Calendar No. 524

109TH CONGRESS *2d Session*	SENATE	REPORT 109–285

THE AMERICAN INNOVATION AND COMPETITIVENESS ACT OF 2006

R E P O R T

OF THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ON

S. 2802

JULY 19, 2006.—Ordered to be printed

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SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED NINTH CONGRESS

SECOND SESSION

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JULY 19, 2006.—Ordered to be printed

Mr. STEVENS, from the Committee on Commerce, Science, and Transportation, submitted the following

R E P O R T

[To accompany S. 2802]

The Committee on Commerce, Science, and Transportation, to which was referred the bill (S. 2802) to improve American innovation and competitiveness in the global economy, having considered the same, reports favorably thereon with amendments and recommends that the bill (as amended) do pass.

PURPOSE OF THE BILL

The purpose of the American Innovation and Competitiveness Act of 2006, S. 2802, as reported, is to maintain and improve U.S. innovation and competitiveness in the 21st century by increasing research investment, improving science and technology talent, and developing an innovation infrastructure.

BACKGROUND AND NEEDS

Innovation will be required for the United States to remain competitive in the 21st century

Today the world is becoming dramatically more interconnected and competitive. To remain globally competitive, the United States must continue to lead the world in innovation. Innovation is the lifeblood of U.S. economic growth and well-being. Education and basic research are the two critical components in the early stages of the innovation ecosystem. A well-educated pipeline of secondary school students feed into the college ranks, which, in turn, feed into the graduate schools. Graduate students engage in challenging and cutting edge research led by principal investigators that are often

funded by Federal grants. Often, the students and scientists will make a breakthrough discovery or innovation and attempt to commercialize it. If successful, they will have created the next great American company that sells the next great product, employs thousands of people, and continues to drive this country's economic growth.

The United States has the luxury of claiming many of the world's top scientific minds. These leading scientists either emigrate to the United States because we provide some of the best facilities and resources, or they are homegrown, having excelled through the U.S. education system to reach the top echelons in their respective disciplines. However, this premier standing that we have enjoyed is in serious jeopardy. As a result, many believe our economic prosperity also is at risk.

Unfortunately, America is steadily losing its global edge in the disciplines that foster innovation in the 21st century—science, technology, engineering, and mathematics. The trouble signs are numerous. For example, based on a 2004 study, fewer than one-third of U.S. fourth-graders performed at or above a level deemed "proficient" and about one-fifth of eighth-graders lacked the competency to perform basic math computations. Fifteen-year-olds in the United States ranked 24 out of 29 Organization for Economic Co-Operation Development (OECD) countries tested in mathematics. [1]

Math competency translates into science and engineering capability: 36 percent of German undergraduates receive degrees in science and engineering; 59 percent of Chinese; and 66 percent of Japanese. In 2006, only 6 percent of U.S. high school seniors plan to pursue engineering degrees, down from 36 percent from a decade ago. Estimates of the number of engineers, computer scientists, and information technology students who obtain 2-, 3-, or 4- year degrees vary. One estimate is that in 2004, "China graduated approximately 350,000 engineers, computer scientists and information technologists with 4-year degrees, while the United States graduated about 140,000." [2] In addition, "China graduated about approximately 290,000 with 3-year degrees in these same fields, while the United States graduated approximately 85,000 with 2- and 3-year degrees." [3] Over the past 3 years alone, both China and India have doubled their production of 3- and 4-year degrees in these fields, while the U.S. production of engineers is stagnant, and the rate of production of computer scientists and information technologists doubled. [4] These statistics are alarming and will have dire consequences as the U.S. talent pipeline begins to diminish. This trend is even more disturbing as other countries aim to overtake the United States economically.

In addition, the U.S. share of global high-technology exports has fallen in the last two decades from 30 percent to 17 percent, while

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[1] Lemke, M., Sen, A., Pahlke, E., Partelow, L., Miller, D., Williams, T., Kastberg, D., Jocelyn, L. (2004). "International Outcomes of Learning in Mathematics Literacy and Problem Solving: PISA 2003 Results From the U.S. Perspective." (NCES 2005-003). Washington, DC: U.S. Department of Education, National Center for Education Statistics.

[2] Committee on Prospering in the Global Economy of the 21st Century, "Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future," p. ES-1, (February 2006 Edition) [hereinafter, "Rising Above the Gathering Storm"].

[3] *Id.* (citing G. Gereffi and V. Wadhwa. 2005. "Framing the Engineering Outsourcing Debate: Placing the United States on a Level Playing Field with China and India," available at http://memp.pratt.duke.edu/downloads/duke__outsourcing__2005.pdf).

[4] See *id.*

the U.S. trade balance in high-technology manufactured goods shifted from a positive $33 billion in 1990 to a negative $24 billion in 2004.[5]

The challenge for the United States is how best to unleash its innovative capacity to increase productivity, improve our standard of living, and ensure continued leadership in global markets.

Both the "Innovate America" report and the "Rising Above the Gathering Storm" report recommend that the Federal Government take action to ensure America retains its innovation lead

Several organizations have taken notice of these trends. The Council on Competitiveness and the National Academies each issued reports recognizing that science-based innovation drives economic growth. The basic premise of both reports is that innovation arises out of scientific discovery, which in turn drives economic growth. While the United States cannot compete currently with nations such as China and India based on wages, our traditional advantage has been the innovation and technical skill of our workforce. Nonetheless, while our global competitors continue to improve their technical skills, the United States graduates fewer mathematicians and scientists. These reports highlight the innovation and competitiveness challenges facing the United States and recommend what the Federal Government should do to maintain U.S. leadership in these areas.

I. INNOVATE AMERICA

The first of these two reports, "Innovate America", was issued as part of the National Innovation Initiative supported by the Council on Competitiveness in December 2004. The Council on Competitiveness is a non-partisan organization comprised of the Nation's top CEOs, university presidents, and labor leaders. Beginning in October 2003, the Council convened over 500 leaders from industry, academia, government, and the non-profit sector to address the challenges of a more interconnected and competitive world, and to make recommendations on how such challenges should be addressed at the Federal level. Through the "Innovate America" report, the National Innovation Initiative (NII) urged Federal policy makers to address the challenge of innovation comprehensively. More specifically, the NII grouped its recommendations under three major objectives: (1) increasing research investment, (2) cultivating science and technology talent, and (3) developing an innovation infrastructure.[6]

II. RISING ABOVE THE GATHERING STORM

The second report on innovation and competitiveness was released by the National Academies, entitled "Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future." Several members of Congress asked the National Academies to identify Federal policy recommendations that can ensure the country's economic competitiveness and prosperity

[5] See *id.*, at p. ES-9. See also National Science Board, "Science and Engineering Indicators 2006-Volume 1," p. 6-20.

[6] For more information on the Council on Competitiveness or the National Innovation Initiative, see www.compete.org (last visited May 16, 2006). See also www.innovateamerica.org (last visited May 16, 2006).

in the 21st century. To meet this charge, the National Academies created the Committee on Prospering in the Global Economy of the 21st century, chaired by Norman Augustine and included a number of experts from academia and industry. In late 2005, the National Academies issued four broad recommendations and twenty specific actions to implement these recommendations. The four recommendations were, in relevant part, to: (1) sustain and strengthen the Nation's traditional commitment to long-term basic research, (2) make the United States the most attractive setting in which to study and perform research to develop, recruit, and retain the best and brightest students, scientists, and engineers from within the United States and throughout the world, (3) increase America's talent pool by vastly improving K-12 science and mathematics education, and (4) ensure that the United States is the premier place in the world to innovate.

Basic research enables innovation

While innovation is the key to the future global competitiveness of the United States, basic research is the key to continued innovation. Basic research is the simple pursuit of knowledge through scientific inquiry. Basic research projects often have unknown applications when they are first conducted, but may yield tremendous long-term benefits as additional discoveries are built upon each other, fostering innovative technologies that revolutionize the way products and services are delivered. Basic research projects funded by the Federal Government have spawned such technologies as personal computers, the Internet, fiber optics, bar codes, medical imaging devices, balloon catheters, hearing aids, laser eye surgery, air bags, and global positioning devices and satellite telecommunications systems. In every case, the Federal Government's investment in research was essential to advance to the point at which the private sector recognized a potentially marketable product and invested in its further development.

In spite of its central importance to fueling economic growth, however, today the future of basic research appears vulnerable. The National Academies' "Rising Above the Gathering Storm" report contends that although the "United States currently spends more on research and development than the rest of the countries combined...the commitment to basic research, particularly in the physical sciences, mathematics, and engineering, is inadequate."[7] For example, although Congress authorized the doubling of the National Science Foundation's (NSF) budget from 2002 to 2007, NSF's funding (in constant fiscal year 2005 dollars) has actually decreased or remained stagnant in recent years.[8] In 2005, only 23 percent of all research proposals submitted to NSF were funded—the lowest proportion in 15 years.[9]

Federal investment in basic research is essential since corporations and other private entities fund relatively little basic research. Corporations and other private entities do not support basic research for a number of reasons, including: (1) direct benefits of

[7] See "Rising Above the Gathering Storm," at p. 6-2, (emphasis in original).

[8] See American Association for the Advancement of Science, "Historical Data on Federal Research and Development, FY-1976-2006," available at http://www.aaas.org/spp/rd/hist06p2.pdf (last visited May 16, 2006).

[9] See NSF Budget Office statistics, available at http://dellweb.bfa.nsf.gov/awdfr3/default.asp (last visited June 22, 2006).

basic research can be difficult to trace since new knowledge is built on layers of previous discoveries, (2) basic research tends to be risky and its applications may not be realized for several years, and (3) shareholder pressure for short-term results discourages long-term investment by industry.[10] Furthermore, a related problem in recent years has been the shift of the Federal research dollars to the life sciences. From 1998 to 2003, funding for the National Institutes of Health (NIH) doubled. In contrast, for the past 15 years, funding for basic research in the physical sciences, engineering, and mathematics, has remained relatively flat.

Historically the Department of Defense (DoD) has maintained a leading role in support of basic research, but recent trends indicate that the agency is shifting its research attention away from the broad unfettered exploration toward basic research that support near term needs. While no one questions DoD's immediate priorities, its change in focus makes civilian support for basic research even more imperative. In order to maintain an innovative and competitive economy in the 21st century, the Committee believes the Federal Government needs to place special emphasis on basic research in the physical sciences, technology, engineering, and mathematics.

The President's American Competitiveness Initiative (ACI)

President George W. Bush's American Competitiveness Initiative (ACI) proposes to double cumulative investment over 10 years in three key Federal agencies that support basic research in the physical sciences and engineering: (1) NSF, (2) the National Institute of Standards and Technology (NIST), and (3) the Department of Energy's Office of Science. In addition to the doubling efforts at these three agencies, the President's fiscal year (FY) 2007 budget makes other similarly high-leverage programs a significant priority, such as basic research at DoD.

In 2007, the ACI proposes overall funding increases for NSF, NIST, and the Department of Energy's Office of Science of $910 million, or 9.3 percent, above FY 2006. To achieve doubling within ten years, overall annual increases for these ACI research agencies would average roughly 7 percent. This would amount to a total of $50 billion in new investments in high-leverage, innovation-enabling fundamental research that will underpin and complement shorter-term research performed by the private sector.

SUMMARY OF PROVISIONS

S. 2802 focuses on three primary areas of importance to maintaining and improving United States innovation in the 21st century: (1) research investment, (2) increasing science and technology talent, and (3) developing an innovation infrastructure.

Title I of this legislation would: (1) require the President to convene a National Science and Technology Summit within 180 days of enactment of this legislation, (2) require the National Academy of Science to conduct a study one year after enactment and every four years thereafter, to identify forms of risk that create barriers to innovation, (3) amend the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3711) to rename the National Tech-

[10] See "Rising Above the Gathering Storm," at pp. 3-14, 3-15, and 6-2.

nology Medal as the "National Technology and Innovation Medal", (4) require the Director of the Office of Science and Technology Policy (OSTP), in consultation with the Director of the Office of Management and Budget (OMB), to develop and issue a set of principles for the communication of scientific information by government scientists, policy makers, and managers to the public, (5) require the Director of OSTP to ensure that all civilian Federal agencies that conduct scientific research develop specific policies and procedures regarding the release of scientific information consistent with the overarching principles established by OSTP, (6) express a Sense of Congress that OSTP should encourage all elementary and middle schools to observe a Math and Science Day twice per school year, (7) require OSTP, through the National Academy of Sciences, to conduct a study on how the Federal Government should best support "service science" through research, education, and training, (8) require the Director of OSTP to review all provisions of the Internal Revenue Code of 1986 and submit a report to Congress and the President on any provisions thereof that discourage or encourage innovation, and (9) require the Director of OSTP to conduct a comprehensive review of all Federal regulations and submit a report to Congress and to the President on any regulations that discourage or encourage innovation.

Title II would: (1) establish the President's Council on Innovation and Competitiveness to develop a comprehensive agenda to promote innovation in the public and private sectors, and (2) establish the Innovation Acceleration Grants Program to direct Federal agencies funding research in science and technology to set as a goal dedicating approximately 8 percent of their respective research and development budgets to grants directed toward high-risk frontier research.

Title III would: (1) increase authorized funding for NSF from approximately $6.4 billion in FY 2007 to $11.4 billion in FY 2011, (2) expand existing NSF graduate research fellowship and traineeship programs, (3) require NSF to work with institutions of higher education to facilitate the development of professional science master's degree programs, (4) expand authorization levels for NSF's technology talent program, (5) help prioritize activities in NSF's Research and Related Activities Account to meet critical national needs in the physical or natural sciences, technology, engineering, mathematics, or enhance competitiveness or innovation in the United States, (6) authorize increased funding for NSF's Experimental Program to Stimulate Competitive Research (EPSCoR), (7) require NSF to establish a mentoring program and an apprenticeship program for women who are interested in careers in science, technology, engineering or mathematics, (8) require NSF to develop and publish a plan regarding broadband access for scientific research purposes in EPSCoR-eligible jurisdictions, and (9) reaffirm NSF's merit-review and peer-review processes.

Title IV would: (1) express a Sense of the Congress that National Aeronautics and Space Administration (NASA) shall utilize funding authorized by the NASA Authorization Act of 2005 (P.L. 109–155) to participate fully in any interagency efforts to promote innovation and economic competitiveness through scientific research and development, (2) establish an Aeronautics Institute for Research within NASA, (3) establish a Basic Research Executive Council

within NASA to oversee the distribution and management of programs and resources engaged in support of basic research activity, (4) express a Sense of Congress that NASA should implement a program to address aging work force issues in aerospace, and (5) direct NASA to increase funding for basic research for FY 2007 by $160 million contingent upon the availability of unobligated balances to NASA.

Title V would: (1) authorize NIST funding of approximately $640 million in FY 2007 to approximately $937 million in FY 2011, (2) include yearly authorization levels for the Hollings Manufacturing Extension Partnership (MEP) program from $110 million in FY 2007 to $130 million in FY 2011, (3) eliminate the Undersecretary of Commerce for Technology, Assistant Secretary of Commerce for Technology Policy, and the Technology Administration at the Department of Commerce, (4) require NIST to set aside no less than 8 percent of its annual funding for high-risk, high-reward innovation acceleration grants discussed in title II of this Act, (5) update the process through which MEP centers are evaluated, and (6) transfer the Experimental Program to Stimulate Competitive Technology (EPSCoT) to NIST.

Title VI would: (1) require the Administrator of the National Oceanic and Atmospheric Administration (NOAA), in consultation with the Director of NSF and the Administrator of NASA, to establish a coordinated program of ocean and atmospheric research and development focused on technologies and methods that would promote U.S. leadership and competitiveness, (2) require the Administrator of NOAA to conduct, develop, support, promote, and coordinate formal and informal educational activities at all levels to enhance public awareness and understanding of ocean, coastal and atmospheric science, and (3) require the Administrator of NOAA to develop a science education plan setting forth education goals and strategies for NOAA.

LEGISLATIVE HISTORY

On November 18, 2005, the Full Committee held a hearing, chaired by Senator Stevens, on "The Future of Science." The hearing examined the future of scientific research in the United States and featured testimony from 3 Nobel laureates.

On March 15, 2006, Senator Ensign chaired a Full Committee hearing on "Innovation and Competitiveness Legislation." This hearing discussed innovation and competitiveness challenges facing the United States and explored legislative action that could be taken by the Commerce Committee to address these challenges. The hearing considered several legislative items, particularly (1) S. 2109 and S. 2390, the National Innovation Act, which are designed to respond to the recommendations of "Innovate America" and (2) S. 2198, the PACE-Education Act, designed with 2 companion bills to respond to recommendations of "Rising Above the Gathering Storm."

On March 29, 2006, Senator Ensign chaired a Technology, Innovation, and Competitiveness Subcommittee hearing on, "The Importance of Basic Research to United States Competitiveness." This hearing explored how basic research in the physical sciences impacts both long-term economic development in the United States

and the ability of American industry to remain globally competitive.

On April 25, 2006, Senator Hutchison chaired a Science and Space Subcommittee hearing on, "NASA Issues and Challenges." This hearing reviewed NASA progress in implementing provisions of the NASA Authorization Act of 2005 in the context of the President's FY 2007 budget request. The hearing also focused on International Space Station (ISS) Research, the transition from the Space Shuttle to the Crew Exploration Vehicle, NASA activities in science and engineering education, and contributions to U.S. technological competitiveness.

On April 26, 2006, Senator Ensign chaired a Science and Space Subcommittee hearing on, "Fostering Innovation in Math and Science Education." This hearing focused on the importance of mathematics and science education in fueling future developments in the 21st century's high-tech innovation economy.

On May 2, 2006, Senator Hutchison chaired a Science and Space Subcommittee hearing on, "The National Science Foundation." The hearing focused on NSF's FY 2007 budget request, research priorities, current plans and activities, and its support for the President's ACI.

On May 15, 2006, Senator Ensign introduced S. 2802, the "American Innovation and Competitiveness Act of 2006," with Senator Stevens and Senator Hutchison as original cosponsors, and was referred to the Committee. The bill is also cosponsored by Senators Inouye, Allen, Smith, Burns, Kerry, Nelson of Florida, Pryor, and Lieberman.

On May 18, 2006, the Full Committee met in open Executive Session and ordered S. 2802 to be reported favorably with amendments.

ESTIMATED COSTS

In accordance with paragraph 11(a) of rule XXVI of the Standing Rules of the Senate and section 403 of the Congressional Budget Act of 1974, the Committee provides the following cost estimate, prepared by the Congressional Budget Office:

JUNE 19, 2006.

Hon. TED STEVENS,
Chairman Committee on Commerce, Science, and Transportation, U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: The Congressional Budget Office has prepared the enclosed cost estimate for S. 2802, the American Innovation and Competitiveness Act of 2006.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contacts are Deborah Reis and Leigh Angres.

Sincerely,

DONALD B. MARRON,
Acting Director.

Enclosure.

S. 2802—American Innovation and Competitiveness Act of 2006

Summary: S. 2802 would address the competitiveness of the United States in science, mathematics, and technology. For this purpose, the bill would authorize appropriations for the National Institutes of Standards and Technology (NIST) and the National Science Foundation (NSF) for fiscal years 2007 through 2011. It also would direct the President to convene a national summit on United States science and technology enterprises and establish a council on innovation and competitiveness.

Assuming appropriation of the amounts authorized by the bill and estimated to be necessary for required studies and other activities, CBO estimates that implementing S. 2802 would cost $32.4 billion over the 2007–2011 period. We also estimate that enacting this legislation would increase direct spending by $1 million in 2007 and by about $10 million over the 2007–2016 period. Enacting S. 2802 would not affect revenues.

S. 2802 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA); any costs to state, local, or tribal governments would be incurred voluntarily.

Estimated cost to the Federal Government: The estimated budgetary impact of S. 2802 is shown in the following table. The costs of this legislation fall within budget functions 250 (general science, space, and technology), 370 (commerce and housing credit), and 800 (general government).

	By fiscal year. in millions of dollars—					
	2006	2007	2008	2009	2010	2011
SPENDING SUBJECT TO APPROPRIATION						
NIST and NSF Spending Under Current Law:						
Budget Authority[1]	6,457	0	0	0	0	0
Estimated Outlays	5,877	4,189	1,812	649	164	25
Proposed Changes:						
National Science Foundation:						
Authorization Level	0	6,440	7,433	8,577	9,898	11,422
Estimated Outlays	0	1,444	4,397	6,444	7,881	9,247
National Institutes of Standards and Technology:						
Authorization Level	0	640	704	774	851	937
Estimated Outlays	0	276	478	615	739	840
Other Spending:						
Estimated Authorization Level	0	4	1	1	1	1
Estimated Outlays	0	4	1	1	1	1
Total Changes:						
Estimated Authorization Level	0	7,084	8,138	9,352	10,750	12,360
Estimated Outlays	0	1,724	4,876	7,060	8,621	10,088
Spending Under S. 2802:						
Estimated Authorization Level[1,2]	6,457	7,084	8,138	9,352	10,750	12,360
Estimated Outlays	5,877	5,913	6,688	7,709	8,785	10,113
CHANGES IN DIRECT SPENDING						
Spending of NIST Fees for Facilities:						
Estimated Budget Authority	0	1	1	1	1	1
Estimated Outlays	0	1	1	1	1	1

[1] The 2006 level is the amount appropriated for that year for NIST and NSF.
[2] The estimate does not include the costs of the National Aeronautics and Space Administration and the National Oceanic and Atmospheric Administration programs addressed by titles IV and VI because such activities are already being carried out under existing authority.

Basis of estimate: For this estimate, CBO assumes that S. 2802 will be enacted by the end of fiscal year 2006 and that the entire amounts authorized and estimated to be necessary will be appro-

priated for each fiscal year. Estimated outlays are based on historical spending patterns for NSF and NIST programs.

Spending subject to appropriation

S. 2802 would specifically authorize the appropriation of nearly $47.7 billion over the 2007–2011 period. In addition to those amounts, CBO estimates that other federal agencies such as the National Academy of Science would need about $8 million over that period for studies and others activities required under title I and title II. Assuming appropriation of those amounts, CBO estimates that implementing S. 2802 would cost $1.7 billion in fiscal year 2007 and $32.4 billion over the 2007–2011 period. As described below, most of those amounts would be used for federal research programs and grants.

National Science Foundation. Title III would authorize the appropriation of between $6.4 billion and $11.4 billion a year over the 2007–2011 period for the NSF, which supports research in science, mathematics, and engineering, primarily through competitive grants. By comparison, NSF received an appropriation of $5.7 billion for 2006. 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. CBO estimates that appropriation of the authorized amounts for NSF would result in discretionary spending of $1.4 billion in 2007 and $29.4 billion through 2011.

National Institutes of Standards and Technology. Title V would authorize the appropriation of between $640 million and $937 million a year over the 2007–2011 period for NIST, which sets industry and scientific standards, makes grants, and conducts research related to technology. In 2006, NIST received an appropriation of $0.7 billion. Appropriation of the specified amounts would result in discretionary spending of $276 million in 2007 and $2.9 billion over the 2007–2011 period.

Other Provisions. CBO estimates that carrying out other provisions of the bill would cost about $8 million over the 2007–2011 period, assuming appropriation of the authorized or necessary amounts. Of that amount, $1 million would be specifically authorized for 2007 for the National Academy of Science to conduct a study on barriers to innovation in United States industries. Based on information provided by the Office of Science and Technology Policy, we estimate that $7 million would be used to prepare other required studies, to generate reports on federal regulations that inhibit scientific innovation, to conduct the national science and technology summit meeting, and to establish a council on innovation and competitiveness.

We estimate that other provisions of the bill would have no budgetary effect because the programs they authorize would duplicate existing efforts. Specifically, title II would direct the President to set aside 8 percent of each federal agency's annual research budget for grants that emphasize innovative technologies. CBO estimates that implementing this provision would have no net impact on the spending of these agencies because it would require them to set new priorities on how they use their existing research resources rather than expand their research programs.

Similarly, titles IV and VI would direct the National Aeronautics and Space Administration and the National Oceanic and Atmospheric Administration to coordinate research and development activities within their jurisdictions to emphasize innovation and economic competitiveness. CBO estimates that implementing these titles would have no significant effect on the federal budget because most of the activities that would be required are already being carried out under existing authority.

Direct spending

Section 506 would authorize NIST to spend certain fees collected from nonfederal and private-sector entities for the use of its facilities. Under current law, these fees are deposited in the general fund of the U.S. Treasury. CBO estimates that allowing NIST to spend them would increase direct spending by about $1 million in 2007 and by about $10 million over the 2007–2016 period.

Intergovernmental and private-sector impact: S. 2802 contains no intergovernmental or private-sector mandates as defined in UMRA. Funding authorized in the bill may benefit institutions of higher education that participate in research activities authorized in the bill. Any costs they might incur would result from complying with conditions for receiving federal assistance.

Previous CBO estimate: On May 11, 2005, CBO transmitted a cost estimate for H.R. 250, the Manufacturing Technology Competitiveness Act of 2005, as ordered reported by the House Committee on Science on May 4, 2005. H.R. 250 would authorize appropriations for NIST and for certain NSF activities over the 2006–2008 period. In contrast, S. 2802 would authorize appropriations for all NIST and NSF programs over the 2007–2011 period. The CBO estimates for these bills reflect the different authorization periods and the fact that S. 2802 would cover additional NSF programs beyond those addressed by H.R. 250.

Estimate prepared by: Federal Costs: Deborah Reis and Leigh Angres. Impact on State, Local, and Tribal Governments: Lisa Ramirez-Branum. Impact on the Private Sector: Fatimot Ladipo.

Estimate approved by: Peter H. Fontaine, Deputy Assistant Director for Budget Analysis.

REGULATORY IMPACT STATEMENT

In accordance with paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee provides the following evaluation of the regulatory impact of the legislation, as reported:

NUMBER OF PERSONS COVERED

S. 2802, as reported, would authorize appropriations for NSF and NIST for FY 2007 through FY 2011, and for the National Academy of Sciences for FY 2007. NSF conducts basic research in several scientific areas. NIST promotes innovation and industrial competitiveness by performing research in advancing measurement science, standards, and technology. The National Academy of Sciences performs a public service by bringing together committees of experts in all areas of scientific and technological endeavor. These experts serve pro bono to address critical national issues and give advice to the Federal Government and the public.

ECONOMIC IMPACT

The legislation would not have an adverse impact on the Nation. The legislation would authorize increased levels to sustain on-going and new awards, cooperative agreements, and contracts related to the missions of NSF, NASA, NIST, and NOAA. The underlying objective of the bill is to improve the economic competitiveness of the Nation through the increased investment in research and development programs supporting innovation and the improved education of students in the science, technology, engineering, and mathematics.

PRIVACY

This legislation would not have a negative impact on the personal privacy of individuals.

PAPERWORK

This legislation would not increase the paperwork requirement for private individuals or businesses. There are reports required of OSTP, NSF, NIST, and NASA. These reports would address such topics as barriers to innovation, service science, regulations and tax provisions that discourage or encourage innovation, increased funding for the NSF, activities of the Basic Research Executive Council at NASA, high-risk, high-reward research, EPSCoT, and education goals and strategies at NOAA. This legislation also would require OSTP to establish overarching principles for the communication of scientific research results to the public.

SECTION-BY-SECTION ANALYSIS

Section 1. Short title; Table of contents

This section would provide that the legislation be cited as the "American Innovation and Competitiveness Act of 2006." A Table of Contents also would be provided.

TITLE I—OFFICE OF SCIENCE AND TECHNOLOGY POLICY; GOVERNMENT-WIDE SCIENCE

Section 101. National Science and Technology Summit

Subsection (a) would require the President to convene a National Science and Technology Summit within 180 days of enactment to evaluate the health and direction of the Nation's science and technology enterprise. Subsection (b) would require the President to identify key research and technology challenges and recommendations for research and development investment over the next five years as a result of the Summit in subsection (a). Subsection (c) would require the Director of OSTP to provide an annual report containing recommendations for areas of investment for Federal research and technology programs together with a justification for each area identified in the report.

The Committee included this provision to ensure that increased investments in research and technology are made strategically. The Summit is intended to help identify potential transformational areas. Nonetheless, Federal investment in basic research must continue across all scientific disciplines.

The Committee continues to be concerned about the increasing costs of science projects and the dwindling public support and understanding of them. Many of these projects have taken on international partners to share the costs. An example of this type of partnership is represented in the International Polar Year (IPY) 2007–2008. The IPY is envisioned to be an intense, coordinated campaign of polar observations, research, and analysis that will be multidisciplinary in scope and international in participation. The National Academy of Sciences' report, "A Vision for the International Polar Year 2007–2008," has recommended that U.S. efforts should excite and engage the public to increase understanding of the importance of the polar regions in the global system and advance general science literacy in the Nation. This recommendation is consistent with the underlying objectives of the bill to encourage more students to consider careers in science, technology, engineering, and mathematics. The exotic polar regions capture the imagination of many people and, therefore, engage the public, including students.

Section 102. Study on barriers to innovation

Section 102 would require the National Academy of Sciences to conduct a study to identify forms of risk that create barriers to innovation, one year after enactment of this bill and every four years thereafter. The study is intended to support research on the long-term value of innovation to the business community and to identify means to mitigate legal or practical risks presently associated with such innovation activities. The provision was derived from S. 2109.

Section 103. National Innovation Medal

Section 103 amends section 16 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3711) to rename the "National Technology Medal" as the "National Technology and Innovation Medal." This provision is intended to respond to recommendations for national innovation prizes. The Committee expects that the Technology and Innovation medal would be used to recognize significant achievements at the time that they occur.

Section 104. Release of scientific research results

Section 104 would require the Director of OSTP, in consultation with the Director of OMB, to develop and issue a set of principles for the communication of scientific information by government scientists, policy makers, and managers to the public within 90 days after the date of enactment of this Act.

Subsection (b) would require the Director of OSTP to ensure that all civilian Federal agencies that conduct scientific research develop specific policies and procedures regarding the release of scientific information consistent with the principles established by OSTP pursuant to subsection (a) within 180 days after the date of enactment of this Act. Subsection (b) also would require that these agency-specific policies be uniformly applied across the agency, widely communicated, and readily accessible to all employees and the public. Finally, subsection (b) would require these agency-specific policies to address specifically what is and what is not permitted or recommended.

Section 104 is based upon recommendations from the National Science Board's review of the policies of Federal science agencies concerning the suppression and distortion of research findings and their impact on the quality and credibility of all future government-sponsored scientific research results. The review was performed in response to complaints from government scientists regarding allegations of suppression and distortion of climate change research findings by government officials. The Nation must trust the quality and credibility of science in order to rely on its results to inform public policy.

Section 105. Semiannual Math and Science Days

Section 105 would express a Sense of Congress that OSTP should encourage all elementary and middle schools to observe a Math and Science Day twice in every school year for the purpose of facilitating the interaction of math and science mentors and grade school students. This section also expresses a Sense of Congress that OSTP should initiate a program, in consultation with appropriate Federal agencies and departments, to allow and encourage Federal employees with scientific, technological, engineering, or mathematical responsibilities to reach out to local schools on such Math and Science Days to instruct and inspire grade school students' interest in math and science through real life math and science experiences and demonstrations. Finally, this section expresses a Sense of Congress that OSTP should promote the involvement by employees from the private sector and from institutions of higher learning in Math and Science Days. Peaking the interest of students in real-world science and discoveries can yield benefits in the development of American scientific talent.

Section 106. Study on service science

Section 106 would express a Sense of Congress that the Federal Government should better understand and respond strategically to the emerging vocation and learning discipline known as "service science" to strengthen the competitiveness of U.S. enterprises and institutions and to prepare U.S. residents for high-wage, high skill employment.

Subsection (b) would require the Director of OSTP, through the National Academy of Sciences, to conduct a study on how the Federal Government should best support service science through research, education, and training. This study would have to be conducted not later than 270 days after the date of enactment of this Act. Service science would be defined as the curriculums, research programs, and training regimens, including management and engineering programs, that exist or that are being developed to teach individuals to apply technology, organizational process management, and industry specific-specific knowledge to solve complex problems. Section 106 is based on a provision of S. 2109 and S. 2390 to respond to the "Innovate America" report's recommendation to recognize and define "service science" as an academic discipline.

Section 107. Review and report by Director of the Office of Science and Technology Policy

Section 107 would require the Director of OSTP to review all provisions of the Internal Revenue Code of 1986 and submit a report to Congress and the President on any provisions thereof that discourage or encourage innovation within 180 days after the date of enactment of this Act.

Section 108. Report by Director of the Office of Science and Technology Policy

Section 108 would require the Director of OSTP to conduct a comprehensive review of all Federal regulations and submit a report to Congress and to the President on any regulations that discourage or encourage innovation within 180 days after the date of enactment of this Act.

TITLE II—INNOVATION PROMOTION

Section 201. President's Council on Innovation and Competitiveness

Section 201 would require the President to establish a President's Council on Innovation and Competitiveness to develop a comprehensive agenda to promote innovation in the public and private sectors. In consultation with OMB, this Council would develop and use metrics to assess the impact of existing and proposed laws that affect innovation in the United States. In addition, the Council would help to coordinate the various Federal efforts that support innovation, use metrics to assess the performance of the Federal innovation programs located in different administrative agencies, and submit an annual report to the President and to the Congress on how the Federal Government can best support innovation.

Subsection (c) would establish the membership of the Council to include the Secretaries of Commerce, Defense, Education, Health and Human Services, Homeland Security, Labor, and Treasury, along with the heads of NASA, the Securities and Exchange Commission, NSF, the Office of the United States Trade Representative, OMB, OSTP, the Environmental Protection Agency, and other relevant Federal agencies involved in innovation. The Secretary of Commerce would chair the Council.

Subsection (d) would require that as the President's Council on Innovation and Competitiveness develops a comprehensive agenda for strengthening the innovation and competitiveness capabilities of the Federal Government, State governments, academia, and the private sector, that the Council consult with appropriate representatives from the private sector, scientific organizations, academic organizations, and other nongovernmental organizations working in the area of science or technology.

Subsection (e) would amend section 101(b) of the High-Performance Computing Act of 1991 (15 U.S.C. 5511(b)) by providing that the President shall establish a distinct advisory committee on high-performance computing.

Subsection (f) would enable the President to designate an existing council or advisory panel to perform the duties and functions of section 201. The Committee expects that the council established by this section will coordinate with other interagency groups that

are similar in membership and purview, including the National Science and Technology Council.

Section 201 is adapted from S. 2109 and S. 2390 and captures several recommendations from the Infrastructure section of "Innovate America," including those to create an innovation strategy led by the President and to use metrics and scorecards to track and assess national innovation.

Section 202. Innovation acceleration grants

Section 202 would require the President, through the head of each Federal research agency, to establish the "Innovation Acceleration Grants Program" to support and promote innovation in the United States.

Subsection (b) would require each department or agency that sponsors scientific research to set as a goal 8 percent of its annual research budget to be directed towards grants under the Program. Each agency head would be required to submit an implementation plan to OSTP and OMB within 90 days of enactment of this Act. Subsection (b) also would require each implantation plan to include metrics upon which grant funding decisions would be made and metrics for assessing the success of the grants awarded. Under subsection (b)(2)(C), any grants issued by an executive agency pursuant to section 202 would be for a period not to exceed 3 years. Not later than 90 days prior to the expiration of a grant issued pursuant to section 202, the Executive agency that approved the grant would be required to complete an evaluation of the effectiveness of the grant based on established metrics under subsection (b)(2)(B). The Executive agency would be required to publish and make available to the public each grant review conducted. Any grant that the Executive agency awarding the grant determines has failed to satisfy any of the metrics established under subsection (b)(2)(B), shall not generally be eligible for a renewal. The head of the Executive agency would only be able to authorize a waiver from the metric-meeting requirements of subsection (b) if (1) he or she determined that the grant failed to meet a small number of metrics and (2) the failure was not significant for the overall performance of the grant. Grants that satisfy all metrics or which receive a waiver from the requirement to satisfy all metrics would be eligible for a one-time renewal for a period not to exceed 3 years. Any additional renewals would be considered only if the head of the Executive agency that awarded the grant made a specific finding that the program being funded involved (1) a significant technology advance (2) that required a longer timeframe to complete critical research and the research satisfied all metrics established under subsection (b)(2)(B).

Both "Innovate America" and "Rising Above the Gathering Storm" recognize that current Federal research tends to be incremental and therefore, relatively low risk. [11] The reports recommend methods to allocate funding for higher-risk, transformational research and section 202, in conjunction with section 503, would respond to these recommendations. The Committee chose to designate 8 percent of research and development funds as a goal rath-

[11] See Council on Competitiveness, "Innovate America," p. 57 (2005 Edition). See also "Rising Above the Gathering Storm," at p. 6–13.

er than a hard set-aside. The Committee did this in order in order to allow agencies to adapt programs over time and so as to guard against disruption in research programs that are not receiving new funding under this Act or the American Competitiveness Initiative.

TITLE III—NATIONAL SCIENCE FOUNDATION

Section 301. Authorization of appropriations

Subsection (a) would authorize appropriations for the National Science Foundation (NSF) at the following levels for 5 years.

(All amounts are in billions.)

	2007	2008	2009	2010	2011
NSF	$6.440	$7.433	$8.577	$9.898	$11.422

Subsection (b) would require the Director of NSF to create a plan for spending this increased funding within 180 days of enactment, taking into account the priorities established by the Science Summit authorized in this Act.

Both the "Innovate America" and "Rising Above the Gathering Storm" reports recommend increased investment in basic science at NSF. Congress previously endorsed a 5-year NSF doubling in the 2002 NSF Authorization Act (P.L. 107–368).

Section 302. Graduate fellowships and graduate traineeships

Section 302 would require the Director of NSF to expand both the Graduate Research Fellowship Program and the Integrative Graduate Education and Research Traineeship Program for an additional 1,250 students each over the next 5 years. Of the funds authorized under section 301, the Graduate Research Fellowship Program would be authorized at $34 million for each of the FYs 2007 through 2011. Of the funds authorized under section 301, the Integrative Graduate Education and Research Traineeship Program would be authorized at $57 million for each of the FYs 2007 through 2011. The provisions are derived from S. 2109 and would respond to recommendations of "Innovate America" regarding graduate traineeships.

Section 303. Professional science masters degree programs

Section 303 would require the Director of NSF to establish an NSF clearinghouse to share program elements used in professional science masters degree programs and other advanced degree programs related to science, mathematics, technology, and engineering, to help institutions of higher education establish professional science masters programs. The clearinghouse would be established in conjunction with 4-year institutions of higher education, graduate schools, industry, and Federal agencies.

Subsection (b) would require the Director to award grants for pilot programs to 4-year institutions of higher education including applicable graduate schools, academic departments and programs, to facilitate the institution's creation or improvement of professional science master's degrees programs. The program would make awards to a maximum of 200 4-year institutions of higher institutions for a 3-year period. Any grant renewals would be for a

maximum of 2 additional years. The Director would be required to give preference in making awards to 4-year institutions of higher education seeking Federal funding to support pilot professional science masters degree programs to applicants that secure more than 2/3 of their funding for such professional science masters degree programs from sources other than the Federal Government.

Subsection (d) would authorize $20 million for FY 2007 and such sums as may be necessary for the subsequent years from the authorizations contained in section 301. The Professional Science Masters degree is a new, innovative masters degree option for bachelor's graduates in science, mathematics, or engineering, and is designed to provide training and skills to enable recipients to compete in today's global economy. This 2-year, rapid-cycle degree is intended for those pursuing employment in industry, government, or the non-profit sectors. The degrees combine science and mathematics studies with knowledge and training in management, law, or other professional areas and are designed to respond to documented workforce needs, student interests, and demand.

Section 303 has its origins in S. 2109 and the "Innovate America" report's recommendation regarding professional science masters degrees.

Section 304. Increased support for science education through the National Science Foundation

Within the amounts authorized under section 301, section 304 would authorize appropriations for the science, mathematics, engineering, and technology talent program established in section 8(7) of the National Science Foundation Act of 2002 (P.L. 107–368) at $35 million in FY 2007, $50 million in FY 2008, $60 million in 2009, and $70 million in FY 2010. This provision, adapted from S. 2109, builds on the "Innovate America" report's discussion of NSF's technology talent program, which seeks to expand undergraduate majors in science, technology, engineering, and math fields. Subsection (b) encourages students involved in technology talent programs to reach out to middle and secondary school students and teachers and engage them in the science, technology, engineering, and mathematics fields.

Section 305. Meeting critical science needs

Section 305, subsection (a) would require the Director of NSF to include consideration of the degree to which NSF awards and research activities assist in meeting critical national needs in innovation, competitiveness, the physical and natural sciences, technology, engineering, and mathematics. Proposed research activities and grants under the Research and Related Activities budgetary account, which can be expected to make contributions in physical and natural sciences, technology, engineering, and mathematics, or which can be expected to enhance competitiveness or innovation in the United States, should be given priority in the selection of awards and in allocation of NSF's resources.

With section 305, the Committee underscores the need to ensure that appropriate consideration is given in the increased awarding of grants made possible through the increased funding levels authorized by this title, to proposals which have the potential for making significant contributions in innovation, competitiveness,

the physical and natural sciences, technology, engineering, and mathematics.

Subsection (c) provides that the priority treatment described in section 305(b) would be applied to other fellowship, grant, or award programs authorized by title III.

With subsection (d), the Committee inserted clarifying language to ensure that the priority consideration required by section 305 does not restrict or bias the grant selection process against other areas of research consistent with the mandate of the Foundation.

Section 306. Experimental Program to Stimulate Competitive Research

Section 306 would authorize the NSF's EPSCoR at $125 million for FY 2007 of the funds authorized in section 301, increasing each year from FY 2008 to FY 2011 by the same percentage by which NSF's overall funding increases. Ensuring regional diversity in research funding can help maximize U.S. competitiveness. The 25 States included in NSF's EPSCoR have approximately 20 percent of the U.S. population and 25 percent of all doctoral research universities, but receive only 10 percent of NSF funding. NSF should strengthen its commitment to EPSCoR jurisdictions by including more representatives from these States on advisory and review panels in all directorates.

Section 307. Encouraging participation

Subsection (a) would require the Director of NSF to establish a program to provide mentors for women who are interested in careers in science, technology, engineering, and mathematics by pairing such women with mentors who are working in industry.

Subsection (b) would require the Director of NSF to establish a program to provide grants to community colleges to provide apprenticeships and other appropriate training to allow women to enter higher-paying technical jobs in fields related to science, technology, engineering, or mathematics.

Subsection (c) would require an institution of higher education, including a community college, desiring a grant under section 307 to submit an application at such time, in such manner, and accompanied by such information as the Director of NSF may require.

Subsection (d) would require the Director of NSF to establish metrics to evaluate the success of the programs established in subsections (a) and (b), use such metrics to evaluate the success of the programs established in subsections (a) and (b) annually, and report the findings and conclusions of the evaluations annually to Congress.

Section 308. Cyberinfrastructure

Section 308 would require the Director of NSF to develop and publish a plan that describes the current status of broadband access for scientific research purposes in EPSCoR-eligible jurisdictions and outlines actions that could be taken to ensure that broadband connections are available to enable participation in NSF programs that rely heavily on high-speed networking and collaborations across institutions and regions.

Section 309. Reaffirmation of the merit-review process of the National Science Foundation

Section 309 would clarify that nothing in this Act shall be interpreted to require or recommend that NSF change its (1) merit-review system or (2) peer review process. These processes should continue to be used in determining what grants NSF will fund.

TITLE IV—NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Section 401. NASA's contribution to innovation

This section would provide a Sense of Congress that NASA's science program contributes significantly to innovation in and the economic competitiveness of the United States and that funding NASA at the levels authorized in the NASA Authorization Act of 2005 would allow all of NASA's programs to contribute to U.S. innovation and competitiveness.

Subsection (b) would authorize the Administrator to participate fully in any interagency efforts to promote innovation and economic competitiveness through scientific research and development.

The Committee recognizes the historical contribution made by NASA in promoting and facilitating innovation and technological excellence. The Committee believes that the full level of funding authorized by the NASA Authorization Act of 2005 for FY 2007 and FY 2008 is sufficient in the near-term to enable the balanced science program that can ensure NASA's ability to continue its historic role in innovation and competitiveness, except as noted in section 406. Space, like the oceans, remains largely unexplored. Discovery of the unknown can be truly transformational and provide the seeds for new products and create new industries.

Section 402. Aeronautics Institute for Research

Section 402 would establish an Aeronautics Institute for Research within NASA to conduct NASA's aeronautics research authorized under the NASA Authorization Act of 2005.

Subsection (c) would require the Institute to cooperate with relevant programs in the Department of Transportation, DoD, the Department of Commerce, and the Department of Homeland Security, including the Joint Planning and Development Office established under the VISION 100—Century of Aviation Reauthorization Act (P.L. 108–176). The Aeronautics Institute would be allowed to accept assistance, staff, and funding from other Federal departments and agencies.

Section 403. Basic research enhancement

Section 403 would establish, within NASA, a Basic Research Executive Council to oversee the distribution and management of programs and resources engaged in support of basic research activity. Subsection (c) would set the membership of the Council as the most senior agency official representing the space science, earth science, life and microgravity sciences, and aeronautical research. Subsection (d) would require that the chair of the council be appointed and report directly to the Administrator. Subsection (e) would require that the Chairman of the Council be provided with adequate support to conduct the activity and functions of the Council. Subsection (f) would establish the duties of the Council as to set cri-

teria for identification of basic research, set priority of research activity, review and evaluate research activity, make recommendations regarding needed adjustments in research activities, and provide annual reports to Congress on research activities.

Section 404. Aging workforce issues program

Section 404 would express a Sense of Congress that the Administrator of NASA should implement a program to address aging workforce issues in aerospace that would: (1) document technical and management experiences of senior NASA employees before they leave NASA, (2) provide incentives for retirees to return to NASA to teach new NASA employees about their lesions and experiences, (3) provide for the development of an award to recognize and reward senior NASA employees for their contributions to knowledge sharing. Several reports have identified the aging of NASA's workforce as one of the challenges to maintaining an appropriately skilled cadre of NASA employees.[12] This provision attempts to encourage retiring employees to transfer some of the knowledge gained over a career before leaving the agency.

Section 405. Conforming amendments

Section 405 would amend section 101(d) of the NASA Authorization Act of 2005 (42 U.S.C. 16611(d)) by adding that the assessment undertaken by NASA examine the number and content of science activities which may be considered as fundamental, or basic research, whether incorporated within specific missions or conducted independently of any specific mission. In addition, this section would require NASA to assess how NASA science activities can best be structured to ensure that basic and fundamental research can be effectively maintained and coordinated in response to national goals in competitiveness and innovation.

Section 406. Direct NASA participation in ACI

Section 406 provides additional authorization, above the levels authorized in the NASA Authorization Act of 2005, of $160 million for the funding of basic science and research for FY 2007. The availability of these funds is made contingent upon unobligated balances being available to NASA. "Rising Above the Gathering Storm" recommends increased funding for basic Federal research and development, and S. 2198 includes authorizations for NASA research.

TITLE V—NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

Section 501. Authorization of appropriations

Section 501 would authorize appropriations for NIST from FY 2007 through FY 2011, including authorizations for the Hollings MEP Program. The MEP authorizations are included within the total authorizations provided for NIST. Authorization levels would be set as follows:

[12] See "Issues Affecting the Future of U.S. Space Science and Engineering Workforce: Interim Report," National Research Council, 2006, http://fermat.nap.edu/catalog/11642.html; "Status of NASA's Efforts to Address Workforce Issues Related to the Space Shuttle Retirement," GAO testimony to the Committee, May 18, 2005, http://www.gao.gov/new.items/d05718t.pdf; and "Space Shuttle: Actions Needed to Better Position NASA to Sustain Its Workforce through Retirement," GAO, March 2005.

(All amounts are in millions.)

	2007	2008	2009	2010	2011
NIST Total	$639.646	$703.611	$773.972	$851.369	$936.506
MEP	$110	$115	$120	$125	$130

While NIST is a relatively unknown Federal agency, it has long been recognized as a world class research institution by its scientific peers. This is demonstrated by the fact that its staff have been honored with: three Nobel Prizes for Physics within the last 10 years; a MacArthur Fellowship "Genius Award", the National Medal of Science; UNESCO's 2003 Women in Science Award; 23 Presidential Early Career Awards for Science and Engineering (PECASE) awards; 16 inductions into the National Academies of Science and Engineering; and 33 Arthur S. Flemming Awards.

Both reports, "Innovate America" and "Rising Above the Gathering Storm," as well as the bills to respond to them, S. 2109, S. 2390, and S. 2198 respectively, recommended increased funding for NIST.

Section 502. Amendments to the Stevenson-Wydler Technology Innovation Act of 1980

Section 502 would eliminate the Technology Administration and the Undersecretary of Commerce for Technology at the Department of Commerce, allowing the NIST Director to report directly to the Secretary. The FY 2007 budget request proposed funding the Technology Administration at $1.5 million. At this level, there is little likelihood that a robust program of analysis and advocacy would remain. The Committee believes that these resources could be more effectively used on other technology-related priorities.

Section 503. Innovation acceleration grants

Section 503 would establish the Innovation Acceleration Grants Program of section 202 at NIST, to be known as the "Standards and Technology Acceleration Research Program" to support and promote innovation in the United States through high-risk, high-reward research and set aside no less than 8 percent of the funds to NIST each year for the program.

Subsection (b) would require that at least 80 percent of the funds available for the program shall be used to award competitive, merit-reviewed grants, cooperative agreements or contracts to public or private entities, including businesses and universities. The Director would be required to ensure that all projects with any resulting intellectual property shall vest in a company or companies incorporated in the United States. Each funded project would be required to have at least one small- or medium-sized business and would receive priority from the Director of NIST when educational institutions are involved.

Subsection (c) would require the Director of NIST to solicit proposals annually to address areas of national need for high-risk, high-reward research.

Subsection (d) would require the Director of NIST to issue an annual report describing the program's activities, including a description of the metrics upon which grant funding decisions were made

in the previous fiscal year, any proposed changes to those metrics, metrics for evaluating the success of ongoing and completed grants, and an evaluation of ongoing and completed grants. This subsection would require the first annual report to include best practices for management of programs to stimulate high-risk, high-reward research.

Subsection (e) would require that no more than 5 percent of the funding available to the program may be used for administrative expenses.

Subsection (f) would define the term "high-risk, high-reward research" to mean research that: (1) has the potential for yielding results with far-ranging or wide-ranging implications, (2) addresses critical national needs related to measurement standards and technology, and (3) is too novel or too interdisciplinary to fare well in traditional peer review process. By defining, "high-risk, high-reward research" in this way, the Committee does not intend to question the value of peer review process, which the Committee affirms as being essential in other sections of this legislation (see, e.g., section 309). Peer review is an essential component of any high-risk, high-reward research undertaken at NIST or any other Federal agency. Subsection (f) would simply note that high-risk, high reward research, by virtue of its novelty and frequently interdisciplinary nature, does not fare well in traditional peer review. The Committee believes that standards and technology acceleration research program grants should be subject to rigorous peer review.

Section 503 builds on provisions of S. 2109, S. 2390, and S. 2198 to respond to recommendations regarding innovation acceleration and high-risk, high-reward research.

Section 504. Manufacturing extension

Section 504 would amend section 25(c)(5) of the National Institute of Standards and Technology Act (15 U.S.C. 278k(c)(5)) by inserting a probationary program for MEP centers that have not received a satisfactory rating. If a center's performance has not improved in one year, the Director would be required to conduct a competition to select a new operator for the center.

Subsection (b) would amend current law that allows the acceptance of funds from other Federal agencies and the private sector by the Secretary of Commerce and Director to strengthen U.S. manufacturing. Any private sector funding would not be considered a part of the Federal share for the purpose of center cost-sharing. Funding accepted from other Federal departments or agencies may be considered in the calculation of the Federal share of capital and annual operating and maintenance costs under 15 U.S.C. 278k(c).

Section 505. Experimental Program to Stimulate Competitive Technology

Section 505 would re-establish EPSCoT, previously managed by the Technology Administration, at NIST.

Subsection (d) would require that in making awards under this section, the Director of NIST shall ensure that the awards are awarded on a competitive basis that includes a review of the merits of the activities that are subject to the award. A special emphasis would be given to those projects which would increase the participation of women, Native Americans (including Native Hawaiians

and Alaska Natives), and other underrepresented groups in science and technology. Subsection (d)(2) would impose a matching requirement that not less than 50 percent of the cost of activities (other than planning activities) carried out by an EPSCoT award be funded by non-Federal sources. All States must improve their technology infrastructure in order to realize the promise of competitiveness and innovation.

Section 506. Technical amendments to the NIST Act and other technical amendments

Section 506 would make several technical amendments to the NIST Act. These amendments have been requested in previous years by the President. Subsection (a) would lift the limitation on NIST-sponsored research fellowships under current law. Subsection (b) would clarify NIST's authority to issue grants and cooperative agreements, along with contracts, cooperative research and development agreements, and other appropriate instruments, bringing NIST authority into conformance with the Federal Grant and Cooperative Agreement Act (31 U.S.C. 6301–08). The subsection also would clarify NIST's authority to purchase memberships in scientific organizations and pay registration fees for NIST employees' attendance at conferences.

Subsection (c) would permit NIST to utilize a portion of its operating funds in the production of high priority Standard Reference Materials and ensure that, once recovered through sales, the working capital fund resources are available to maintain future supplies. In addition, this authority would permit funds transferred to NIST from other Federal agencies for the production of Standard Reference Materials to be transferred to the fund.

Subsection (d) would update several measurements found in statute to be consistent with current practice and internationally recognized standards.

Subsection (e) would allow NIST to retain the depreciation surcharge that is assessed against all Federal agencies and returned to the Treasury for the upkeep of public buildings.

Subsection (f) would strike NIST authority for the Non-Energy Inventions program. This program is no longer operated by NIST. Rather, it is now operated by the Department of Energy.

TITLE VI—OCEAN AND ATMOSPHERIC PROGRAMS

Section 601. Ocean and atmospheric research and development program

Section 601 would require the Administrator of NOAA, in consultation with the Director of NSF and the Administrator of NASA, to establish a coordinated program of ocean and atmospheric research and development to promote U.S. leadership in ocean and atmospheric science.

The program would be conducted in collaboration with academic institutions and other nongovernmental entities to focus on the development of advanced technologies and analytical methods that will promote U.S. leadership in ocean and atmospheric science and competitiveness in the application of such knowledge. Such cutting-edge research, by nature, requires an interdisciplinary approach that will be a critical source for new knowledge, new technologies

and the workforce needed for economic competitiveness. Areas with significant promise include research on beneficial marine products, observing, monitoring, and prediction of marine and atmospheric conditions (including severe weather events), exploration and monitoring in extreme conditions, and technologies capable of detecting and mitigating threats to public safety or the environment.

Federal research and training in these areas are important contributors to the Nation's long term economic competitiveness and national security. For example, the Federal investment made in mathematics, computer research, data collection and analysis, software, high end computing, modeling and simulation, satellites and other advanced instrumentation, along with the education and training of a workforce able to translate this research into usable forecasts, can strengthen our ability to understand and respond to natural disasters. In addition, outreach programs can magnify these benefits by bringing such information, in a usable form, to communities for a variety of purposes, including hazard mitigation, resource management, and planning sustainable communities.

Section 602. NOAA ocean and atmospheric science education programs

Section 602 would require the Administrator of NOAA to conduct, develop, support, promote, and coordinate formal and informal educational activities at all levels to enhance public awareness and understanding of ocean, coastal, and atmospheric science and stewardship by the general public. In conducting those activities the Administrator shall build upon the existing educational programs and activities of the agency. Such programs include the National Sea Grant College Program, the National Marine Sanctuary Program, the National Estuarine Research Reserve System, the Educational Partnership Program, experiential learning programs for students and teachers, and programs relating to ocean exploration, oceans and human health, marine resources, and marine and atmospheric observations.

Subsection (b) would require the Administrator of NOAA, appropriate NOAA programs, ocean and atmospheric science and education experts, and interested members of the public to develop a science education plan that would set forth education goals and strategies for NOAA, as well as programmatic actions to carry out such goals and priorities over the next 20 years. This plan would be reevaluated and updated every 5 years.

CHANGES IN EXISTING LAW

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new material is printed in italic, existing law in which no change is proposed is shown in roman):

TITLE 5, UNITED STATES CODE

CHAPTER 53—PAY RATES AND SYSTEMS

SEC. 5314. POSITIONS AT LEVEL III.

[5 U.S.C. 5314]

Level III of the Executive Schedule applies to the following positions, for which the annual rate of basic pay shall be the rate determined with respect to such level under chapter 11 of title 2, as adjusted by section 5318 of this title:

Under Secretary of Commerce, Under Secretary of Commerce for Economic Affairs, Under Secretary of Commerce for Export Administration, and Under Secretary of Commerce for Travel and Tourism.

Under Secretaries of State (6).

Under Secretary of the Treasury (3).

Administrator of the Small Business Administration.

Deputy Administrator, Agency for International Development.

Chairman of the Merit Systems Protection Board.

Chairman, Federal Communications Commission.

Chairman, Board of Directors, Federal Deposit Insurance Corporation.

Chairman, Federal Energy Regulatory Commission.

Chairman, Federal Trade Commission.

Chairman, Surface Transportation Board.

Chairman, National Labor Relations Board.

Chairman, Securities and Exchange Commission.

Chairman, Board of Directors of the Tennessee Valley Authority.

Chairman, National Mediation Board.

Chairman, Railroad Retirement Board.

Chairman, Federal Maritime Commission.

Comptroller of the Currency.

Commissioner of Internal Revenue.

Under Secretary of Defense for Policy.

Under Secretary of Defense (Comptroller).

Under Secretary of Defense for Personnel and Readiness.

Under Secretary of Defense for Intelligence.

Under Secretary of the Air Force.

Under Secretary of the Army.

Under Secretary of the Navy.

Deputy Administrator of the National Aeronautics and Space Administration.
Deputy Directors of Central Intelligence (2).
Director of the Office of Emergency Planning.
Director of the Peace Corps.
Deputy Director, National Science Foundation.
President of the Export-Import Bank of Washington.
Members, Nuclear Regulatory Commission.
Members, Defense Nuclear Facilities Safety Board.
Director of the Federal Bureau of Investigation, Department of Justice.
Administrator of the National Highway Traffic Safety Administration.
Administrator of the Federal Motor Carrier Safety Administration.
Administrator, Federal Railroad Administration.
Chairman, National Transportation Safety Board.
Chairman of the National Endowment for the Arts the incumbent of which also serves as Chairman of the National Council on the Arts.
Chairman of the National Endowment for the Humanities.
Director of the Federal Mediation and Conciliation Service.
Federal Transit Administrator.
President, Overseas Private Investment Corporation.
Chairman, Postal Rate Commission.
Chairman, Occupational Safety and Health Review Commission.
Governor of the Farm Credit Administration.
Chairman, Equal Employment Opportunity Commission.
Chairman, Consumer Product Safety Commission.
Under Secretaries of Energy (3).
Chairman, Commodity Futures Trading Commission.
Deputy United States Trade Representatives (3).
Chief Agricultural Negotiator.
Chairman, United States International Trade Commission.
Under Secretary of Commerce for Oceans and Atmosphere, the incumbent of which also serves as Administrator of the National Oceanic and Atmospheric Administration.
Associate Attorney General.
Chairman, Federal Mine Safety and Health Review Commission.
Chairman, National Credit Union Administration Board.
Deputy Director of the Office of Personnel Management.
Under Secretary of Agriculture for Farm and Foreign Agricultural Services.
Under Secretary of Agriculture for Food, Nutrition, and Consumer Services.
Under Secretary of Agriculture for Natural Resources and Environment.
Under Secretary of Agriculture for Research, Education, and Economics.
Under Secretary of Agriculture for Food Safety.
Under Secretary of Agriculture for Marketing and Regulatory Programs.
Director, Institute for Scientific and Technological Cooperation.
Under Secretary of Agriculture for Rural Development.

Administrator, Maritime Administration.
Executive Director Property Review Board.
Deputy Administrator of the Environmental Protection Agency.
Archivist of the United States.
Executive Director, Federal Retirement Thrift Investment Board.
Deputy Under Secretary of Defense for Acquisition and Technology.
Deputy Under Secretary of Defense for Logistics and Materiel Readiness.
Director, Trade and Development Agency.
[Under Secretary of Commerce for Technology.]
Under Secretary for Health, Department of Veterans Affairs.
Under Secretary for Benefits, Department of Veterans Affairs.
Under Secretary for Memorial Affairs, Department of Veterans Affairs.
Under Secretaries, Department of Homeland Security.
Director of the Bureau of Citizenship and Immigration Services.
Director of the Office of Government Ethics.
Administrator for Federal Procurement Policy.
Administrator, Office of Information and Regulatory Affairs, Office of Management and Budget.
Director of the Office of Thrift Supervision.
Chairperson of the Federal Housing Finance Board.
Executive Secretary, National Space Council.
Controller, Office of Federal Financial Management, Office of Management and Budget.
Administrator, Research and Innovative Technology Administration.
Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office.
Register of Copyrights.
Deputy Director for State and Local Affairs, Office of National Drug Control Policy.
Commissioner of Customs, Department of Homeland Security.
Under Secretary of Education[.]
Administrator of the Centers for Medicare & Medicaid Services.
Administrator of the Office of Electronic Government.
Administrator, Pipeline and Hazardous Materials Safety Administration.

METRIC SYSTEM ACT OF 1866

[SEC. 2. AUTHORIZED TABLES.

[15 U.S.C. 205]

[The tables [1] in the schedule hereto annexed shall be recognized in the construction of contracts, and in all legal proceedings, as establishing, in terms of the weights and measures now in use in the United States, the equivalents of the weights and measures expressed therein in terms of the metric system; and the tables may lawfully be used for computing, determining, and expressing in cus-

[1] Tables omitted

tomary weights and measures the weights and measures of the metric system.

SEC. 2. METRIC SYSTEM DEFINED.

The metric system of measurement shall be defined as the International System of Units as established in 1960, and subsequently maintained, by the General Conference of Weights and Measures, and as interpreted or modified for the United States by the Secretary of Commerce.

[THE ACT OF JULY 21, 1950

[UNITS OF ELECTRICAL MEASURE.

[15 U.S.C. 223]

[From and after the date this Act is approved, the legal units of electrical and photometric measurement in the United States of America shall be those defined and established as provided in the following sections.

[RESISTANCE—OHM.—The unit of electrical resistance shall be the ohm, which is equal to one thousand million units of resistance of the centimeter-gram-second system of electromagnetic units.

[CURRENT—AMPERE.—The unit of electric current shall be the ampere, which is one-tenth of the unit of current of the centimeter-gram-second system of electromagnetic units.

[ELECTROMOTIVE FORCE AND ELECTRIC POTENTIAL—VOLT.—The unit of electromotive force and of electric potential shall be the volt, which is the electromotive force that, steadily applied to a conductor whose resistance is one ohm, will produce a current of one ampere.

[QUANTITY—COULOMB.—The unit of electric quantity shall be the coulomb, which is the quantity of electricity transferred by a current of one ampere in one second.

[CAPACITANCE—FARAD.—The unit of electrical capacitance shall be the farad, which is the capacitance of a capacitor that is charged to a potential of one volt by one coulomb of electricity.

[INDUCTANCE—HENRY.—The unit of electrical inductance shall be the henry, which is the inductance in a circuit such that an electromotive force of one volt is induced in the circuit by variation of an inducing current at the rate of one ampere per second.

[POWER—WATT.—The unit of power shall be the watt, which is equal to ten million units of power in the centimeter-gram-second system, and which is the power required to cause an unvarying current of one ampere to flow between points differing in potential by one volt.

[ENERGY—JOULE; KILOWATT-HOUR.—The units of energy shall be (a) the joule, which is equivalent to the energy supplied by a power of one watt operating for one second, and (b) the kilowatt-hour, which is equivalent to the energy supplied by a power of one thousand watts operating for one hour.

[INTENSITY OF LIGHT—CANDELA.—The unit of intensity of light shall be the candela, which is one-sixtieth of the intensity of one square centimeter of a perfect radiator, known as a "black body", when operated at the temperature of freezing platinum.

[FLUX OF LIGHT—LUMEN.—The unit of flux of light shall be the lumen, which is the flux in a unit of solid angle from a source of which the intensity is one candela.

[ESTABLISHMENT OF VALUES OF PRIMARY ELECTRIC AND PHOTOMETRIC UNITS IN ABSOLUTE MEASURE; LEGAL VALUES.

[15 U.S.C. 224]

[It shall be the duty of the Secretary of Commerce to establish the values of the primary electric and photometric units in absolute measure, and the legal values for these units shall be those represented by, or derived from, national reference standards maintained by the Department of Commerce.]

ACT OF MARCH 19, 1918 [CALDER ACT]

SEC. 1. ZONES FOR STANDARD TIME; INTERSTATE OR FOREIGN COMMERCE.

[15 U.S.C. 261]

(a) IN GENERAL.—For the purpose of establishing the standard time of the United States, the territory of the United States shall be divided into nine zones in the manner provided in this section. [Except as provided in section 3(a) of the Uniform Time Act of 1966, the standard time of the first zone shall be based on the mean solar time of the sixtieth degree of longitude west from Greenwich; that of the second zone on the seventy-fifth degree; that of the third zone on the ninetieth degree; that of the fourth zone on the one hundred and fifth degree; that of the fifth zone on the one hundred and twentieth degree; that of the sixth zone on the one hundred and thirty-fifth degree; that of the seventh zone on the one hundred and fiftieth degree; that of the eighth zone on the one hundred and sixty-fifth degree; and that of the ninth zone on the one hundred and fiftieth meridian of longitude east from Greenwich. The limits of each zone shall be defined by an order of the Secretary of Transportation, having regard for the convenience of commerce and the existing junction points and division points of common carriers engaged in interstate or foreign commerce, and any such order may be modified from time to time.] *Except as provided in section 3(a) of the Uniform Time Act of 1966, the standard time of the first zone shall be Coordinated Universal Time retarded by 4 hours; that of the second zone retarded by 5 hours; that of the third zone retarded by 6 hours; that of the fourth zone retarded by 7 hours; that of the fifth zone retarded 8 hours; that of the sixth zone retarded by 9 hours; that of the seventh zone retarded by 10 hours; that of the eighth zone retarded by 11 hours; and that of the ninth zone shall be Coordinated Universal Time advanced by 10 hours.* As used in this Act, the term "interstate or foreign commerce" means commerce between a State, the District of Columbia, the Commonwealth of Puerto Rico, or any possession of the United States and any place outside thereof.

(b) COORDINATED UNIVERSAL TIME DEFINED.—In this section, the term "Coordinated Universal Time" means the time scale maintained through the General Conference of Weights and Measures

and interpreted or modified for the United States by the Secretary of Commerce.

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY ACT

SEC. 2. ESTABLISHMENT, FUNCTIONS, AND ACTIVITIES.

[15 U.S.C. 272]

(a) ESTABLISHMENT OF NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY.—There is established within the Department of Commerce a science, engineering, technology, and measurement laboratory to be known as the National Institute of Standards and Technology (hereafter in this Act referred to as the "Institute").

(b) FUNCTIONS OF SECRETARY AND INSTITUTE.—The Secretary of Commerce (hereafter in this Act referred to as the "Secretary") acting through the Director of the Institute (hereafter in this Act referred to as the "Director") and, if appropriate, through other officials, is authorized to take all actions necessary and appropriate to accomplish the purposes of this Act, including the following functions of the Institute—

(1) to assist industry in the development of technology and procedures needed to improve quality, to modernize manufacturing processes, to ensure product reliability, manufacturability, functionality, and cost-effectiveness, and to facilitate the more rapid commercialization, especially by small- and medium-sized companies throughout the United States, of products based on new scientific discoveries in fields such as automation, electronics, advanced materials, biotechnology, and optical technologies;

(2) to develop, maintain, and retain custody of the national standards of measurement, and provide the means and methods for making measurements consistent with those standards;

(3) to compare standards used in scientific investigations, engineering, manufacturing, commerce, industry, and educational institutions with the standards adopted or recognized by the Federal Government and to coordinate the use by Federal agencies of private sector standards, emphasizing where possible the use of standards developed by private, consensus organizations;

(4) to enter into contracts, including cooperative research and development arrangements, *and grants and cooperative arrangements,* in furtherance of the purposes of this Act;

(5) to provide United States industry, Government, and educational institutions with a national clearinghouse of current information, techniques, and advice for the achievement of higher quality and productivity based on current domestic and international scientific and technical development;

(6) to assist industry in the development of measurements, measurement methods, and basic measurement technology;

(7) to determine, compile, evaluate, and disseminate physical constants and the properties and performance of conventional and advanced materials when they are important to science, engineering, manufacturing, education, commerce, and industry and are not available with sufficient accuracy elsewhere;

(8) to develop a fundamental basis and methods for testing materials, mechanisms, structures, equipment, and systems, including those used by the Federal Government;

(9) to assure the compatibility of United States national measurement standards with those of other nations;

(10) to cooperate with other departments and agencies of the Federal Government, with industry, with State and local governments, with the governments of other nations and international organizations, and with private organizations in establishing standard practices, codes, specifications, and voluntary consensus standards;

(11) to advise government and industry on scientific and technical problems;

(12) to invent, develop, and (when appropriate) promote transfer to the private sector of measurement devices to serve special national needs; and

(13) to coordinate Federal, State, and local technical standards activities and conformity assessment activities, with private sector technical standards activities and conformity assessment activities, with the goal of eliminating unnecessary duplication and complexity in the development and promulgation of conformity assessment requirements and measures.

(c) IMPLEMENTATION ACTIVITIES.—In carrying out the functions specified in subsection (b), the Secretary, acting through the Director and, if appropriate, through other appropriate officials, may, among other things—

(1) construct physical standards;

(2) test, calibrate, and certify standards and standard measuring apparatus;

(3) study and improve instruments, measurement methods, and industrial process control and quality assurance techniques;

(4) cooperate with the States in securing uniformity in weights and measures laws and methods of inspection;

(5) cooperate with foreign scientific and technical institutions to understand technological developments in other countries better;

(6) prepare, certify, and sell standard reference materials for use in ensuring the accuracy of chemical analyses and measurements of physical and other properties of materials;

(7) in furtherance of the purposes of this Act, accept research associates, cash donations, and donated equipment from industry, and also engage with industry in research to develop new basic and generic technologies for traditional and new products and for improved production and manufacturing;

(8) study and develop fundamental scientific understanding and improved measurement, analysis, synthesis, processing, and fabrication methods for chemical substances and compounds, ferrous and nonferrous metals, and all traditional and advanced materials, including processes of degradation;

(9) investigate ionizing and nonionizing radiation and radioactive substances, their uses, and ways to protect people structures, and equipment from their harmful effects;

(10) determine the atomic and molecular structure of matter, through analysis of spectra and other methods, to provide a basis for predicting chemical and physical structures and reactions and for designing new materials and chemical substances, including biologically active macromolecules;

(11) perform research on electromagnetic waves, including optical waves, and on properties and performance of electrical, electronic, and electromagnetic devices and systems and their essential materials, develop and maintain related standards, and disseminate standard signals through broadcast and other means;

(12) develop and test standard interfaces, communication protocols, and data structures for computer and related telecommunications systems;

(13) study computer systems (as that term is defined in section 20(d) of this Act) and their use to control machinery and processes;

(14) perform research to develop standards and test methods to advance the effective use of computers and related systems and to protect the information stored, processed, and transmitted by such systems and to provide advice in support of policies affecting Federal computer and related telecommunications systems;

(15) determine properties of building materials and structural elements, and encourage their standardization and most effective use, including investigation of fire-resisting properties of building materials and conditions under which they may be most efficiently used, and the standardization of types of appliances for fire prevention;

(16) undertake such research in engineering, pure and applied mathematics, statistics, computer science, materials science, and the physical sciences as may be necessary to carry out and support the functions specified in this section;

(17) compile, evaluate, publish, and otherwise disseminate general, specific and technical data resulting from the performance of the functions specified in this section or from other sources when such data are important to science, engineering, or industry, or to the general public, and are not available elsewhere;

(18) collect, create, analyze, and maintain specimens of scientific value;

(19) operate national user facilities;

(20) evaluate promising inventions and other novel technical concepts submitted by inventors and small companies and work with other Federal agencies, States, and localities to provide appropriate technical assistance and support for those inventions which are found in the evaluation process to have commercial promise;

(21) demonstrate the results of the Institute's activities by exhibits or other methods of technology transfer, including the use of scientific or technical personnel of the Institute for part-time or intermittent teaching and training activities at educational institutions of higher learning as part of and incidental to their official duties; [and]

(22) notwithstanding subsection (b)(4) of this section, the Grants and Cooperative Agreements Act (31 U.S.C. 6301–6308), the Competition in Contracting Act (31 U.S.C. 3551–3556), and the Federal Acquisition Regulations set forth in title 48, Code of Federal Regulations, to expend appropriated funds for National Institute of Standards and Technology memberships in scientific organizations, registration fees for attendance at conferences, and sponsorship of conferences in furtherance of technology transfer; and

[(22)**]** *(23) undertake such other activities similar to those specified in this subsection as the Director determines appropriate.*

(d) MANAGEMENT COSTS.—In carrying out the extramural funding programs of the Institute, including the programs established under sections 25, 26, and 28 of this Act, the Secretary may retain reasonable amounts of any funds appropriated pursuant to authorizations for these programs in order to pay for the Institute's management of these programs.

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SEC. 12. WORKING CAPITAL FUND.

[15 U.S.C. 278b]

(a) UTILIZATION.—The Institute is authorized to utilize in the performance of its functions the Working Capital Fund established by the Act of June 29, 1950 (64 Stat. 275).

(b) AVAILABILITY OF FUND.—The working capital of the fund shall be available for obligation and payment for any activities authorized by this Act, as amended, and for any activities for which provision is made in the appropriations which reimburse the fund.

(c) REIMBURSEMENTS.—In the performance of authorized activities, the Working Capital Fund shall be available and may be reimbursed for expenses of hire of automobile, hire of consultants, and travel to meetings, to the extent that such expenses are authorized for the appropriations of the Department of Commerce.

(d) CREDITS.—The fund may be credited with advances and reimbursements, including receipts from non-Federal sources, for services performed under the authority of section 3 of this Act.

(e) "COST" DEFINED.—As used in this Act the term "cost" shall be construed to include directly related expenses and appropriate charges for indirect and administrative expenses.

(f) DISTRIBUTION OF EARNINGS; RESTORATION OF PRIOR IMPAIRMENT.—The amount of any earned net income resulting from the operation of the fund at the close of each fiscal year shall be paid into the general fund of the Treasury: Provided, That such earned net income may be applied to restore any prior impairment of the fund, and to ensure the availability of working capital necessary to replace equipment and inventories.

(g) AMOUNT AND SOURCE OF TRANSFERS.—Not to exceed one-quarter per centum of the amounts appropriated to the Institute for any fiscal year may be transferred to the fund, in addition to any other transfer authority. In addition, funds provided to the Institute

from other Federal agencies for the purpose of production of Standard Reference Materials may be transferred to the fund.

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SEC. 14. CONSTRUCTION AND IMPROVEMENT OF BUILDINGS AND FACILITIES.

[15 U.S.C. 278d]

(a) IN GENERAL.—Within the limits of funds which are appropriated for the Institute, the Secretary of Commerce is authorized to undertake such construction of buildings and other facilities and to make such improvements to existing buildings, grounds, and other facilities occupied or used by the Institute as are necessary for the proper and efficient conduct of the activities authorized herein.

(b) RETENTION OF FEES.—The Director is authorized to retain all building use and depreciation surcharge fees collected pursuant to OMB Circular A-25. Such fees shall be collected and credited to the Construction of Research Facilities Appropriation Account for use in maintenance and repair of National Institute of Standards and Technology's existing facilities.

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SEC. 18. RESEARCH FELLOWSHIPS AND OTHER FINANCIAL ASSISTANCE TO STUDENTS AT INSTITUTES OF HIGHER EDUCATION.

[15 U.S.C. 278g–1]

The Director is authorized to expend [up to 1 per centum of the] funds appropriated for activities of the Institute in any fiscal year, as the Director may deem desirable, for awards of research fellowships and other forms of financial assistance to students at institutions of higher learning within the United States who show promise as present or future contributors to the mission of the Institute, and to United States citizens for research and technical activities on Institute programs. The selection of persons to receive such fellowships and assistance shall be made on the basis of ability and of the relevance of the proposed work to the mission and programs of the Institute.

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SEC. 25. REGIONAL CENTERS FOR THE TRANSFER OF MANUFACTURING TECHNOLOGY.

[15 U.S.C. 278k]

(a) CREATION AND SUPPORT OF CENTERS; AFFILIATIONS; MERIT REVIEW IN DETERMINING AWARDS; OBJECTIVES.—The Secretary, through the Director and, if appropriate, through other officials, shall provide assistance for the creation and support of Regional Centers for the Transfer of Manufacturing Technology (hereafter in this Act referred to as the "Centers"). Such centers shall be affiliated with any United States-based nonprofit institution or organization, or group thereof, that applies for and is awarded financial assistance under this section in accordance with the description published by the Secretary in the Federal Register under subsection (c)(2). Individual awards shall be decided on the basis of

merit review. The objective of the Centers is to enhance productivity and technological performance in United States manufacturing through—

(1) the transfer of manufacturing technology and techniques developed at the Institute to Centers and, through them, to manufacturing companies throughout the United States;

(2) the participation of individuals from industry, universities, State governments, other Federal agencies, and, when appropriate, the Institute in cooperative technology transfer activities;

(3) efforts to make new manufacturing technology and processes usable by United States-based small- and medium-sized companies;

(4) the active dissemination of scientific, engineering, technical, and management information about manufacturing to industrial firms, including small- and medium-sized manufacturing companies; and

(5) the utilization, when appropriate, of the expertise and capability that exists in Federal laboratories other than the Institute.

(b) ACTIVITIES OF CENTERS.—The activities of the Centers shall include—

(1) the establishment of automated manufacturing systems and other advanced production technologies, based on research by the Institute, for the purpose of demonstrations and technology transfer;

(2) the active transfer and dissemination of research findings and Center expertise to a wide range of companies and enterprises, particularly small- and medium-sized manufacturers; and

(3) loans, on a selective, short-term basis, of items of advanced manufacturing equipment to small manufacturing firms with less than 100 employees.

(c) DURATION AND AMOUNT OF SUPPORT; PROGRAM DESCRIPTIONS; APPLICATIONS; MERIT REVIEW; EVALUATIONS OF ASSISTANCE; APPLICABILITY OF PATENT LAW.—

(1) The Secretary may provide financial support to any Center created under subsection (a) for a period not to exceed six years. The Secretary may not provide to a Center more than 50 percent of the capital and annual operating and maintenance funds required to create and maintain such Center.

(2) The Secretary shall publish in the Federal Register, within 90 days after the date of the enactment of this section, a draft description of a program for establishing Centers, including—

(A) a description of the program;

(B) procedures to be followed by applicants;

(C) criteria for determining qualified applicants;

(D) criteria, including those listed under paragraph (4), for choosing recipients of financial assistance under this section from among the qualified applicants; and

(E) maximum support levels expected to be available to Centers under the program in the fourth through sixth years of assistance under this section.The Secretary shall

publish a final description under this paragraph after the expiration of a 30-day comment period.

(3) Any nonprofit institution, or group thereof, or consortia of nonprofit institutions, including entities existing on the date of the enactment of this section, may submit to the Secretary an application for financial support under this subsection, in accordance with the procedures established by the Secretary and published in the Federal Register under paragraph (2). In order to receive assistance under this section, an applicant shall provide adequate assurances that it will contribute 50 percent or more of the proposed Center's capital and annual operating and maintenance costs for the first three years and an increasing share for each of the last three years. Each applicant shall also submit a proposal for the allocation of the legal rights associated with any invention which may result from the proposed Center's activities.

(4) The Secretary shall subject each such application to merit review. In making a decision whether to approve such application and provide financial support under this subsection, the Secretary shall consider at a minimum (A) the merits of the application, particularly those portions of the application regarding technology transfer, training and education, and adaptation of manufacturing technologies to the needs of particular industrial sectors, (B) the quality of service to be provided, (C) geographical diversity and extent of service area, and (D) the percentage of funding and amount of in-kind commitment from other sources.

(5) Each Center which receives financial assistance under this section shall be evaluated during its third year of operation by an evaluation panel appointed by the Secretary. Each such evaluation panel shall be composed of private experts, none of whom shall be connected with the involved Center, and Federal officials. An official of the Institute shall chair the panel. Each evaluation panel shall measure the involved Center's performance against the objectives specified in this section. The Secretary shall not provide funding for the fourth through the sixth years of such Center's operation unless the evaluation is positive. If the evaluation is positive, the Secretary may provide continued funding through the sixth year at declining levels. *A Center that has not received a positive evaluation by the evaluation panel shall be notified by the panel of the deficiencies in its performance and shall be placed on probation for one year, after which time the panel shall reevaluate the Center. If the Center has not addressed the deficiencies identified by the panel, or shown a significant improvement in its performance, the Director shall conduct a new competition to select an operator for the Center or may close the Center.* After the sixth year, a Center may receive additional financial support under this section if it has received a positive evaluation through an independent review, under procedures established by the Institute. Such an independent review shall be required at least every two years after the sixth year of operation. Funding received for a fiscal year under this section after the sixth year of operation shall not exceed one third of

the capital and annual operating and maintenance costs of the Center under the program.

(6) The provisions of chapter 18 of title 35, United States Code, shall (to the extent not inconsistent with this section) apply to the promotion of technology from research by Centers under this section except for contracts for such specific technology extension or transfer services as may be specified by statute or by the Director.

[(d) ACCEPTANCE OF FUNDS FROM OTHER FEDERAL DEPARTMENTS AND AGENCIES.—In addition to such sums as may be authorized and appropriated to the Secretary and Director to operate the Centers program, the Secretary and Director also may accept funds from other Federal departments and agencies for the purpose of providing Federal funds to support Centers. Any Center which is supported with funds which originally came from other Federal departments and agencies shall be selected and operated according to the provisions of this section.]

(d) ACCEPTANCE OF FUNDS.—In addition to such sums as may be appropriated to the Secretary and Director to operate the Centers program, the Secretary and Director also may accept funds from other Federal departments and agencies and under section 2(c)(7) from the private sector for the purpose of strengthening United States manufacturing. Such funds from the private sector, if allocated to a Center or Centers, shall not be considered in the calculation of the Federal share of capital and annual operating and maintenance costs under subsection (c).

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[SEC. 28. NON-ENERGY INVENTIONS PROGRAM.

[15 U.S.C. 278m]

[In conjunction with the initial organization of the Institute, the Director shall establish a program for the evaluation of inventions that are not energy-related to complement but not replace the Energy-Related Inventions Program established under section 14 of the Federal Nonnuclear Energy Research and Development Act of 1974 (Public Law 93–577). The Director shall submit an initial implementation plan for this program to accompany the organization plan for the Institute. The implementation plan shall include specific cost estimates, implementation schedules, and mechanisms to help finance the development of technologies the program has determined to have potential. In the preparation of the plan, the Director shall consult with appropriate Federal agencies, including the Small Business Administration and the Department of Energy, State and local government organizations, university officials, and private sector organizations in order to obtain advice on how those agencies and organizations might cooperate with the expansion of this program of the Institute.]

STEVENSON-WYDLER TECHNOLOGY INNOVATION ACT OF 1980

SEC. 4. DEFINITIONS.

[15 U.S.C. 3703]

As used in this Act, unless the context otherwise requires, the term—

[(1) "Office" means the Office of Technology Policy established under section 5 of this Act.]

[(2)] *(1)* "Secretary" means the Secretary of Commerce.

[(3) "Under Secretary" means the Under Secretary of Commerce for Technology appointed under section 5(b)(1).]

[(4)] *(2)* "Centers" means the Cooperative Research Centers established under section 7 or section 9 of this Act.

[(5)] *(3)* "Nonprofit institution" means an organization owned and operated exclusively for scientific or educational purposes, no part of the net earnings of which inures to the benefit of any private shareholder or individual.

[(6)] *(4)* "Federal laboratory" means any laboratory, any federally funded research and development center, or any center established under section 7 or section 9 of this Act that is owned, leased, or otherwise used by a Federal agency and funded by the Federal Government, whether operated by the Government or by a contractor.

[(7)] *(5)* "Supporting agency" means either the Department of Commerce or the National Science Foundation, as appropriate.

[(8)] *(6)* "Federal agency" means any executive agency as defined in section 105 of title 5, United States Code, and the military departments as defined in section 102 of such title, as well as any agency of the legislative branch of the Federal Government.

[(9)] *(7)* "Invention" means any invention or discovery which is or may be patentable or otherwise protected under title 35, United States Code, or any novel variety of plant which is or may be protectable under the Plant Variety Protection Act (7 U.S.C. 2321 et seq.).

[(10)] *(8)* "Made" when used in conjunction with any invention means the conception or first actual reduction to practice of such invention.

[(11)] *(9)* "Small business firm" means a small business concern as defined in section 2 of Public Law 85–536 (15 U.S.C. 632) and implementing regulations of the Administrator of the Small Business Administration.

[(12)] *(10)* "Training technology" means computer software and related materials which are developed by a Federal agency to train employees of such agency, including but not limited to software for computer-based instructional systems and for interactive video disc systems.

[(13)] *(11)* "Clearinghouse" means the Clearinghouse for State and Local Initiatives on Productivity, Technology, and Innovation established by section 6.

[SEC. 5. COMMERCE AND TECHNOLOGICAL INNOVATION.

[15 U.S.C. 3704]

[(a) ESTABLISHMENT.—There is established in the Department of Commerce a Technology Administration, which shall operate in accordance with the provisions, findings, and purposes of this Act. The Technology Administration shall include—

[(1) the National Institute of Standards and Technology;

[(2) the National Technical Information Service; and

[(3) a policy analysis office, which shall be known as the Office of Technology Policy.

[(b) UNDER SECRETARY AND ASSISTANT SECRETARY.—The President shall appoint, by and with the advice and consent of the Senate, to the extent provided for in appropriations Acts—

[(1) an Under Secretary of Commerce for Technology, who shall be compensated at the rate provided for level III of the Executive Schedule in section 5314 of title 5, United States Code; and

[(2) an Assistant Secretary of Commerce for Technology Policy, who shall serve as policy analyst for the Under Secretary.

[(c) DUTIES.—The Secretary, through the Under Secretary, as appropriate, shall—

[(1) manage the Technology Administration and supervise its agencies, programs, and activities;

[(2) conduct technology policy analyses to improve United States industrial productivity, technology, and innovation, and cooperate with United States industry in the improvement of its productivity, technology, and ability to compete successfully in world markets;

[(3) carry out any functions formerly assigned to the Office of Productivity, Technology, and Innovation;

[(4) assist in the implementation of the Metric Conversion Act of 1975;

[(5) determine the relationships of technological developments and international technology transfers to the output, employment, productivity, and world trade performance of United States and foreign industrial sectors;

[(6) determine the influence of economic, labor and other conditions, industrial structure and management, and government policies on technological developments in particular industrial sectors worldwide;

[(7) identify technological needs, problems, and opportunities within and across industrial sectors that, if addressed, could make a significant contribution to the economy of the United States;

[(8) assess whether the capital, technical and other resources being allocated to domestic industrial sectors which are likely to generate new technologies are adequate to meet private and social demands for goods and services and to promote productivity and economic growth;

[(9) propose and support studies and policy experiments, in cooperation with other Federal agencies, to determine the effectiveness of measures with the potential of advancing United States technological innovation.

[(10) provide that cooperative efforts to stimulate industrial innovation be undertaken between the Under Secretary and other officials in the Department of Commerce responsible for such areas as trade and economic assistance;

[(11) encourage and assist the creation of centers and other joint initiatives by State or local governments regional organizations, private businesses, institutions of higher education, nonprofit organizations, or Federal laboratories to encourage technology transfer, to stimulate innovation, and to promote an appropriate climate for investment in technology-related industries;

[(12) propose and encourage cooperative research involving appropriate Federal entities, State or local governments, regional organizations, colleges or universities, nonprofit organizations, or private industry to promote the common use of resources, to improve training programs and curricula, to stimulate interest in high technology careers, and to encourage the effective dissemination of technology skills within the wider community;

[(13) serve as a focal point for discussions among United States companies on topics of interest to industry and labor, including discussions regarding manufacturing and discussions regarding emerging technologies;

[(14) consider government measures with the potential of advancing United States technological innovation and exploiting innovations of foreign origin; and

[(15) publish the results of studies and policy experiments.

[(d) JAPANESE TECHNICAL LITERATURE.—

[(1) In addition to the duties specified in subsection (c), the Secretary and the Under Secretary shall establish, and through the National Technical Information Service and with the cooperation of such other offices within the Department of Commerce as the Secretary considers appropriate, maintain a program (including an office in Japan) which shall, on a continuing basis—

[(A) monitor Japanese technical activities and developments;

[(B) consult with businesses, professional societies, and libraries in the United States regarding their needs for information on Japanese developments in technology and engineering;

[(C) acquire and translate selected Japanese technical reports and documents that may be of value to agencies and departments of the Federal Government, and to businesses and researchers in the United States; and

[(D) coordinate with other agencies and departments of the Federal Government to identify significant gaps and avoid duplication in efforts by the Federal Government to acquire, translate, index, and disseminate Japanese technical information.

[Activities undertaken pursuant to subparagraph (C) of this paragraph shall only be performed on a cost-reimbursable basis. Translations referred to in such subparagraph shall be performed

only to the extent that they are not otherwise available from sources within the private sector in the United States.

[(2) Beginning in 1986, the Secretary shall prepare annual reports regarding important Japanese scientific discoveries and technical innovations in such areas as computers, semiconductors, biotechnology, and robotics and manufacturing. In preparing such reports, the Secretary shall consult with professional societies and businesses in the United States. The Secretary may, to the extent provided in advance by appropriation Acts, contract with private organizations to acquire and translate Japanese scientific and technical information relevant to the preparation of such reports.

[(3) The Secretary also shall encourage professional societies and private businesses in the United States to increase their efforts to acquire, screen, translate, and disseminate Japanese technical literature.

[(4) In addition, the Secretary shall compile, publish, and disseminate an annual directory which lists—

[(A) all programs and services in the United States that collect, abstract, translate, and distribute Japanese scientific and technical information; and

[(B) all translations of Japanese technical documents performed by agencies and departments of the Federal Government in the preceding 12 months that are available to the public.

[(5) The Secretary shall transmit to the Congress, within 1 year after the date of enactment of the Japanese Technical Literature Act of 1986, a report on the activities of the Federal Government to collect, abstract, translate, and distribute declassified Japanese scientific and technical information.

[(e) [Omitted]

[(f) EXPERIMENTAL PROGRAM TO STIMULATE COMPETITIVE TECHNOLOGY.—

[(1) IN GENERAL.—The Secretary, acting through the Under Secretary, shall establish for fiscal year 1999 a program to be known as the Experimental Program to Stimulate Competitive Technology (referred to in this subsection as the "program"). The purpose of the program shall be to strengthen the technological competitiveness of those States that have historically received less Federal research and development funds than those received by a majority of the States.

[(2) ARRANGEMENTS.—In carrying out the program, the Secretary, acting through the Under Secretary, shall—

[(A) enter into such arrangements as may be necessary to provide for the coordination of the program through the State committees established under the Experimental Program to Stimulate Competitive Research of the National Science Foundation; and

[(B) cooperate with—

[(i) any State science and technology council established under the program under subparagraph (A); and

[(ii) representatives of small business firms and other appropriate technology-based businesses.

[(3) GRANTS AND COOPERATIVE AGREEMENTS.—In carrying out the program, the Secretary, acting through the Under Secretary, may make grants or enter into cooperative agreements to provide for—

[(A) technology research and development;

(B) technology transfer from university research;

[(C) technology deployment and diffusion; and

[(D) the strengthening of technological capabilities through consortia comprised of—

[(i) technology-based small business firms;

[(ii) industries and emerging companies;

[(iii) universities; and

[(iv) State and local development agencies and entities.

[(4) REQUIREMENTS FOR MAKING AWARDS.—

[(A) IN GENERAL.—In making awards under this subsection, the Secretary, acting through the Under Secretary, shall ensure that the awards are awarded on a competitive basis that includes a review of the merits of the activities that are the subject of the award.

[(B) MATCHING REQUIREMENT.—The non-Federal share of the activities (other than planning activities) carried out under an award under this subsection shall be not less than 25 percent of the cost of those activities.

[(5) CRITERIA FOR STATES.—The Secretary, acting through the Under Secretary, shall establish criteria for achievement by each State that participates in the program. Upon the achievement of all such criteria, a State shall cease to be eligible to participate in the program.

[(6) COORDINATION.—To the extent practicable, in carrying out this subsection, the Secretary, acting through the Under Secretary, shall coordinate the program with other programs of the Department of Commerce.

[(7) Report.—

[(A) IN GENERAL.—Not later than 90 days after the date of the enactment of the Technology Administration Act of 1998, the Under Secretary shall prepare and submit a report that meets the requirements of this paragraph to the Secretary. Upon receipt of the report, the Secretary shall transmit a copy of the report to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science of the House of Representatives.

[(B) REQUIREMENTS FOR REPORT.—The report prepared under this paragraph shall contain with respect to the program—

[(i) a description of the structure and procedures of the program;

[(ii) a management plan for the program;

[(iii) a description of the merit-based review process to be used in the program;

[(iv) milestones for the evaluation of activities to be assisted under the program in fiscal year 1999;

[(v) an assessment of the eligibility of each State that participates in the Experimental Program to

Stimulate Competitive Research of the National Science Foundation to participate in the program under this subsection; and

[(vi) the evaluation criteria with respect to which the overall management and effectiveness of the program will be evaluated.]

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[SEC. 16. NATIONAL TECHNOLOGY MEDAL.]

SEC. 16. NATIONAL TECHNOLOGY AND INNOVATION MEDAL.

[15 U.S.C. 3711]

(a) ESTABLISHMENT.—There is hereby established a National [Technology Medal,] *Technology and Innovation Medal,* which shall be of such design and materials and bear such inscriptions as the President, on the basis of recommendations submitted by the Office of Science and Technology Policy, may prescribe.

(b) AWARD.—The President shall periodically award the medal, on the basis of recommendations received from the Secretary or on the basis of such other information and evidence as he deems appropriate, to individuals or companies, which in his judgment are deserving of special recognition by reason of their outstanding contributions to the promotion of technology or technological manpower for the improvement of the economic, environmental, or social well-being of the United States.

(c) PRESENTATION.—The presentation of the award shall be made by the President with such ceremonies as he may deem proper.

* * * * * * *

SEC. 21. AUTHORIZATION OF APPROPRIATIONS.

[15 U.S.C. 3713]

(a)(1) There is authorized to be appropriated to the Secretary for the purposes of carrying out [sections 5, 11(g), and 16] *sections 11(g) and 16* of this Act not to exceed $3,400,000 for the fiscal year ending September 30, 1988.

(2) Of the amount authorized under paragraph (1) of this subsection, $2,400,000 is authorized only for the Office of Productivity, Technology, and Innovation; [$500,000 is authorized only for the purpose of carrying out the requirements of the Japanese technical literature program established under section 5(d) of this Act;] and $500,000 is authorized only for the patent licensing activities of the National Technical Information Service.

(b) In addition to the authorization of appropriations provided under subsection (a) of this section, there is authorized to be appropriated to the Secretary for the purposes of carrying out section 6 of this Act not to exceed $500,000 for the fiscal year ending September 30, 1988, $1,000,000 for the fiscal year ending September 30, 1989, and $1,500,000 for the fiscal year ending September 30, 1990.

(c) Such sums as may be appropriated under subsections (a) and (b) shall remain available until expended.

(d) To enable the National Science Foundation to carry out its powers and duties under this Act only such sums may be appropriated as the Congress may authorize by law.

HIGH-PERFORMANCE COMPUTING ACT OF 1991

SEC. 101. NATIONAL HIGH-PERFORMANCE COMPUTING PROGRAM.

[15 U.S.C. 5511]

(a) NATIONAL HIGH-PERFORMANCE COMPUTING PROGRAM.—

(1) The President shall implement a National High-Performance Computing Program, which shall—

(A) establish the goals and priorities for Federal high-performance computing research, development, networking, and other activities; and

(B) provide for interagency coordination of Federal high-performance computing research, development, networking, and other activities undertaken pursuant to the Program.

(2) The Program shall—

(A) provide for the development of technologies to advance the capacity and capabilities of the Internet;

(B) provide for high performance testbed networks to enable the research, development, and demonstration of advanced networking technologies and to develop and demonstrate advanced applications made possible by the existence of such testbed networks;

(C) promote connectivity among computer networks of Federal agencies and departments;

(D) provide for efforts to increase software availability, productivity, capability, portability, and reliability;

(E) provide for improved dissemination of Federal agency data and electronic information;

(F) provide for acceleration of the development of high-performance computing systems, subsystems, and associated software;

(G) provide for the technical support and research and development of high-performance computing software and hardware needed to address Grand Challenges;

(H) provide for educating and training additional undergraduate and graduate students in software engineering, computer science, library and information science, and computational science; and

(I) provide—

(i) for the security requirements, policies, and standards necessary to protect Federal research computer networks and information resources accessible through Federal research computer networks, including research required to establish security standards for high-performance computing systems and networks; and

(ii) that agencies and departments identified in the annual report submitted under paragraph (3)(A) shall define and implement a security plan consistent with the Program and with applicable law.

(3) The Director shall—

(A) submit to the Congress an annual report, along with the President's annual budget request, describing the implementation of the Program;

(B) provide for interagency coordination of the Program; and

(C) consult with academic, State, industry, and other appropriate groups conducting research on and using high-performance computing.

(4) The annual report submitted under paragraph (3)(A) shall—

(A) include a detailed description of the goals and priorities established by the President for the Program;

(B) set forth the relevant programs and activities, for the fiscal year with respect to which the budget submission applies, of each Federal agency and department, including—

(i) the Department of Agriculture;

(ii) the Department of Commerce;

(iii) the Department of Defense;

(iv) the Department of Education;

(v) the Department of Energy;

(vi) the Department of Health and Human Services;

(vii) the Department of the Interior;

(viii) the Environmental Protection Agency;

(ix) the National Aeronautics and Space Administration;

(x) the National Science Foundation; and

(xi) such other agencies and departments as the President or the Director considers appropriate;

(C) describe the levels of Federal funding for the fiscal year during which such report is submitted, and the levels proposed for the fiscal year with respect to which the budget submission applies, for specific activities, including education, research, hardware and software development, and support for the establishment of the Network;

(D) describe the levels of Federal funding for each agency and department participating in the Program for the fiscal year during which such report is submitted, and the levels proposed for the fiscal year with respect to which the budget submission applies;

(E) include the report of the Secretary of Energy required by section 203(d); and

(F) include an analysis of the progress made toward achieving the goals and priorities established for the Program.

(b) ADVISORY COMMITTEE.—The President shall establish [an] *a distinct* advisory committee on high-performance computing consisting of non-Federal members, including representatives of the research, education, and library communities, network providers, and industry, who are specially qualified to provide the Director with advice and information on high-performance computing. The recommendations of the advisory committee shall be considered in reviewing and revising the Program. The advisory committee shall provide the Director with an independent assessment of—

(1) progress made in implementing the Program;
(2) the need to revise the Program;
(3) the balance between the components of the Program;
(4) whether the research and development undertaken pursuant to the Program is helping to maintain United States leadership in computing technology; and
(5) other issues identified by the Director.

(c) OFFICE OF MANAGEMENT AND BUDGET.—

(1) Each Federal agency and department participating in the Program shall, as part of its annual request for appropriations to the Office of Management and Budget, submit a report to the Office of Management and Budget which—

(A) identifies each element of its high-performance computing activities which contributes directly to the Program or benefits from the Program; and

(B) states the portion of its request for appropriations that is allocated to each such element.

(2) The Office of Management and Budget shall review each such report in light of the goals, priorities, and agency and departmental responsibilities set forth in the annual report submitted under subsection (a)(3)(A), and shall include, in the President's annual budget estimate, a statement of the portion of each appropriate agency's or department's annual budget estimate relating to its activities undertaken pursuant to the Program.

* * * * * * *

SEC. 208. FOSTERING UNITED STATES COMPETITIVENESS IN HIGH-PERFORMANCE COMPUTING AND RELATED ACTIVITIES.

[15 U.S.C. 5528]

(a) FINDINGS.—The Congress finds the following:

(1) High-performance computing and associated technologies are critical to the United States economy.

(2) While the United States has led the development of high-performance computing, United States industry is facing increasing global competition.

(3) Despite existing international agreements on fair competition and nondiscrimination in government procurements, there is increasing concern that such agreements are not being honored, that more aggressive enforcement of such agreements is needed, and that additional steps may be required to ensure fair global competition, particularly in high-technology fields such as high-performance computing and associated technologies.

(4) It is appropriate for Federal agencies and departments to use the funds authorized for the Program in a manner which most effectively fosters the maintenance and development of United States leadership in high-performance computers and associated technologies in and for the benefit of the United States.

(5) It is appropriate for Federal agencies and departments to use the funds authorized for the Program in a manner, consistent with the Trade Agreements Act of 1979 (19 U.S.C. 2501

et seq.), which most effectively fosters reciprocal competitive procurement treatment by foreign governments for United States high-performance computing and associated technology products and suppliers.

(b) ANNUAL REPORT.—

(1) REPORT.—The Director shall submit an annual report to Congress that identifies—

(A) any grant, contract, cooperative agreement, or cooperative research and development agreement (as defined under section 12(d)(1) of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3710a(d)(1)) made or entered into by any Federal agency or department for research and development under the Program with—

(i) any company other than a company that is either incorporated or located in the United States, and that has majority ownership by individuals who are citizens of the United States; or

(ii) any educational institution or nonprofit institution located outside the United States; and

(B) any procurement exceeding $1,000,000 by any Federal agency or department under the Program for—

(i) unmanufactured articles, materials, or supplies mined or produced outside the United States; or

(ii) manufactured articles, materials, or supplies other than those manufactured in the United States substantially all from articles, materials, or supplies mined, produced, or manufactured in the United States, under the meaning of title III of the Act of March 3, 1933 (41 U.S.C. 10a-10d; popularly known as the Buy American Act) as amended by the Buy American Act of 1988.

(2) CONSOLIDATION OF REPORTS.—The report required by this subsection may be included with the report required by section 101(a)(3)(A).

[(c) REVIEW OF SUPERCOMPUTER AGREEMENT.—

[(1) REPORT.—The Under Secretary for Technology Administration of the Department of Commerce (in this subsection referred to as the "Under Secretary") shall conduct a comprehensive study of the revised "Procedures to Introduce Supercomputers" and the accompanying exchange of letters between the United States and Japan dated June 15, 1990 (commonly referred to as the "Supercomputer Agreement") to determine whether the goals and objectives of such Agreement have been met and to analyze the effects of such Agreement on United States and Japanese supercomputer manufacturers. Within 180 days after the date of enactment of this Act, the Under Secretary shall submit a report to Congress containing the results of such study.

[(2) CONSULTATION.—In conducting the comprehensive study under this subsection, the Under Secretary shall consult with approprite Federal agencies and departments and with United States manufacturers of supercomputers and other appropriate private sector entities.]

[(d)] *(c)* APPLICATION OF BUY AMERICAN ACT.—This Act does not affect the applicability of title III of the Act of March 3, 1933 (41 U.S.C. 10a–10d; popularly known as the Buy American Act), as amended by the Buy American Act of 1988, to procurements by Federal agencies and departments undertaken as a part of the Program.

ASSISTIVE TECHNOLOGY ACT OF 1998

SEC. 6. NATIONAL ACTIVITIES.

[29 U.S.C. 3005]

(a) IN GENERAL.—In order to support activities designed to improve the administration of this Act, the Secretary, under subsection (b)—

(1) may award, on a competitive basis, grants, contracts, and cooperative agreements to entities to support activities described in paragraphs (1) and (2) of subsection (b); and

(2) shall award, on a competitive basis, grants, contracts, and cooperative agreements to entities to support activities described in paragraphs (3), (4), and (5) of subsection (b).

(b) AUTHORIZED ACTIVITIES.—

(1) NATIONAL PUBLIC-AWARENESS TOOLKIT.—

(A) NATIONAL PUBLIC-AWARENESS TOOLKIT.—The Secretary may award a 1-time grant, contract, or cooperative agreement to an eligible entity to support a training and technical assistance program that—

(i) expands public-awareness efforts to reach targeted individuals and entities;

(ii) contains appropriate accessible multimedia materials to reach targeted individuals and entities, for dissemination to State assistive technology programs; and

(iii) in coordination with State assistive technology programs, provides meaningful and up-to-date information to targeted individuals and entities about the availability of assistive technology devices and assistive technology services.

(B) ELIGIBLE ENTITY.—To be eligible to receive the grant, contract, or cooperative agreement, an entity shall develop a partnership that—

(i) shall consist of—

(I) a lead agency or implementing entity for a State assistive technology program or an organization or association that represents implementing entities for State assistive technology programs;

(II) a private or public entity from the media industry;

(III) a private entity from the assistive technology industry; and

(IV) a private employer or an organization or association that represents private employers;

(ii) may include other entities determined by the Secretary to be necessary; and

(iii) may include other entities determined by the applicant to be appropriate.

(2) RESEARCH AND DEVELOPMENT.—

(A) IN GENERAL.—The Secretary may award grants, contracts, or cooperative agreements to eligible entities to carry out research and development of assistive technology that consists of—

(i) developing standards for reliability and accessibility of assistive technology, and standards for interoperability (including open standards) of assistive technology with information technology, telecommunications products, and other assistive technology; or

(ii) developing assistive technology that benefits individuals with disabilities or developing technologies or practices that result in the adaptation, maintenance, servicing, or improvement of assistive technology devices.

(B) ELIGIBLE ENTITIES.—Entities eligible to receive a grant, contract, or cooperative agreement under this paragraph shall include—

(i) providers of assistive technology services and assistive technology devices;

(ii) institutions of higher education, including University Centers for Excellence in Developmental Disabilities Education, Research, and Service authorized under subtitle D of title I of the Developmental Disabilities Assistance and Bill of Rights Act of 2000 (42 U.S.C. 15061 et seq.), or such institutions offering rehabilitation engineering programs, computer science programs, or information technology programs;

(iii) manufacturers of assistive technology devices; and

(iv) professionals, individuals, organizations, and agencies providing services or employment to individuals with disabilities.

(C) COLLABORATION.—An entity that receives a grant, contract, or cooperative agreement under this paragraph shall, in developing and implementing the project carried out through the grant, contract, or cooperative agreement coordinate activities with the lead agency for the State assistive technology program (or a national organization that represents such programs) and the State advisory council described in section 4(c)(2) (or a national organization that represents such councils).

(3) STATE TRAINING AND TECHNICAL ASSISTANCE.—

(A) TRAINING AND TECHNICAL ASSISTANCE EFFORTS.—The Secretary shall award a grant, contract, or cooperative agreement to an entity to support a training and technical assistance program that—

(i) addresses State-specific information requests concerning assistive technology from entities funded under this Act and public entities not funded under this Act, including—

(I) requests for information on effective approaches to Federal-State coordination of programs for individuals with disabilities, related to improving funding for or access to assistive technology devices and assistive technology services for individuals with disabilities of all ages;

(II) requests for state-of-the-art, or model, Federal, State, and local laws, regulations, policies, practices, procedures, and organizational structures, that facilitate, and overcome barriers to, funding for, and access to, assistive technology devices and assistive technology services;

(III) requests for information on effective approaches to developing, implementing, evaluating, and sustaining activities described in sections 4 and 5 and related to improving funding for or access to assistive technology devices and assistive technology services for individuals with disabilities of all ages, and requests for assistance in developing corrective action plans;

(IV) requests for examples of policies, practices, procedures, regulations, or judicial decisions that have enhanced or may enhance access to funding for assistive technology devices and assistive technology services for individuals with disabilities;

(V) requests for information on effective approaches to the development of consumer-controlled systems that increase access to, funding for, and awareness of, assistive technology devices and assistive technology services; and

(VI) other requests for training and technical assistance from entities funded under this Act and public and private entities not funded under this Act;

(ii) assists targeted individuals and entities by disseminating information about—

(I) Federal, State, and local laws, regulations, policies, practices, procedures, and organizational structures, that facilitate, and overcome barriers to, funding for, and access to, assistive technology devices and assistive technology services, to promote fuller independence, productivity, and inclusion in society for individuals with disabilities of all ages; and

(II) technical assistance activities undertaken under clause (i);

(iii) provides State-specific, regional, and national training and technical assistance concerning assistive technology to entities funded under this Act, other entities funded under this Act, and public and private entities not funded under this Act, including—

(I) annually providing a forum for exchanging information concerning, and promoting program

and policy improvements in, required activities of the State assistive technology programs;

(II) facilitating onsite and electronic information sharing using state-of-the-art Internet technologies such as real-time online discussions, multipoint video conferencing, and web-based audio/video broadcasts, on emerging topics that affect State assistive technology programs;

(III) convening experts from State assistive technology programs to discuss and make recommendations with regard to national emerging issues of importance to individuals with assistive technology needs;

(IV) sharing best practice and evidence-based practices among State assistive technology programs;

(V) maintaining an accessible website that includes a link to State assistive technology programs, appropriate Federal departments and agencies, and private associations and developing a national toll-free number that links callers from a State with the State assistive technology program in their State;

(VI) developing or utilizing existing (as of the date of the award involved) model cooperative volume-purchasing mechanisms designed to reduce the financial costs of purchasing assistive technology for required and discretionary activities identified in section 4, and reducing duplication of activities among State assistive technology programs; and

(VII) providing access to experts in the areas of banking, microlending, and finance, for entities funded under this Act, through site visits, teleconferences, and other means, to ensure access to information for entities that are carrying out new programs or programs that are not making progress in achieving the objectives of the programs; and

(iv) includes such other activities as the Secretary may require.

(B) ELIGIBLE ENTITIES.—To be eligible to receive a grant, contract, or cooperative agreement under this paragraph, an entity shall have (directly or through grant or contract)—

(i) experience and expertise in administering programs, including developing, implementing, and administering the required and discretionary activities described in sections 4 and 5, and providing technical assistance; and

(ii) documented experience in and knowledge about banking, finance, and microlending.

(C) COLLABORATION.—In developing and providing training and technical assistance under this paragraph, includ-

ing activities identified as priorities, a recipient of a grant, contract, or cooperative agreement under this paragraph shall collaborate with other organizations, in particular—

(i) organizations representing individuals with disabilities;

(ii) national organizations representing State assistive technology programs;

(iii) organizations representing State officials and agencies engaged in the delivery of assistive technology;

(iv) the data-collection and reporting providers described in paragraph (5); and

(v) other providers of national programs or programs of national significance funded under this Act.

(4) NATIONAL INFORMATION INTERNET SYSTEM.—

(A) IN GENERAL.—The Secretary shall award a grant, contract, or cooperative agreement to an entity to renovate, update, and maintain the National Public Internet Site established under this Act (as in effect on the day before the date of enactment of the Assistive Technology Act of 2004).

(B) FEATURES OF INTERNET SITE.—The National Public Internet Site shall contain the following features:

(i) AVAILABILITY OF INFORMATION AT ANY TIME.—The site shall be designed so that any member of the public may obtain information posted on the site at any time.

(ii) INNOVATIVE AUTOMATED INTELLIGENT AGENT.—The site shall be constructed with an innovative automated intelligent agent that is a diagnostic tool for assisting users in problem definition and the selection of appropriate assistive technology devices and assistive technology services resources.

(iii) RESOURCES.—

(I) LIBRARY ON ASSISTIVE TECHNOLOGY.—The site shall include access to a comprehensive working library on assistive technology for all environments, including home, workplace, transportation, and other environments.

(II) INFORMATION ON ACCOMMODATING INDIVIDUALS WITH DISABILITIES.—The site shall include access to evidence-based research and best practices concerning how assistive technology can be used to accommodate individuals with disabilities in the areas of education, employment, health care, community living, and telecommunications and information technology.

(III) RESOURCES FOR A NUMBER OF DISABILITIES.—The site shall include resources relating to the largest possible number of disabilities, including resources relating to low-level reading skills.

(iv) LINKS TO PRIVATE-SECTOR RESOURCES AND INFORMATION.—To the extent feasible, the site shall be linked to relevant private-sector resources and infor-

mation, under agreements developed between the recipient of the grant, contract, or cooperative agreement and cooperating private-sector entities.

(v) LINKS TO PUBLIC-SECTOR RESOURCES AND INFORMATION.—To the extent feasible, the site shall be linked to relevant public-sector resources and information, such as the Internet sites of the Office of Special Education and Rehabilitation Services of the Department of Education, the Office of Disability Employment Policy of the Department of Labor, the Small Business Administration, the Architectural and Transportation Barriers Compliance Board, [the Technology Administration of the Department of Commerce,] *the National Institute of Standards and Technology,* the Jobs Accommodation Network funded by the Office of Disability Employment Policy of the Department of Labor, and other relevant sites.

(vi) MINIMUM LIBRARY COMPONENTS.—At a minimum, the site shall maintain updated information on—

(I) State assistive technology program demonstration sites where individuals may try out assistive technology devices;

(II) State assistive technology program device loan program sites where individuals may borrow assistive technology devices;

(III) State assistive technology program device reutilization program sites;

(IV) alternative financing programs or State financing systems operated through, or independently of, State assistive technology programs, and other sources of funding for assistive technology devices; and

(V) various programs, including programs with tax credits, available to employers for hiring or accommodating employees who are individuals with disabilities.

(C) ELIGIBLE ENTITY.—To be eligible to receive a grant, contract, or cooperative agreement under this paragraph, an entity shall be a nonprofit organization, for-profit organization, or institution of higher education, that—

(i) emphasizes research and engineering;

(ii) has a multidisciplinary research center; and

(iii) has demonstrated expertise in—

(I) working with assistive technology and intelligent agent interactive information dissemination systems;

(II) managing libraries of assistive technology and disability-related resources;

(III) delivering to individuals with disabilities education, information, and referral services, including technology-based curriculum-development services for adults with low-level reading skills;

(IV) developing cooperative partnerships with the private sector, particularly with private-sector computer software, hardware, and Internet services entities; and

(V) developing and designing advanced Internet sites.

(5) DATA-COLLECTION AND REPORTING ASSISTANCE.—

(A) IN GENERAL.—The Secretary shall award grants, contracts, and cooperative agreements to entities to assist the entities in carrying out State assistive technology programs in developing and implementing effective data-collection and reporting systems that—

(i) focus on quantitative and qualitative data elements;

(ii) measure the outcomes of the required activities described in section 4 that are implemented by the States and the progress of the States toward achieving the measurable goals described in section 4(d)(3);

(iii) provide States with the necessary information required under this Act or by the Secretary for reports described in section 4(f)(2); and

(iv) help measure the accrued benefits of the activities to individuals who need assistive technology.

(B) ELIGIBLE ENTITIES.—To be eligible to receive a grant, contract, or cooperative agreement under this paragraph, an entity shall have personnel with—

(i) documented experience and expertise in administering State assistive technology programs;

(ii) experience in collecting and analyzing data associated with implementing required and discretionary activities;

(iii) expertise necessary to identify additional data elements needed to provide comprehensive reporting of State activities and outcomes; and

(iv) experience in utilizing data to provide annual reports to State policymakers.

(c) APPLICATION.—To be eligible to receive a grant, contract, or cooperative agreement under this section, an entity shall submit an application to the Secretary at such time, in such manner, and containing such information as the Secretary may require.

(d) INPUT.—With respect to the activities described in subsection (b) to be funded under this section, including the national and regionally based training and technical assistance efforts carried out through the activities, in designing the activities the Secretary shall consider, and in providing the activities providers shall include, input of the directors of comprehensive statewide programs of technology-related assistance, directors of alternative financing programs, and other individuals the Secretary determines to be appropriate, especially—

(1) individuals with disabilities who use assistive technology and understand the barriers to the acquisition of such technology and assistive technology services;

(2) family members, guardians, advocates, and authorized representatives of such individuals;

(3) individuals employed by protection and advocacy systems funded under section 5;

(4) relevant employees from Federal departments and agencies, other than the Department of Education;

(5) representatives of businesses; and

(6) venders and public and private researchers and developers.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION AUTHORIZATION ACT OF 2005

SEC. 101. RESPONSIBILITIES, POLICIES, AND PLANS.

[42 U.S.C. 16611]

(a) GENERAL RESPONSIBILITIES.—

(1) PROGRAMS.—The Administrator shall ensure that NASA carries out a balanced set of programs that shall include, at a minimum, programs in—

(A) human space flight, in accordance with subsection (b);

(B) aeronautics research and development; and

(C) scientific research, which shall include, at a minimum—

(i) robotic missions to study the Moon and other planets and their moons, and to deepen understanding of astronomy, astrophysics, and other areas of science that can be productively studied from space;

(ii) earth science research and research on the Sun-Earth connection through the development and operation of research satellites and other means;

(iii) support of university research in space science, earth science, and microgravity science; and

(iv) research on microgravity, including research that is not directly related to human exploration.

(2) CONSULTATION AND COORDINATION.—In carrying out the programs of NASA, the Administrator shall—

(A) consult and coordinate to the extent appropriate with other relevant Federal agencies, including through the National Science and Technology Council;

(B) work closely with the private sector, including by—

(i) encouraging the work of entrepreneurs who are seeking to develop new means to launch satellites, crew, or cargo;

(ii) contracting with the private sector for crew and cargo services, including to the International Space Station, to the extent practicable;

(iii) using commercially available products (including software) and services to the extent practicable to support all NASA activities; and

(iv) encouraging commercial use and development of space to the greatest extent practicable; and

(C) involve other nations to the extent appropriate.

(b) VISION FOR SPACE EXPLORATION.—

(1) IN GENERAL.—The Administrator shall establish a program to develop a sustained human presence on the Moon, in-

cluding a robust precursor program, to promote exploration, science, commerce, and United States preeminence in space, and as a stepping-stone to future exploration of Mars and other destinations. The Administrator is further authorized to develop and conduct appropriate international collaborations in pursuit of these goals.

(2) MILESTONES.—The Administrator shall manage human space flight programs to strive to achieve the following milestones (in conformity with section 503)—

(A) Returning Americans to the Moon no later than 2020.

(B) Launching the Crew Exploration Vehicle as close to 2010 as possible.

(C) Increasing knowledge of the impacts of long duration stays in space on the human body using the most appropriate facilities available, including the ISS.

(D) Enabling humans to land on and return from Mars and other destinations on a timetable that is technically and fiscally possible.

(c) AERONAUTICS.—

(1) IN GENERAL.—The President of the United States, through an official the President shall designate, and in consultation with appropriate Federal agencies, shall develop a national policy to guide the aeronautics research and development programs of the United States through 2020. The policy shall include national goals for aeronautics research and development and shall describe the role and responsibilities of each Federal agency that will carry out the policy. The development of the policy shall utilize external studies that have been conducted on the state of United States aeronautics and aviation research and development and have suggested policies to ensure continued competitiveness.

(2) CONTENT.—

(A) At a minimum, the national aeronautics research and development policy shall describe for NASA—

(i) the priority areas of research for aeronautics through fiscal year 2011;

(ii) the basis on which and the process by which priorities for ensuing fiscal years will be selected;

(iii) the facilities and personnel needed to carry out the aeronautics program through fiscal year 2011; and

(iv) the budget assumptions on which the policy is based, which for fiscal years 2007 and 2008 shall be the authorized level for aeronautics provided in title II of this Act.

(B) The policy shall be based on the premises that—

(i) the Federal Government has an established interest in conducting research and development programs for improving the usefulness, performance, speed, safety, and efficiency of aeronautical vehicles, as described in section 102(d)(2) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2451(d)(2)); and

(ii) the Federal Government has an established interest in conducting research and development pro-

grams that help preserve the role of the United States as a global leader in aeronautical technologies and in their application, as described in section 102(d)(5) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2451(d)(5)).

(3) CONSIDERATIONS.—In developing the national aeronautics research and development policy, the President shall consider the following issues, which shall be discussed in the transmittal under paragraph (5):

(A) The extent to which NASA should focus on long-term, high-risk research or more incremental research, and the expected impact of that decision on the United States economy, and the ability to achieve environmental and other public goals related to aeronautics.

(B) The extent to which NASA should address military and commercial needs.

(C) How NASA will coordinate its aeronautics program with other Federal agencies.

(D) The extent to which NASA will conduct research in-house, fund university research, and collaborate on industry research, and the expected impact of that mix of funding on the supply of United States workers for the aeronautics industry.

(E) The extent to which the priority areas of research listed pursuant to paragraph (2)(A) should include the activities authorized by title IV of this Act, the discussion of which shall include a priority ranking of all of the activities authorized in title IV and an explanation for that ranking.

(4) CONSULTATION.—In the development of the national aeronautics research and development policy, the President shall consult widely with academic and industry experts and with other Federal agencies. The Administrator may enter into an arrangement with the National Academy of Sciences to help develop the policy.

(5) SCHEDULE.—

(A) Not later than 1 year after the date of enactment of this Act, the President shall transmit the national aeronautics research and development policy to the Committee on Appropriations of the House of Representatives, the Committee on Appropriations of the Senate, the Committee on Science of the House of Representatives, and the Committee on Commerce, Science, and Transportation of the Senate.

(B) Not later than 60 days after the transmittal of the policy under subparagraph (A), the Administrator shall transmit to the Committee on Appropriations of the House of Representatives, the Committee on Appropriations of the Senate, the Committee on Science of the House of Representatives, and the Committee on Commerce, Science, and Transportation of the Senate a report describing how NASA will carry out the policy.

(C) At the time the President's fiscal year 2007 budget is transmitted to the Congress, the Administrator shall

transmit to the Committee on Appropriations of the House of Representatives, the Committee on Appropriations of the Senate, the Committee on Science of the House of Representatives, and the Committee on Commerce, Science, and Transportation of the Senate a report on the proposed NASA aeronautics budget describing—

(i) the rationale for the budget levels and activities in the proposed fiscal year 2007 NASA aeronautics budget;

(ii) the extent to which the program directions proposed for fiscal year 2007 are likely to be consistent with the national policy being prepared under this section; and

(iii) the extent to which the proposed programs for fiscal year 2007 are consistent with past reports and current studies of the National Academy of Sciences, and other relevant reports and studies.

(d) SCIENCE.—

(1) IN GENERAL.—The Administrator shall develop a plan to guide the science programs of NASA through 2016.

(2) CONTENT.—At a minimum, the plan developed under paragraph (1) shall be designed to ensure that NASA has a rich and vigorous set of science activities, and shall describe—

(A) the missions NASA will initiate, design, develop, launch, or operate in space science and earth science through fiscal year 2016, including launch dates;

(B) a priority ranking of all of the missions listed under subparagraph (A), and the rationale for the ranking; [and]

(C) the budget assumptions on which the policy is based, which for fiscal years 2007 and 2008 shall be consistent with the authorizations provided in title II of this [Act.] *Act; and*

(D) the number and content of science activities which are undertaken in support of science missions described in subparagraph (A), and the number and content of science activities which may be considered as fundamental, or basic research, whether incorporated within specific missions or conducted independently of any specific mission.

(3) CONSIDERATIONS.—In developing the science plan under this subsection, the Administrator shall consider the following issues, which shall be discussed in the transmittal under paragraph (6):

(A) What the most important scientific questions in space science and earth science are.

(B) How to best benefit from the relationship between NASA's space and earth science activities and those of other Federal agencies.

(C) Whether the Magnetospheric Multiscale Mission, SIM-Planet Quest, and missions under the Future Explorers Programs can be expedited to meet previous schedules.

(D) Whether any NASA Earth observing missions that have been delayed or cancelled can be restored.

(E) How to ensure the long-term vitality of Earth observation programs at NASA, including their satellite, science, and data system components.

(F) Whether current and currently planned Earth observation missions should be supplemented or replaced with new satellite architectures and instruments that enable global coverage, and all-weather, day and night imaging of the Earth's surface features.

(G) How to integrate NASA earth science missions with the Global Earth Observing System of Systems.

(H) How NASA science activities can best be structured to ensure that basic and fundamental research can be effectively maintained and coordinated in response to national goals in competitiveness and innovation, and in contributing to national scientific, technology, engineering and mathematics leadership.

(4) CONSULTATION.—In developing the plan under this subsection, the Administrator shall draw on decadal surveys and other reports in planetary science, astronomy, solar and space physics, earth science, and any other relevant fields developed by the National Academy of Sciences. The Administrator shall also consult widely with academic and industry experts and with other Federal agencies.

(5) HUBBLE SPACE TELESCOPE.—The plan developed under this subsection shall address plans for a human mission to repair the Hubble Space Telescope consistent with section 302 of this Act.

(6) SCHEDULE.—The Administrator shall transmit the plan developed under this subsection to the Committee on Science of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate not later than 1 year after the date of enactment of this Act. The Administrator shall make available to those committees any study done by a nongovernmental entity that was used in the development of the plan.

(e) FACILITIES.—

(1) IN GENERAL.—The Administrator shall develop a plan for managing NASA's facilities through fiscal year 2015. The plan shall be consistent with the policies and plans developed pursuant to this section.

(2) CONTENT.—At a minimum, the plan developed under paragraph (1) shall describe—

(A) any new facilities NASA intends to acquire, whether through construction, purchase, or lease, and the expected dates for doing so;

(B) any facilities NASA intends to significantly modify, refurbish, or upgrade, and the expected dates for doing so;

(C) any facilities NASA intends to close, and the expected dates for doing so;

(D) any transactions NASA intends to conduct to sell, lease, or otherwise transfer the ownership of a facility, and the expected dates for doing so;

(E) how each of the actions described in subparagraphs (A), (B), (C), and (D) will enhance the ability of NASA to carry out its programs;

(F) the expected costs or savings expected from each of the actions described in subparagraphs (A), (B), (C), and (D);

(G) the priority order of the actions described in subparagraphs (A), (B), (C), and (D);

(H) the budget assumptions of the plan, which for fiscal years 2007 and 2008 shall be consistent with the authorizations provided in title II of this Act, including the funding levels for maintenance and repairs; and

(I) how facilities were evaluated in developing the plan.

(3) SCHEDULE.—The Administrator shall transmit the plan developed under this subsection to the Committee on Science of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate not later than the date on which the President submits the proposed budget for the Federal Government for fiscal year 2008 to the Congress.

(f) WORKFORCE.—

(1) IN GENERAL.—The Administrator shall develop a human capital strategy to ensure that NASA has a workforce of the appropriate size and with the appropriate skills to carry out the programs of NASA, consistent with the policies and plans developed pursuant to this section. Under the strategy, NASA shall utilize current personnel, to the maximum extent feasible, in implementing the vision for space exploration and NASA's other programs. The strategy shall cover the period through fiscal year 2011.

(2) CONTENT.—The strategy developed under paragraph (1) shall describe, at a minimum—

(A) any categories of employees NASA intends to reduce, the expected size and timing of those reductions, the methods NASA intends to use to make the reductions, and the reasons NASA no longer needs those employees;

(B) any categories of employees NASA intends to increase, the expected size and timing of those increases, the methods NASA intends to use to recruit the additional employees, and the reasons NASA needs those employees;

(C) the steps NASA will use to retain needed employees; and

(D) the budget assumptions of the strategy, which for fiscal years 2007 and 2008 shall be consistent with the authorizations provided in title II of this Act, and any expected additional costs or savings from the strategy by fiscal year.

(3) SCHEDULE.—The Administrator shall transmit the strategy developed under this subsection to the Committee on Science of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate not later than 60 days after the date on which the President submits the proposed budget for the Federal Government for fiscal year 2007 to the Congress. At least 60 days before transmitting the

strategy, NASA shall provide a draft of the strategy to its Federal employee unions for a 30-day consultation period after which NASA shall respond in writing to any written concerns provided by the unions.

(4) LIMITATION.—NASA may not implement any Reduction in Force or other involuntary separations (except for cause) prior to March 16, 2007.

(g) CENTER MANAGEMENT.—

(1) IN GENERAL.—The Administrator shall conduct a study to determine whether any of NASA's centers should be operated by or with the private sector by converting a center to a Federally Funded Research and Development Center or through any other mechanism.

(2) CONTENT.—The study conducted under paragraph (1) shall, at a minimum—

(A) make a recommendation for the operation of each center and provide reasons for that recommendation; and

(B) describe the advantages and disadvantages of each mode of operation considered in the study.

(3) CONSIDERATIONS.—In conducting the study, the Administrator shall take into consideration the experiences of other relevant Federal agencies in operating laboratories and centers, and any reports that have reviewed the mode of operation of those laboratories and centers, as well as any reports that have reviewed NASA's centers.

(4) SCHEDULE.—The Administrator shall transmit the study conducted under this subsection to the Committee on Science of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate not later than May 31, 2006.

(h) BUDGETS.—

(1) CATEGORIES.—The proposed budget for NASA submitted by the President for each fiscal year shall be accompanied by documents showing—

(A) by program—

(i) the budget for space operations, including the ISS and the Space Shuttle;

(ii) the budget for exploration systems;

(iii) the budget for aeronautics;

(iv) the budget for space science;

(v) the budget for earth science;

(vi) the budget for microgravity science;

(vii) the budget for education;

(viii) the budget for safety oversight; and

(ix) the budget for public relations;

(B) the budget for technology transfer programs;

(C) the budget for the Integrated Enterprise Management Program, by individual element;

(D) the budget for the Independent Technical Authority, both total and by center;

(E) the total budget for the prize program under section 104, and the administrative budget for that program; and

(F) the comparable figures for at least the 2 previous fiscal years for each item in the proposed budget.

(2) SENSE OF CONGRESS REGARDING EVALUATION CRITERIA FOR BUDGET REQUESTS.—It is the sense of the Congress that each budget of the United States submitted to the Congress after the date of enactment of this Act should be evaluated for compliance with the findings and priorities established by this Act and the amendments made by this Act.

(i) ADDITIONAL BUDGET INFORMATION.—NASA shall make available, upon request from the Committee on Science of the House of Representatives or the Committee on Commerce, Science, and Transportation of the Senate—

(1) information on corporate and center general and administrative costs and service pool costs, including—

(A) the total amount of funds being allocated for those purposes for any fiscal year for which the President has submitted an annual budget request to Congress;

(B) the amount of funds being allocated for those purposes for each center, for headquarters, and for each directorate; and

(C) the major activities included in each cost category; and

(2) the figures on the amount of unobligated funds and unexpended funds, by appropriations account—

(A) that remained at the end of the fiscal year prior to the fiscal year in which the budget is being presented that were carried over into the fiscal year in which the budget is being presented;

(B) that are estimated will remain at the end of the fiscal year in which the budget is being presented that are proposed to be carried over into the fiscal year for which the budget is being presented; and

(C) that are estimated will remain at the end of the fiscal year for which the budget is being presented.

(j) NASA AERONAUTICS TEST FACILITIES AND SIMULATORS.—

(1) REVIEW.—The Director of the Office of Science and Technology Policy shall commission an independent review of the Nation's long-term strategic needs for aeronautics test facilities and shall submit the review to the Committee on Science of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate. The review shall include an evaluation of the facility needs described pursuant to subsection (c)(2)(A)(iii). The review shall take into consideration the results of the study conducted pursuant to the instructions on page 582 of the conference report (H. Rept. 108–767) to accompany the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005 (P.L. 108–375).

(2) LIMITATION.—The Administrator shall not close or mothball any aeronautics test facilities identified in the 2003 independent assessment by the RAND Corporation titled "Wind Tunnel and Propulsion Test Facilities: An Assessment of NASA's Capabilities to Serve National Needs" as being part of the minimum set of those facilities necessary to retain and manage to serve national needs, or any aeronautics simulators, that were in use as of January 1, 2004, with the exception of the already closed 16-foot transonic tunnel, until—

(A) the review conducted under paragraph (1) has been transmitted to the Congress; and

(B) 60 days after the Administrator has transmitted to the Committee on Appropriations and the Committee on Science of the House of Representatives and the Committee on Appropriations and the Committee on Commerce, Science, and Transportation of the Senate a written certification that the proposed closure will not have an adverse impact on NASA's ability to execute the national policy developed under subsection (c) and to achieve the goals described in that policy.Subparagraph (B) shall cease to be effective five years after the date the study required by this section has been transmitted to the Congress.

NATIONAL SCIENCE FOUNDATION AUTHORIZATION ACT OF 2002

SEC. 8. SPECIFIC PROGRAM AUTHORIZATIONS.

[116 Stat. 3042]

From amounts authorized to be appropriated under section 5, the Director shall carry out the Foundation's research and education programs, including the following initiatives in accordance with this section:

(1) INFORMATION TECHNOLOGY.—An information technology research program to support competitive, merit-reviewed proposals for research, education, and infrastructure support in areas related to cybersecurity, terascale computing systems, software, networking, scalability, communications, data management, and remote sensing and geospatial information technologies.

(2) NANOSCALE SCIENCE AND ENGINEERING.—A nanoscale science and engineering research and education program to support competitive, merit-reviewed proposals that emphasize—

(A) research aimed at discovering novel phenomena, processes, materials, and tools that address grand challenges in materials, electronics, optoelectronics and magnetics, manufacturing, the environment, and health care; and

(B) supporting new research and interdisciplinary centers and networks of excellence, including shared national user facilities, infrastructure, research, and education activities on the societal implications of advances in nanoscale science and engineering.

(3) PLANT GENOME RESEARCH.—

(A) A plant genome research program to support competitive, merit-reviewed proposals—

(i) that advance the understanding of the structure, organization, and function of plant genomes; and

(ii) that accelerate the use of new knowledge and innovative technologies toward a more complete understanding of basic biological processes in plants, especially in economically important plants such as corn and soybeans.

(B) Regional plant genome and gene expression research centers to conduct research and dissemination activities that may include—

(i) basic plant genomics research and genomics applications, including those related to cultivation of crops in extreme environments and to cultivation of crops with reduced reliance on fertilizer, herbicides, and pesticides;

(ii) basic research that will contribute to the development or use of innovative plant-derived products;

(iii) basic research on alternative uses for plants and plant materials, including the use of plants as renewable feedstock for alternative energy production and nonpetroleum-based industrial chemicals and precursors; and

(iv) basic research and dissemination of information on the ecological and other consequences of genetically engineered plants.

Competitive, merit-based awards for centers under this subparagraph shall be to consortia of institutions of higher education or nonprofit organizations. The Director shall, to the extent practicable, ensure that research centers established under this subparagraph collectively examine as many different agricultural environments as possible, enhance the excellence of existing Foundation programs, and focus on plants of economic importance.

(C) Research partnerships to focus on—

(i) basic genomic research on crops grown in the developing world;

(ii) basic plant genome research that will advance and expedite the development of improved cultivars, including those that are pest-resistant, produce increased yield, reduce the need for fertilizers, herbicides, or pesticides, or have increased tolerance to stress;

(iii) basic research that could lead to the development of technologies to produce pharmaceutical compounds such as vaccines and medications in plants that can be grown in the developing world; and

(iv) research on the impact of plant biotechnology on the social, political, economic, health, and environmental conditions in countries in the developing world.

Competitive, merit-based awards for partnerships under this subparagraph shall be to institutions of higher education, nonprofit organizations, or consortia of such entities that enter into a partnership that shall include one or more research institutions in one or more developing nations, and that may also include for-profit companies involved in plant biotechnology. The Director, by means of outreach, shall encourage inclusion of historically Black colleges and universities, Hispanic-serving institutions, tribally controlled colleges and universities, Alaska Native-serving institutions, and Native Hawaiian-serving institutions in consortia that enter into such partnerships.

(4) INNOVATION PARTNERSHIPS.—An innovation partnerships program to support competitive, merit-reviewed proposals that

seek to stimulate innovation at the regional level through new partnerships involving States, regional governmental entities, local governmental entities, industry, academic institutions, and other related organizations in strategically important fields of science and technology.

(5) MATHEMATICS AND SCIENCE EDUCATION PARTNERSHIPS.—The mathematics and science education partnerships program described in section 9.

(6) ROBERT NOYCE SCHOLARSHIP PROGRAM.—The Robert Noyce Scholarship Program described in section 10.

(7) SCIENCE, MATHEMATICS, ENGINEERING, AND TECHNOLOGY TALENT EXPANSION PROGRAM.—

(A) A program of competitive, merit-based, multi-year grants for eligible applicants to increase the number of students studying toward and completing associate's or bachelor's degrees in science, mathematics, engineering, and technology, particularly in fields that have faced declining enrollment in recent years.

(B) In selecting projects under this paragraph, the Director shall strive to increase the number of students studying toward and completing baccalaureate degrees, concentrations, or certificates in science, mathematics, engineering, or technology who are individuals identified in section 33 or 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a or 1885b).

(C) The types of projects the Foundation may support under this paragraph include those that promote high quality—

(i) interdisciplinary teaching;

(ii) undergraduate-conducted research;

(iii) mentor relationships for students;

(iv) bridge programs that enable students at community colleges to matriculate directly into baccalaureate science, mathematics, engineering, or technology programs;

(v) internships carried out in partnership with industry; [and]

(vi) innovative uses of digital technologies, particularly at institutions of higher education that serve high numbers or percentages of economically disadvantaged [students.] *students; and*

(vii) outreach programs that provide middle and secondary school students and their science and math teachers opportunities to increase their exposure to engineering and technology.

(D)(i) In order to receive a grant under this paragraph, an eligible applicant shall establish targets to increase the number of students studying toward and completing associate's or bachelor's degrees in science, mathematics, engineering, or technology.

(ii) A grant under this paragraph shall be awarded for a period of 5 years, with the final 2 years of funding contingent on the Director's determination that

satisfactory progress has been made by the grantee toward meeting the targets established under clause (i).

(iii) In the case of community colleges, a student who transfers to a baccalaureate program, or receives a certificate under an established certificate program, in science, mathematics, engineering, or technology shall be counted toward meeting a target established under clause (i).

(E) For each grant awarded under this paragraph to an institution of higher education, at least 1 principal investigator shall be in a position of administrative leadership at the institution of higher education, and at least 1 principal investigator shall be a faculty member from an academic department included in the work of the project. For each grant awarded to a consortium or partnership, at each institution of higher education participating in the consortium or partnership, at least 1 of the individuals responsible for carrying out activities authorized under this paragraph at that institution shall be in a position of administrative leadership at the institution, and at least 1 shall be a faculty member from an academic department included in the work of the project at that institution.

(F) In this paragraph, the term "eligible applicant" means—

(i) an institution of higher education;

(ii) a consortium of institutions of higher education; or

(iii) a partnership between—

(I) an institution of higher education or a consortium of such institutions; and

(II) a nonprofit organization, a State or local government, or a private company, with demonstrated experience and effectiveness in science, mathematics, engineering, or technology education.

(8) SECONDARY SCHOOL SYSTEMIC INITIATIVE.—A program of competitive, merit-based grants for State educational agencies or local educational agencies that supports the planning and implementation of agency-wide secondary school reform initiatives designed to promote scientific and technological literacy, meet the mathematics and science education needs of students at risk of not achieving State student academic achievement standards, reduce the need for basic skill training by employers, and heighten college completion rates through activities, such as—

(A) systemic alignment of secondary school curricula and higher education freshman placement requirements;

(B) development of materials and curricula that support small, theme-oriented schools and learning communities;

(C) implementation of enriched mathematics and science curricula for all secondary school students;

(D) strengthened teacher training in mathematics, science, and reading as it relates to technical and specialized texts;

(E) laboratory improvement and provision of instrumentation as part of a comprehensive program to enhance the quality of mathematics, science, engineering, and technology instruction; or

(F) other secondary school systemic initiatives that enable grantees to leverage private sector funding for mathematics, science, engineering, and technology scholarships.

In awarding grants under this paragraph, the Director shall give priority to agencies that serve high poverty communities.

(9) EXPERIMENTAL PROGRAM TO STIMULATE COMPETITIVE RESEARCH.—The Experimental Program to Stimulate Competitive Research, established under section 113 of the National Science Foundation Authorization Act of 1988 (42 U.S.C. 1862g), that is designed to enhance—

(A) research in mathematics, science, and engineering throughout the States eligible to participate in the program and the Commonwealth of Puerto Rico;

(B) research infrastructure in the States eligible to participate in the program and the Commonwealth of Puerto Rico; and

(C) the geographic distribution of Federal research and development support.

(10) THE SCIENCE AND ENGINEERING EQUAL OPPORTUNITIES ACT.—A comprehensive program designed to advance the goals of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885 et seq.), including programs to—

(A) provide support to minority-serving institutions; and

(B) ensure that reports required under sections 36 and 37 of such Act are submitted to the—

(i) Committee on Science of the House of Representatives;

(ii) Committee on Health, Education, Labor, and Pensions of the Senate; and

(iii) Committee on Commerce, Science, and Transportation of the Senate.

(11) ASTRONOMICAL RESEARCH AND INSTRUMENTATION.—An astronomical research program to support competitive, merit-reviewed proposals that—

(A) will advance understanding of—

(i) the origins and characteristics of planets, the Sun, other stars, the Milky Way Galaxy, and extragalactic objects (such as clusters of galaxies and quasars); and

(ii) the structure and origin of the universe; and

(B) support related activities such as developing advanced technologies and instrumentation, funding undergraduate and graduate students, and satisfying other instrumentation and research needs.

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