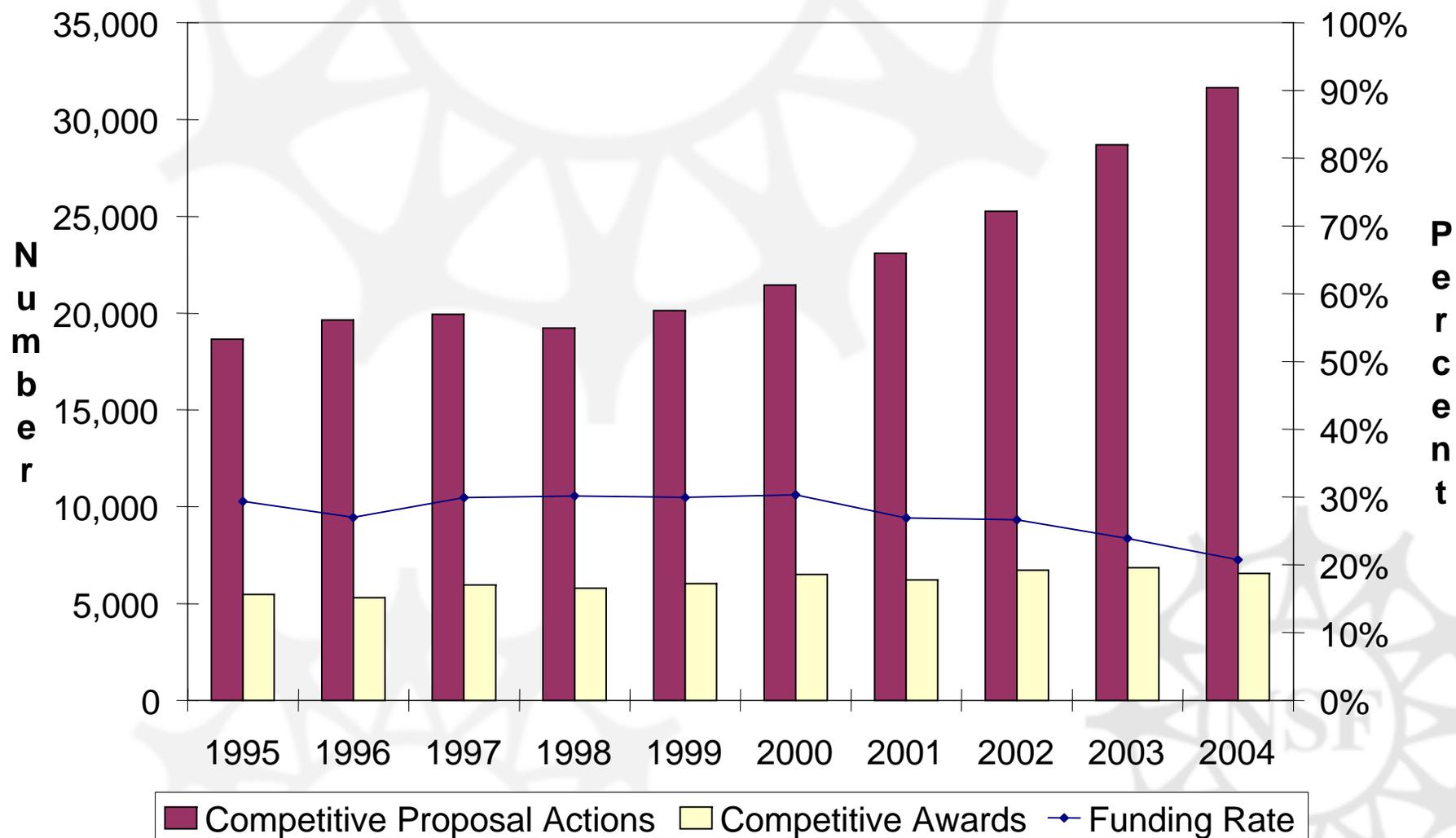
| | FY02 | FY03 | FY04 | FY05 | Change from FY02 to FY05 |
|--|-----------|-----------|-----------|-----------|-----------------------------------|
| Obligations Incurred (Millions of Dollars) | \$4,954 | \$5,579 | \$5,871 | \$5,654 | 14% |
| Organizational Excellence | \$184 | \$196 | \$268 | \$292 | 59% |
| FTE | 1,239 | 1,242 | 1,274 | 1,279 | 3% |
| # of Competitive Proposals | 35,164 | 40,075 | 43,851 | 41,722 | 19% |
| # of Competitive Awards | 10,406 | 10,844 | 10,380 | 9,757 | -7% |
| Aver. Annual Res. Grant Size | \$115,666 | \$135,609 | \$139,637 | \$143,669 | 24% |
| Aver. Research Grant Duration (years) | 2.9 | 2.9 | 2.9 | 2.9 | - |

Distribution of Average Reviewer Ratings FY 2005

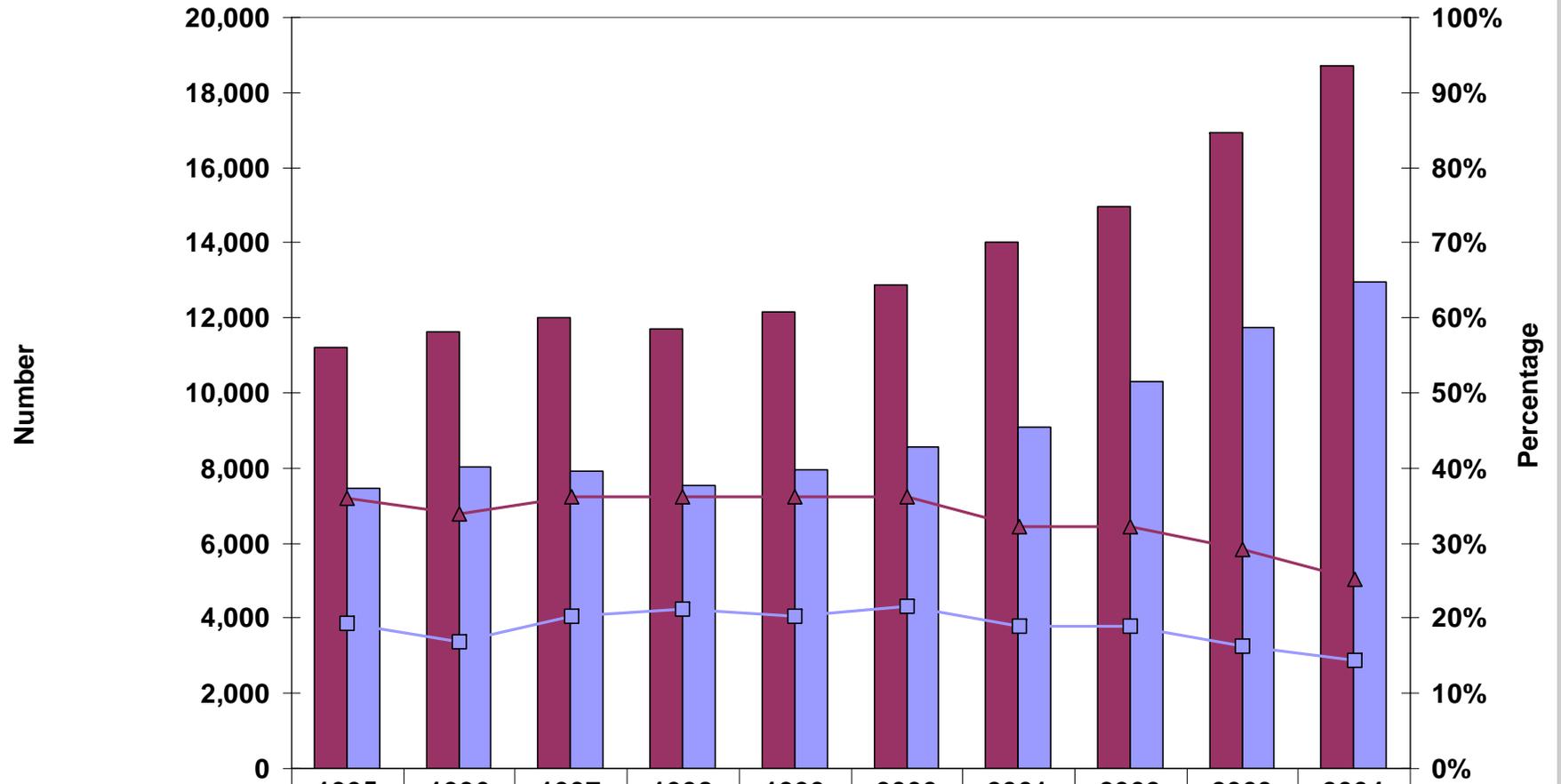


Number of Proposals: 31,966 Declines, 9,792 Awards

NSF Funding Rate for Competitive Awards - Competitive Research Grants

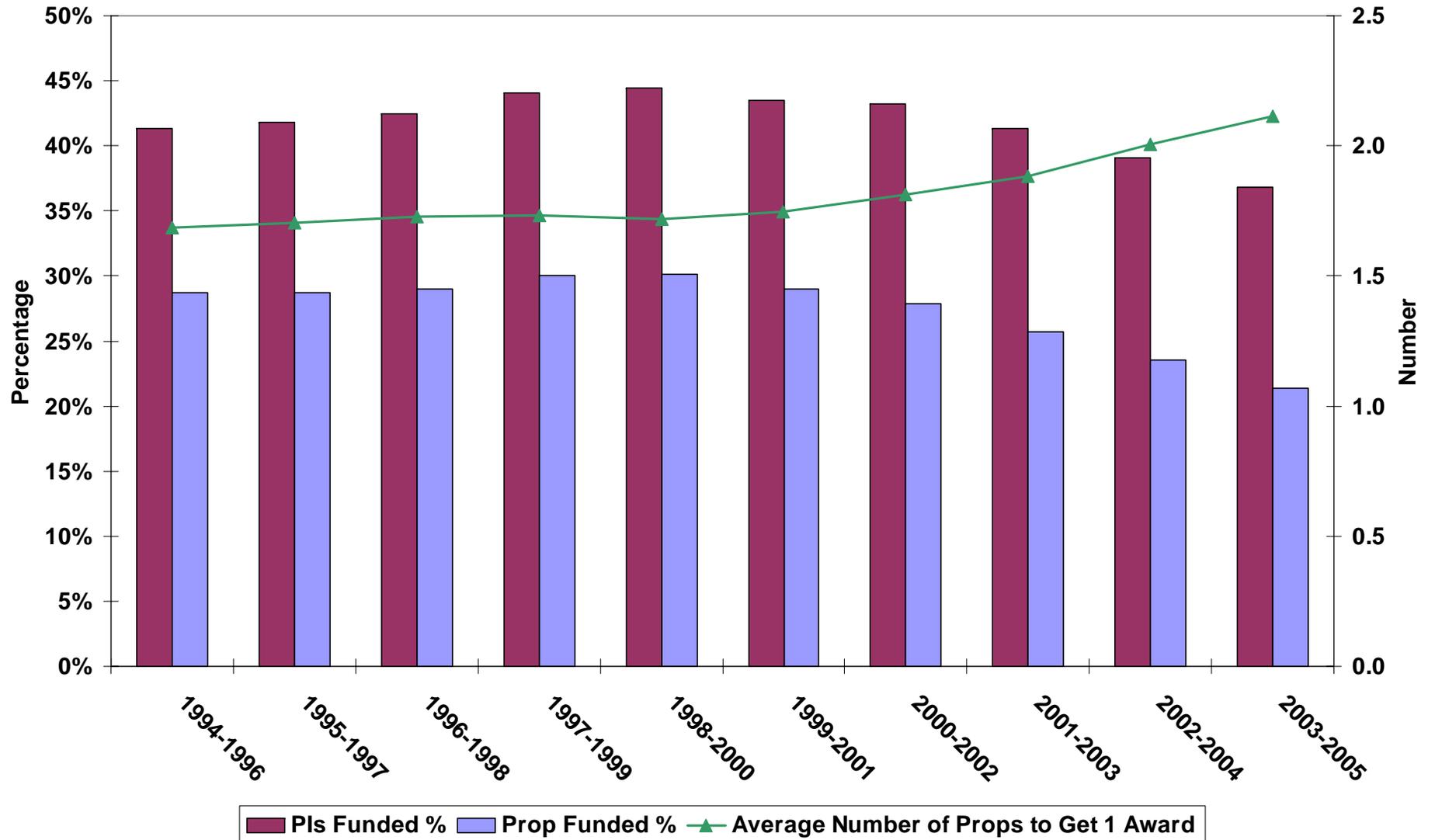


Research Grant Proposals by PI Type

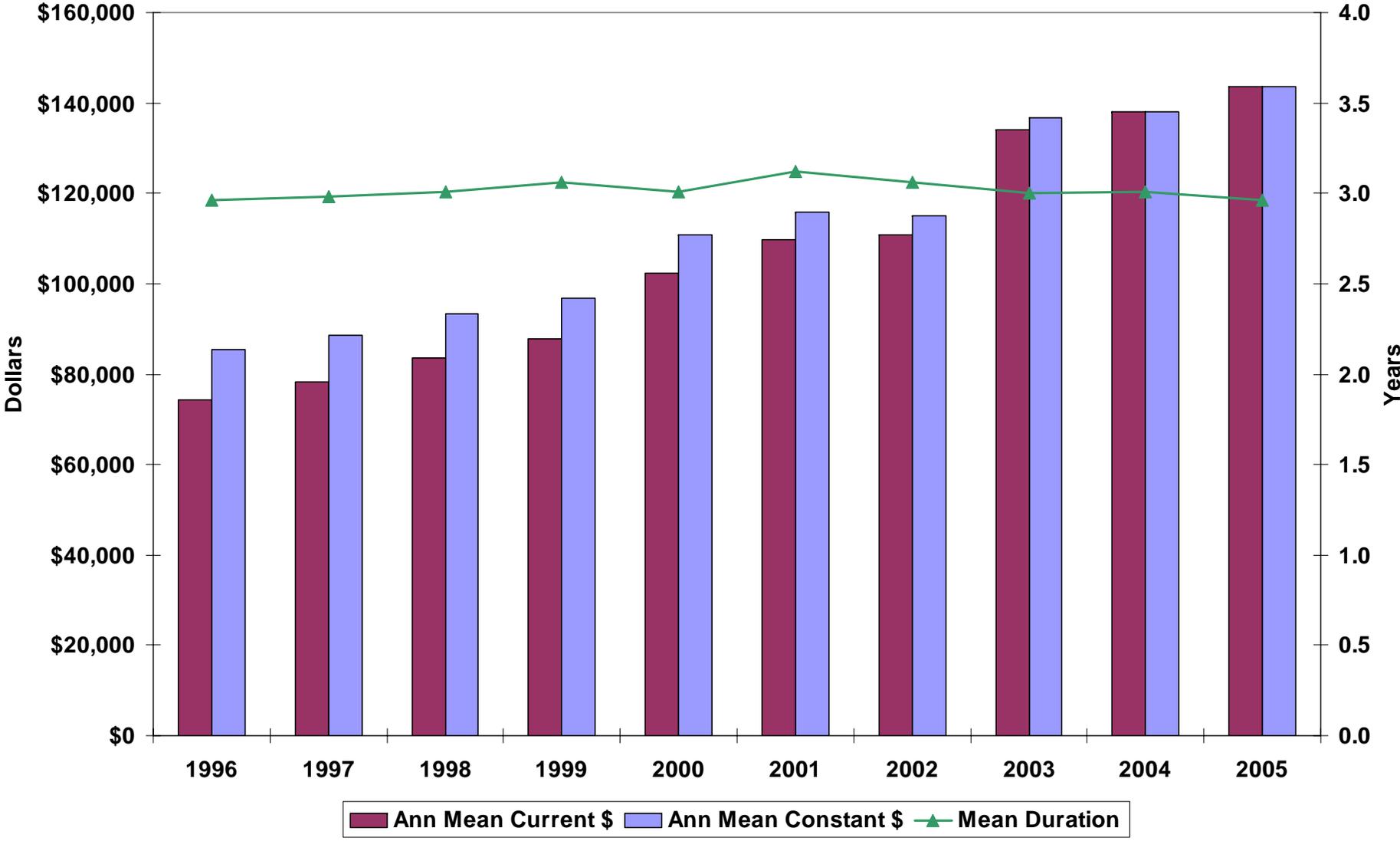


| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|--------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Proposals - Prior PI | 11,203 | 11,635 | 12,026 | 11,693 | 12,172 | 12,885 | 14,013 | 14,965 | 16,944 | 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



NSF Competitive Award Size and Duration - Research Grants



*Based on estimated 2003-2004 Deflators

Key Documents

- FY 2007 NSF Budget Request
 - <http://www.nsf.gov/about/budget/fy2007>
- 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/>