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[Report No. 109–285]

To improve American innovation and competitiveness in the global economy.

IN THE SENATE OF THE UNITED STATES

MAY 15, 2006

Mr. ENSIGN (for himself, Mr. STEVENS, Mrs. HUTCHISON, Mr. INOUE, Mr. SMITH, Mr. ALLEN, Mr. BURNS, Mr. KERRY, Mr. LIEBERMAN, Mr. NELSON of Florida, and Mr. PRYOR) introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

JULY 19, 2006

Reported by Mr. STEVENS, with amendments

[Omit the part struck through and insert the part printed in *italic*]

A BILL

To improve American innovation and competitiveness in the global economy.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE; TABLE OF CONTENTS.**

4 (a) SHORT TITLE.—This Act may be cited as the
5 “American Innovation and Competitiveness Act of 2006”.

1 (b) TABLE OF CONTENTS.—The table of contents for
 2 this Act is as follows:

Sec. 1. Short title; table of contents.

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

- Sec. 101. National science and technology summit.
 Sec. 102. Study on barriers to innovation.
 Sec. 103. National innovation medal.
 Sec. 104. *Release of scientific research results.*
 Sec. 105. *Semiannual math and science days.*
 Sec. 106. *Study of service science.*
 Sec. 107. *Review and report by director of the Office of Science and Technology Policy.*
 Sec. 108. *Report by director of the Office of Science and Technology Policy.*

TITLE II—INNOVATION PROMOTION

- Sec. 201. President’s Council on Innovation and Competitiveness.
 Sec. 202. Innovation acceleration grants.
 Sec. ~~203~~. ~~Regional economic development.~~

TITLE III—NATIONAL SCIENCE FOUNDATION

- Sec. 301. Authorization of appropriations.
 Sec. ~~302~~. ~~Innovation-based experiential learning.~~
 Sec. ~~303~~. 302. Graduate fellowships and graduate traineeships.
 Sec. ~~304~~. 303. Professional science masters degree programs.
 Sec. ~~305~~. 304. Increased support for science education through the National Science Foundation.
 Sec. ~~306~~. ~~Study of service science.~~
 Sec. ~~307~~. 305. Meeting critical national science needs.
 Sec. ~~308~~. 306. Experimental program to stimulate competitive research.
 Sec. 307. *Encouraging participation.*
 Sec. 308. *Cyberinfrastructure.*
 Sec. 309. *Reaffirmation of the merit-review process of the National Science Foundation.*

TITLE IV—NATIONAL AERONAUTICS AND SPACE
 ADMINISTRATION

- Sec. 401. NASA’s contribution to innovation.
 Sec. 402. Aeronautics Institute for Research.
 Sec. 403. Basic research enhancement.
 Sec. 404. *Aging workforce issues program.*
 Sec. 405. *Conforming amendments.*
 Sec. 406. *Direct NASA participation in American competitiveness initiative.*

TITLE V—NATIONAL INSTITUTE OF STANDARDS AND
 TECHNOLOGY

- Sec. 501. Authorization of appropriations.
 Sec. 502. Amendments to the Stevenson-Wydler Technology Innovation Act of 1980.

Sec. 503. Innovation acceleration.

~~Sec. 504. Development of advanced manufacturing systems.~~

~~Sec. 505. Collaborative manufacturing research pilot grants.~~

~~Sec. 506.~~ 504. Manufacturing extension.

~~Sec. 507.~~ 505. Experimental program to stimulate competitive technology.

~~Sec. 508.~~ 506. Technical amendments to the National Institute of Standards and Technology Act and other technical amendments.

TITLE VI—OCEAN AND ATMOSPHERIC PROGRAMS

Sec. 601. Ocean and atmospheric research and development program.

Sec. 602. NOAA ocean and atmospheric science education programs.

1 **TITLE I—OFFICE OF SCIENCE**
 2 **AND TECHNOLOGY POLICY;**
 3 **GOVERNMENT-WIDE SCIENCE**

4 **SEC. 101. NATIONAL SCIENCE AND TECHNOLOGY SUMMIT.**

5 (a) *IN GENERAL.*—Within 180 days after the date
 6 of enactment of this act, the President shall convene a
 7 National Science and Technology Summit. The Summit
 8 shall include representatives of industry, small business,
 9 academia, State government, and Federal research and
 10 development agencies. The summit shall examine the
 11 health and direction of the United States' science and
 12 technology enterprise.

13 (a) *IN GENERAL.*—Within 180 days after the date of
 14 enactment of this Act, the President shall convene a Na-
 15 tional Science and Technology Summit to examine the
 16 health and direction of the United States' science and tech-
 17 nology enterprises. The Summit shall include representa-
 18 tives of industry, small business, academia, State govern-
 19 ment, Federal research and development agencies, non-prof-
 20 it environmental and energy policy groups concerned with

1 *science and technology issues, and other nongovernmental*
2 *organizations.*

3 (b) REPORT.—Within 90 days after the end of the
4 Summit, the President shall issue a report on the results
5 of the Summit. The report shall identify key research and
6 technology challenges and recommendations for areas of
7 investment for Federal research and technology programs
8 over the next 5 years beginning after the report is issued.

9 (c) ANNUAL EVALUATION.—Beginning with the first
10 year ending after the date of enactment of this Act, the
11 Director of the Office of Science and Technology Policy
12 shall publish an annual report containing recommenda-
13 tions for areas of investment for Federal research and
14 technology programs, together with a justification for each
15 area identified in the report. For the first 5 years after
16 the Summit, the report shall take into account rec-
17 ommendations of the Summit.

18 **SEC. 102. STUDY ON BARRIERS TO INNOVATION.**

19 (a) IN GENERAL.—The National Academy of
20 Sciences shall conduct and complete a study to identify,
21 and to review methods to mitigate, new forms of risk for
22 businesses beyond conventional operational and financial
23 risk that affect the ability to innovate, including studying
24 and reviewing—

1 (1) incentive and compensation structures that
2 could effectively encourage long-term value creation
3 and innovation;

4 (2) methods of voluntary and supplemental dis-
5 closure by industry of intellectual capital, innovation
6 performance, and indicators of future valuation;

7 (3) means by which government could work
8 with industry to enhance the legal and regulatory
9 framework to encourage the disclosures described in
10 paragraph (2);

11 (4) practices that may be significant deterrents
12 to United States businesses engaging in innovation
13 risk-taking compared to foreign competitors, includ-
14 ing tort litigation, the nature and extent of any re-
15 sulting defensive management practices, and rec-
16 ommendations on practices to restore innovation
17 risk-taking and to overcome defensive practices;

18 (5) *costs faced by United States businesses en-*
19 *gaging in innovation compared to foreign competi-*
20 *tors, including the burden placed on businesses by*
21 *high and rising health care costs;*

22 ~~(5)~~ (6) means by which industry, trade associa-
23 tions, and universities could collaborate to support
24 research on management practices and methodolo-

1 gies for assessing the value and risks of longer term
2 innovation strategies; ~~and~~

3 ~~(6)~~ (7) means to encourage new, open, and col-
4 laborative dialogue between industry associations,
5 regulatory authorities, management, shareholders,
6 and other concerned interests to encourage appro-
7 priate approaches to innovation ~~risk-taking~~; *risk-tak-*
8 *ing; and*

9 (8) *incentives to encourage participation among*
10 *institutions of higher education, especially those in*
11 *rural and underserved areas, to engage in innovation.*

12 (b) REPORT REQUIRED.—The National Academy of
13 Sciences shall, not later than 1 year after the date of en-
14 actment of this Act and every 4 years thereafter, submit
15 to Congress a report on the study conducted under sub-
16 section (a).

17 (c) AUTHORIZATION OF APPROPRIATIONS.—There
18 are authorized to be appropriated to the National Acad-
19 emy of Sciences \$1,000,000 for fiscal year 2007 for the
20 purpose of carrying out the study required under this sec-
21 tion.

22 **SEC. 103. NATIONAL INNOVATION MEDAL.**

23 Section 16 of the Stevenson-Wydler Technology Inno-
24 vation Act of 1980 (15 U.S.C. 3711) is amended—

1 (1) by striking the section heading and insert-
 2 ing “**SEC. 16. NATIONAL TECHNOLOGY**
 3 **MEDAL; NATIONAL INNOVATION AND**
 4 **INNOVATION MEDAL.**”; and

5 (2) by striking “is” in subsection (a) and in-
 6 serting “are”;

7 (3) by striking “Medal,” in subsection (a) and
 8 inserting “Medal and a National Innovation Medal”;

9 (4) by striking “medal,” in subsection (b) and
 10 inserting “medals,”;

11 (5) by striking “States.” in subsection (b) and
 12 inserting “States or by reason of their unique sci-
 13 entific and engineering innovations in the National
 14 interest at the time such innovation occurs.”; and

15 (6) by striking “presentation of the award” in
 16 subsection (c) and inserting “presentations of the
 17 awards”.

18 (2) in subsection (a), by striking “Technology
 19 Medal” and inserting “Technology and Innovation
 20 Medal”.

21 **SEC. 104. RELEASE OF SCIENTIFIC RESEARCH RESULTS.**

22 (a) *PRINCIPLES.*—Within 90 days after the date of en-
 23 actment of this Act, the Director of the Office of Science
 24 and Technology Policy, in consultation with the Director
 25 of the Office of Management and Budget, shall develop and

1 *issue an overarching set of principles for the communica-*
2 *tion of scientific information by government scientists, pol-*
3 *icy makers, and managers to the public. The principles*
4 *shall encourage the open exchange of data and results of*
5 *research by Federal agency scientists.*

6 **(b) IMPLEMENTATION.**—*The Director shall ensure that*
7 *all civilian Federal agencies that conduct scientific research*
8 *develop specific policies and procedures regarding the public*
9 *release of scientific information consistent with the prin-*
10 *ciples established under subsection (a) within 180 days after*
11 *the date of enactment of this Act. These agency-specific poli-*
12 *cies shall be uniformly applied across the agency, widely*
13 *communicated, and readily accessible to all employees and*
14 *the public. They shall specifically address what is and what*
15 *is not permitted or recommended.*

16 **SEC. 105. SEMIANNUAL MATH AND SCIENCE DAYS.**

17 *It is the sense of Congress that the Office of Science*
18 *and Technology Policy should—*

19 (1) *encourage all elementary and middle schools*
20 *to observe a Math and Science Day twice in every*
21 *school year for the purpose of bringing in math and*
22 *science mentors to provide hands-on lessons to excite*
23 *and inspire students to pursue the math and science*
24 *fields (continuing education and career paths);*

1 (2) *initiate a program, in consultation with*
2 *Federal agencies and departments, to provide support*
3 *systems, tools (from existing outreach offices), and*
4 *mechanisms to allow and encourage Federal employ-*
5 *ees with scientific, technological, engineering, or*
6 *mathematical responsibilities to reach out to local*
7 *classrooms on such Math and Science Days to in-*
8 *struct and inspire school children, focusing on real*
9 *life math and science-related applicable experiences*
10 *along with hands-on demonstrations in order to dem-*
11 *onstrate the advantages and direct applications of*
12 *studying the math and science fields; and*

13 (3) *promote Math and Science Days involvement*
14 *by private sector and institutions of higher learning*
15 *employees in a manner similar to the Federal em-*
16 *ployee involvement described in paragraph (2).*

17 **SEC. 106. STUDY OF SERVICE SCIENCE.**

18 (a) *SENSE OF CONGRESS.—It is the sense of Congress*
19 *that, in order to strengthen the competitiveness of United*
20 *States enterprises and institutions and to prepare the peo-*
21 *ple of the United States for high-wage, high-skill employ-*
22 *ment, the Federal Government should better understand and*
23 *respond strategically to the emerging vocation and learning*
24 *discipline known as service science.*

1 (b) *STUDY.*—Not later than 270 days after the date
2 of the enactment of this Act, the Director of the Office of
3 Science and Technology Policy, through the National Acad-
4 emy of Sciences, shall conduct a study and report to Con-
5 gress regarding how the Federal Government should sup-
6 port, through research, education, and training, the new
7 discipline of service science.

8 (c) *OUTSIDE RESOURCES.*—In conducting the study
9 under subsection (b), the National Academy of Sciences
10 shall consult with leaders from 2- and 4-year institutions
11 of higher education, as defined in section 101 of the Higher
12 Education Act of 1965 (20 U.S.C. 1001), leaders from cor-
13 porations, and other relevant parties.

14 (d) *SERVICE SCIENCE DEFINED.*—In this section:

15 (1) *IN GENERAL.*—The term “service science”
16 means curricula, research programs, and training
17 regimens, including service sciences, management,
18 and engineering programs, to teach individuals to
19 apply technology, organizational process manage-
20 ment, and industry-specific knowledge to solve com-
21 plex problems.

22 (2) *SERVICE SCIENCES, MANAGEMENT, AND ENGI-*
23 *NEERING PROGRAMS.*—The term “service sciences,
24 management, and engineering programs” means the

1 *discipline known as service sciences, management,*
2 *and engineering that—*

3 *(A) applies scientific, engineering, and*
4 *management disciplines to tasks that one organi-*
5 *zation performs beneficial for others, generally as*
6 *part of the services sector of the economy; and*

7 *(B) integrates computer science, operations*
8 *research, industrial engineering, business strat-*
9 *egy, management sciences, and social and legal*
10 *sciences, in order to encourage innovation in*
11 *how organizations create value for customers and*
12 *shareholders that could not be achieved through*
13 *such disciplines working in isolation.*

14 **SEC. 107. REVIEW AND REPORT BY DIRECTOR OF THE OF-**
15 ****FICE OF SCIENCE AND TECHNOLOGY POLICY.****

16 *Within 180 days after the date of enactment of this*
17 *Act, the Director of the Office of Science and Technology*
18 *Policy shall review all provisions of the Internal Revenue*
19 *Code of 1986, including tax provisions, compliance costs,*
20 *and reporting requirements, and submit a report to the*
21 *Congress and the President on any provisions thereof that*
22 *discourage or encourage innovation.*

1 **SEC. 108. REPORT BY DIRECTOR OF THE OFFICE OF**
2 **SCIENCE AND TECHNOLOGY POLICY.**

3 *Within 180 days after the date of enactment of this*
4 *Act, the Director of the Office of Science and Technology*
5 *Policy shall conduct a comprehensive review of all Federal*
6 *regulations and submit a report to the Congress and the*
7 *President on any regulations that discourage or encourage*
8 *innovation.*

9 **TITLE II—INNOVATION**
10 **PROMOTION**

11 **SEC. 201. PRESIDENT’S COUNCIL ON INNOVATION AND**
12 **COMPETITIVENESS.**

13 (a) IN GENERAL.—The President shall establish a
14 President’s Council on Innovation and Competitiveness.

15 (b) DUTIES.—The Council’s duties shall include—

16 (1) monitoring implementation of public laws
17 and initiatives for promoting innovation, including
18 policies related to research funding, taxation, immi-
19 gration, trade, and education that are proposed in
20 this and other Acts;

21 (2) in consultation with the Director of the Of-
22 fice of Management and Budget, developing a proc-
23 ess for using metrics to assess the impact of existing
24 and proposed policies and rules that affect innova-
25 tion capabilities in the United States;

1 (3) identifying opportunities and making rec-
2 ommendations for the heads of executive agencies to
3 improve innovation, monitoring, and reporting on
4 the implementation of such recommendations;

5 (4) developing metrics for measuring the
6 progress of the Federal Government with respect to
7 improving conditions for innovation, including
8 through talent development, investment, and infra-
9 structure improvements; and

10 (5) submitting an annual report to the Presi-
11 dent and Congress on such progress.

12 (c) MEMBERSHIP AND COORDINATION.—

13 (1) MEMBERSHIP.—The Council shall be com-
14 posed of the Secretary or head of each of the fol-
15 lowing:

16 (A) The Department of Commerce.

17 (B) The Department of Defense.

18 (C) The Department of Education.

19 (D) The Department of Energy.

20 (E) The Department of Health and
21 Human Services.

22 (F) The Department of Homeland Secu-
23 rity.

24 (G) The Department of Labor.

25 (H) The Department of the Treasury.

1 (I) The National Aeronautics and Space
2 Administration.

3 (J) The Securities and Exchange Commis-
4 sion.

5 (K) The National Science Foundation.

6 (L) The Office of the United States Trade
7 Representative.

8 (M) The Office of Management and Budg-
9 et.

10 (N) The Office of Science and Technology
11 Policy.

12 (O) *The Environmental Protection Agency.*

13 ~~(P)~~ (P) Any other department or agency
14 designated by the President.

15 (2) CHAIRPERSON.—The Secretary of Com-
16 merce shall serve as chairperson of the Council.

17 (3) COORDINATION.—The chairperson of the
18 Council shall ensure appropriate coordination be-
19 tween the Council and the National Economic Coun-
20 cil, the National Security Council, and the National
21 Science and Technology Council.

22 (d) DEVELOPMENT OF INNOVATION AGENDA.—

23 (1) IN GENERAL.—The Council shall develop a
24 comprehensive agenda for strengthening the innova-
25 tion and competitiveness capabilities of the Federal

1 Government and State governments, academia, and
2 the private sector in the United States.

3 (2) CONSULTATION.—The comprehensive agen-
4 da required by paragraph (1) shall be developed in
5 consultation with appropriate representatives of the
6 private sector, scientific organizations, ~~and academic~~
7 ~~organizations.~~ *academic organizations, and other*
8 *nongovernmental organizations working in the area*
9 *of science or technology.*

10 (e) TECHNICAL AMENDMENT.—Section 101(b) of the
11 High-Performance Computing Act of 1991 (15 U.S.C.
12 5511(b)) is amended by striking “an” in the first sentence
13 and inserting “a distinct”.

14 (f) OPTIONAL ASSIGNMENT.—*Notwithstanding sub-*
15 *section (a) and paragraphs (1) and (2) of subsection (c),*
16 *the President may designate an existing council or advisory*
17 *panel to perform the duties and functions of this section.*

18 **SEC. 202. INNOVATION ACCELERATION GRANTS.**

19 (a) GRANT PROGRAM.—The President, through the
20 head of each Federal research agency, shall establish a
21 grant program, to be known as the “Innovation Accelera-
22 tion Grants Program”, to support and promote innovation
23 in the United States. Priority in the awarding of grants
24 shall be given to projects that—

25 (1) meet fundamental technology challenges;

1 (2) involve multidisciplinary work and a high
2 degree of novelty;

3 (3) have the potential for yielding results with
4 far-ranging or wide-ranging implications but are
5 considered too novel or span too diverse a range of
6 disciplines to fare well in the traditional peer review
7 process.

8 (b) AWARDING OF GRANTS THROUGH DEPARTMENTS
9 AND AGENCIES.—

10 (1) FUNDING GOALS.—The President shall en-
11 sure that it is the goal of each Executive agency (as
12 defined in section 105 of title 5, United States
13 Code) that finances research in science, mathe-
14 matics, engineering, and technology to allocate ap-
15 proximately 8 percent of the agency’s total annual
16 research and development budget to funding grants
17 under the Innovation Acceleration Grants Program.

18 (2) ADMINISTRATION.—

19 (A) IN GENERAL.—Each head of an Exec-
20 utive agency awarding grants under paragraph
21 (1) shall submit a plan for implementing the
22 grant program within such Executive agency to
23 the Director of the Office of Science and Tech-
24 nology Policy and the Director of the Office of
25 Management and Budget. The implementation

1 plan shall be submitted not later than 90 days
2 after the date of enactment of this Act. The im-
3 plementation plan may incorporate existing ini-
4 tiatives of the Executive agencies that promote
5 research in innovation as described in sub-
6 section (a).

7 (B) REQUIRED METRICS.—The head of
8 each Executive agency submitting an implemen-
9 tation plan pursuant to this section shall in-
10 clude metrics upon which grant funding deci-
11 sions will be made and metrics for assessing the
12 success of the grants awarded.

13 (C) GRANT DURATION AND RENEWALS.—

14 (i) IN GENERAL.—Any grants issued
15 by an Executive agency under this section
16 shall be for a period not to exceed 3 years.

17 (ii) EVALUATION.—Not later than 90
18 days prior to the expiration of a grant
19 issued under this section, the Executive
20 agency that approved the grant shall com-
21 plete an evaluation of the effectiveness of
22 the grant based on the metrics established
23 pursuant to subparagraph (B). In its eval-
24 uation, the Executive agency shall consider
25 the extent to which the program funded by

1 the grant met the goals of quality improve-
2 ment and job creation.

3 (iii) PUBLICATION OF REVIEW.—The
4 Executive agency shall publish and make
5 available to the public the review of each
6 grant approved pursuant to this section.

7 (iv) FAILURE TO MEET METRICS.—
8 Any grant that the Executive agency
9 awarding the grant determines has failed
10 to satisfy any of the metrics developed pur-
11 suant to subparagraph (B), shall not be el-
12 igible for a renewal.

13 (v) WAIVER.—*The head of the Execu-*
14 *tive agency may authorize a waiver of the*
15 *metric-meeting requirement of clauses (iv)*
16 *and (vi) if he or she determines that the*
17 *grant failed to meet a small number of*
18 *metrics and the failure was not significant*
19 *for the overall performance of the grant.*

20 ~~(v)~~ (vi) RENEWAL.—A grant issued
21 under this section that satisfies all of the
22 metrics developed pursuant to subpara-
23 graph (B), may be renewed once for a pe-
24 riod not to exceed 3 years. Additional re-
25 newals may be considered only if the head

1 of the Executive agency makes a specific
2 finding that the program being funded in-
3 volves a significant technology advance
4 that requires a longer timeframe to com-
5 plete critical research, and the research
6 satisfies all the metrics developed pursuant
7 to subparagraph (B).

8 (c) DEFINITIONS.—

9 (1) FEDERAL RESEARCH AGENCY DEFINED.—

10 In this section, the term “Federal research agency”
11 means a major organizational component of a de-
12 partment or agency of the Federal Government, or
13 other establishment of the Federal Government op-
14 erating with appropriated funds, that has as its pri-
15 mary purpose the performance of scientific research.

16 (2) MAJOR ORGANIZATIONAL COMPONENT.—

17 The term “major organizational component”, with
18 respect to a department, agency, or other establish-
19 ment of the Federal Government, means a compo-
20 nent of the department, agency, or other establish-
21 ment that is administered by an individual whose
22 rate of basic pay is not less than the rate of basic
23 pay payable under level V of the Executive Schedule
24 under section 5316 of title 5, United States Code.

1 **SEC. 203. REGIONAL ECONOMIC DEVELOPMENT.**

2 (a) DEVELOPMENT OF FUNDING STRATEGY.—

3 (1) IN GENERAL.—The Assistant Secretary for
4 Economic Development of the Department of Com-
5 merce shall review Federal programs that support
6 local economic development and prepare and imple-
7 ment a strategy to focus greater funding on initia-
8 tives that improve the ability of communities to par-
9 ticipate successfully in the modern economy through
10 innovation. In preparing the strategy, priority should
11 be given to projects that—

12 (A) emphasize private sector cooperation
13 with State and local governments and nonprofit
14 organizations focused on regional economic de-
15 velopment as the means of achieving specific
16 objectives related to the support and promotion
17 of innovation; and

18 (B) are the most successful in meeting the
19 metrics established under subsection (b).

20 (2) COORDINATION.—The Assistant Secretary
21 shall coordinate the development and implementation
22 of the strategy with the activities carried out by the
23 Secretary of Commerce under subsection (d).

24 (b) EVALUATION OF PROGRAMS.—The Assistant Sec-
25 retary for Economic Development of the Department of
26 Commerce shall develop metrics to measure the success

1 of Federal programs in supporting and promoting innova-
 2 tion at the local community level while minimizing bu-
 3 reaucracy and overhead expenses.

4 (c) PROMOTION OF ECONOMIC DEVELOPMENT OP-
 5 PORTUNITIES.—The Assistant Secretary for Economic
 6 Development of the Department of Commerce should work
 7 with organizations focused on economic development to
 8 highlight opportunities for such organizations to serve
 9 local communities through grants focused on economic de-
 10 velopment and investment in companies pursuing innova-
 11 tion.

12 (d) REGIONAL INNOVATION HOT SPOTS.—

13 (1) PROMOTION OF REGIONAL INNOVATION HOT
 14 SPOTS.—The Secretary of Commerce shall coordi-
 15 nate activities focused on promoting innovation
 16 through the development of regional innovation hot
 17 spots.

18 (2) GUIDE TO DEVELOPING SUCCESSFUL RE-
 19 GIONAL INNOVATION HOT SPOTS.—

20 (A) IN GENERAL.—Not later than 1 year
 21 after the date of enactment of this Act, the Sec-
 22 retary of Commerce, in consultation with rep-
 23 resentatives of regional innovation hot spots,
 24 shall publish a report, to be titled the “Guide
 25 to Developing Successful Regional Innovation

1 Hot Spots”, that examines successful regional
2 innovation hot spots and includes recommenda-
3 tions for establishing and fostering regional in-
4 novation hot spots.

5 (B) CONTENT.—The report required under
6 subparagraph (A) shall—

7 (i) include information on the evalua-
8 tion of human capital;

9 (ii) include information on the role of
10 sponsoring institutions, such as univer-
11 sities, nonprofit organizations, and labora-
12 tories, in establishing and fostering re-
13 gional innovation hot spots;

14 (iii) include information on the role of
15 State and local government leaders, leaders
16 in the research and business communities,
17 and community organizations in estab-
18 lishing and fostering regional innovation
19 hot spots;

20 (iv) discuss the importance of collabo-
21 ration by public and private sector leaders;

22 (v) identify sources of funding for
23 these activities within Federal, State, and
24 local governments and the private sector;
25 and

1 (vi) include recommendations for de-
2 veloping strategic plans to stimulate inno-
3 vation, including recommendations relating
4 to knowledge transfer and commercializa-
5 tion, the support of regional entrepreneur-
6 ship and increased innovation within exist-
7 ing regional firms, and the linking of pri-
8 mary institutions engaged in the innova-
9 tion process.

10 (3) REGIONAL INNOVATION HOT SPOT
11 METRICS.—

12 (A) DEVELOPMENT OF METRICS.—In con-
13 junction with publishing the report required
14 under paragraph (2), the Secretary of Com-
15 merce shall develop the following sets of
16 metrics:

17 (i) Metrics to be considered for identi-
18 fying potential regional innovation hot
19 spots (in this subsection referred to as
20 “identifying metrics”).

21 (ii) Metrics to be considered for evalu-
22 ating the impact and effectiveness of estab-
23 lished regional innovation hot spots (in this
24 subsection referred to as “evaluation
25 metrics”).

1 ~~(B) USE OF METRICS.~~—The Secretary of
 2 Commerce shall use the identifying metrics to
 3 conduct biannual assessments of potential re-
 4 gional clusters and shall use the evaluation
 5 metrics to assess the impact and effectiveness
 6 of established regional innovation hot spots in
 7 improving the regional economy and regional
 8 job market. The Secretary shall also assess the
 9 cost effectiveness of operating within each re-
 10 regional hot spot. The Secretary shall report the
 11 biannual assessments to Congress.

12 ~~(c) REGIONAL INNOVATION HOT SPOTS.~~—In this
 13 section, the term “regional innovation hot spots” means
 14 regions that are defined by a high degree of innovation
 15 and the availability of talent, investment, and infrastruc-
 16 ture necessary to create and sustain such innovation.

17 **TITLE III—NATIONAL SCIENCE**
 18 **FOUNDATION**

19 **SEC. 301. AUTHORIZATION OF APPROPRIATIONS.**

20 (a) IN GENERAL.—There are authorized to be appro-
 21 priated to the National Science Foundation—

- 22 (1) \$6,440,000,000 for fiscal year 2007;
 23 (2) \$7,433,000,000 for fiscal year 2008;
 24 (3) \$8,577,000,000 for fiscal year 2009;
 25 (4) \$9,898,000,000 for fiscal year 2010; and

1 (5) \$11,422,000,000 for fiscal year 2011.

2 (b) PLAN FOR INCREASED RESEARCH.—

3 (1) IN GENERAL.—Not later than 180 days
4 after the date of the enactment of this Act, the Di-
5 rector of the National Science Foundation shall sub-
6 mit a comprehensive, multiyear plan that describes
7 how the funds authorized in subsection (a) would be
8 used, if appropriated, to the Senate Committee on
9 Commerce, Science, and Transportation, the Senate
10 Committee on Health, Education, Labor, and Pen-
11 sions and the House of Representatives Committee
12 on Science.

13 (2) PLAN REQUIREMENTS.—The Director
14 shall—

15 (A) develop the plan with a focus on
16 strengthening the Nation’s lead in physical
17 science and technology, increasing overall work-
18 force skills in physical science, technology, engi-
19 neering, and mathematics at all levels, and
20 strengthening innovation by expanding the
21 focus of competitiveness and innovation policy
22 at the regional and local level; and

23 (B) emphasize spending increased research
24 funds appropriated pursuant to subsection (a)
25 in areas of investment for Federal research and

1 technology programs identified under section
2 101(c) of this Act.

3 **SEC. 302. INNOVATION-BASED EXPERIENTIAL LEARNING.**

4 (a) **IN GENERAL.**—The Director of the National
5 Science Foundation shall establish a grant program under
6 which grants are provided to local educational agencies to
7 enable the local educational agencies to implement innova-
8 tion-based experiential learning in a total of up to 500
9 secondary schools and up to 500 elementary or middle
10 schools in the United States.

11 (b) **APPLICATIONS.**—A local educational agency de-
12 siring a grant under this section shall submit an applica-
13 tion at such time, in such manner, and accompanied by
14 such information as the Director of the National Science
15 Foundation may require.

16 (c) **EXPERIENTIAL LEARNING DEFINED.**—In this
17 section, the term “experiential learning” means a teaching
18 model that—

19 (1) begins with a relevant, real-world problem;

20 (2) requires a student to research and plan a
21 solution to the problem, and experiment with that
22 solution; and

23 (3) follows the experiment with analysis, reflec-
24 tion, discussion, and a redesign of the solution.

1 **SEC. 303. 302. GRADUATE FELLOWSHIPS AND GRADUATE**
2 **TRAINEESHIPS.**

3 (a) GRADUATE RESEARCH FELLOWSHIP PRO-
4 GRAM.—

5 (1) IN GENERAL.—During the 5-year period be-
6 ginning on the date of the enactment of this Act, the
7 Director of the National Science Foundation shall
8 expand the Graduate Research Fellowship Program
9 of the Foundation so that an additional 1,250 fel-
10 lowships are awarded to United States citizens
11 under the Program during that period.

12 (2) EXTENSION OF FELLOWSHIP PERIOD.—The
13 Director is authorized to award fellowships under
14 the Graduate Research Fellowship Program for a
15 period of up to 5 years.

16 (3) AUTHORIZATION OF APPROPRIATIONS.—
17 Within the amounts authorized to be appropriated
18 by section 301, there are authorized to be appro-
19 priated \$34,000,000 for each of the fiscal years
20 2007 through 2011 to provide an additional 250 fel-
21 lowships under the Graduate Research Fellowship
22 Program during each such fiscal year.

23 (b) INTEGRATIVE GRADUATE EDUCATION AND RE-
24 SEARCH TRAINEESHIP PROGRAM.—

25 (1) IN GENERAL.—During the 5-year period be-
26 ginning on the date of the enactment of this Act, the

1 Director shall expand the Integrative Graduate Edu-
2 cation and Research Traineeship program of the
3 Foundation so that an additional 1,250 United
4 States citizens are awarded grants under the pro-
5 gram during that period.

6 (2) AUTHORIZATION OF APPROPRIATIONS.—
7 Within the amounts authorized to be appropriated
8 by section 301, there are authorized to be appro-
9 priated \$57,000,000 for each of the fiscal years
10 2007 through 2011 to provide grants to an addi-
11 tional 250 individuals under the Integrative Grad-
12 uate Education and Research Traineeship program
13 during each such fiscal year.

14 **SEC. ~~304.~~ 303. PROFESSIONAL SCIENCE MASTERS DEGREE**
15 **PROGRAMS.**

16 (a) CLEARINGHOUSE.—

17 (1) DEVELOPMENT.—The Director of the Na-
18 tional Science Foundation shall establish a clearing-
19 house, in collaboration with 4-year institutions of
20 higher education, including applicable graduate
21 schools and academic departments, industries, and
22 Federal agencies that employ science-trained per-
23 sonnel, to share program elements used in successful
24 professional science masters degree programs *and*

1 *other advanced degree programs related to science,*
2 *mathematics, technology, and engineering.*

3 (2) AVAILABILITY.—The Director shall make
4 the clearinghouse of program elements developed
5 under paragraph (1) available to institutions of
6 higher education that are developing professional
7 science masters degree programs.

8 (b) PILOT PROGRAMS.—

9 (1) PROGRAM AUTHORIZED.—The Director
10 shall award grants for pilot programs to 4-year in-
11 stitutions of higher education to facilitate the insti-
12 tutions' creation or improvement of professional
13 science ~~master's~~ *masters* degree programs.

14 (2) APPLICATION.—A 4-year institution of
15 higher education desiring a grant under this section
16 shall submit an application at such time, in such
17 manner, and accompanied by such information as
18 the Director may require. The application shall in-
19 clude—

20 (A) a description of the professional
21 science masters degree program that the insti-
22 tution of higher education will implement;

23 (B) the amount of funding from non-Fed-
24 eral sources, including from private industries,
25 that the institution of higher education shall

1 use to support the professional masters degree
2 program; and

3 (C) an assurance that the institution of
4 higher education shall encourage students in
5 the professional science ~~master's~~ *masters* degree
6 program to apply for all forms of Federal as-
7 sistance available to such students, including
8 applicable graduate fellowships and student fi-
9 nancial assistance under title IV of the Higher
10 Education Act of 1965 (20 U.S.C. 1070 et
11 seq.).

12 (3) PREFERENCE FOR ALTERNATIVE FUNDING
13 SOURCES.—The Director shall give preference in
14 making awards to 4-year institutions of higher edu-
15 cation seeking Federal funding to support pilot pro-
16 fessional science ~~master's~~ *masters* degree programs,
17 to those applicants that secure more than $\frac{2}{3}$ of the
18 funding for such professional science masters degree
19 programs from sources other than the Federal Gov-
20 ernment.

21 (4) NUMBER OF GRANTS; TIME PERIOD OF
22 GRANTS.—

23 (A) NUMBER OF GRANTS.—Subject to the
24 availability of appropriated funds, the Director
25 shall award grants under paragraph (1) to a

1 maximum of 200 4-year institutions of higher
2 education.

3 (B) TIME PERIOD OF GRANTS.—Grants
4 awarded under this section shall be for one 3-
5 year term. Grants may be renewed only once
6 for a maximum of 2 additional years.

7 (5) EVALUATION AND REPORTS.—

8 (A) DEVELOPMENT OF PERFORMANCE
9 BENCHMARKS.—Prior to the start of the grant
10 program, the National Science Foundation, in
11 collaboration with 4-year institutions of higher
12 education, shall develop performance bench-
13 marks to evaluate the pilot programs assisted
14 by grants under this section.

15 (B) EVALUATION.—For each year of the
16 grant period, the Director, in consultation with
17 4-year institutions of higher education, and
18 Federal agencies that employ science-trained
19 personnel, shall complete an evaluation of each
20 pilot program assisted by grants under this sec-
21 tion. Any pilot program that fails to satisfy the
22 performance benchmarks developed under sub-
23 paragraph (A) shall not be eligible for further
24 funding.

1 (C) REPORT.—Not later than 180 days
2 after the completion of an evaluation described
3 in subparagraph (A), the Director, in consulta-
4 tion with industries and Federal agencies that
5 employ science-trained personnel, shall submit a
6 report to Congress that includes—

7 (i) the results of the evaluation de-
8 scribed in subparagraph (A); and

9 (ii) recommendations for administra-
10 tive and legislative action that could opti-
11 mize the effectiveness of the pilot pro-
12 grams, as the Director determines to be
13 appropriate.

14 (c) INSTITUTION OF HIGHER EDUCATION DE-
15 FINED.—In this section, the term “institution of higher
16 education” has the meaning given that term in section
17 101(a) of the Higher Education Act of 1965.

18 (d) AUTHORIZATION OF APPROPRIATIONS.—Within
19 the amounts authorized to be appropriated by section 301,
20 there are authorized to be appropriated to carry out this
21 section \$20,000,000 for fiscal year 2007 and such sums
22 as may be necessary for each succeeding fiscal year.

1 **SEC. 305. 304. INCREASED SUPPORT FOR SCIENCE EDU-**
 2 **CATION THROUGH THE NATIONAL SCIENCE**
 3 **FOUNDATION.**

4 (a) *IN GENERAL.*—Within the amounts authorized to
 5 be appropriated by section 301, there are authorized to
 6 be appropriated to carry out the physical science, mathe-
 7 matics, engineering, and technology talent expansion pro-
 8 gram under section 8(7) of the National Science Founda-
 9 tion Authorization Act of 2002 (Public Law 107–368, 116
 10 Stat. 3042)—

- 11 (1) \$35,000,000 for fiscal year 2007;
- 12 (2) \$50,000,000 for fiscal year 2008;
- 13 (3) \$60,000,000 for fiscal year 2009; and
- 14 (4) \$70,000,000 for fiscal year 2010.

15 (b) *OUTREACH PROGRAMS.*—Section 8(7)(C) of the
 16 *National Science Foundation Authorization Act of 2002*
 17 *(Public Law 107–368, 116 Stat. 3042)* is amended—

- 18 (1) *by striking “and” after the semicolon in*
 19 *clause (v);*
- 20 (2) *by striking “students.” in clause (vi) and in-*
 21 *serting “students; and”; and*
- 22 (3) *by adding at the end the following:*
 23 *“(vii) outreach programs that provide*
 24 *middle and secondary school students and*
 25 *their science and math teachers opportuni-*

1 *ties to increase their exposure to engineering*
2 *and technology.”.*

3 **SEC. 306. STUDY OF SERVICE SCIENCE.**

4 (a) SENSE OF CONGRESS.—It is the sense of the Con-
5 gress that, in order to strengthen the competitiveness of
6 United States enterprises and institutions and to prepare
7 the people of the United States for high-wage, high-skill
8 employment, the Federal Government should better under-
9 stand and respond strategically to the emerging vocation
10 and learning discipline known as service science.

11 (b) STUDY.—Not later than 270 days after the date
12 of the enactment of this Act, the Director of the National
13 Science Foundation, through the National Academy of
14 Sciences, shall conduct a study and report to Congress re-
15 garding how the Federal Government should support,
16 through research, education, and training, the new dis-
17 eipline of service science.

18 (c) OUTSIDE RESOURCES.—In conducting the study
19 under subsection (b), the Director of the National Science
20 Foundation shall consult with leaders from 2- and 4-year
21 institutions of higher education, as defined in section 101
22 of the Higher Education Act of 1965 (20 U.S.C. 1001),
23 leaders from corporations, and other relevant parties.

24 (d) SERVICE SCIENCE DEFINED.—In this section:

1 (1) IN GENERAL.—The term “service science”
2 means curricula, research programs, and training
3 regimens, including service sciences, management,
4 and engineering programs, to teach individuals to
5 apply technology, organizational process manage-
6 ment, and industry-specific knowledge to solve com-
7 plex problems.

8 (2) SERVICE SCIENCES, MANAGEMENT, AND EN-
9 GINEERING PROGRAMS.—The term “service sciences,
10 management, and engineering programs” means the
11 discipline known as service sciences, management,
12 and engineering that—

13 (A) applies scientific, engineering, and
14 management disciplines to tasks that one orga-
15 nization performs beneficially for others, gen-
16 erally as part of the services sector of the econ-
17 omy; and

18 (B) integrates computer science, operations
19 research, industrial engineering, business strat-
20 egy, management sciences, and social and legal
21 sciences, in order to encourage innovation in
22 how organizations create value for customers
23 and shareholders that could not be achieved
24 through such disciplines working in isolation.

1 **SEC. 307. 305. MEETING CRITICAL NATIONAL SCIENCE**
2 **NEEDS.**

3 (a) **IN GENERAL.**—In addition to assessing the de-
4 gree to which research award and grant proposals sub-
5 mitted to the Foundation, and research activities initiated
6 by the Foundation, sustain and strengthen the nation’s
7 traditional commitment to long-term basic research that
8 have the potential to be transformational to maintain the
9 flow of new ideas that fuel the economy, provide security,
10 and enhance the quality of life, to developing and sus-
11 taining a world class scientific workforce, and to fostering
12 the scientific literacy of its citizens, the Director of the
13 National Science Foundation shall include consideration
14 of the degree to which such awards and such research ac-
15 tivities may assist in meeting critical national needs in the
16 physical sciences, technology, engineering, and mathe-
17 matics.

18 (b) **PRIORITY TREATMENT.**—Proposed research ac-
19 tivities, and grants funded under the Foundation’s Re-
20 search and Related Activities Account, which can be ex-
21 pected to make contributions in physical and natural
22 sciences, technology, engineering, and mathematics, and
23 other research that underpins these areas, shall be given
24 priority in the selection of awards and in the allocation
25 of Foundation resources.

1 ~~(e) APPLICATION OF PRIORITY TREATMENT TO~~
2 ~~OTHER PROGRAMS.—This requirement shall be applied to~~
3 ~~other fellowship, grant or award programs authorized in~~
4 ~~this title.~~

5 *(a) IN GENERAL.—In addition to any other criteria,*
6 *the Director of the National Science Foundation shall in-*
7 *clude consideration of the degree to which awards and re-*
8 *search activities may assist in meeting critical national*
9 *needs in innovation, competitiveness, the physical and nat-*
10 *ural sciences, technology, engineering, and mathematics.*

11 *(b) PRIORITY TREATMENT.—The Director shall give*
12 *priority in the selection of awards and the allocation of*
13 *Foundation resources to proposed research activities, and*
14 *grants funded under the Foundation’s Research and Related*
15 *Activities Account, that can be expected to make contribu-*
16 *tions in physical or natural science, technology, engineer-*
17 *ing, or mathematics, or that enhance competitiveness or in-*
18 *novation in the United States.*

19 *(c) APPLICATION OF PRIORITY TREATMENT TO OTHER*
20 *PROGRAMS.—The priority treatment described in sub-*
21 *section (b) shall be applied to other fellowship, grant, or*
22 *award programs authorized by this title.*

23 *(d) LIMITATION.—Nothing in this section shall be con-*
24 *strued to restrict or bias the grant selection process against*
25 *funding other areas of research deemed by the Foundation*

1 *to be consistent with its mandate nor to change the core*
 2 *mission of the Foundation.*

3 **SEC. 308. 306. EXPERIMENTAL PROGRAM TO STIMULATE**
 4 **COMPETITIVE RESEARCH.**

5 Within the amounts authorized to be appropriated by
 6 section 301, there are authorized to be appropriated to
 7 the National Science Foundation for the Experimental
 8 Program to Stimulate Competitive Research authorized
 9 under section 113 of the National Science Foundation Au-
 10 thorization Act of 1988 (42 U.S.C. 1862g)—

- 11 (1) \$125,000,000 for fiscal year 2007; and
 12 (2) for each of fiscal years 2008 through 2011,
 13 an amount equal to \$125,000,000 increased for each
 14 such year by an amount equal to the percentage in-
 15 crease of the National Science Foundation's budget
 16 request above the total amount appropriated to the
 17 Foundation for fiscal year 2007.

18 **SEC. 307. ENCOURAGING PARTICIPATION.**

19 (a) *MENTORING PROGRAM.*—*The Director of the Na-*
 20 *tional Science Foundation shall establish a program to pro-*
 21 *vide mentors for women who are interested in careers in*
 22 *science, technology, engineering, and mathematics by pair-*
 23 *ing such women who are in science, technology, engineering,*
 24 *or mathematics programs of study in high school, commu-*

1 nity college, undergraduate or graduate school with mentors
2 who are working in industry.

3 (b) *APPRENTICESHIP PROGRAM.*—The Director shall
4 also establish a program to provide grants to community
5 colleges to provide apprenticeships and other appropriate
6 training to allow women to enter higher-paying technical
7 jobs in fields related to science, technology, engineering, or
8 mathematics.

9 (c) *APPLICATIONS.*—An institution of higher edu-
10 cation, including a community college, desiring a grant
11 under this section shall submit an application at such time,
12 in such manner, and accompanied by such information as
13 the Director may require.

14 (d) *PROGRAM EVALUATION.*—The Director shall estab-
15 lish metrics to evaluate the success of the programs estab-
16 lished under subsections (a) and (b) annually and report
17 the findings and conclusions of the evaluations annually to
18 the Congress.

19 **SEC. 308. CYBERINFRASTRUCTURE**

20 In order to continue and expand efforts to ensure that
21 research institutions throughout the nation can fully par-
22 ticipate in research programs of the National Science Foun-
23 dation and collaborate with colleagues throughout the na-
24 tion, the Director, within 180 days after enactment of this
25 Act, shall develop and publish a plan that describes the cur-

1 *rent status of broadband access for scientific research pur-*
 2 *poses in States located in EPSCoR-eligible jurisdictions*
 3 *and outlines actions which can be taken to ensure that such*
 4 *connections are available to enable participation in those*
 5 *National Science Foundation programs which rely heavily*
 6 *on high-speed networking and collaborations across institu-*
 7 *tions and regions.*

8 **SEC. 309. REAFFIRMATION OF THE MERIT-REVIEW PROCESS**
 9 **OF THE NATIONAL SCIENCE FOUNDATION.**

10 *Nothing in this Act, or the amendments made by this*
 11 *Act, shall be interpreted to require or recommend that the*
 12 *National Science Foundation—*

13 *(1) alter or modify its merit-review system or*
 14 *peer-review process; or*

15 *(2) exclude the awarding of any proposal by*
 16 *means of the merit-review or peer-review process.*

17 **TITLE IV—NATIONAL AERO-**
 18 **NAUTICS AND SPACE ADMIN-**
 19 **ISTRATION**

20 **SEC. 401. NASA'S CONTRIBUTION TO INNOVATION.**

21 (a) SENSE OF THE CONGRESS.—It is the sense of the
 22 Congress that—

23 (1) since its establishment the National Aero-
 24 nautics and Space Administration has played an im-
 25 portant role in stimulating excellence in the advance-

1 ment of physical science and engineering disciplines
2 and in providing opportunities and incentives for the
3 pursuit of academine studies in science, technology,
4 engineering, and mathematics;

5 (2) a balanced science program as authorized
6 by section 101(d) of the National Aeronautics and
7 Space Administration Act 2005 (Public Law 109–
8 155) contributes significantly to innovation in and
9 the economic competitiveness of the United States;
10 and

11 (3) a robust National Aeronautics and Space
12 Administration, funded at the levels authorized
13 under sections 202 and 203 of that Act would offer
14 a fair balance among science, aeronautics, explo-
15 ration, and human space flight programs, all of
16 which can attract and employ scientists, engineers,
17 and technicians across a broad range of fields in
18 science, technology, mathematics, and engineering.

19 (b) PARTICIPATION IN INNOVATION AND COMPETI-
20 TIVENESS PROGRAMS.—The Administrator shall fully par-
21 ticipate in any interagency efforts to promote innovation
22 and economic competitiveness through scientific research
23 and development.

1 **SEC. 402. AERONAUTICS INSTITUTE FOR RESEARCH.**

2 (a) ESTABLISHMENT.—The Administrator of the Na-
3 tional Aeronautics and Space Administration shall estab-
4 lish within the Administration an Aeronautics Institute for
5 Research to manage the Aeronautics research of the Ad-
6 ministration. The Institute shall be headed by a director
7 with appropriate experience in aeronautics research and
8 development.

9 (b) DUTIES.—The Institute shall implement the pro-
10 grams authorized under Title IV of the National Aero-
11 nautics and Space Administration Authorization Act of
12 2005 (Public Law 109–155).

13 (c) COOPERATION WITH OTHER AGENCIES.—The In-
14 stitute shall operate in conjunction with relevant programs
15 in the Department of Transportation, the Department of
16 Defense, the Department of Commerce, and the Depart-
17 ment of Homeland Security, including the activities of the
18 Joint Planning and Development Office established under
19 the VISION 100—Century of Aviation Reauthorization
20 Act (Public Law 108–176). The Director of the Institute
21 may accept assistance, staff, and funding from those De-
22 partments and other Federal agencies. Such funding shall
23 be in addition to funds authorized for aeronautics under
24 the National Aeronautics and Space Administration Au-
25 thorization Act of 2005 (Public Law 109–155). The Di-
26 rector of the Institute may utilize the Next Generation Air

1 Transportation Senior Policy Committee established under
2 section 710 of under the VISION 100—Century of Avia-
3 tion Reauthorization Act (Public Law 108–176) to coordi-
4 nate its programs with other Departments and agencies.

5 (d) PARTNERSHIPS.—In developing and carrying out
6 its plans, the Institute shall consult with the public and
7 ensure the participation of experts from the private sector
8 including representatives of commercial aviation, general
9 aviation, aviation labor groups, aviation research and de-
10 velopment entities, aircraft and air traffic control sup-
11 pliers, and the space industry.

12 **SEC. 403. BASIC RESEARCH ENHANCEMENT.**

13 (a) IN GENERAL.—The Administrator of the Na-
14 tional Aeronautics and Space Administration, the Director
15 of the National Science Foundation, the Secretary of En-
16 ergy, the Secretary of Defense, and Secretary of Com-
17 merce shall, to the extent practicable, coordinate basic and
18 fundamental research activities related to physical
19 sciences, technology, engineering and mathematics.

20 (b) ESTABLISHMENT OF BASIC RESEARCH EXECU-
21 TIVE COUNCIL.—In order to ensure effective application
22 of resources to basic science activity and to facilitate coop-
23 erative basic and fundamental research activities with
24 other governmental organizations, the Administrator of
25 the National Aeronautics and Space Administration shall

1 establish within the Administration a Basic Research Ex-
2 ecutive Council to oversee the distribution and manage-
3 ment of programs and resources engaged in support of
4 basic research activity.

5 (c) MEMBERSHIP.—The membership of the Basic Re-
6 search Executive Council shall consist of the most senior
7 agency official representing each of the following areas of
8 research:

9 (1) Space Science.

10 (2) Earth Science.

11 (3) Life and Microgravity Sciences.

12 (4) Aeronautical Research.

13 (d) LEADERSHIP.—The Council shall be chaired by
14 an individual appointed for that purpose who shall have,
15 as a minimum, a appropriate graduate degree in a rec-
16 ognizable discipline in the physical sciences, and appro-
17 priate experience in the conduct and management of basic
18 research activity. The Chairman of the Council shall re-
19 port directly to the Administrator of the National Aero-
20 nautics and Space Administration.

21 (e) SUPPORTING RESOURCES AND PERSONNEL.—
22 The Chairman of the Council shall be provided with ade-
23 quate administrative staff support to conduct the activity
24 and functions of the Council.

1 (f) DUTIES.—The Basic Research Executive Council
2 shall have, at minimum, the following duties:

3 (1) To establish criteria for the identification of
4 research activity as basic in nature.

5 (2) To establish, in consultation with the Office
6 of Science and Technology Policy, the National
7 Science Foundation, the National Academy of
8 Sciences, the National Institutes of Health, and
9 other appropriate external organizations, a
10 prioritization of fundamental research activity to be
11 conducted by the National Aeronautics and Space
12 Administration, to be reviewed and updated on an
13 annual basis, taking into consideration evolving na-
14 tional research priorities.

15 (3) To monitor, review, and evaluate all basic
16 research activity of the National Aeronautics and
17 Space Administration for compliance with basic re-
18 search priorities established under paragraph (2).

19 (4) To make recommendations to the Adminis-
20 trator regarding adjustments in the basic research
21 activities of the Administration to ensure consistency
22 with the research priorities established under this
23 section.

24 (5) To provide an annual report to the Senate
25 Committee on Commerce, Science, and Transpor-

1 tation and the House of Representatives Committee
2 on Science outlining the activities of the Council
3 during the preceding year and the status of basic re-
4 search activity within the Administration. The initial
5 such report, to serve as a baseline document, shall
6 be provided within 90 days after the establishment
7 and initial operations of the Council.

8 **SEC. 404. AGING WORKFORCE ISSUES PROGRAM.**

9 *It is the sense of the Congress that the Administrator*
10 *of the National Aeronautics and Space Administration*
11 *should implement a program to address aging work force*
12 *issues in aerospace that—*

13 *(1) documents technical and management experi-*
14 *ences before senior people leave the Administration,*
15 *including—*

16 *(A) documenting lessons learned;*

17 *(B) briefing organizations;*

18 *(C) providing opportunities for archiving*
19 *lessons in a database; and*

20 *(D) providing opportunities for near-term*
21 *retirees to transition out early from their pri-*
22 *mary assignment in order to document their ca-*
23 *reer lessons learned and brief new employees*
24 *prior to their separation from the Administra-*
25 *tion;*

1 (2) *provides incentives for retirees to return and*
2 *teach new employees about their career lessons and*
3 *experiences; and*

4 (3) *provides for the development of an award to*
5 *recognize and reward outstanding senior employees*
6 *for their contributions to knowledge sharing.*

7 **SEC. 405. CONFORMING AMENDMENTS.**

8 *Section 101(d) of the National Aeronautics and Space*
9 *Administration Authorization Act of 2005 (42 U.S.C.*
10 *16611(d)) is amended—*

11 (1) *by striking “and” after the semicolon in*
12 *paragraph (2)(B);*

13 (2) *by striking “Act.” in paragraph (2)(C) and*
14 *inserting “Act; and”;*

15 (3) *by adding at the end of paragraph (2) the*
16 *following:*

17 *“(D) the number and content of science ac-*
18 *tivities which are undertaken in support of*
19 *science missions described in subparagraph (A),*
20 *and the number and content of science activities*
21 *which may be considered as fundamental, or*
22 *basic research, whether incorporated within spe-*
23 *cific missions or conducted independently of any*
24 *specific mission.”; and*

1 (4) *by adding at the end of paragraph (3) the*
2 *following:*

3 “(H) *How NASA science activities can best*
4 *be structured to ensure that basic and funda-*
5 *mental research can be effectively maintained*
6 *and coordinated in response to national goals in*
7 *competitiveness and innovation, and in contrib-*
8 *uting to national scientific, technology, engineer-*
9 *ing and mathematics leadership.”.*

10 **SEC. 406. DIRECT NASA PARTICIPATION IN AMERICAN COM-**
11 **PETITIVENESS INITIATIVE.**

12 *Notwithstanding any other provision of law, the Ad-*
13 *ministrator of the National Aeronautics and Space Admin-*
14 *istration shall increase funding for basic science and re-*
15 *search, including for the Explorer Program, for fiscal year*
16 *2007 by \$160,000,000 by transferring such amount for such*
17 *purpose from accounts of the National Aeronautics and*
18 *Space Administration. The transfer shall be contingent*
19 *upon the availability of unobligated balances to the Na-*
20 *tional Aeronautics and Space Administration.*

1 **TITLE V—NATIONAL INSTITUTE**
2 **OF STANDARDS AND TECH-**
3 **NOLOGY**

4 **SEC. 501. AUTHORIZATION OF APPROPRIATIONS.**

5 There are authorized to be appropriated to the Sec-
6 retary of Commerce for the use of the National Institute
7 of Standards and Technology—

8 (1) for fiscal year 2007, \$639,646,000, of
9 which ~~\$106,000,000~~ *\$110,000,000* shall be used for
10 the Hollings Manufacturing Extension Partnership
11 Program;

12 (2) for fiscal year 2008, \$703,611,000, of
13 which ~~\$106,000,000~~ *\$115,000,000* shall be used for
14 the Hollings Manufacturing Extension Partnership
15 Program;

16 (3) for fiscal year 2009, \$773,972,000, of
17 which ~~\$106,000,000~~ *\$120,000,000* shall be used for
18 the Hollings Manufacturing Extension Partnership
19 Program;

20 (4) for fiscal year 2010, \$851,369,000, of
21 which ~~\$106,000,000~~ *\$125,000,000* shall be used for
22 the Hollings Manufacturing Extension Partnership
23 Program; and

24 (5) for fiscal year 2011, \$936,506,000, of
25 which ~~\$106,000,000~~ *\$130,000,000* shall be used for

1 the Hollings Manufacturing Extension Partnership
2 Program.

3 **SEC. 502. AMENDMENTS TO THE STEVENSON-WYDLER**
4 **TECHNOLOGY INNOVATION ACT OF 1980.**

5 (a) IN GENERAL.—Section 5 of the Stevenson-
6 Wydler Technology Innovation Act of 1980 (15 U.S.C.
7 3704) is repealed.

8 (b) CONFORMING AMENDMENTS.—

9 (1) Section 5314 of title 5, United States Code,
10 is amended by striking “Under Secretary of Com-
11 merce for Technology”.

12 (2) Section 4 of the Stevenson-Wydler Tech-
13 nology Innovation Act of 1980 (15 U.S.C. 3703) is
14 amended—

15 (A) by striking paragraphs (1) and (3);
16 and

17 (B) by redesignating paragraphs (2)
18 through (13) as paragraphs (1) through (11),
19 respectively.

20 (3) Section 21(a) of the Stevenson-Wydler
21 Technology Innovation Act of 1980 (15 U.S.C.
22 3713(a)) is amended—

23 (A) by striking out “sections 5, 11(g), and
24 16” in paragraph (1) and inserting “sections
25 11(g) and 16”;

1 (B) by striking “\$500,000 is authorized
2 only for the purpose of carrying out the require-
3 ments of the Japanese technical literature pro-
4 gram established under section 5(d) of this
5 Act;”.

6 (4) Section 208 of the High-Performance Com-
7 puting Act of 1991 (15 U.S.C. 5528 is amended by
8 striking subsection (c) and redesignating subsection
9 (d) as subsection (c).

10 (5) Section 6(b)(4)(B)(v) of the Assistive Tech-
11 nology Act of 1998 (29 U.S.C. 3005(b)(4)(B)(v)) is
12 amended by striking “the Technology Administra-
13 tion of the Department of Commerce,” and inserting
14 “the National Institute of Standards and Tech-
15 nology,”.

16 **SEC. 503. INNOVATION ACCELERATION.**

17 (a) GRANT PROGRAM.—In order to implement sec-
18 tion 202 of this Act, the Director of the National Institute
19 of Standards and Technology shall—

20 (1) establish a program linked to the measure-
21 ment laboratories, to be known as the “Standards
22 and Technology Acceleration Research Program”, to
23 support and promote innovation in the United States
24 through high-risk, high-reward research; and

1 (2) set aside not less than 8 percent of the
2 funds available to the Institute each fiscal year for
3 the program.

4 (b) EXTERNAL FUNDING.—The Director shall ensure
5 that at least 80 percent of the funds available for the pro-
6 gram shall be used to award competitive, merit-reviewed
7 grants, cooperative agreements or contracts to public or
8 private entities, including businesses and universities. In
9 selecting these projects, the Director shall ensure that all
10 projects have scientific and technical merit and that any
11 resulting intellectual property shall vest in a company or
12 companies incorporated in the United States. Each exter-
13 nal project shall involve at least one small or medium-sized
14 business and the Director shall give priority to joint ven-
15 tures between small or medium-sized businesses and edu-
16 cational institutions. Any grant shall be for a period not
17 to exceed 3 years.

18 (c) COMPETITIONS.—The Director shall solicit pro-
19 posals annually to address areas of national need for high-
20 risk, high-reward research, as identified by the Director.

21 (d) ANNUAL REPORT.—Each year the Director shall
22 issue an annual report describing the program’s activities,
23 including include a description of the metrics upon which
24 grant funding decisions were made in the previous fiscal
25 year, any proposed changes to those metrics, metrics for

1 evaluating the success of ongoing and completed grants,
2 and an evaluation of ongoing and completed grants. The
3 first annual report shall include best practices for manage-
4 ment of programs to stimulate high-risk, high-reward re-
5 search.

6 (e) ADMINISTRATIVE EXPENSES.—No more than 5
7 percent of the finding available to the program may be
8 used for administrative expenses.

9 (f) HIGH-RISK, HIGH-REWARD RESEARCH DE-
10 FINED.—In this section, the term “high-risk, high-reward
11 research” means research that—

12 (1) has the potential for yielding results with
13 far-ranging or wide-ranging implications; and

14 (2) addresses critical national needs related to
15 measurement standards and technology; but

16 (3) is too novel or spans too diverse a range of
17 disciplines to fare well in the traditional peer review
18 process.

19 **SEC. 504. DEVELOPMENT OF ADVANCED MANUFACTURING**
20 **SYSTEMS.**

21 (a) RESEARCH AND DEVELOPMENT.—The Director
22 of the National Institute of Standards and Technology
23 shall support research and development in collaboration
24 with entities and organizations from the industrial sector
25 to supplement and support work in the private sector on

1 advanced manufacturing systems designed to increase pro-
2 ductivity and efficiency and to create competitive advan-
3 tages for United States businesses. These research and de-
4 velopment activities should focus on the following activi-
5 ties:

6 (1) Supporting industry efforts to develop inno-
7 vative, state-of-the-art manufacturing processes, ad-
8 vanced technologies through interoperable standards,
9 and related concepts, including—

10 (A) advanced distributed and desktop man-
11 ufacturing linked to and made compatible with
12 the extended production enterprise system de-
13 scribed in paragraph (2);

14 (B) non-contact quality inspection proe-
15 cesses linked to and made compatible with the
16 extended production enterprise system;

17 (C) small lot manufacturing processes that
18 are—

19 (i) as cost-effective as mass produc-
20 tion processes; and

21 (ii) linked to and compatible with the
22 extended production enterprise system; and

23 (D) the use of state-of-the-art materials
24 and processes at the nanotechnological level.

1 (2) Supporting industry efforts to develop an
2 extended production enterprise system that inte-
3 grates key entities, including entities engaged in
4 product design and development, manufacturing,
5 sourcing, distribution, and user entities, including
6 through the development of—

7 (A) interoperable software and standards
8 designed to maximize the compatibility of the
9 design, modeling, and manufacturing stages of
10 the manufacturing process; and

11 (B) supply chain software.

12 (b) COORDINATION OF ACTIVITIES.—The Director
13 shall coordinate activities under subsection (a) with activi-
14 ties under—

15 (1) the Small Business Innovation Research
16 Program (as defined in section 2500(11) of title 10,
17 United States Code);

18 (2) the Small Business Technology Transfer
19 Program (as defined in section 2500(12) of title 10,
20 United States Code); and

21 (3) the Manufacturing Technology Program es-
22 tablished under section 2521 of title 10, United
23 States Code.

24 (c) TESTING.—The Director shall support the work
25 of entities and organizations from the industrial sector in

1 developing prototypes and testing areas for testing and re-
2 fining; in actual production conditions; the processes; tech-
3 nologies; and extended production enterprise system de-
4 scribed in subsection (a)(2) in order to maximize produc-
5 tivity gains and cost efficiencies.

6 (d) DEVELOPMENT OF STANDARDS.—The Director,
7 in coordination with entities and organizations from the
8 industrial sector and the Manufacturing Technology Pro-
9 gram, shall support standards to be used as manufac-
10 turing performance criteria to accelerate the adoption of
11 improvements and innovative processes and protocols de-
12 veloped under subsection (a).

13 (e) PILOT TEST BEDS OF EXCELLENCE.—

14 (1) ESTABLISHMENT.—The Director shall, in
15 collaboration with entities and organizations from
16 the industrial sector, support not more than 3 pilot
17 testbeds of excellence in manufacturing fields impor-
18 tant to advanced technologies developed under sub-
19 section (a), such as nanotechnology or fuel cell tech-
20 nology, to be used by the public and private sector.
21 The testbeds of excellence shall focus on production
22 development, particularly the invention, prototyping,
23 and engineering development stages of the manufac-
24 turing process.

1 (2) COMPETITION.—The Director shall conduct
2 a competition to select the pilot testbeds of excel-
3 lence based on criteria and metrics established by
4 the Secretary prior to the competition.

5 (3) FUNDING.—The Director may provide the
6 pilot testbeds of excellence selected pursuant to the
7 competition set forth in paragraph (2) with an ap-
8 propriate level of funding if and only if the following
9 conditions are satisfied:

10 (A) No more than $\frac{1}{3}$ of the funding of
11 each testbed of excellence is provided by the
12 Federal Government.

13 (B) At least $\frac{1}{3}$ of the cost of each testbed
14 of excellence is provided by participants from
15 the private sector.

16 (C) At least $\frac{1}{3}$ of the cost of each testbed
17 of excellence is provided by State or local gov-
18 ernments.

19 (4) REVIEW OF FUNDED TESTBEDS.—Within 3
20 years of the start of Federal funding for any testbed
21 of excellence pursuant to this section, the Director
22 shall use the metrics established pursuant to para-
23 graph (2) and any additional review metrics that the
24 Director determines appropriate to assess the per-
25 formance of the federally funded testbeds of excel-

1 lence. Any testbed of excellence that fails to satisfy
2 any of the performance metrics will be ineligible for
3 additional Federal funding.

4 (5) SUNSET PROVISION.—Federal funding of
5 any testbed of excellence shall cease 5 years after
6 the date of enactment of this Act.

7 (f) HOLLINGS MANUFACTURING EXTENSION PART-
8 NERSHIP FOCUS ON INNOVATION.—The Director of the
9 National Institute of Standards and Technology shall en-
10 sure that the Hollings Manufacturing Extension Partner-
11 ship program develops a focus on innovation, including
12 through technology diffusion, supply and distribution
13 chain integration, and the dissemination of the processes,
14 technologies, and extended production enterprise systems
15 developed under this section.

16 (g) EXTENDED PRODUCTION ENTERPRISE.—In this
17 section the term “extended production enterprise” means
18 a system in which key entities in the manufacturing chain,
19 including entities engaged in product design and develop-
20 ment, manufacturing, sourcing, distribution, and user en-
21 tities, are linked together through information technology
22 and other means to promote efficiency and productivity.

1 **SEC. 505. COLLABORATIVE MANUFACTURING RESEARCH**
 2 **PILOT GRANTS.**

3 The National Institute of Standards and Technology
 4 Act is amended—

5 (1) by redesignating the first section ~~32~~ (15
 6 U.S.C. 271 note) as section 34 and moving it to the
 7 end of the Act; and

8 (2) by inserting before the section moved by
 9 paragraph (1) the following new section:

10 **“SEC. 33. COLLABORATIVE MANUFACTURING RESEARCH**
 11 **PILOT GRANTS.**

12 **“(a) AUTHORITY.—**

13 **“(1) ESTABLISHMENT.—**The Director shall es-
 14 tablish a pilot program of awards to partnerships
 15 among participants described in paragraph (2) for
 16 the purposes described in paragraph (3). Awards
 17 shall be made on a peer-reviewed, competitive basis.

18 **“(2) PARTICIPANTS.—**Such partnerships shall
 19 include at least—

20 **“(A) 1 manufacturing industry partner;**
 21 **and**

22 **“(B) 1 nonindustry partner.**

23 **“(3) PURPOSE.—**The purpose of the program
 24 under this section is to foster cost-shared collabora-
 25 tions among firms, educational institutions, research
 26 institutions, State agencies, and nonprofit organiza-

1 tions to encourage the development of innovative,
2 multidisciplinary manufacturing technologies. Part-
3 nerships receiving awards under this section shall
4 conduct applied research to develop new manufac-
5 turing processes, techniques, or materials that would
6 contribute to improved performance, productivity,
7 and competitiveness of United States manufacturing,
8 and build lasting alliances among collaborators.

9 “(b) PROGRAM CONTRIBUTION.—Awards under this
10 section shall provide for not more than one-third of the
11 costs of a partnership.

12 “(c) APPLICATIONS.—Applications for awards under
13 this section shall be submitted in such manner, at such
14 time, and containing such information as the Director
15 shall require. Such applications shall describe at a min-
16 imum—

17 “(1) how each partner will participate in devel-
18 oping and carrying out the research agenda of the
19 partnership;

20 “(2) the research that the grant would fund;
21 and

22 “(3) how the research to be funded with the
23 award would contribute to improved performance,
24 productivity, and competitiveness of the United
25 States manufacturing industry.

1 “(d) **SELECTION CRITERIA.**—In selecting applica-
 2 tions for awards under this section, the Director shall con-
 3 sider at a minimum—

4 “(1) the degree to which projects will have a
 5 broad impact on manufacturing;

6 “(2) the novelty and scientific and technical
 7 merit of the proposed projects; and

8 “(3) the demonstrated capabilities of the appli-
 9 cants to successfully carry out the proposed re-
 10 search.

11 “(e) **DISTRIBUTION.**—In selecting applications under
 12 this section the Director shall ensure, to the extent prac-
 13 ticable, a distribution of overall awards among a variety
 14 of manufacturing industry sectors and a range of firm
 15 sizes.

16 “(f) **DURATION.**—In carrying out this section, the Di-
 17 rector shall run a single pilot competition to solicit and
 18 make awards. Each award shall be for a 3-year period.”.

19 **SEC. 506. 504. MANUFACTURING EXTENSION.**

20 (a) **MANUFACTURING CENTER EVALUATION.**—Sec-
 21 tion 25(c)(5) of the National Institute of Standards and
 22 Technology Act (15 U.S.C. 278k(c)(5)) is amended by in-
 23 serting “A Center that has not received a positive evalua-
 24 tion by the evaluation panel shall be notified by the panel
 25 of the deficiencies in its performance and shall be placed

1 on probation for one year, after which time the panel shall
2 reevaluate the Center. If the Center has not addressed the
3 deficiencies identified by the panel, or shown a significant
4 improvement in its performance, the Director shall con-
5 duct a new competition to select an operator for the Cen-
6 ter or may close the Center.” after “at declining levels.”.

7 (b) FEDERAL SHARE.—Strike section 25(d) of the
8 National Institute of Standards and Technology Act (15
9 U.S.C. 278k(d)) and insert the following:

10 “(d) ACCEPTANCE OF FUNDS.—In addition to such
11 sums as may be appropriated to the Secretary and Direc-
12 tor to operate the Centers program, the Secretary and Di-
13 rector also may accept funds from other Federal depart-
14 ments and agencies and under section 2(c)(7) from the
15 private sector for the purpose of strengthening United
16 States manufacturing. Such funds from the private sector,
17 if allocated to a Center or Centers, shall not be considered
18 in the calculation of the Federal share of capital and an-
19 nual operating and maintenance costs under subsection
20 (c).”.

21 ~~(c) HOLLINGS MANUFACTURING EXTENSION CEN-~~
22 ~~TER COMPETITIVE GRANT PROGRAM.—Section 25 of the~~
23 ~~National Institute of Standards and Technology Act (15~~
24 ~~U.S.C. 278k) is amended by adding at the end the fol-~~
25 ~~lowing new subsections:~~

1 “(e) COMPETITIVE GRANT PROGRAM.—

2 “(1) ESTABLISHMENT.—The Director shall es-
3 tablish, within the Hollings Manufacturing Exten-
4 sion Partnership program under this section and
5 section 26 of this Act, a program of competitive
6 awards among participants described in paragraph
7 (2) for the purposes described in paragraph (3).

8 “(2) PARTICIPANTS.—Participants receiving
9 awards under this subsection shall be the Centers, or
10 a consortium of such Centers.

11 “(3) PURPOSE.—The purpose of the program
12 under this subsection is to develop projects to solve
13 new or emerging manufacturing problems as deter-
14 mined by the Director, in consultation with the Di-
15 rector of the Hollings Manufacturing Extension
16 Partnership program, the Hollings Manufacturing
17 Extension Partnership National Advisory Board,
18 and small and medium-sized manufacturers. One or
19 more themes for the competition may be identified,
20 which may vary from year to year, depending on the
21 needs of manufacturers and the success of previous
22 competitions. These themes shall be related to
23 projects associated with manufacturing extension ac-
24 tivities, including supply chain integration and qual-

1 ity management, or extend beyond these traditional
2 areas.

3 “(4) APPLICATIONS.—Applications for awards
4 under this subsection shall be submitted in such
5 manner, at such time, and containing such informa-
6 tion as the Director shall require, in consultation
7 with the Hollings Manufacturing Extension Partner-
8 ship National Advisory Board.

9 “(5) SELECTION.—Awards under this sub-
10 section shall be peer reviewed and competitively
11 awarded. The Director shall select proposals to re-
12 ceive awards—

13 “(A) that utilize innovative or collaborative
14 approaches to solving the problem described in
15 the competition;

16 “(B) that will improve the competitiveness
17 of industries in the region in which the Center
18 or Centers are located; and

19 “(C) that will contribute to the long-term
20 economic stability of that region.

21 “(6) PROGRAM CONTRIBUTION.—Recipients of
22 awards under this subsection may be required to
23 provide a matching contribution.

24 “(f) AUDITS.—A center that receives assistance
25 under this section shall submit annual audits to the Sec-

1 retary in accordance with Office of Management and
2 Budget Circular A-133 and shall make such audits avail-
3 able to the public on request.”.

4 (d) PROGRAMMATIC AND OPERATIONAL PLAN.—Not
5 later than 120 days after the date of enactment of this
6 Act, the Director of the National Institute of Standards
7 and Technology shall transmit to the Committee on
8 Science of the House of Representatives and the Com-
9 mittee on Commerce, Science, and Transportation of the
10 Senate a 3-year programmatic and operational plan for
11 the Hollings Manufacturing Extension Partnership pro-
12 gram under sections 25 and 26 of the National Institute
13 of Standards and Technology Act (15 U.S.C. 278k and
14 278l). The plan shall include comments on the plan from
15 the Hollings Manufacturing Extension Partnership State
16 partners and the Hollings Manufacturing Extension Part-
17 nership National Advisory Board.

18 **SEC. 507. 505. EXPERIMENTAL PROGRAM TO STIMULATE**
19 **COMPETITIVE TECHNOLOGY.**

20 (a) IN GENERAL.—The Director of the National In-
21 stitutes of Standards and Technology shall re-establish the
22 Experimental Program to Stimulate Competitive Tech-
23 nology. The purpose of the program shall be to strengthen
24 the technological competitiveness of those States that have

1 historically received less Federal research and development
2 funds than a majority of the States have received.

3 (b) ARRANGEMENTS.—In carrying out the program,
4 the Director shall cooperate with State, regional, or local
5 science and technology-based economic development orga-
6 nization and with representatives of small business firms
7 and other appropriate technology-based businesses.

8 (c) GRANTS AND COOPERATIVE AGREEMENTS.—In
9 carrying out the program, the Director may make grants
10 or enter into cooperative agreements to provide for—

- 11 (1) technology research and development;
- 12 (2) technology transfer from university re-
13 search;
- 14 (3) technology deployment and diffusion; and
- 15 (4) the strengthening of technological and inno-
16 vation capabilities through consortia comprised of—
 - 17 (A) technology-based small business firms;
 - 18 (B) industries and emerging companies;
 - 19 (C) institutions of higher education includ-
20 ing community colleges; and
 - 21 (D) State and local development agencies
22 and entities.

23 (d) REQUIREMENTS FOR MAKING AWARDS.—

24 (1) IN GENERAL.—In making awards under
25 this section, the Director shall ensure that the

1 awards are awarded on a competitive basis that in-
2 cludes a review of the merits of the activities that
3 are the subject of the award, giving special emphasis
4 to those projects which will increase the participa-
5 tion of ~~women~~ *women, Native Americans (including*
6 *Native Hawaiians and Alaska Natives)*, and under-
7 represented groups in science and technology.

8 (2) MATCHING REQUIREMENT.—The non-Fed-
9 eral share of the activities (other than planning ac-
10 tivities) carried out under an award under this sub-
11 section shall be not less than 50 percent of the cost
12 of those activities.

13 (e) CRITERIA FOR STATES.—The Director shall es-
14 tablish criteria for achievement by each State that partici-
15 pates in the program. Upon the achievement of all such
16 criteria, a State shall cease to be eligible to participate
17 in the program.

18 (f) COORDINATION.—To the extent practicable, in
19 carrying out this subsection, the Director shall coordinate
20 the program with other programs of the Department of
21 Commerce.

22 (g) REPORT.—

23 (1) IN GENERAL.—Not later than 90 days after
24 the enactment of this act, the Director shall prepare
25 and submit a report that meets the requirements of

1 this paragraph to the Senate Committee on Com-
2 merce, Science, and Transportation and the House
3 of Representatives Committee on Science.

4 (2) REQUIREMENTS FOR REPORT.—The report
5 prepared under this paragraph shall contain—

6 (A) a description of the structure and pro-
7 cedures of the program;

8 (B) a management plan for the program;

9 (C) a description of the merit-based review
10 process to be used in the program;

11 (D) milestones for the evaluation of activi-
12 ties to be assisted under the program in fiscal
13 year 2008;

14 (E) an assessment of the eligibility of each
15 State that participates in the Experimental
16 Program to Stimulate Competitive Research of
17 the National Science Foundation to participate
18 in the program under this subsection; and

19 (F) the evaluation criteria with respect to
20 which the overall management and effectiveness
21 of the program will be evaluated.

1 **SEC. 508. 506. TECHNICAL AMENDMENTS TO THE NATIONAL**
2 **INSTITUTE OF STANDARDS AND TECH-**
3 **NOLOGY ACT AND OTHER TECHNICAL**
4 **AMENDMENTS.**

5 (a) RESEARCH FELLOWSHIPS.—Section 18 of the
6 National Institute of Standards and Technology Act (15
7 U.S.C. 278g–1) is amended by striking “up to 1 per cen-
8 tum of the” in the first sentence.

9 (b) FINANCIAL AGREEMENTS.—

10 (1) CLARIFICATION.—Section 2(b)(4) of the
11 National Institute of Standards and Technology Act
12 (15 U.S.C. 272(b)(4)) is amended by inserting “and
13 grants and cooperative agreements,” after “arrange-
14 ments,”.

15 (2) MEMBERSHIPS.—Section 2(c) of the Na-
16 tional Institute of Standards and Technology Act
17 (15 U.S.C. 272(c)) is amended—

18 (A) by striking “and” after the semicolon
19 in paragraph (21);

20 (B) by redesignating paragraph (22) as
21 paragraph (23); and

22 (C) by inserting after paragraph (21) the
23 following:

24 “(22) notwithstanding subsection (b)(4) of this
25 section, the Grants and Cooperative Agreements Act
26 (31 U.S.C. 6301–6308), the Competition in Con-

1 tracting Act (31 U.S.C. 3551–3556), and the Fed-
 2 eral Acquisition Regulations set forth in title 48,
 3 Code of Federal Regulations, to expend appropriated
 4 funds for National Institute of Standards and Tech-
 5 nology memberships in scientific organizations, reg-
 6 istration fees for attendance at conferences, and
 7 sponsorship of conferences in furtherance of tech-
 8 nology transfer; and”.

9 (c) WORKING CAPITAL FUND.—Section 12 of the
 10 National Institute of Standards and Development Act (15
 11 U.S.C. 278b) is amended by adding at the end the fol-
 12 lowing:

13 “(g) AMOUNT AND SOURCE OF TRANSFERS.—Not to
 14 exceed one-quarter per centum of the amounts appro-
 15 priated to the Institute for any fiscal year may be trans-
 16 ferred to the fund, in addition to any other transfer au-
 17 thority. In addition, funds provided to the Institute from
 18 other Federal agencies for the purpose of production of
 19 Standard Reference Materials may be transferred to the
 20 fund.”.

21 (d) OUTDATED SPECIFICATIONS.—

22 (1) REDEFINITION OF METRIC SYSTEM.—~~The~~
 23 Metric System Act of 1866 (15 U.S.C. 205; 14 Stat.
 24 339, 340) is amended by striking the text of section
 25 2 and inserting the following: *Section 2 of the Act of*

1 *July 28, 1866, entitled “An Act to authorize the Use*
 2 *of the Metric System of Weights and Measures” (15*
 3 *U.S.C. 205; 14 Stat. 339, 340) is amended to read as*
 4 *follows:*

5 **“SEC. 2. METRIC SYSTEM DEFINED.**

6 “The metric system of measurement shall be defined
 7 as the International System of Units as established in
 8 1960, and subsequently maintained, by the General Con-
 9 ference of Weights and Measures, and as interpreted or
 10 modified for the United States by the Secretary of Com-
 11 merce.”.

12 (2) REPEAL OF REDUNDANT AND OBSOLETE
 13 AUTHORITY.—The Act of July 21, 1950, entitled,
 14 “An Act To redefine the units and establish the
 15 standards of electrical and photometric measure-
 16 ments of 1950” (15 U.S.C. 223, 224) is hereby re-
 17 pealed.

18 (3) STANDARD TIME.—The first section of the
 19 Act of March 19, 1918, (15 U.S.C 261; commonly
 20 known as the Calder Act) is amended—

21 (A) by inserting “(a) IN GENERAL.—” be-
 22 fore “For the purpose”;

23 (B) by striking the second sentence and
 24 the extra period after it and inserting “Except
 25 as provided in section 3(a) of the Uniform Time

1 Act of 1966, the standard time of the first zone
2 shall be Coordinated Universal Time retarded
3 by 4 hours; that of the second zone retarded by
4 5 hours; that of the third zone retarded by 6
5 hours; that of the fourth zone retarded by 7
6 hours; that of the fifth zone retarded 8 hours;
7 that of the sixth zone retarded by 9 hours; that
8 of the seventh zone retarded by 10 hours; that
9 of the eighth zone retarded by 11 hours; and
10 that of the ninth zone shall be Coordinated
11 Universal Time advanced by 10 hours.”; and

12 (C) adding at the end the following:

13 “(b) COORDINATED UNIVERSAL TIME DEFINED.—In
14 this section, the term ‘Coordinated Universal Time’ means
15 the time scale maintained through the General Conference
16 of Weights and Measures and interpreted or modified for
17 the United States by the Secretary of Commerce.’.

18 (e) RETENTION OF DEPRECIATION SURCHARGE.—
19 Section 14 of the National Institute of Standards and
20 Technology Act (15 U.S.C. 278d) is amended—

21 (1) by inserting “(a) IN GENERAL.—” before
22 “Within”; and

23 (2) adding at the end the following:

24 “(b) RETENTION OF FEES.—The Director is author-
25 ized to retain all building use and depreciation surcharge

1 fees collected pursuant to OMB Circular A–25. Such fees
 2 shall be collected and credited to the Construction of Re-
 3 search Facilities Appropriation Account for use in mainte-
 4 nance and repair of National Institute of Standards and
 5 Technology’s existing facilities.”.

6 (f) NON-ENERGY INVENTIONS PROGRAM.—Section
 7 28 of the National Institute of Standards and Technology
 8 Act, as redesignated by section 202 of this Act (formerly
 9 15 U.S.C. 278m), is repealed.

10 ***TITLE VI—OCEAN AND***
 11 ***ATMOSPHERIC PROGRAMS.***

12 ***SEC. 601. OCEAN AND ATMOSPHERIC RESEARCH AND DE-***
 13 ***VELOPMENT PROGRAM.***

14 *The Administrator of the National Oceanic and At-*
 15 *mospheric Administration, in consultation with the Direc-*
 16 *tor of the National Science Foundation and the Adminis-*
 17 *trator of the National Aeronautics and Space Administra-*
 18 *tion, shall establish a coordinated program of ocean and*
 19 *atmospheric research and development, in collaboration*
 20 *with academic institutions and other nongovernmental en-*
 21 *tities, that shall focus on the development of advanced tech-*
 22 *nologies and analytical methods that will promote United*
 23 *States leadership in ocean and atmospheric science and*
 24 *competitiveness in the applied uses of such knowledge.*

1 **SEC. 602. NOAA OCEAN AND ATMOSPHERIC SCIENCE EDU-**
2 **CATION PROGRAMS.**

3 (a) *IN GENERAL.*—*The Administrator of the National*
4 *Oceanic and Atmospheric Administration shall conduct, de-*
5 *velop, support, promote, and coordinate formal and infor-*
6 *mal educational activities at all levels to enhance public*
7 *awareness and understanding of ocean, coastal, and atmos-*
8 *pheric science and stewardship by the general public and*
9 *other coastal stakeholders, including underrepresented*
10 *groups in ocean and atmospheric science and policy careers.*
11 *In conducting those activities, the Administrator shall build*
12 *upon the educational programs and activities of the agency.*

13 (b) *NOAA SCIENCE EDUCATION PLAN.*—*The Adminis-*
14 *trator, appropriate National Oceanic and Atmospheric Ad-*
15 *ministration programs, ocean atmospheric science and edu-*
16 *cation experts, and interested members of the public shall*
17 *develop a science education plan setting forth education*
18 *goals and strategies for the Administration, as well as pro-*
19 *grammatic actions to carry out such goals and priorities*
20 *over the next 20 years, and evaluate and update such plan*
21 *every 5 years.*

Calendar No. 524

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2^D SESSION

S. 2802

[Report No. 109-285]

A BILL

To improve American innovation and
competitiveness in the global economy.

JULY 19, 2006

Reported with amendments