National Science Board

NSB-06-90
August 29, 2006

MEMORANDUM TO MEMBERS AND CONSULTANTS OF THE NATIONAL SCIENCE BOARD

SUBJECT: Summary Report of the August 9-10, 2006 Meeting

The major actions of the National Science Board (NSB, the Board) at its 393rd meeting on August 9-10, 2006 and a preliminary summary of the proceedings are provided. This memorandum will be publicly available for any interested parties to review. A more comprehensive set of NSB meeting minutes will be posted on the Board's public Web site (http://www.nsf.gov/nsb/) following Board approval at the September 2006 meeting.

1. Major Actions of the Board (not in priority order):

a. The Board approved the minutes of the Plenary Open Session (NSB-06-64) for the May 2006 meeting (http://www.nsf.gov/nsb/meetings/2006/0509/minutes.pdf). Minutes for the Plenary Executive Closed and Closed Sessions for the May 2006 meeting of the Board were also approved.

b. The Board approved a resolution to close portions of the upcoming September 27-28, 2006 Board meeting dealing with staff appointments; future budgets; grants and contracts; specific Office of the Inspector General investigations and enforcement actions; and National Science Foundation (NSF) participation in a civil or administrative action, proceeding, or arbitration (NSB-06-74) (http://www.nsf.gov/nsb/meetings/2006/0927/closing.pdf).

c. The Board authorized the NSF Director, at his discretion, to make an award to provide support to Michigan State University for the National Superconducting Cyclotron Laboratory (NSCL) for FY 2007 – 2011.

d. The Board authorized the NSF Director, at his discretion, to make an award to the Texas Advanced Computing Center (TACC) at the University of Texas at Austin for the World-Class Science through World Leadership in High Performance Computing for a period of 4 years after deployment.

e. The Board approved resolutions for the FY 2008 budget requests to the Office of Management and Budget (OMB) for the Office of the Inspector General, the National Science Board, and the National Science Foundation.

f. The Chairman introduced eight new Presidential Nominees to the Board: Dr. Mark Abbott, Oregon State University; Dr. Camilla Benbow, Vanderbilt University's Peabody College; Dr. John Bruer, The James S. McDonnell Foundation; Dr. Patricia Galloway, Nielsen-Wurster Group, Inc.; Dr. José-Marie Griffiths, University of North Carolina, Chapel Hill; Dr. Karl Hess, Beckman Institute, University of Illinois at Urbana; Dr. Thomas Taylor, University of Kansas; and Dr. Richard Thompson, University of Southern California. The Chairman also announced the recent nomination of Mr. Arthur Reilly, Cisco Systems, Inc.

g. The Chairman announced that, based on the recommendation of the Executive Committee, he selected Corvallis, Oregon as the site of the annual Board retreat, visit, and off-site meeting on February 7-8, 2007.

h. The Chairman also announced the appointment of Board Members to serve on the *ad hoc* Committee on NSB Nominations for the Class of 2008 – 2014 to be Dr. Wayne Clough, chairman, with Drs. Daniel Hastings, Elizabeth Hoffman, Alan Leshner, and Douglas Randall as members. The Board Chairman, Vice Chairman, and NSF Director will serve as *ex officio* members.

i. The Board accepted the *National Science Foundation Facility Plan, July 2006* subject to final edits to be approved by the Board Chairman and the chairman of the Committee on Programs and Plans.

j. The Board approved the draft *National Science Foundation Strategic Plan for FY 2006 – 2011* subject to final editorial changes resulting from Board discussions and recommended changes by the NSF Director, which are approved by the Board Chairman and the chairman of the Committee on Strategy and Budget prior to transmittal by NSF to OMB.

2. Board Chairman's Report

Dr. Steven Beering, Board Chairman, welcomed the Presidential Nominees for the National Science Board, Class of 2010 and 2012. Eight of nine Nominees were confirmed by the Senate on August 3, 2006. He thanked Dr. Michael Crosby, Board Executive Officer, and the Board Office for their efforts to help the process proceed as quickly as possible.

Dr. Beering introduced the Presidential Nominees for the Class of 2012.

- Dr. Mark Abbott of Oregon, Dean and Professor, College of Oceanic and Atmospheric Sciences, Oregon State University
- Dr. Camilla Benbow of Tennessee, Patricia and Rodes Hart Dean of Education and Human Development, Vanderbilt University's Peabody College
- Dr. John Bruer of Missouri, President, The James S. McDonnell Foundation
- Dr. Patricia Galloway of Washington (state), Chief Executive Officer, Nielsen-Wurster Group, Inc.

- Dr. José-Marie Griffiths of Pennsylvania, Dean and Professor, School of Information and Library Science, University of North Carolina, Chapel Hill
- Dr. Thomas Taylor of Kansas, Roy A. Roberts Distinguished Professor, Department of Ecology and Evolutionary Biology, Curator of Paleobotany for the Natural History Museum and Biodiversity Research Center, University of Kansas
- Dr. Richard Thompson of California, Keck Professor of Psychology and Biological Sciences, Psychology Department and Biological Sciences Department, University of Southern California

He also introduced the Presidential Nominee for the Class of 2010, replacing Dr. Delores Etter.

Dr. Karl Hess of Illinois, Swanlund Professor, Center for Advanced Study, Professor of Electrical and Computer Engineering and Physics, Faculty of the Beckman Institute, University of Illinois, Urbana

One Presidential Nominee for the Class of 2012 was unable to attend the meeting.

Mr. Arthur Reilly of New Jersey, Senior Director, Strategic Technology Policy, Cisco Systems, Inc.

The Chairman reminded both the Executive Committee and the chairman of the Committee on Programs and Plans that NSF Authorization Act of 2002, Section 14 requires the Board report to Congress any delegations of authority related to the use of the Major Research Equipment and Facilities Construction (MREFC) account. Dr. Beering will be reporting to Congress that there had been no delegation of authority related to MREFC during the past year. That report is due September 15, 2006.

At the May meeting, Dr. Beering asked Dr. Crosby to develop a list of proposed sites for the 2007 annual retreat, visit, and meeting. The Executive Committee reached a consensus recommendation that the Board's retreat, visit, and meeting site for February 2007 should take place at Corvallis, Oregon. Dr. Beering announced that he accepted this recommendation. He asked Dr. Crosby to develop the logistics and agenda, and provide updated information to the Board at the September and December 2006 Board meetings.

The Chairman announced the appointment of Board Members to serve on the *ad hoc* Committee on NSB Nominations for the Class of 2008 – 2014. The chairman of that committee will be Dr. Clough with committee members Drs. Hastings, Hoffman, Leshner, and Randall.

The Commission on 21st Century Education in Science, Technology, Engineering, and Mathematics (STEM) held its first meeting on August 3-4, 2006 at NSF. Dr. Beering called on Dr. Jo Anne Vasquez, a Board Member and Commission Vice Chairman, for an update.

Dr. Vasquez reported that since the May Board meeting, Dr. Beering appointed the final two members of the Commission: Nobel Laureate, Dr. Dudley Herschbach from Harvard University and former United States Senator Nancy Kassebaum Baker. In addition, Dr. Shirley Malcom was named as the Co-Chairman, along with Dr. Leon Lederman. During its first meeting, the Commission was addressed by Mr. Robert Shea from OMB, who spoke about the efforts of the inter-agency Academic Competitiveness Council that is reviewing STEM education programs

across the Federal Government; Dr. Donald Thompson from the Directorate for Education and Human Resources; and Mr. Norman Augustine who chaired the committee that produced the influential report, *Rising Above the Gathering Storm*, from the National Academies. The Commission formed a series of working groups during the meeting that will meet over the coming months and report back to the full Commission at its next meeting, which is tentatively scheduled for mid-November. The Commission plans to have a draft action plan ready to circulate in early 2007.

3. NSF Director's Report

Dr. Arden Bement, NSF Director, introduced the following new NSF staff:

- Mr. David Elizalde, Director, Division of Acquisition and Cooperative Agreement Support, Office of Budget, Finance, and Award Management (as of July 23, 2006)
- Dr. Edward Hackett, Director, Division of Social and Economic Sciences, Directorate for Social, Behavioral, and Economic Sciences (as of July 14, 2006)
- Mr. Jeffrey Nesbit, Director, Office of Legislative and Public Affairs (OLPA), Office of the Director (as of June 11, 2006)
- Dr. Sandra Schneider, Director, Division of Behavioral and Cognitive Sciences, Directorate for Social, Behavioral, and Economic Sciences (as of July 26, 2006)
- Dr. Rae Silver, Office of Integrative Activities (as of June 2006)

He also announced that Dr. Richard Buckius agreed to serve as Assistant Director for the Directorate for Engineering for the next 2 years beginning September 15, 2006. Dr. Buckius had been the Acting Assistant Director for that directorate since August 2005. Additionally, Dr. Bement announced that Dr. Donald Thompson, Assistant Director, Directorate for Education and Human Resources, completed his 4-year assignment with NSF.

The Director's congressional update, which listed numerous hearings and legislation relating to NSF, was submitted for the record. (Attachment)

Dr. Kathie Olsen, NSF Deputy Director, reported on an NSF effort to further support science and engineering education programs. The NSF Web site, which was recently awarded the *Webby*, will have a children's site that includes scientific information and quizzes to earn patches that correlate to NSF scientific disciplines.

4. NSB Committee Reports
(Note: The Education and Human Resources (EHR) Committee did not meet in August 2006.)

a. Executive Committee (EC)

<u>EC Open Session</u>

Dr. Beering notified the committee about the Board's congressional requirement of the NSF Authorization Act of 2002, Section 14 report, and that no delegation of MREFC authority was made by the Board during the past year. At the request of Dr. Beering, Dr. Crosby reported that he met with Mr. Thomas Cooley, NSF Chief Financial Officer, to develop an initial automated

system to record Board Member proposals in progress. Dr. Bement also reported on two NSF personnel updates and the status of an executive staff search.

EC Closed Session

In closed session, Dr. Crosby presented candidate sites for the annual NSB retreat, meeting, and visit in February 2007. The committee reached a consensus recommendation for Dr. Beering that Corvallis, Oregon be the site. Dr. Bement also reported on two NSF award items.

b. Audit and Oversight (A&O) Committee

A&O Open Session

Dr. Bement introduced Dr. Gloria Rogers, chairman of the Advisory Committee for Government Performance and Results Act (GPRA) Assessment. Dr. Rogers presented a brief background of the committee and its FY 2006 charge. She also noted that the Advisory Committee was asked to report on issues related to the NSF's strategic outcome goals and associated indicators as defined in the *NSF Strategic Plan for FY 2003 - 2008*. The committee concluded that NSF demonstrated significant achievement in all performance indicators related to the strategic outcome goals in FY 2006.

Mr. Salvatore Ercolano, with the accounting firm Clifton Gunderson LLP, presented information about the audit process and various audit reports that his firm will issue. He also discussed the concept of "auditor judgment" and emphasized that the conclusions reached during an audit are based on facts, figures, and analysis, and that the conclusions are subject to a quality review process. Mr. Ercolano stated that the audit is proceeding on schedule.

Mr. Cooley provided updates on a variety of topics. The FY 2006 financial audit is going well, and considerable progress has been made in addressing the FY 2005 reportable conditions regarding post-award monitoring and contract monitoring. NSF is also successfully addressing the new internal control analysis and reporting requirements.

A&O Closed Session

The committee reviewed the Office of Inspector General's proposed FY 2008 budget submission and approved recommending it to the full Board (NSB-06-75). *[The full Board subsequently approved the Office of Inspector General budget submission.]* The committee also heard about issues related to several ongoing investigations.

c. EHR Subcommittee on Science and Engineering Indicators (SEI)

Dr. Beering and Dr. Alan Rapoport, SEI Executive Secretary, provided an overview answering the question, "What is Science and Engineering Indicators?" Dr. Louis Lanzerotti, SEI chairman, explained the role of both the subcommittee and the full Board in the production of *Science and Engineering Indicators*. There was a discussion of the chapters in the publication. Dr. Lanzerotti introduced a parallel process to plan for *Science and Engineering Indicators*

2010 at the same time that the current edition for 2008 is being developed. Ms. Jean Pomeroy, Board Office staff, briefly discussed the new condensed version of *Indicators* and the Companion Piece.

d. Committee on Programs and Plans (CPP)

CPP Open Session

The committee heard reports from its task forces and subcommittee. CPP also heard information reports on NSF's activities in high performance computing, and on the EarthScope construction project. Discussions were held concerning the NSB policy on recompetition, and the timing and circumstances for the annual Board re-examination of priority order of MREFC candidates for new start projects. The committee also heard updates on the draft *NSF's Cyberinfrastructure Vision*, NSF's major research facilities portfolio, and the draft *NSF Facility Plan, July 2006*.

Dr. Lanzerotti provided background information on the NSB's policy on recompetition of NSF awards. He and Board Office staff will also continue to compile information on recompetition policies at other agencies, and provide more information and a recommendation at the November 2006 Board meeting.

Dr. Daniel Atkins, Director, Office of Cyberinfrastructure, provided an update on the draft *NSF's Cyberinfrastructure Vision for the 21st Century Discovery*, followed by an information item on NSF's activities in high performance computing, specifically the status of the petascale system acquisition. The second information item presented was on EarthScope, a construction project funded through the MREFC account. Dr. Margaret Leinen, Assistant Director, Directorate for Geosciences, provided a few examples of the successful impacts of EarthScope, and noted that the project is operating close to budget and schedule.

Dr. Olsen provided the annual update on NSF's major research facilities. Dr. Olsen also delivered the draft *NSF Facility Plan, July 2006* to the committee, which the committee recommended to forward to the full Board. *[The full Board subsequently accepted the draft NSF Facility Plan subject to final edits to be approved by the Board Chairman and the CPP chairman.]*

CPP Closed Session

The committee considered and approved two action items: Support for the National Superconducting Cyclotron Laboratory (NSCL) for FY 2007 – 2011 (NSB-06-81), and World-Class Science through World Leadership in High Performance Computing, Texas Advanced Computing Center (TACC) at the University of Texas at Austin (NSB-06-82). *[The full Board subsequently approved both resolutions.]*

e. CPP Subcommittee on Polar Issues (SOPI)

Dr. Karl Erb, Head of the Office of Polar Programs (OPP), described competing pressures for resources at South Pole Station for the coming operational season. These included construction of the IceCube neutrino detector, the 10-meter South Pole Telescope, and modernization of the South Pole Station.

Dr. Jane Dionne, Arctic Natural Sciences Program Manager, described recent exploration of the Arctic Ocean floor and summarized the goals and outcomes of numerous NSF-supported activities. Dr. Julie Palais, Glaciology Program Manager, provided a brief overview of the West Antarctic Ice Sheet Divide Ice Core Project, a study of climate, ice sheet history, and cryobiology that is part of International Polar Year (IPY) activities. She also described two NSF-funded projects: Polar RADAR for Ice Sheet Measurements (PRISM) and the recently awarded Center for Remote Sensing of Ice Sheets. Mr. Brian Stone, Research Support Manager for OPP, summarized progress on development of the Deep Ice Sheet Coring (DISC) Drill System. Lastly, Ms. Renee Crain, Assistant Program Officer in the Arctic Sciences Section, presented an overview of the recent IPY competition for education-related activities, with Ms. Valentine Kass, Program Officer in the Informal Education Division of the EHR Directorate.

f. CPP Task Force on Transformative Research (TR)

Dr. Doug Randall, TR chairman, reported that the task force is absorbing the results of the various workshops and discussions on transformative research. The task force plans to present a working draft report to the committee at the September 2006 Board meeting.

g. CPP Task Force on International Science (INT)

Dr. Jon Strauss, INT chairman, reported that the task force drafted preliminary recommendations following the hearing on May 11, 2006. A second roundtable discussion is planned for Monday, September 25, 2006 - 2 days before the Board meeting. Additional possible roundtable discussions are being considered.

h. CPP Task Force on Hurricane Science and Engineering (HSE)

Dr. Droegemeier, HSE co-chairman, reported that a first draft of a report was provided to the Board, and the task force plans to present a final draft report at the September 2006 meeting. Once approved, it will be released for public comment. The task force plans to submit a final report to the Board for approval at the November 2006 meeting.

i. Committee on Strategy and Budget (CSB)

<u>CSB Open Session</u>

Dr. Bement reported on the status of the NSF FY 2007 budget request. The House and Senate marks are close to the request level. The conference committee report is not expected until after the mid-term elections in November, and will likely be part of an Omnibus bill. A few

corrections to the request (OPP and MREFC accounts) will be made in the conference report. NSF will work with the National Academies to develop the requested Innovation Inducement Prize and will keep the Board informed.

Dr. Olsen summarized the draft *NSF Strategic Plan FY 2006 – 2011* and NSF responses to comments from the Board, NSF staff, and the public. The committee approved the Plan and forwarded the resolution to the full Board (NSB-06-87). *[The full Board subsequently approved the draft NSF Strategic Plan for FY 2006 – FY 2011, subject to final editorial changes resulting from Board discussions and recommended changes by the NSF Director, which are approved by the Board Chairman and the CSB chairman prior to transmittal by NSF to OMB.]*

CSB Closed Session

Dr. Crosby presented the FY 2008 budget request for the National Science Board, and CSB recommended that the Board approve the National Science Board FY 2008 budget submission (NSB-06-76). *[The full Board subsequently approved the Board FY 2008 budget submission.]*

Dr. Bement presented the NSF FY 2008 budget request, and the committee recommended that the Board approve the FY 2008 budget submission (NSB-06-77). *[The full Board subsequently approved the NSF FY 2008 budget submission.]*

j. *ad hoc* Engineering Education Group

The *ad hoc* Engineering Education Group plans to hold a second workshop on November 7, 2006 at Georgia Institute of Technology to address major issues raised during the October 2005 NSB-sponsored workshop at the Massachusetts Institute of Technology, "Engineering Workforce Issues and Engineering Education: What are the Linkages?"

Michael P. Crosby
Executive Officer

Attachment: NSF Director's Congressional Update

NSF Director's Congressional Update
August 2006

Appropriations:

On June 29 the House passed the Science, State, Justice, Commerce and Related Agencies Appropriations bill for the coming fiscal year. Included in the bill was funding for NSF at the President's requested level of $6.02 billion, a 7.9 per cent increase over the FY 2006 level.

On July 13 the Senate Appropriations Committee marked up their version of the Commerce, Justice and Science Appropriation, which would provide NSF with $5.99 billion. This is $410 million over the FY 2006 level, an increase of 7.4 percent. The Senate is not expected to vote on the measure before Congress adjourns, after which it is most likely to become part of an omnibus appropriations bill.

Congress is currently in recess until September 5th, and both the House and Senate are expected to adjourn on September 29.

Hearings:

There have been no hearings involving NSF witnesses since the last NSB meeting.

Legislation:

The following bills that mention the National Science Foundation have been introduced or have been subject to Congressional action since the last NSB meeting:

H.R.27; Rep. Howard P. (Buck) McKeon [CA-25] (introduced 1/4/2005)
Workforce Investment Act Amendments of 2005
6/29/2006: Passed Senate with an amendment by Unanimous Consent.

To enhance the workforce investment system of the Nation by strengthening one-stop career centers, providing for more effective governance arrangements, promoting access to a more comprehensive array of employment, training, and related services, establishing a targeted approach to serving youth, and improving performance accountability, and for other purposes. Requires consultation and Interagency Committee participation by the NSF Director.

H.R.5356; Rep. Michael T. McCaul [TX-10] (introduced 5/11/2006)
Research for Competitiveness Act
6/22/2006: Placed on Union Calendar No. 294.

Requires the NSF Director to allocate at least 3.5 percent of funds appropriated to NSF for Research and Related Activities for FYs 2007 through 2011 for grants to early-career researchers to establish innovative research programs and integrate education and research. Permits the existing Faculty Early Career Development (CAREER) Program to be designated as the mechanism for awarding such grants. Requires reports describing the: (1) distribution of the

institutions of the awardees of such program since FY 2001 among specified categories of institutions of higher education; and (2) impact of such program on the ability of young faculty to compete for NSF research grants.

H.R.5358; Rep. John J. H. "Joe" Schwarz [MI-7] (introduced 5/11/2006)
Science and Mathematics Education for Competitiveness Act
6/22/2006: Placed on the Union Calendar No. 293.

- Authorizes $50 M for FY 2007; $70 M for FY 2008; $90 M for FYs 2009 and FY 2010 to NSF for the Robert Noyce "Teacher" Scholarship Program and related capacity-building activities.
- Authorizes $50 M from FY 2007 to 2011 to NSF to award grants to establish science and mathematics teacher training partnership programs to improve elementary and secondary science and math instruction.
- Authorizes $40 M for FY 2007, $45 M for FY 2008, $50 M for FY 2009, $50 M for FY 2010, and $50 M for FY 2011 to NSF for the STEM Talent Expansion Program.
- Calls for the NSF Director to allocate at least 1.5 percent of funds appropriated for Research and Related Activities to the Integrative Graduate Education and Research Traineeship program for FYs 2007 through 2011.
- Authorizes $4 M for FY 2007 and $10 M for FYs 2008 through 2011 to NSF for a program to award grants to STEM departments at institutions of higher education to establish Centers for Undergraduate Education in Science, Mathematics, and Engineering.
- Requires the NSF to assess the impact of the Professional Science Master's (PSM) degree at a variety of institutions.
- Requires the NSF to submit a report to Congress on the impact of the broader impacts grant criterion.

H.R.5605; Rep. David Wu [OR-1]; introduced 6/14/2006
10,000 Trained by 2010 Act
6/14/2006: Referred to House Committee on Science.

- Authorizes NSF from $3.5 M (FY 2007) increasing incrementally to $3.8 M (FY 2010) to award grants for basic research on innovative approaches to improve information systems, including research on information studies; population informatics; translational informatics; and data security, integrity, and confidentiality.
- Authorizes NSF from $4.5 M (FY 2007) increasing incrementally to $4.8 M (FY 2010) to award multi-year grants for Informatics Research Centers.
- Authorizes NSF from $9 M (FY 2007) increasing to $9.6 M (FY 2010) for capacity building grants to establish or improve undergraduate and master's degree information programs.
- Authorizes from $7 M (FY 2007) increasing incrementally to $7.6 M (FY 2010) to award grants under the Scientific and Advanced Technology Act of 1992 for the purposes of section 3(a) and (b) of that Act (which authorize grants to: 3(a) associate-degree-granting colleges to assist them in providing education in advanced-technology fields, including manufacturing, and 3(b) to improve the quality of their core education courses in science and mathematics and to support National Centers of Scientific and Technical Education).

H.R.5644; Rep. Michael T. McCaul [TX-10] (introduced 6/20/2006)
Green Energy Education Act of 2006
6/20/2006: Referred to House Committee on Science.

Authorizes the Secretary of Energy to contribute energy research and development funds to NSF for the Integrative Graduate Education and Research Traineeship program to support graduate education related to such energy projects. Authorizes the Secretary to contribute funds for advanced energy technology research and development for high performance buildings to the NSF for curriculum development to improve undergraduate or graduate interdisciplinary engineering and architecture education related to the design and construction of such buildings.

H.R.5656; Rep. Judy Biggert [IL-13] (introduced 6/21/2006)
Energy Research, Development, Demonstration, and Commercial Application Act of 2006
6/27/2006: Ordered to be reported out of committee by voice vote.

To provide for Federal energy research, development, demonstration, and commercial application activities, and for other purposes. Section 14 contains same provisions as H.R.5644. Authorizes the Secretary of Energy to contribute energy research and development funds to NSF for the Integrative Graduate Education and Research Traineeship program to support graduate education related to such energy projects. Authorizes the Secretary to contribute funds for advanced energy technology research and development for high performance buildings to the NSF for curriculum development to improve undergraduate or graduate interdisciplinary engineering and architecture education related to the design and construction of such buildings.

S.2802; Sen. John Ensign [NV] (introduced 5/15/2006)
A bill to improve American innovation and competitiveness in the global economy.
7/19/2006: Reported out of Committee on Commerce, Science, and Transportation Committee with and placed on Senate Legislative Calendar No. 524.

Addresses the competitiveness of the United States in science, mathematics, and technology. Authorizes appropriations for NSF for fiscal years 2007 through 2011 of between $6.4 billion and $11.4 billion a year. The bill would earmark a portion of the authorized amounts to increase graduate research fellowships, expand the graduate education and research trainee program, and create pilot programs to stimulate competitive research. Also directs the President to convene a national summit on United States science and technology enterprises and establish a council on innovation and competitiveness.

S.3483; Sen. John Ensign [NV]; introduced 6/8/2006
National Innovation Education Act - College Pathway Act of 2006
6/8/2006: Referred to Senate Committee on Health, Education, Labor, and Pensions.

- Authorizes NSF to award competitive grants to local educational agencies (LEAs) for the development or improvement of magnet school programs which focus on science, mathematics, and technology education. Authorizes $10 M for FY 2007 and $20 M for FYs 2008 and 2009 to NSF to award grants to LEAs to enable implementation of innovation-based experiential learning.

- Requires NSF to: (1) expand the Graduate Research Fellowship Program by an additional 250 fellowships annually for five years (1,250 total) and the Integrative Graduate Education and Research Traineeship Program (1,250 additional trainees over five years); (2) establish a clearinghouse for sharing program elements used in successful professional science master's degree programs; (3) award grants for pilot programs to four-year institutions of higher education to facilitate the creation or improvement of such programs; (4) submit a multi-year plan that describes how the funds authorized by this Act for doubling research funding shall be used; and (5) study how the federal government should support the new discipline of service science.
- Authorizes appropriations for the NSF Mathematics, Engineering, and Technology Talent Expansion Program as follows: $35 M (FY 2007); $50 M (FY 2008); $100 M (FY 2009); and $150 M (FY 2010).
- Authorizes the doubling of NSF research funding as follows: $6,440 M (FY 2007); $7,280 M (FY 2008); $8,120 M (FY 2009); $8,960 M (FY 2010), and $9,800 M (FY 2011).

S.3502; Sen. Edward Kennedy [MA]; introduced 6/13/2006
New National Defense Education Act of 2006
6/13/2006: Referred to Senate Committee on Health, Education, Labor, and Pensions.

- Authorizes to NSF $400 M for the NSF Math and Science Partnerships for FY 2007, and increases funding by 10 percent annually for each of the FYs 2008 through 2011. These funds should be in addition to any other amounts authorized or appropriated.
- Directs funding of the Teacher institutes for the 21st Century program as follows: $50 M (FY 2007); $60 M (FY 2008); $70 M (FY 2009); $80 M (FY 2010), and $90 M (FY 2011).
- Authorizes funds to double NSF's Education and Human Resources programs as follows: $887 M (FY 2007); $1,040 M (FY 2008); $1,193 M (FY 2009); $1,346 M (FY 2010); and $1,500 M (FY 2011).

S.3510; Sen. Robert Menendez [NJ]; introduced 6/14/2006
Amends the NSF Authorization Act of 2002 to authorize grants for Partnerships for Access to Laboratory Science (PALS).
6/14/2006: Referred to Senate Committee on Health, Education, Labor, and Pensions.

- Authorizes $9,839,262,000 to NSF for FY 2007, and of that amount, calls for $50 M to be specifically allocated for a Partnerships for Access to Laboratory Sciences program, which awards grants to high-need local educational agencies to establish partnerships for access to laboratory science to improve laboratories and provide instrumentation as part of a comprehensive program to enhance the quality of STEM instruction at the secondary school level.
- Calls for the program to be evaluated, and for the NSF Director to provide technical assistance, including providing advice from experts on how to develop: (1) a quality application for a grant and (2) quality activities from funds received from a grant.