110TH CONGRESS
1ST SESSION

# H. R. 2272

# AN ACT

To invest in innovation through research and development, and to improve the competitiveness of the United States.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

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

(a) SHORT TITLE.—This Act may be cited as the ''21st Century Competitiveness Act of 2007''.

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

# TITLE I—SCIENCE AND MATHEMATICS SCHOLARSHIPS AND EDUCATION IMPROVEMENT

**SEC. 101. FINDINGS.**

Congress finds the following:

(1) The National Science Foundation has made significant and valuable contributions to the improvement of K–12 and undergraduate science, technology, engineering, and mathematics education throughout its 56 year history.

(2) Under section 3 of the National Science Foundation Act of 1950 (42 U.S.C. 1862), the National Science Foundation is explicitly required to strengthen science, mathematics, and engineering research potential and education programs at all levels.

**SEC. 102. DEFINITIONS.**

In this title:

(1) The term ''cost of attendance'' has the meaning given that term in section 472 of the Higher Education Act of 1965 (20 U.S.C. 1087ll).

(2) The term ''Director'' means the Director of the National Science Foundation.

(3) The term ''institution of higher education'' has the meaning given that term in section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a)).

(4) The term ''mathematics and science teacher'' means a mathematics, science, or technology teacher at the elementary school or secondary school level.

# Subtitle A—Science Scholarships

**SEC. 111. SHORT TITLE.**

This subtitle may be cited as the ''10,000 Teachers, 10 Million Minds Science and Math Scholarship Act''.

**SEC. 112. FINDINGS.**

Congress finds the following:

(1) The prosperity the United States enjoys today is due in no small part to investments the Nation has made in research and development over the past 50 years.

(2) Corporate, government, and national scientific and technical leaders have raised concerns that current trends affecting the science and technology enterprise of the Nation could result in erosion of this past success and jeopardize future prosperity.

(3) The National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine were tasked in a congressional request to recommend actions that the Federal Government could take to enhance the science and technology enterprise so that the United States can successfully compete, prosper, and be secure in the global community of the 21st century.

(4) The Academies' highest priority recommendation in its report, ''Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future'', is to improve K–12 mathematics and science education, and the Academies' first recommended action item is to institute a major scholarship program to recruit and educate annually 10,000 mathematics and science teachers.

**SEC. 113. POLICY OBJECTIVE.**

In carrying out the program under section 10 of the National Science Foundation Authorization Act of 2002, the National Science Foundation shall seek to increase by up to 10,000 per year the number of elementary and secondary mathematics and science teachers in the Nation's schools having both exemplary subject knowledge and pedagogical skills.

**SEC. 114. ROBERT NOYCE TEACHER SCHOLARSHIP PROGRAM.**

(a) PROGRAM AMENDMENTS.—Section 10 of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n–1) is amended—

(1) by inserting ''**TEACHER**'' after ''**NOYCE**'' in the section heading;

(2) in subsection (a)(1)—

(A) by striking ''to provide scholarships, stipends, and programming designed'';

(B) by inserting ''and to provide scholarships and stipends to students participating in the program'' after ''science teachers''; and

(C) by inserting ''Teacher'' after ''Noyce'';

(3) in subsection (a)(3)(A)—

(A) by striking ''encourage top college juniors and seniors'' and inserting ''recruit and prepare undergraduate students''; and

(B) by inserting ''qualified as'' after ''to become'';

(4) in subsection (a)(3)(A)(ii)—

(A) by striking ''programs to help scholarship recipients'' and inserting ''academic courses and early field teaching experiences designed to prepare students participating in the program'';

(B) by striking ''programs that will result in'' and inserting ''such preparation as is necessary to meet requirements for''; and

(C) by striking ''licensing; and'' and inserting ''licensing;'';

(5) in subsection (a)(3)(A)(iii)—

(A) by striking ''scholarship recipients'' and inserting ''students participating in the program'';

(B) by striking ''enable the recipients'' and inserting ''enable the students''; and

(C) by striking ''; or'' and inserting ''; and'';

(6) in subsection (a)(3)(A) by inserting at the end the following new clause:

''(iv) providing summer internships for freshman students participating in the program; or'';

(7) in subsection (a)(3)(B)—

(A) by striking ''encourage'' and inserting ''recruit and prepare''; and

(B) by inserting ''qualified as'' after ''to become'';

(8) by amending clause (ii) of subsection (a)(3)(B) to read as follows:

''(ii) offering academic courses and field teaching experiences designed to prepare stipend recipients to teach in elementary schools and secondary schools, including such preparation as is necessary to meet requirements for teacher certification or licensing; and'';

(9) in subsection (a) by inserting at the end the following new paragraph:

''(4) ELIGIBILITY REQUIREMENT.—To be eligible for an award under this section, an institution of higher education (or consortia of such institutions) shall ensure that specific faculty members and staff from the institution's mathematics, science, or engineering departments and specific education faculty are designated to carry out the development and implementation of the program. An institution of higher education may also include teacher leaders to participate in developing the pedagogical content of the program and to supervise students participating in the program in their field teaching experiences. No institution of higher education shall be eligible for an award unless faculty from the institution's mathematics, science, or engineering departments are active participants in the program.

''(5) AWARDS.—In awarding grants under this section, the Director shall endeavor to ensure that the recipients are from a variety of types of institutions of higher education. In support of this goal, the Director shall broadly disseminate information about when and how to apply for grants under this section, including by conducting outreach to Historically Black Colleges and Universities that are part B institutions as defined in section 322(2) of the Higher Education Act of 1965 (20 U.S.C. 1061(2)) and minority institutions (as defined in section 365(3) of that Act (20 U.S.C. 1067k(3))).'';

(10) in subsection (b)(1)(A)—

(A) by striking ''scholarship or stipend'';

(B) by inserting ''and summer internships'' after ''number of scholarships''; and

(C) by inserting ''the type of activities proposed for the recruitment of students to the program,'' after ''intends to award,'';

(11) in subsection (b)(1)(B)—

(A) by striking ''scholarship or stipend''; and

(B) by striking ''; and'' and inserting '', which may include a description of any existing programs at the applicant's institution that are

targeted to the education of mathematics and science teachers and the number of teachers graduated annually from such programs;'';

(12) in subsection (b)(1), by striking subparagraph (C) and inserting the following:

''(C) a description of the academic courses and field teaching experiences required under subsection (a)(3)(A)(ii) and (B)(ii), including—

''(i) a description of the undergraduate program that will enable a student to graduate within 5 years with a major in mathematics, science, or engineering and to obtain teacher certification or licensing;

''(ii) a description of the field teaching experiences proposed; and

''(iii) evidence of agreements between the applicant and the schools or school districts that are identified as the locations at which field teaching experiences will occur;

''(D) a description of the programs required under subsection (a)(3)(A)(iii) and (B)(iii), including activities to assist new teachers in fulfilling their service requirements under this section; and

''(E) an identification of the applicant's mathematics, science, or engineering faculty and its education faculty who will carry out the development and implementation of the program as required under subsection (a)(4).'';

(13) in subsection (b)(2)—

(A) by redesignating subparagraphs (B), (C), (D), and (E) as subparagraphs (C), (D), (E) and (F), respectively;

(B) by inserting after subparagraph (A) a new subparagraph as follows:

''(B) the extent to which the applicant's mathematics, science, or engineering faculty and its education faculty have worked or will work collaboratively to design new or revised curricula that recognizes the specialized pedagogy required to teach mathematics, science, and technology effectively in elementary and secondary schools;''; and

(C) by amending subparagraph (F), as so redesignated by subparagraph (A) of this paragraph, to read as follows:

''(F) the ability of the applicant to recruit students who are individuals identified in section 33 or 34 of the Science and Engineering

Equal Opportunities Act (42 U.S.C. 1885a or 1885b).'';

(14) in subsection (c)(1)(B), by striking ''2 years'' and inserting ''3 years'';

(15) in subsection (c)(3)—

(A) by striking ''$7,500'' and inserting ''$10,000''; and

(B) by striking ''2 years of scholarship support'' and inserting ''3 years of scholarship support, unless the Director establishes a policy by which part-time students may receive additional years of support'';

(16) in subsection (c)(4)—

(A) by striking ''6 years'' and inserting ''8 years'';

(B) by inserting '', with a maximum service requirement of 6 years'' after ''was received''; and

(C) by striking ''Service required under this paragraph shall be performed in a high-need local educational agency.'';

(17) in subsection (c), by adding at the end a new paragraph as follows:

''(5) EXCEPTION.—The period of service obligation under paragraph (4) is reduced by 1 year for

scholarship recipients whose service is performed in a high-need local educational agency. The Director shall establish and maintain a central clearinghouse of information on teaching opportunities available in high-need local educational agencies throughout the United States, which shall be made available to individuals having a service obligation under this section.'';

(18) in subsection (d)(1), by striking ''to receive certification or licensing to teach'' and inserting ''established under subsection (a)(3)(B)'';

(19) in subsection (d)(2), by inserting ''and professional achievement'' after ''academic merit'';

(20) in subsection (d)(3), by striking ''1 year'' and inserting ''16 months'';

(21) in subsection (d)(4)—

(A) by striking ''6 years'' and inserting ''4 years''; and

(B) by striking ''for each year a stipend was received'';

(22) in subsection (e)—

(A) by inserting ''or section 10A'' after ''under this section''; and

(B) in paragraph (1) by inserting ''or section 10A'' after ''subsection (d)'';

(23) in subsection (f)(1), by inserting ''or section 10A'' after ''under this section'';

(24) in subsection (g)(2)(A)—

(A) by striking ''Treasurer of the United States,'' and inserting ''Treasurer of the United States.''; and

(B) by striking ''multiplied by 2.'';

(25) in subsection (h), by inserting ''or section 10A'' after ''under this section'';

(26) in subsection (i)(3), by inserting ''or had a career in'' after ''is working in'';

(27) in subsection (i)—

(A) by striking ''and'' at the end of paragraph (4);

(B) in paragraph (5), by inserting ''or section 10A'' after ''subsection (d)'';

(C) by striking the period at the end of paragraph (5) and inserting ''; and''; and

(D) by adding at the end the following:

''(6) the term 'teacher leader' means a mathematics or science teacher who works to improve the instruction of mathematics or science in kindergarten through grade 12 through—

''(A) participating in the development or revision of science, mathematics, engineering, or technology curricula;

''(B) serving as a mentor to mathematics or science teachers;

''(C) coordinating and assisting teachers in the use of hands-on inquiry materials, equipment, and supplies, and when appropriate, supervising acquisition and repair of such materials;

''(D) providing in-classroom teaching assistance to mathematics or science teachers; and

''(E) providing professional development, for the purposes of training other teacher leaders, to mathematics and science teachers.''; and

(28) by adding at the end the following:

''(j) MATHEMATICS AND SCIENCE SCHOLARSHIP GIFT FUND.—In accordance with section 11(f) of the National Science Foundation Act of 1950, the Director is authorized to accept donations from the private sector to support scholarships, stipends, or internships associated with programs under this section.

''(k) ASSESSMENT OF TEACHER SERVICE AND RETENTION.—Not later than 4 years after the date of enact-

ment of this subsection, the Director shall transmit to Congress a report on the effectiveness of the program carried out under this section. The report shall include the proportion of individuals receiving scholarships or stipends under the program who—

''(1) fulfill their service obligation required under this section in a high-need local educational agency;

''(2) elect to fulfill their service obligation in a high-need local educational agency but fail to complete it, as defined in subsection (g);

''(3) remain in the teaching profession beyond their service obligation; and

''(4) remain in the teaching profession in a high-need local educational agency beyond their service obligation.''.

(b) SPECIAL PARTNERSHIP PROGRAM FOR STIPENDS.—The National Science Foundation Authorization Act of 2002 is amended by inserting after section 10 the following new section:

**''SEC. 10A. SPECIAL PARTNERSHIP PROGRAM FOR STIPENDS.**

''(a) IN GENERAL.—As part of the Robert Noyce Teacher Scholarship Program established under section 10, the Director shall establish a separate type of award

for eligible entities described in subsection (b). Stipends under this section shall be available only to mathematics, science, and engineering professionals who, while receiving the stipend, are enrolled in a program to receive certification or licensing to teach.

''(b) ELIGIBILITY.—In order to be eligible to receive a grant under this section, an institution of higher education (or consortia of such institutions) shall enter into a partnership with one or more private sector nonprofit organizations, local or State government organizations, and businesses. The members of the partnership shall provide the teaching supplements described in subsection (f).

''(c) USE OF GRANTS.—Grants provided under this section shall be used by institutions of higher education or consortia to develop and implement a program to encourage science, mathematics, or engineering professionals to become qualified as mathematics and science teachers, through—

''(1) administering stipends in accordance with this section;

''(2) offering academic courses and field teaching experiences designed to prepare stipend recipients to teach in elementary and secondary schools, including such preparation as is necessary to meet the requirements for certification or licensing; and

''(3) offering programs to stipend recipients, both during and after matriculation in the program for which the stipend is received, to enable recipients to become better mathematics and science teachers, to fulfill the service requirements of this section, and to exchange ideas with others in their fields.

''(d) SELECTION PROCESS.—

''(1) MERIT REVIEW.—Grants shall be provided under this section on a competitive, merit-reviewed basis.

''(2) APPLICATIONS.—An eligible institution of higher education or consortium seeking funding under this section shall submit an application to the Director at such time, in such manner, and containing such information as the Director may require. The application shall include, at a minimum—

''(A) a description of the program that the applicant intends to operate, including the number of stipends the applicant intends to award, the type of activities proposed for the recruitment of students to the program, and the amount of the teaching supplements to be provided in accordance with subsection (f);

''(B) a description of the selection process that will be used in awarding stipends, includ-

ing a description of the rigorous, nationally recognized test that will be administered during the selection process in order to determine whether individuals applying for stipends have advanced content knowledge of science or mathematics;

''(C) evidence that the applicant has the capability to administer the program in accordance with the provisions of this section, which may include a description of any existing programs at the applicant's institution that are targeted to the education of mathematics and science teachers and the number of teachers graduated annually from such programs;

''(D) a description of the academic courses and field teaching experiences described in subsection (c)(2), including—

''(i) a description of an educational program that will enable a student to obtain teacher certification or licensing within 16 months; and

''(ii) evidence of agreements between the applicant and the schools or school districts that are identified as the locations at which field teaching experiences will occur;

"(E) a description of the programs described in subsection (c)(3), including activities to assist new teachers in fulfilling their service requirements under this section; and

"(F) evidence that the partnership will provide the teaching supplements required under subsection (f).

"(3) CRITERIA.—In evaluating the applications submitted under paragraph (2), the Director shall consider, at a minimum—

"(A) the ability of the applicant to effectively carry out the program and to meet the requirement of subsection (f);

"(B) the extent to which the applicant's mathematics, science, or engineering faculty and its education faculty have worked or will work collaboratively to design new or revised curricula that recognizes the specialized pedagogy required to teach mathematics and science effectively in elementary and secondary schools;

"(C) the extent to which the applicant is committed to making the program a central organizational focus;

"(D) the degree to which the proposed programming will enable stipend recipients to be-

come successful mathematics and science teachers;

''(E) the number and quality of the students that will be served by the program; and

''(F) the ability of the applicant to recruit students who would otherwise not pursue a career in teaching.

''(e) STIPENDS.—Individuals shall be selected to receive stipends under this section primarily on the basis of their content knowledge of science or mathematics as demonstrated by their performance on a test designated in accordance with subsection (d)(2)(B). Among individuals demonstrating equivalent content knowledge, consideration may be given to financial need and to the goal of promoting the participation of individuals identified in section 33 or 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a or 1885b).

''(f) TEACHING SUPPLEMENTS.—The members of a partnership shall identify a source of non-Federal funding to provide salary supplements to individuals who participate in the program under this section during the period of their service obligation under subsection (h).

''(g) AMOUNT AND DURATION.—Stipends under this section shall be not less than $10,000 per year, except that no individual shall receive for any year more than the cost

of attendance at that individual's institution. Individuals may receive a maximum of 16 months of stipend support.

''(h) SERVICE OBLIGATION.—If an individual receives a stipend under this section, that individual shall be required to complete, within 6 years after completion of the educational program for which the stipend was awarded, 4 years of service as a mathematics or science teacher in a public secondary school.''.

(c) CONFORMING AMENDMENT.—Section 8(6) of the National Science Foundation Authorization Act of 2002 is amended—

(1) in the paragraph heading by inserting ''TEACHER'' after ''NOYCE''; and

(2) by inserting ''Teacher'' after ''Noyce''.

# Subtitle B—Mathematics and Science Education Improvement

### SEC. 121. MATHEMATICS AND SCIENCE EDUCATION PARTNERSHIPS AMENDMENTS.

Section 9 of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n) is amended—

(1) in subsection (a)(2)—

(A) by striking ''(A)'';

(B) by striking subparagraph (B);

(C) by inserting '', through 1 or more of its departments in science, mathematics, or en-

gineering,'' after ''institution of higher education''; and

(D) by striking ''a State educational agency'' and inserting ''education faculty from the participating institution or institutions of higher education, a State educational agency,'';

(2) in subsection (a)(3)(B)—

(A) by inserting ''content-specific'' before ''professional development programs'';

(B) by inserting ''which are'' before ''designed''; and

(C) by inserting ''and which may include teacher training activities to prepare mathematics and science teachers to teach challenging mathematics, science, and technology college-preparatory courses, including Advanced Placement and International Baccalaureate courses'' after ''and science teachers'';

(3) in subsection (a)(3)(C)—

(A) by inserting ''and laboratory experiences'' after ''technology''; and

(B) by inserting ''and laboratory'' after ''provide technical'';

(4) in subsection (a)(3)(I) by inserting ''including model induction programs for teachers in their first 2 years of teaching,'' after ''and science,'';

(5) in subsection (a)(3)(K) by striking ''developing and offering mathematics or science enrichment programs for students, including after-school and summer programs;'' and inserting ''developing educational programs and materials and conducting mathematics, science, and technology enrichment programs for students, including after-school programs and summer camps for students described in subsection (b)(2)(G);'';

(6) in subsection (a) by inserting at the end the following:

''(8) MASTER'S DEGREE PROGRAMS.—Activities carried out in accordance with paragraph (3)(B) shall include the development and offering of master's degree programs for in-service mathematics and science teachers that will strengthen their subject area knowledge and pedagogical skills, as described in section 123 of the Act enacting this paragraph. Grants provided under this section may be used to develop and implement courses of instruction for the master's degree programs, which may involve

online learning, and develop related educational materials.

''(9) MENTORS FOR TEACHERS AND STUDENTS OF CHALLENGING COURSES.—Partnerships carrying out activities to prepare mathematics and science teachers to teach challenging mathematics, science, and technology college-preparatory courses, including Advanced Placement and International Baccalaureate courses, in accordance with paragraph (3)(B) shall encourage companies employing scientists, mathematicians, or engineers to provide mentors to teachers and students and provide for the coordination of such mentoring activities.

''(10) INVENTIVENESS.—Activities carried out in accordance with paragraph (3)(H) may include the development and dissemination of curriculum tools that will help foster inventiveness and innovation.'';

(7) in subsection (b)(2) by redesignating subparagraphs (E) and (F) as subparagraphs (F) and (G), respectively, and inserting after subparagraph (D) the following new subparagraph:

''(E) the extent to which the evaluation described in paragraph (1)(E) will be independent and based on objective measures;'';

(8) in subsection (b) by inserting at the end the following:

''(4) MINIMUM AND MAXIMUM GRANT SIZE.—A grant awarded under this section shall be not less than $75,000 or greater than $2,000,000 for any fiscal year.'';

(9) in subsection (c)—

(A) by striking paragraph (2);

(B) by redesignating paragraphs (3), (4), and (5) as paragraphs (4), (5), and (6), respectively; and

(C) by inserting after paragraph (1) the following new paragraphs:

''(2) REPORT ON MODEL PROJECTS.—The Director shall determine which completed projects funded through the program under this section should be seen as models to be replicated on a more expansive basis at the State or national levels. Not later than 1 year after the date of enactment of this paragraph, the Director shall transmit a report describing the results of this study to the Committee on Science and Technology and the Committee on Education and Labor of the House of Representatives and to the Committee on Commerce, Science,

and Transportation and the Committee on Health, Education, Labor, and Pensions of the Senate.

''(3) REPORT ON EVALUATIONS.—Not later than 4 years after the date of enactment of this paragraph, the Director shall transmit a report summarizing the evaluations required under subsection (b)(1)(E) of grants received under this program and describing any changes to the program recommended as a result of these evaluations to the Committee on Science and Technology and the Committee on Education and Labor of the House of Representatives and to the Committee on Commerce, Science, and Transportation and the Committee on Health, Education, Labor, and Pensions of the Senate. Such report shall be made widely available to the public.''; and

(10) by adding at the end the following new subsection:

''(d) DEFINITIONS.—In this section—

''(1) the term 'mathematics and science teacher' means a mathematics, science, or technology teacher at the elementary school or secondary school level; and

''(2) the term 'science', in the context of elementary and secondary education, includes technology and pre-engineering.''.

**SEC. 122. TEACHER INSTITUTES.**

(a) NATIONAL SCIENCE FOUNDATION INSTITUTES.—

(1) IN GENERAL.—The Director shall establish a grant program to provide for summer or academic year teacher institutes or workshops authorized by section 9(a)(3)(B) of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n(a)(3)(B)) and shall allow grantees under the Teacher Institutes for the 21st Century program to operate 1 to 2 week summer teacher institutes with the goal of reaching the maximum number of in-service mathematics and science teachers, particularly elementary and middle school teachers, to improve their content knowledge and pedagogical skills.

(2) PREPARATION TO TEACH CHALLENGING COURSES.—The Director shall ensure that activities supported for awards under paragraph (1) include the development and implementation of teacher training activities to prepare mathematics and science teachers to teach challenging mathematics, science, and technology college-preparatory courses,

including Advanced Placement and International Baccalaureate courses.

(3) AWARDS.—In awarding grants under this section, the Director shall give priority to applications that propose programs that will attract mathematics and science teachers from local educational agencies that—

(A) are receiving grants under title I of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 6301 et seq.) as a result of having within their jurisdictions concentrations of children from low income families; and

(B) are experiencing a shortage of highly qualified teachers, as defined in section 9101 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7801), in the fields of science, mathematics, or technology.

(b) LABORATORY SCIENCE TEACHER PROFESSIONAL DEVELOPMENT.—There are authorized to be appropriated to the Secretary of Energy for the Laboratory Science Teacher Professional Development program, $3,000,000 for fiscal year 2008, $8,000,000 for fiscal year 2009, $10,000,000 for fiscal year 2010, $10,000,000 for fiscal year 2011, and $10,000,000 for fiscal year 2012.

**SEC. 123. GRADUATE DEGREE PROGRAM.**

(a) IN GENERAL.—The Director shall ensure that master's degree programs for in-service mathematics and science teachers that will strengthen their subject area knowledge and pedagogical skills are instituted in accordance with section 9(a)(8) of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n(a)(8)). The degree programs shall be designed for current teachers, who will enroll as part-time students, and to allow participants to obtain master's degrees within a period of 3 years.

(b) DISTRIBUTION OF AWARDS.—The Director shall, in awarding grants to carry out subsection (a), consider the distribution of awards among institutions of higher education of different sizes and geographic locations.

(c) PROGRAM ACTIVITIES.—Activities supported through master's degree programs established under subsection (a) may include—

(1) development of courses of instruction and related educational materials;

(2) stipends to defray the cost of attendance for students in the degree program; and

(3) acquisition of computer and networking equipment needed for online instruction under the degree program.

**SEC. 124. CURRICULA.**

Nothing in this title, or the amendments made by this title, shall be construed to limit the authority of State governments or local school boards to determine the curricula of their students.

**SEC. 125. SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS TALENT EXPANSION PROGRAM.**

(a) AMENDMENTS.—Section 8(7) of the National Science Foundation Authorization Act of 2002 is amended—

(1) in subparagraph (A) by striking ''competitive, merit-based'' and all that follows through ''in recent years.'' and inserting ''competitive, merit-reviewed multiyear grants for eligible applicants to improve undergraduate education in science, mathematics, engineering, and technology through—

''(i) the creation of programs to increase the number of students studying toward and completing associate's or bachelor's degrees in science, technology, engineering, and mathematics, particularly in fields that have faced declining enrollment in recent years; and

''(ii) the creation of centers (in this paragraph referred to as 'Centers') to develop undergraduate curriculum, teaching methods for

undergraduate courses, and methods to better train professors and teaching assistants who teach undergraduate courses to increase the number of students completing undergraduate courses in science, technology, engineering, and mathematics, including the number of non-majors, and to improve student academic achievement in those courses.

Grants made under clause (ii) shall be awarded jointly through the Education and Human Resources Directorate and at least 1 research directorate of the Foundation.'';

(2) by amending subparagraph (B) to read as follows:

''(B) In selecting projects under subparagraph (A)(i), 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—

''(i) individuals identified in section 33 or 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a or 1885b); or

''(ii) graduates of a secondary school that is administered by a local educational agency

that is receiving grants under title I of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 6301 et seq.) as a result of having within its jurisdiction concentrations of children from low income families.'';

(3) in subparagraph (C)—

(A) by inserting ''(i)'' before ''The types of'';

(B) by redesignating clauses (i) through (vi) as subclauses (I) through (VI), respectively;

(C) by striking ''under this paragraph'' and inserting ''under subparagraph (A)(i)''; and

(D) by adding at the end the following new clause:

''(ii) The types of activities the Foundation may support under subparagraph (A)(ii) include—

''(I) creating model curricula and laboratory programs;

''(II) developing and demonstrating research-based instructional methods and technologies;

''(III) developing methods to train graduate students and faculty to be more effective teachers of undergraduates;

''(IV) conducting programs to disseminate curricula, instructional methods, or training methods to faculty at the grantee institutions and at other institutions;

''(V) conducting assessments of the effectiveness of the Center at accomplishing the goals described in subparagraph (A)(ii); and

''(VI) conducting any other activities the Director determines will accomplish the goals described in subparagraph (A)(ii).'';

(4) in subparagraph (D)(i), by striking ''under this paragraph'' and inserting ''under subparagraph (A)(i)'';

(5) in subparagraph (D)(ii), by striking ''under this paragraph'' and inserting ''under subparagraph (A)(i)'';

(6) after subparagraph (D)(iii), by adding at the end the following new clause:

''(iv) A grant under subparagraph (A)(ii) shall be awarded for 5 years, and the Director may extend such a grant for up to 2 additional 3 year periods.'';

(7) in subparagraph (E), by striking ''under this paragraph'' both places it appears and inserting ''under subparagraph (A)(i)'';

(8) by redesignating subparagraph (F) as subparagraph (J); and

(9) by inserting after subparagraph (E) the following new subparagraphs:

''(F) Grants awarded under subparagraph (A)(ii) shall be carried out by a department or departments of science, mathematics, or engineering at institutions of higher education (or a consortia thereof), which may partner with education faculty. Applications for awards under subparagraph (A)(ii) shall be submitted to the Director at such time, in such manner, and containing such information as the Director may require. At a minimum, the application shall include—

''(i) a description of the activities to be carried out by the Center;

''(ii) a plan for disseminating programs related to the activities carried out by the Center to faculty at the grantee institution and at other institutions;

''(iii) an estimate of the number of faculty, graduate students (if any), and undergraduate students who will be affected by the activities carried out by the Center; and

''(iv) a plan for assessing the effectiveness of the Center at accomplishing the goals described in subparagraph (A)(ii).

''(G) In evaluating the applications submitted under subparagraph (F), the Director shall consider, at a minimum—

''(i) the ability of the applicant to effectively carry out the proposed activities, including the dissemination activities described in subparagraph (C)(ii)(IV); and

''(ii) the extent to which the faculty, staff, and administrators of the applicant institution are committed to improving undergraduate science, mathematics, and engineering education.

''(H) In awarding grants under subparagraph (A)(ii), the Director shall endeavor to ensure that a wide variety of science, technology, engineering, and mathematics fields and types of institutions of higher education, including 2-year colleges and minority-serving institutions, are covered, and that—

''(i) at least 1 Center is housed at a Doctoral/Research University as defined by the Carnegie Foundation for the Advancement of Teaching; and

''(ii) at least 1 Center is focused on improving undergraduate education in an interdisciplinary area.

''(I) The Director shall convene an annual meeting of the awardees under this paragraph to foster collaboration and to disseminate the results of the Centers and the other activities funded under this paragraph.''.

(b) REPORT ON DATA COLLECTION.—Not later than 180 days after the date of enactment of this Act, the Director shall transmit to Congress a report on how the Director is determining whether current grant recipients in the Science, Technology, Engineering, and Mathematics Talent Expansion Program are making satisfactory progress as required by section 8(7)(D)(ii) of the National Science Foundation Authorization Act of 2002 and what funding actions have been taken as a result of the Director's determinations.

**SEC. 126. HIGH-NEED LOCAL EDUCATIONAL AGENCY DEFINITION.**

Section 4(8) of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n note) is amended to read as follows:

''(8) HIGH-NEED LOCAL EDUCATIONAL AGENCY.—The term 'high-need local educational agency' means a local educational agency that—

''(A) is receiving grants under title I of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 6301 et seq.) as a result of having within its jurisdiction concentrations of children from low income families; and

''(B) is experiencing a shortage of highly qualified teachers, as defined in section 9101 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7801), in the fields of science, mathematics, or engineering.''.

**SEC. 127. TEACHER LEADERS.**

The National Science Foundation Authorization Act of 2002 is amended—

(1) in section 4(11)—

(A) by striking ''MASTER TEACHER'' and inserting ''TEACHER LEADER'';

(B) by striking ''master teacher'' and inserting ''teacher leader''; and

(C) in subparagraph (E), by striking ''master teachers'' and inserting ''teacher leaders''; and

(2) in section 9—

(A) in subsection (a)(3)(E), by striking ''master teachers'' and inserting ''teacher leaders''; and

(B) in subsection (a)(4)—

(i) by striking ''MASTER TEACHERS'' and inserting ''TEACHER LEADERS''; and

(ii) by striking ''master teachers'' each place it appears and inserting ''teacher leaders''.

**SEC. 128. LABORATORY SCIENCE PILOT PROGRAM.**

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

(1) To remain competitive in science and technology in the global economy, the United States must increase the number of students graduating from high school prepared to pursue postsecondary education in science, technology, engineering, and mathematics.

(2) There is broad agreement in the scientific community that learning science requires direct involvement by students in scientific inquiry and that laboratory experience is so integral to the nature of science that it must be included in every science program for every science student.

(3) In America's Lab Report, the National Research Council concluded that the current quality of

laboratory experiences is poor for most students and that educators and researchers do not agree on how to define high school science laboratories or on their purpose, hampering the accumulation of research on how to improve labs.

(4) The National Research Council found that schools with higher concentrations of non-Asian minorities and schools with higher concentrations of poor students are less likely to have adequate laboratory facilities than other schools.

(5) The Government Accountability Office reported that 49.1 percent of schools where the minority student population is greater than 50.5 percent reported not meeting functional requirements for laboratory science well or at all.

(6) 40 percent of those college students who left the science fields reported some problems related to high school science preparation, including lack of laboratory experience and no introduction to theoretical or to analytical modes of thought.

(7) It is in the national interest for the Federal Government to invest in research and demonstration projects to improve the teaching of laboratory science in the Nation's high schools.

(b) GRANT PROGRAM.—Section 8(8) of the National Science Foundation Authorization Act of 2002 is amended—

(1) by redesignating subparagraphs (A) through (F) as clauses (i) through (vi), respectively;

(2) by inserting ''(A)'' before ''A program of competitive''; and

(3) by inserting at the end the following new subparagraphs:

''(B) In accordance with subparagraph (A)(v), the Director shall establish a research pilot program designated as 'Partnerships for Access to Laboratory Science' to award grants to partnerships to improve laboratories and provide instrumentation as part of a comprehensive program to enhance the quality of mathematics, science, engineering, and technology instruction at the secondary school level. Grants under this subparagraph may be used for—

''(i) purchase, rental, or leasing of equipment, instrumentation, and other scientific educational materials;

''(ii) maintenance, renovation, and improvement of laboratory facilities;

''(iii) development of instructional programs designed to integrate the laboratory ex-

perience with classroom instruction and to be consistent with State mathematics and science academic achievement standards;

"(iv) training in laboratory safety for school personnel;

"(v) design and implementation of hands-on laboratory experiences to encourage the interest of individuals identified in section 33 or 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a or 1885b) in mathematics, science, engineering, and technology and help prepare such individuals to pursue postsecondary studies in these fields; and

"(vi) assessment of the activities funded under this subparagraph.

"(C) Grants may be made under subparagraph (B) only to a partnership—

"(i) for a project that includes significant teacher training and professional development components; or

"(ii) that establishes that appropriate teacher training and professional development is being addressed, or has been addressed, through other means.

''(D) Grants awarded under subparagraph (B) shall be to a partnership that—

''(i) includes an institution of higher education or a community college;

''(ii) includes a high-need local educational agency;

''(iii) includes a business or eligible nonprofit organization; and

''(iv) may include a State educational agency, other public agency, National Laboratory, or community-based organization.

''(E) The Federal share of the cost of activities carried out using amounts from a grant under subparagraph (B) shall not exceed 50 percent.

''(F) The Director shall require grant recipients to submit a report to the Director on the results of the project supported by the grant.''.

(c) REPORT.—The Director shall evaluate the effectiveness of activities carried out under the research pilot projects funded by the grant program established pursuant to the amendment made by subsection (b) in improving student performance in mathematics, science, engineering, and technology. A report documenting the results of that evaluation shall be submitted to the Committee on Science and Technology of the House of Representatives

and the Committees on Commerce, Science, and Transportation and on Health, Education, Labor, and Pensions of the Senate not later than 5 years after the date of enactment of this Act. The report shall identify best practices and materials developed and demonstrated by grant awardees.

(d) AUTHORIZATION OF APPROPRIATIONS.—From the amount authorized in section 303(a)(2)(B), (b)(2)(B), and (c)(2)(B) of this Act, there are authorized to be appropriated to carry out this section and the amendments made by this section $5,000,000 for fiscal year 2008, and such sums as may be necessary for each of the 2 succeeding fiscal years.

**SEC. 129. STUDY ON LABORATORY EQUIPMENT DONATIONS FOR SCHOOLS.**

Not later than 2 years after the date of enactment of this Act, the Director shall transmit a report to the Congress examining the extent to which institutions of higher education are donating used laboratory equipment to elementary and secondary schools. The Director, in consultation with the Secretary of Education, shall survey institutions of higher education to determine—

(1) how often, how much, and what type of equipment is donated;

(2) what criteria or guidelines the institutions are using to determine what types of equipment can be donated, what condition the equipment should be in, and which schools receive the equipment;

(3) whether the institutions provide any support to, or follow-up with the schools; and

(4) how appropriate donations can be encouraged.

# TITLE II—SCIENCE AND ENGINEERING RESEARCH

**SEC. 201. SHORT TITLE.**

This title may be cited as the ''Sowing the Seeds Through Science and Engineering Research Act''.

**SEC. 202. NATIONAL SCIENCE FOUNDATION EARLY CAREER AWARDS FOR SCIENCE AND ENGINEERING RESEARCHERS.**

(a) IN GENERAL.—The Director of the National Science Foundation shall carry out a program to award grants to scientists and engineers at the early stage of their careers at institutions of higher education and organizations described in subsection (c)(2) to conduct research in fields relevant to the mission of the Foundation. The existing Faculty Early Career Development (CAREER) Program may be designated as the mechanism for awarding such grants.

(b) SIZE AND DURATION OF AWARD.—The duration of awards under this section shall be 5 years, and the amount per year shall be at least $80,000.

(c) ELIGIBILITY.—Award recipients shall be individuals who are employed in a tenure-track position as an assistant professor or equivalent title, or who hold an equivalent position, at—

(1) an institution of higher education in the United States; or

(2) an organization in the United States that is a nonprofit, nondegree-granting research organization such as a museum, observatory, or research laboratory.

(d) SELECTION.—Award recipients shall be selected on a competitive, merit-reviewed basis.

(e) SELECTION PROCESS AND CRITERIA FOR AWARDS.—An applicant seeking funding under this section shall submit a proposal to the Director at such time, in such manner, and containing such information as the Director may require. In evaluating the proposals submitted under this section, the Director shall consider, at a minimum—

(1) the intellectual merit of the proposed work;

(2) the innovative or transformative nature of the proposed research;

(3) the extent to which the proposal integrates research and education, including undergraduate education in science and engineering disciplines; and

(4) the potential of the applicant for leadership at the frontiers of knowledge.

(f) AWARDS.—In awarding grants under this section, the Director shall endeavor to ensure that the recipients are from a variety of types of institutions of higher education and nonprofit, nondegree-granting research organizations. In support of this goal, the Director shall broadly disseminate information about when and how to apply for grants under this section, including by conducting outreach to Historically Black Colleges and Universities that are part B institutions as defined in section 322(2) of the Higher Education Act of 1965 (20 U.S.C. 1061(2)) and minority institutions (as defined in section 365(3) of that Act (20 U.S.C. 1067k(3))). In awarding grants under this section, the Director shall give special consideration to eligible early-career researchers who have followed alternative career paths such as working part-time or in non-academic settings, or who have taken a significant career break or other leave of absence.

(g) AUTHORIZATION OF APPROPRIATION.—For each of the fiscal years 2008 through 2012, the Director shall allocate at least 3.5 percent of funds appropriated to the

National Science Foundation for Research and Related Activities to the grants program under this section, except to the extent that a sufficient number of meritorious grant applications have not been received for a fiscal year.

(h) REPORT.—Not later than 6 months after the date of enactment of this Act, the Director shall transmit to the Committee on Science and Technology of the House of Representatives and to the Committee on Commerce, Science, and Transportation of the Senate a report describing the distribution of the institutions from which individuals have participated in the Faculty Early Career Development Program since fiscal year 2001 among each of the categories of institutions of higher education defined by the Carnegie Foundation for the Advancement of Teaching and the organizations in subsection (c)(2).

(i) EVALUATION.—Not later than 2 years after the date of enactment of this Act, the Director shall transmit to the Committee on Science and Technology of the House of Representatives and to the Committee on Commerce, Science, and Transportation of the Senate a report evaluating the impact of the program carried out under this section on the ability of young faculty to compete for National Science Foundation research grants.

**SEC. 203. DEPARTMENT OF ENERGY EARLY CAREER AWARDS FOR SCIENCE AND ENGINEERING RESEARCHERS.**

(a) IN GENERAL.—The Director of the Office of Science of the Department of Energy shall carry out a program to award grants to scientists and engineers at the early stage of their careers at institutions of higher education and organizations described in subsection (c)(2) to conduct research in fields relevant to the mission of the Department, giving priority to grants to expand domestic energy production and use through coal-to-liquids technology and advanced nuclear reprocessing.

(b) SIZE AND DURATION OF AWARD.—The duration of awards under this section shall be up to 5 years, and the amount per year shall be at least $80,000.

(c) ELIGIBILITY.—Award recipients shall be individuals who are employed in a tenure-track position as an assistant professor or equivalent title, or who hold an equivalent position, at—

(1) an institution of higher education in the United States; or

(2) an organization in the United States that is a nonprofit, nondegree-granting research organization such as a museum, observatory, or research laboratory.

(d) SELECTION.—Award recipients shall be selected on a competitive, merit-reviewed basis.

(e) SELECTION PROCESS AND CRITERIA FOR AWARDS.—An applicant seeking funding under this section shall submit a proposal to the Director of the Office of Science at such time, in such manner, and containing such information as the Director may require. In evaluating the proposals submitted under this section, the Director shall consider, at a minimum—

(1) the intellectual merit of the proposed work;

(2) the innovative or transformative nature of the proposed research;

(3) the extent to which the proposal integrates research and education, including undergraduate education in science and engineering disciplines; and

(4) the potential of the applicant for leadership at the frontiers of knowledge.

(f) COLLABORATION WITH NATIONAL LABORATORIES.—In awarding grants under this section, the Director shall give priority to proposals in which the proposed work includes collaboration with the Department of Energy National Laboratories.

(g) AWARDS.—In awarding grants under this section, the Director shall endeavor to ensure that the recipients are from a variety of types of institutions of higher edu-

cation and nonprofit, nondegree-granting research organizations. In support of this goal, the Director shall broadly disseminate information about when and how to apply for grants under this section, including by conducting outreach to Historically Black Colleges and Universities that are part B institutions as defined in section 322(2) of the Higher Education Act of 1965 (20 U.S.C. 1061(2)) and minority institutions (as defined in section 365(3) of that Act (20 U.S.C. 1067k(3))).

(h) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary of Energy to carry out the Director's responsibilities under this section $25,000,000 for each of the fiscal years 2008 through 2012.

(i) REPORT ON RECRUITING AND RETAINING EARLY CAREER SCIENCE AND ENGINEERING RESEARCHERS AT THE NATIONAL LABORATORIES.—Not later than 3 months after the date of enactment of this Act, the Director of the Office of Science shall transmit to the Committee on Science and Technology of the House of Representatives and to the Committee on Energy and Natural Resources of the Senate a report on efforts to recruit and retain young scientists and engineers at the early stages of their careers at the Department of Energy National Laboratories. The report shall include—

(1) a description of Department of Energy and National Laboratory policies and procedures, including financial incentives, awards, promotions, time set aside for independent research, access to equipment or facilities, and other forms of recognition, designed to attract and retain young scientists and engineers;

(2) an evaluation of the impact of these incentives on the careers of young scientists and engineers at Department of Energy National Laboratories, and also on the quality of the research at the National Laboratories and in Department of Energy programs;

(3) a description of what barriers, if any, exist to efforts to recruit and retain young scientists and engineers, including limited availability of full time equivalent positions, legal and procedural requirements, and pay grading systems; and

(4) the amount of funding devoted to efforts to recruit and retain young researchers and the source of such funds.

**SEC. 204. INTEGRATIVE GRADUATE EDUCATION AND RESEARCH TRAINEESHIP PROGRAM.**

(a) FUNDING.—For each of the fiscal years 2008 through 2012, the Director of the National Science Foundation shall allocate at least 1.5 percent of funds appro-

priated for Research and Related Activities to the Integrative Graduate Education and Research Traineeship program.

(b) COORDINATION.—The Director shall coordinate with Federal departments and agencies, as appropriate, to expand the interdisciplinary nature of the Integrative Graduate Education and Research Traineeship program.

(c) AUTHORITY TO ACCEPT FUNDS FROM OTHER AGENCIES.—The Director is authorized to accept funds from other Federal departments and agencies to carry out the Integrative Graduate Education and Research Traineeship program.

**SEC. 205. PRESIDENTIAL INNOVATION AWARD.**

(a) ESTABLISHMENT.—The President shall periodically present the Presidential Innovation Award, on the basis of recommendations received from the Director of the Office of Science and Technology Policy or on the basis of such other information as the President considers appropriate, to individuals who develop one or more unique scientific or engineering ideas in the national interest at the time the innovation occurs.

(b) PURPOSE.—The awards under this section shall be made to—

(1) stimulate scientific and engineering advances in the national interest;

(2) illustrate the linkage between science and engineering and national needs;

(3) show the potential of such innovation to substantively enhance the economic competitiveness of the United States through development of commercializable intellectual property; and

(4) provide an example to students of the contribution they could make to society by entering the science and engineering profession.

(c) CITIZENSHIP.—An individual is not eligible to receive the award under this section unless at the time such award is made the individual—

(1) is a citizen or other national of the United States; or

(2) is an alien lawfully admitted to the United States for permanent residence who—

(A) has filed an application for naturalization in the manner prescribed by section 334 of the Immigration and Nationality Act (8 U.S.C. 1445); and

(B) is not permanently ineligible to become a citizen of the United States.

(d) PRESENTATION.—The presentation of the award shall be made by the President with such ceremonies as

he may deem proper, including attendance by appropriate Members of Congress.

**SEC. 206. NATIONAL COORDINATION OFFICE FOR RESEARCH INFRASTRUCTURE.**

(a) IN GENERAL.—The Office of Science and Technology Policy shall establish a National Coordination Office for Research Infrastructure. Such Office shall—

(1) identify and prioritize the deficiencies in research facilities and major instrumentation located at academic institutions and at national laboratories that are available for use by academic researchers; and

(2) institute and coordinate the planning by Federal agencies for the acquisition, refurbishment, and maintenance of research facilities and major instrumentation required to address the deficiencies identified under paragraph (1).

In prioritizing the deficiencies identified under paragraph (1), the Office shall consider research needs in areas relevant to the Nation's economic competitiveness.

(b) STAFFING.—The Director of the Office of Science and Technology Policy shall appoint individuals to serve in the Office established under subsection (a) from among the principal Federal agencies that support research in the sciences, mathematics, and engineering, and shall at a

minimum include individuals from the National Science Foundation and the Department of Energy.

(c) REPORT.—The Director of the Office of Science and Technology Policy shall provide annually a report to Congress at the time of the President's budget proposal—

(1) describing the research infrastructure needs identified in accordance with subsection (a);

(2) listing research facilities projects and budget proposals, by agency, for major instrumentation acquisitions that are included in the President's budget proposal; and

(3) explaining how these facilities projects and instrumentation acquisitions relate to the deficiencies and priorities arrived at in accordance with subsection (a).

**SEC. 207. RESEARCH ON INNOVATION AND INVENTIVENESS.**

In carrying out its research programs on science policy and on the science of learning, the National Science Foundation may support research on the process of innovation and the teaching of inventiveness.

**SEC. 208. REPORT ON NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY EFFORTS TO RECRUIT AND RETAIN EARLY CAREER SCIENCE AND ENGINEERING RESEARCHERS.**

Not later than 3 months after the date of enactment of this Act, the Director of the National Institute of Standards and Technology shall transmit to the Committee on Science and Technology of the House of Representatives and to the Committee on Commerce, Science, and Transportation of the Senate a report on efforts to recruit and retain young scientists and engineers at the early stages of their careers at the National Institute of Standards and Technology laboratories and joint institutes. The report shall include—

(1) a description of National Institute of Standards and Technology policies and procedures, including financial incentives, awards, promotions, time set aside for independent research, access to equipment or facilities, and other forms of recognition, designed to attract and retain young scientists and engineers;

(2) an evaluation of the impact of these incentives on the careers of young scientists and engineers at the National Institute of Standards and Technology, and also on the quality of the research at the National Institute of Standards and Tech-

nology's laboratories and in the National Institute of Standards and Technology's programs;

(3) a description of what barriers, if any, exist to efforts to recruit and retain young scientists and engineers, including limited availability of full time equivalent positions, legal and procedural requirements, and pay grading systems; and

(4) the amount of funding devoted to efforts to recruit and retain young researchers and the source of such funds.

**SEC. 209. NASA'S CONTRIBUTION TO INNOVATION.**

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

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

(2) a robust National Aeronautics and Space Administration, funded at the levels authorized under sections 202 and 203 of that Act, would offer a balance among science, aeronautics, exploration, and human space flight programs, all of which can attract and employ scientists, engineers, and techni-

cians across a broad range of fields in science, technology, mathematics, and engineering.

(b) PARTICIPATION IN INNOVATION AND COMPETITIVENESS PROGRAMS.—The Administrator of the National Aeronautics and Space Administration shall fully participate in any interagency efforts to promote innovation and economic competitiveness through scientific research and development within the spending levels cited in subsection (a).

**SEC. 210. UNDERGRADUATE SCHOLARSHIPS FOR SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS.**

(a) ESTABLISHMENT.—The National Science Foundation shall establish a program, to be known as the Undergraduate Scholarships for Science, Technology, Engineering, and Mathematics, or US–STEM, program, for awarding scholarships to undergraduate scholars in science, technology, engineering, and mathematics.

(b) ELIGIBILITY.—A student is eligible for a scholarship under this section only if the student—

(1) is enrolled at a public, 4-year college or university;

(2) will have completed at least one-half of the credit requirements for an undergraduate degree be-

fore beginning studies to be funded by the scholarship;

(3) has maintained a grade point average in undergraduate studies of at least 3.0 on a scale of 4.0, or an equivalent level as calculated by the National Science Foundation, except that if the student's institution appeals this criterion on the basis of undue hardship on the student, the National Science Foundation may waive this paragraph;

(4) has a total family income of less than $75,000 per year, with such amount to be adjusted annually by the National Science Foundation for inflation;

(5) has not been convicted of a felony; and

(6) is a citizen or permanent resident alien of the United States.

(c) SELECTION CRITERIA.—Scholarship recipients shall be selected on the basis of merit and such other criteria as the National Science Foundation shall establish.

(d) AWARDS.—The National Science Foundation shall announce awards before April 1 for each upcoming academic year, and may make up to 2,500 awards per year. Awards may be made for a maximum of 2 academic years for each student, and scholarship amounts shall be paid to the institution.

(e) ADVISORY BOARD.—The Director of the National Science Foundation shall establish an advisory board, which shall make recommendations to the Director for selection criteria for scholarship recipients, and provide guidance and oversight for the program.

# TITLE III—NATIONAL SCIENCE FOUNDATION

**SEC. 301. SHORT TITLE.**

This title may be cited as the ''National Science Foundation Authorization Act of 2007''.

**SEC. 302. DEFINITIONS.**

In this title:

(1) BOARD.—The term ''Board'' means the National Science Board established under section 2 of the National Science Foundation Act of 1950 (42 U.S.C. 1861).

(2) DIRECTOR.—The term ''Director'' means the Director of the Foundation.

(3) ELEMENTARY SCHOOL.—The term ''elementary school'' has the meaning given that term by section 9101(18) of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7801(18)).

(4) FOUNDATION.—The term ''Foundation'' means the National Science Foundation.

(5) INSTITUTION OF HIGHER EDUCATION.—The term ''institution of higher education'' has the meaning given such term in section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a)).

(6) SECONDARY SCHOOL.—The term ''secondary school'' has the meaning given that term by section 9101(38) of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7801(38)).

**SEC. 303. AUTHORIZATION OF APPROPRIATIONS.**

(a) FISCAL YEAR 2008.—

(1) IN GENERAL.—There are authorized to be appropriated to the Foundation $6,500,000,000 for fiscal year 2008.

(2) SPECIFIC ALLOCATIONS.—Of the amount authorized under paragraph (1)—

(A) $5,080,000,000 shall be made available for research and related activities, of which $115,000,000 shall be made available for the Major Research Instrumentation program;

(B) $873,000,000 shall be made available for education and human resources, of which—

(i) $94,000,000 shall be for Mathematics and Science Education Partnerships established under section 9 of the National Science Foundation Authorization

Act of 2002 (42 U.S.C. 1862n), of which $32,000,000 shall be made available for the purposes of section 122(a) of this Act and $46,000,000 shall be made available for the purposes of section 123 of this Act;

(ii) $70,000,000 shall be for the Robert Noyce Scholarship Program established under section 10 of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n–1);

(iii) $44,000,000 shall be for the Science, Mathematics, Engineering, and Technology Talent Expansion Program established under section 8(7) of the National Science Foundation Authorization Act of 2002 (Public Law 107–368); and

(iv) $51,620,000 shall be for the Advanced Technological Education program established by section 3(a) of the Scientific and Advanced-Technology Act of 1992 (Public Law 102–476);

(C) $245,000,000 shall be made available for major research equipment and facilities construction;

(D) $285,600,000 shall be made available for agency operations and award management;

(E) $4,050,000 shall be made available for the Office of the National Science Board; and

(F) $12,350,000 shall be made available for the Office of Inspector General.

(b) FISCAL YEAR 2009.—

(1) IN GENERAL.—There are authorized to be appropriated to the Foundation $6,980,000,000 for fiscal year 2009.

(2) SPECIFIC ALLOCATIONS.—Of the amount authorized under paragraph (1)—

(A) $5,457,400,000 shall be made available for research and related activities, of which $123,100,000 shall be made available for the Major Research Instrumentation program;

(B) $934,000,000 shall be made available for education and human resources, of which—

(i) $100,600,000 shall be for Mathematics and Science Education Partnerships established under section 9 of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n), of which $35,200,000 shall be made available for the purposes of section 122(a) of this Act

and $50,600,000 shall be made available for the purposes of section 123 of this Act;

(ii) $101,000,000 shall be for the Robert Noyce Scholarship Program established under section 10 of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n–1);

(iii) $55,000,000 shall be for the Science, Mathematics, Engineering, and Technology Talent Expansion Program established under section 8(7) of the National Science Foundation Authorization Act of 2002 (Public Law 107–368); and

(iv) $55,200,000 shall be for the Advanced Technological Education program as established by section 3(a) of the Scientific and Advanced-Technology Act of 1992 (Public Law 102–476);

(C) $262,000,000 shall be made available for major research equipment and facilities construction;

(D) $309,760,000 shall be made available for agency operations and award management;

(E) $4,120,000 shall be made available for the Office of the National Science Board; and

(F) $12,720,000 shall be made available for the Office of Inspector General.

(c) FISCAL YEAR 2010.—

(1) IN GENERAL.—There are authorized to be appropriated to the Foundation $7,493,000,000 for fiscal year 2010.

(2) SPECIFIC ALLOCATIONS.—Of the amount authorized under paragraph (1)—

(A) $5,863,200,000 shall be made available for research and related activities, of which $131,700,000 shall be made available for the Major Research Instrumentation program;

(B) $1,003,000,000 shall be made available for education and human resources, of which—

(i) $107,600,000 shall be for Mathematics and Science Education Partnerships established under section 9 of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n), of which $38,700,000 shall be made available for the purposes of section 122(a) of this Act and $55,700,000 shall be made available for the purposes of section 123 of this Act;

(ii) $133,000,000 shall be for the Robert Noyce Scholarship Program established under section 10 of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n–1);

(iii) $60,000,000 shall be for the Science, Mathematics, Engineering, and Technology Talent Expansion Program established under section 8(7) of the National Science Foundation Authorization Act of 2002 (Public Law 107–368); and

(iv) $59,100,000 shall be for the Advanced Technological Education program as established by section 3(a) of the Scientific and Advanced-Technology Act of 1992 (Public Law 102–476);

(C) $280,000,000 shall be made available for major research equipment and facilities construction;

(D) $329,450,000 shall be made available for agency operations and award management;

(E) $4,250,000 shall be made available for the Office of the National Science Board; and

(F) $13,100,000 shall be made available for the Office of Inspector General.

(d) MAJOR RESEARCH INSTRUMENTATION.—

(1) AWARD AMOUNT.—The minimum amount of an award under the Major Research Instrumentation program shall be $100,000. The maximum amount of an award under the program shall be $4,000,000, except if the total amount appropriated for the program for a fiscal year exceeds $125,000,000, in which case the maximum amount of an award shall be $6,000,000.

(2) USE OF FUNDS.—In addition to the acquisition of instrumentation and equipment, funds made available by awards under the Major Research Instrumentation program may be used to support the operations and maintenance of such instrumentation and equipment.

(3) COST SHARING.—

(A) IN GENERAL.—An institution of higher education receiving an award shall provide at least 30 percent of the cost from private or non-Federal sources.

(B) EXCEPTIONS.—Institutions of higher education that are not Ph.D.-granting institutions are exempt from the cost sharing requirement in subparagraph (A), and the Director

may reduce or waive the cost sharing requirement for—

(i) institutions—

(I) which are not ranked among the top 100 institutions receiving Federal research and development funding, as documented by the statistical data published by the Foundation; and

(II) for which the proposed project will make a substantial improvement in the institution's capabilities to conduct leading edge research, to provide research experiences for undergraduate students using leading edge facilities, and to broaden the participation in science and engineering research by individuals identified in section 33 or 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a or 1885b); and

(ii) consortia of institutions of higher education that include at least one institu-

tion that is not a Ph.D-granting institution.

(e) UNDERGRADUATE EDUCATION PROGRAMS.—The Director shall continue to carry out programs in support of undergraduate education, including those authorized in section 17 of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n–6). Funding for these programs shall increase in proportion to the increase in the total amount appropriated to the Foundation in any year for which appropriations are authorized by this title.

(f) LIMIT ON PROPOSALS.—

(1) POLICY.—For programs that require as part of the selection process for awards the submission of preproposals and that also limit the number of preproposals that may be submitted by an institution, the Director shall allow the subsequent submission of a full proposal based on each preproposal that is determined to have merit following the Foundation's merit review process.

(2) REVIEW AND ASSESSMENT OF POLICIES.—The Board shall review and assess the effects on institutions of higher education of the policies of the Foundation regarding the imposition of limitations on the number of proposals that may be submitted by a single institution for programs supported by the

Foundation. The Board shall determine whether current policies are well justified and appropriate for the types of programs that limit the number of proposal submissions. Not later that 1 year after the date of enactment of this Act, the Board shall summarize its findings and any recommendations regarding changes to the current policy on the restriction of proposal submissions in a report to the Committee on Science and Technology of the House of Representatives and to the Committee on Commerce, Science, and Transportation and the Committee on Health, Education, Labor, and Pensions of the Senate.

(g) RESEARCH EXPERIENCES FOR UNDERGRADUATES.—The Director shall increase funding for the Research Experiences for Undergraduates program in proportion to the increase in the total amount appropriated to the Foundation for research and related activities in any year for which appropriations are authorized by this title.

(h) GLOBAL WARMING EDUCATION.—

(1) INFORMAL EDUCATION.—As part of Informal Science Education activities, the Director shall support activities to create informal educational materials, exhibits, and multimedia presentations rel-

evant to global warming, climate science, and greenhouse gas reduction strategies.

(2) K–12 INSTRUCTIONAL MATERIALS.—As part of Discovery Research K–12 activities, the Director shall support the development of K–12 educational materials relevant to global warming, climate science, and greenhouse gas reduction strategies.

**SEC. 304. CENTERS FOR RESEARCH ON LEARNING AND EDUCATION IMPROVEMENT.**

(a) FUNDING FOR CENTERS.—The Director shall continue to carry out the program of Centers for Research on Learning and Education Improvement as established in section 11 of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n–2).

(b) ELIGIBILITY FOR CENTERS.—Section 11 of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n–2) is amended—

(1) in subsection (a)(1), by inserting ''or eligible nonprofit organizations'' after ''institutions of higher education'';

(2) in subsection (b)(1) by inserting ''or an eligible nonprofit organization'' after ''institution of higher education''; and

(3) in subsection (b)(1) by striking ''of such institutions'' and inserting ''thereof''.

**SEC. 305. INTERDISCIPLINARY RESEARCH.**

(a) IN GENERAL.—The Board shall evaluate the role of the Foundation in supporting interdisciplinary research, including through the Major Research Instrumentation program, the effectiveness of the Foundation's efforts in providing information to the scientific community about opportunities for funding of interdisciplinary research proposals, and the process through which interdisciplinary proposals are selected for support. The Board shall also evaluate the effectiveness of the Foundation's efforts to engage undergraduate students in research experiences in interdisciplinary settings, including through the Research in Undergraduate Institutions program and the Research Experiences for Undergraduates program.

(b) REPORT.—Not later than 1 year after the date of enactment of this Act, the Board shall provide the results of its evaluation under subsection (a), including a recommendation for the proportion of the Foundation's research and related activities funding that should be allocated for interdisciplinary research, to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transpor-

tation and the Committee on Health, Education, Labor, and Pensions of the Senate.

**SEC. 306. PILOT PROGRAM OF GRANTS FOR NEW INVESTIGATORS.**

(a) IN GENERAL.—The Director shall carry out a pilot program to award one-year grants to individuals to assist them in improving research proposals that were previously submitted to the Foundation but not selected for funding.

(b) USE OF FUNDS.—Grants awarded under this section shall be used to enable an individual to resubmit an updated research proposal for review by the Foundation through the agency's competitive merit review process. Uses of funds made available under this section may include the generation of new data and the performance of additional analysis.

(c) ELIGIBILITY.—To be eligible to receive a grant under this section, an individual shall—

(1) not have previously received funding as the principal investigator of a research grant from the Foundation; and

(2) have submitted a proposal to the Foundation, which may include a proposal submitted to the Research in Undergraduate Institutions program,

that was rated very good or excellent under the Foundation's competitive merit review process.

(d) SELECTION PROCESS.—The Director shall make awards under this section based on the advice of the program officers of the Foundation.

(e) PROGRAM ADMINISTRATION.—The Director may carry out this section through the Small Grants for Exploratory Research program.

(f) NATIONAL SCIENCE BOARD REVIEW.—The Board shall conduct a review and assessment of the pilot program under this section, including the number of new investigators funded, the distribution of awards by type of institution of higher education, and the success rate upon resubmittal of proposals by new investigators funded through this pilot program. Not later than 3 years after the date of enactment of this Act, the Board shall summarize its findings and any recommendations regarding changes to or the continuation of the pilot program in a report to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation and the Committee on Health, Education, Labor, and Pensions of the Senate.

**SEC. 307. BROADER IMPACTS MERIT REVIEW CRITERION.**

(a) IN GENERAL.—In evaluating research proposals under the Foundation's broader impacts criterion, the Di-

rector shall give special consideration to proposals that involve partnerships between academic researchers and industrial scientists and engineers that address research areas that have been identified as having high importance for future national economic competitiveness, such as nanotechnology.

(b) PARTNERSHIPS WITH INDUSTRY.—The Director shall encourage research proposals from institutions of higher education that involve partnerships with businesses and organizations representing businesses in fields that have been identified as having high importance for future national economic competitiveness and that include input on the research agenda from and cost-sharing by the industry partners.

(c) REPORT ON BROADER IMPACTS CRITERION.—Not later than 1 year after the date of enactment of this Act, the Director shall transmit to Congress a report on the impact of the broader impacts grant criterion used by the Foundation. The report shall—

(1) identify the criteria that each division and directorate of the Foundation uses to evaluate the broader impacts aspects of research proposals;

(2) provide a breakdown of the types of activities by division that awardees have proposed to carry out to meet the broader impacts criterion;

(3) provide any evaluations performed by the Foundation to assess the degree to which the broader impacts aspects of research proposals were carried out and how effective they have been at meeting the goals described in the research proposals;

(4) describe what national goals, such as improving undergraduate science, mathematics, and engineering education, improving K–12 science and mathematics education, promoting university-industry collaboration and technology transfer, and broadening participation of underrepresented groups, the broader impacts criterion is best suited to promote; and

(5) describe what steps the Foundation is taking and should take to use the broader impacts criterion to improve undergraduate science, mathematics, and engineering education.

**SEC. 308. POSTDOCTORAL RESEARCH FELLOWS.**

(a) MENTORING.—The Director shall require that all grant applications that include funding to support postdoctoral researchers include a description of the mentoring activities that will be provided for such individuals, and shall ensure that this part of the application is evaluated under the Foundation's broader impacts merit review criterion. Mentoring activities may include career coun-

seling, training in preparing grant applications, guidance on ways to improve teaching skills, and training in research ethics.

(b) REPORTS.—The Director shall require that annual reports and the final report for research grants that include funding to support postdoctoral researchers include a description of the mentoring activities provided to such researchers.

**SEC. 309. RESPONSIBLE CONDUCT OF RESEARCH.**

The Director shall require that each institution that applies for financial assistance from the Foundation for science and engineering research or education describe in its grant proposal a plan to provide appropriate training and oversight in the responsible and ethical conduct of research to undergraduate students, graduate students, and postdoctoral researchers participating in the proposed research project.

**SEC. 310. REPORTING OF RESEARCH RESULTS.**

The Director shall ensure that all final project reports and citations of published research documents resulting from research funded, in whole or in part, by the Foundation, are made available to the public in a timely manner and in electronic form through the Foundation's Web site.

**SEC. 311. SHARING RESEARCH RESULTS.**

An investigator supported under a Foundation award, whom the Director determines has failed to comply with the provisions of section 734 of the Foundation Grant Policy Manual, shall be ineligible for a future award under any Foundation supported program or activity. The Director may restore the eligibility of such an investigator on the basis of the investigator's subsequent compliance with the provisions of section 734 of the Foundation Grant Policy Manual and with such other terms and conditions as the Director may impose.

**SEC. 312. FUNDING FOR SUCCESSFUL STEM EDUCATION PROGRAMS.**

(a) EVALUATION OF PROGRAMS.—The Director shall, on an annual basis, evaluate all of the Foundation's grants that are scheduled to expire within one year and—

(1) that have the primary purpose of meeting the objectives of the Science and Engineering Equal Opportunity Act (42 U.S.C. 1885 et seq.); or

(2) that have the primary purpose of providing teacher professional development.

(b) CONTINUATION OF FUNDING.—For grants that are identified under subsection (a) and that are deemed by the Director to be successful in meeting the objectives of the initial grant solicitation, the Director may extend the duration of those grants for up to 3 additional years

beyond their scheduled expiration without the requirement for a recompetition. The Director may extend such grants for an additional 3 years following a second review within 1 year before the extended completion date, in accordance with subsection (a), and the determination by the Director that the objectives of the grant are being achieved.

(c) REPORT TO CONGRESS.—Not later than 2 years after the date of enactment of this Act, the Director shall submit a report to the Committee on Science and Technology of the House of Representatives and to the Committee on Commerce, Science, and Transportation and the Committee on Health, Education, Labor, and Pensions of the Senate that—

(1) lists the grants which have been extended in duration by the authority provided under this section; and

(2) provides any recommendations the Director may have regarding the extension of the authority provided under this section to programs other than those specified in subsection (a).

**SEC. 313. COST SHARING.**

(a) IN GENERAL.—The Board shall evaluate the impact of its policy to eliminate cost sharing for research grants and cooperative agreements for existing programs that were developed around industry partnerships and his-

torically required industry cost sharing, such as the Engineering Research Centers and Industry/University Cooperative Research Centers. The Board shall also consider the impact that the cost sharing policy has on initiating new programs for which industry interest and participation are sought.

(b) REPORT.—Not later than 6 months after the date of enactment of this Act, the Board shall report to the Committee on Science and Technology and the Committee on Appropriations of the House of Representatives, and the Committee on Commerce, Science, and Transportation, the Committee on Health, Education, Labor, and Pensions, and the Committee on Appropriations of the Senate, on the results of the evaluation under subsection (a).

**SEC. 314. DONATIONS.**

Section 11(f) of the National Science Foundation Act of 1950 (42 U.S.C. 1870(f)) is amended by inserting at the end before the semicolon ", except that funds may be donated for specific prize competitions".

**SEC. 315. ADDITIONAL REPORTS.**

(a) REPORT ON FUNDING FOR MAJOR FACILITIES.—

(1) PRECONSTRUCTION FUNDING.—The Board shall evaluate the appropriateness of the requirement that funding for detailed design work and

other preconstruction activities for major research equipment and facilities come exclusively from the sponsoring research division rather than being available, at least in part, from the Major Research Equipment and Facilities Construction account.

(2) MAINTENANCE AND OPERATION COSTS.—The Board shall evaluate the appropriateness of the Foundation's policies for allocation of costs for, and oversight of, maintenance and operation of major research equipment and facilities.

(3) REPORT.—Not later than 6 months after the date of enactment of this Act, the Board shall report on the results of the evaluations under paragraphs (1) and (2) and on any recommendations for modifying the current policies related to allocation of funding for major research equipment and facilities to the Committee on Science and Technology and the Committee on Appropriations of the House of Representatives, and to the Committee on Commerce, Science, and Transportation, the Committee on Health, Education, Labor, and Pensions, and the Committee on Appropriations of the Senate.

(b) INCLUSION OF POLAR FACILITIES UPGRADES IN MAJOR RESEARCH EQUIPMENT AND FACILITIES CONSTRUCTION PLAN.—Section 201(a)(2)(D) of the National

Science Foundation Authorization Act of 1998 (42 U.S.C. 1862l(a)(2)(D)) is amended by inserting ''and for major upgrades of facilities in support of Antarctic research programs'' after ''facilities construction account''.

(c) REPORT ON EDUCATION PROGRAMS WITHIN THE RESEARCH DIRECTORATES.—Not later than 6 months after the date of enactment of this Act, the Director shall transmit to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation and the Committee on Health, Education, Labor, and Pensions of the Senate a report cataloging all elementary and secondary school, informal, and undergraduate educational programs and activities supported through appropriations for Research and Related Activities. The report shall display the programs and activities by directorate, along with estimated funding levels for the fiscal years 2006, 2007, and 2008, and shall provide a description of the goals of each program and activity. The report shall also describe how the programs and activities relate to or are coordinated with the programs supported by the Education and Human Resources Directorate.

(d) REPORT ON RESEARCH IN UNDERGRADUATE INSTITUTIONS PROGRAM.—The Director shall transmit to Congress along with the fiscal year 2011 budget request

a report listing the funding success rates and distribution of awards for the Research in Undergraduate Institutions program, by type of institution based on the highest academic degree conferred by the institution, for fiscal years 2008, 2009, and 2010.

(e) ANNUAL PLAN FOR ALLOCATION OF EDUCATION AND HUMAN RESOURCES FUNDING.—

(1) IN GENERAL.—Not later than 60 days after the date of enactment of legislation providing for the annual appropriation of funds for the Foundation, the Director shall submit to the Committee on Science and Technology and the Committee on Appropriations of the House of Representatives, and to the Committee on Commerce, Science, and Transportation, the Committee on Health, Education, Labor, and Pensions, and the Committee on Appropriations of the Senate, a plan for the allocation of education and human resources funds authorized by this title for the corresponding fiscal year, including any funds from within the research and related activities account used to support activities that have the primary purpose of improving education or broadening participation.

(2) SPECIFIC REQUIREMENTS.—The plan shall include a description of how the allocation of funding—

(A) will affect the average size and duration of education and human resources grants supported by the Foundation;

(B) will affect trends in research support for the effective instruction of mathematics, science, engineering, and technology;

(C) will affect the K–20 pipeline for the study of mathematics, science, engineering, and technology; and

(D) will encourage the interest of individuals identified in section 33 or 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a or 1885b) in mathematics, science, engineering, and technology, and help prepare such individuals to pursue postsecondary studies in these fields.

**SEC. 316. ADMINISTRATIVE AMENDMENTS.**

(a) TRIANNUAL AUDIT OF THE OFFICE OF THE NATIONAL SCIENCE BOARD.—Section 15(a) of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 4862n–5) is amended—

(1) in paragraph (3), by striking ''an annual audit'' and inserting ''an audit every three years'';

(2) in paragraph (4), by striking ''each year'' and inserting ''every third year''; and

(3) by inserting after paragraph (4) the following new paragraph:

''(5) MATERIALS RELATING TO CLOSED PORTIONS OF MEETINGS.—To facilitate the audit required under paragraph (3) of this subsection, the Office of the National Science Board shall maintain the General Counsel's certificate, the presiding officer's statement, and a transcript or recording of any closed meeting, for at least 3 years after such meeting.''.

(b) LIMITED TERM PERSONNEL FOR THE NATIONAL SCIENCE BOARD.—Subsection (g) of section 4 of the National Science Foundation Act of 1950 (42 U.S.C. 1863(g)) is amended to read as follows:

''(g) The Board may, with the concurrence of a majority of its members, permit the appointment of a staff consisting of not more than 5 professional staff members, technical and professional personnel on leave of absence from academic, industrial, or research institutions for a limited term and such operations and support staff members as may be necessary. Such staff shall be appointed

by the Chairman and assigned at the direction of the Board. The professional members and limited term technical and professional personnel of such staff may be appointed without regard to the provisions of title 5, United States Code, governing appointments in the competitive service, and the provisions of chapter 51 of such title relating to classification, and shall be compensated at a rate not exceeding the maximum rate payable under section 5376 of such title, as may be necessary to provide for the performance of such duties as may be prescribed by the Board in connection with the exercise of its powers and functions under this Act. Section 14(a)(3) shall apply to each limited term appointment of technical and professional personnel under this subsection. Each appointment under this subsection shall be subject to the same security requirements as those required for personnel of the Foundation appointed under section 14(a).''.

(c) INCREASE IN NUMBER OF WATERMAN AWARDS TO THREE.—Section 6(c) of the National Science Foundation Authorization Act of 1975 (42 U.S.C. 1881a) is amended to read as follows:

''(c) Up to three awards may be made under this section in any one fiscal year.''.

**SEC. 317. NATIONAL SCIENCE BOARD REPORTS.**

Paragraphs (1) and (2) of section 4(j) of the National Science Foundation Act of 1950 (42 U.S.C. 1863(j)(1) and (2)) are amended by striking ", for submission to" and "for submission to", respectively, and inserting "and".

**SEC. 318. NATIONAL ACADEMY OF SCIENCE REPORT ON DIVERSITY IN STEM FIELDS.**

(a) IN GENERAL.—The Foundation shall enter into an arrangement with the National Academy of Sciences for a report, to be transmitted to the Congress not later than 1 year after the date of enactment of this Act, about barriers to increasing the number of underrepresented minorities in science, technology, engineering, and mathematics fields and to identify strategies for bringing more underrepresented minorities into the science, technology, engineering, and mathematics workforce.

(b) SPECIFIC REQUIREMENTS.—The Director shall ensure that the study described in subsection (a) addresses—

(1) social and institutional factors that shape the decisions of minority students to commit to education and careers in the science, technology, engineering, and mathematics fields;

(2) specific barriers preventing greater minority student participation in the science, technology, engineering, and mathematics fields;

(3) primary focus points for policy intervention to increase the recruitment and retention of underrepresented minorities in America's future workforce;

(4) programs already underway to increase diversity in the science, technology, engineering, and mathematics fields, and their level of effectiveness;

(5) factors that make such programs effective, and how to expand and improve upon existing programs;

(6) the role of minority-serving institutions in the diversification of America's workforce in these fields and how that role can be supported and strengthened; and

(7) how the public and private sectors can better assist minority students in their efforts to join America's workforce in these fields.

**SEC. 319. SENSE OF THE CONGRESS REGARDING THE MATHEMATICS AND SCIENCE PARTNERSHIP PROGRAMS OF THE DEPARTMENT OF EDUCATION AND THE NATIONAL SCIENCE FOUNDATION.**

It is the sense of the Congress that—

(1) although the mathematics and science education partnership program at the National Science Foundation and the mathematics and science partnership program at the Department of Education practically share the same name, the 2 programs are intended to be complementary, not duplicative;

(2) the National Science Foundation partnership programs are innovative, model reform initiatives that move promising ideas in education from research into practice to improve teacher quality, develop challenging curricula, and increase student achievement in mathematics and science, and Congress intends that the National Science Foundation peer-reviewed partnership programs found to be effective should be put into wider practice by dissemination through the Department of Education partnership programs; and

(3) the Director of the National Science Foundation and the Secretary of Education should have ongoing collaboration to ensure that the 2 compo-

nents of this priority effort for mathematics and science education continue to work in concert for the benefit of States and local practitioners nationwide.

**SEC. 320. HISPANIC-SERVING INSTITUTIONS UNDERGRADUATE PROGRAM.**

(a) IN GENERAL.—The Director is authorized to establish a new program to award grants on a competitive, merit-reviewed basis to Hispanic-serving institutions to enhance the quality of undergraduate science, mathematics, engineering, and technology education at such institutions and to increase the retention and graduation rates of students pursuing associate's or baccalaureate degrees in science, mathematics, engineering, or technology.

(b) PROGRAM COMPONENTS.—Grants awarded under this section shall support—

(1) activities to improve courses and curriculum in science, mathematics, engineering, and technology;

(2) faculty development;

(3) stipends for undergraduate students participating in research; and

(4) other activities consistent with subsection (a), as determined by the Director.

(c) INSTRUMENTATION.—Funding for instrumentation is an allowed use of grants awarded under this section.

**SEC. 321. COMMUNICATIONS TRAINING FOR SCIENTISTS.**

(a) GRANT SUPPLEMENTS FOR COMMUNICATIONS TRAINING.—The Director shall provide grant supplements, on a competitive, merit-reviewed basis, to institutions receiving awards under the Integrative Graduate Education and Research Traineeship program. The grant supplements shall be used to train graduate students in the communication of the substance and importance of their research to nonscientist audiences, including policymakers.

(b) REPORT TO CONGRESS.—Not later than 3 years after the date of enactment of this Act, the Director shall transmit a report to the Committee on Science and Technology of the House of Representatives, and to the Committee on Commerce, Science, and Transportation and the Committee on Health, Education, Labor, and Pensions of the Senate, describing how the activities required under subsection (a) have been implemented. The report shall include data on the number of graduate students trained and the number and size of grant supplements awarded, and a description of the types of activities funded through the grant supplements.

# TITLE IV—NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

**SEC. 401. SHORT TITLE.**

This title may be cited as the ''Technology Innovation and Manufacturing Stimulation Act of 2007''.

## Subtitle A—Authorization of Appropriations

**SEC. 411. SCIENTIFIC AND TECHNICAL RESEARCH AND SERVICES.**

(a) LABORATORY ACTIVITIES.—There are authorized to be appropriated to the Secretary of Commerce for the scientific and technical research and services laboratory activities of the National Institute of Standards and Technology—

(1) $470,879,000 for fiscal year 2008;

(2) $497,750,000 for fiscal year 2009; and

(3) $537,569,000 for fiscal year 2010.

(b) MALCOLM BALDRIGE NATIONAL QUALITY AWARD PROGRAM.—There are authorized to be appropriated to the Secretary of Commerce for the Malcolm Baldrige National Quality Award program under section 17 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3711a)—

(1) $7,860,000 for fiscal year 2008;

(2) $8,096,000 for fiscal year 2009; and

(3) $8,339,000 for fiscal year 2010.

(c) CONSTRUCTION AND MAINTENANCE.—There are authorized to be appropriated to the Secretary of Commerce for construction and maintenance of facilities of the National Institute of Standards and Technology—

(1) $93,865,000 for fiscal year 2008;

(2) $86,371,000 for fiscal year 2009; and

(3) $49,719,000 for fiscal year 2010.

**SEC. 412. INDUSTRIAL TECHNOLOGY SERVICES.**

There are authorized to be appropriated to the Secretary of Commerce for Industrial Technology Services activities of the National Institute of Standards and Technology—

(1) $222,968,000 for fiscal year 2008, of which—

(A) $110,000,000 shall be for the Technology Innovation Program under section 28 of the National Institute of Standards and Technology Act (15 U.S.C. 278n), of which at least $45,000,000 shall be for new awards; and

(B) $112,968,000 shall be for the Manufacturing Extension Partnership program under sections 25 and 26 of the National Institute of Standards and Technology Act (15 U.S.C. 278k

and 278l), of which not more than $1,000,000 shall be for the competitive grant program under section 25(f) of such Act;

(2) $263,505,000 for fiscal year 2009, of which—

(A) $141,500,000 shall be for the Technology Innovation Program under section 28 of the National Institute of Standards and Technology Act (15 U.S.C. 278n), of which at least $45,000,000 shall be for new awards; and

(B) $122,005,000 shall be for the Manufacturing Extension Partnership Program under sections 25 and 26 of the National Institute of Standards and Technology Act (15 U.S.C. 278k and 278l), of which not more than $4,000,000 shall be for the competitive grant program under section 25(f) of such Act; and

(3) $282,266,000 for fiscal year 2010, of which—

(A) $150,500,000 shall be for the Technology Innovation Program under section 28 of the National Institute of Standards and Technology Act (15 U.S.C. 278n), of which at least $45,000,000 shall be for new awards; and

(B) $131,766,000 shall be for the Manufacturing Extension Partnership Program under sections 25 and 26 of the National Institute of Standards and Technology Act (15 U.S.C. 278k and 278l), of which not more than $4,000,000 shall be for the competitive grant program under section 25(f) of such Act.

# Subtitle B—Innovation and Technology Policy Reforms

**SEC. 421. INSTITUTE-WIDE PLANNING REPORT.**

Section 23 of the National Institute of Standards and Technology Act (15 U.S.C. 278i) is amended by adding at the end the following new subsections:

''(c) Concurrent with the submission to Congress of the President's annual budget request in the first year after the date of enactment of the Technology Innovation and Manufacturing Stimulation Act of 2007, the Director shall transmit to the Congress a 3-year programmatic planning document for the Institute, including programs under the Scientific and Technical Research and Services, Industrial Technology Services, and Construction of Research Facilities functions.

''(d) Concurrent with the submission to the Congress of the President's annual budget request in each year after the date of enactment of the Technology Innovation and

Manufacturing Stimulation Act of 2007, the Director shall transmit to the Congress an update to the 3-year programmatic planning document transmitted under subsection (c), revised to cover the first 3 fiscal years after the date of that update.''.

**SEC. 422. REPORT BY VISITING COMMITTEE.**

Section 10(h)(1) of the National Institute of Standards and Technology Act (15 U.S.C. 278(h)(1)) is amended—

(1) by striking ''on or before January 31 in each year'' and inserting ''within 30 days after the submission to Congress of the President's annual budget request in each year''; and

(2) by adding to the end the following: ''Such report also shall comment on the programmatic planning document and updates thereto transmitted to the Congress by the Director under section 23(c) and (d).''.

**SEC. 423. MANUFACTURING EXTENSION PARTNERSHIP.**

(a) MEP ADVISORY BOARD.—Section 25 of the National Institute of Standards and Technology Act (15 U.S.C. 278k) is amended by adding at the end the following new subsection:

''(e) MEP ADVISORY BOARD.—(1) There is established within the Institute a Manufacturing Extension

Partnership Advisory Board (in this Act referred to as the 'MEP Advisory Board'). The MEP Advisory Board shall consist of 10 members broadly representative of stakeholders, to be appointed by the Director. At least 2 members shall be employed by or on an advisory board for the Centers, and at least 5 other members shall be from United States small businesses in the manufacturing sector. No member shall be an employee of the Federal Government.

''(2)(A) Except as provided in subparagraph (B) or (C), the term of office of each member of the MEP Advisory Board shall be 3 years.

''(B) The original members of the MEP Advisory Board shall be appointed to 3 classes. One class of 3 members shall have an initial term of 1 year, one class of 3 members shall have an initial term of 2 years, and one class of 4 members shall have an initial term of 3 years.

''(C) Any member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term.

''(D) Any person who has completed two consecutive full terms of service on the MEP Advisory Board shall thereafter be ineligible for appointment during the one-

year period following the expiration of the second such term.

''(3) The MEP Advisory Board shall meet no less than 2 times annually, and provide to the Director—

''(A) advice on Manufacturing Extension Partnership programs, plans, and policies;

''(B) assessments of the soundness of Manufacturing Extension Partnership plans and strategies; and

''(C) assessments of current performance against Manufacturing Extension Partnership program plans.

''(4) In discharging its duties under this subsection, the MEP Advisory Board shall function solely in an advisory capacity, in accordance with the Federal Advisory Committee Act.

''(5) The MEP Advisory Board shall transmit an annual report to the Secretary for transmittal to the Congress within 30 days after the submission to the Congress of the President's annual budget request in each year. Such report shall address the status of the Manufacturing Extension Partnership program and comment on the relevant sections of the programmatic planning document and updates thereto transmitted to the Congress by the Director under section 23(c) and (d).''.

(b) ACCEPTANCE OF FUNDS.—Section 25(d) of the National Institute of Standards and Technology Act (15 U.S.C. 278k(d)) is amended to read as follows:

''(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, 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).''.

(c) MANUFACTURING EXTENSION CENTER COMPETITIVE GRANT PROGRAM.—Section 25 of the National Institute of Standards and Technology Act (15 U.S.C. 278k), as amended by subsection (a) of this section, is further amended by adding at the end the following new subsection:

''(f) COMPETITIVE GRANT PROGRAM.—

''(1) ESTABLISHMENT.—The Director shall establish, within the Manufacturing Extension Partnership program under this section and section 26 of this Act, a program of competitive awards among

participants described in paragraph (2) for the purposes described in paragraph (3).

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

''(3) PURPOSE.—The purpose of the program under this subsection is to develop projects to solve new or emerging manufacturing problems as determined by the Director, in consultation with the Director of the Manufacturing Extension Partnership program, the Manufacturing Extension Partnership Advisory Board, and small and medium-sized manufacturers. One or more themes for the competition may be identified, which may vary from year to year, depending on the needs of manufacturers and the success of previous competitions. These themes shall be related to projects associated with manufacturing extension activities, including supply chain integration and quality management, and including the transfer of technology based on the technological needs of manufacturers and available technologies from institutions of higher education, laboratories, and other technology producing entities, or extend beyond these traditional areas.

''(4) APPLICATIONS.—Applications for awards under this subsection shall be submitted in such manner, at such time, and containing such information as the Director shall require, in consultation with the Manufacturing Extension Partnership Advisory Board.

''(5) SELECTION.—Awards under this subsection shall be peer reviewed and competitively awarded. The Director shall select proposals to receive awards—

''(A) that utilize innovative or collaborative approaches to solving the problem described in the competition;

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

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

''(6) PROGRAM CONTRIBUTION.—Recipients of awards under this subsection shall not be required to provide a matching contribution.''.

**SEC. 424. TECHNOLOGY INNOVATION PROGRAM.**

Section 28 of the National Institute of Standards and Technology Act (15 U.S.C. 278n) is amended to read as follows:

''TECHNOLOGY INNOVATION PROGRAM

''SEC. 28. (a) ESTABLISHMENT.—There is established in the Institute a Technology Innovation Program for the purpose of assisting United States businesses and institutions of higher education or other organizations, such as national laboratories and nonprofit research institutes, to accelerate the research and development and application of challenging, high-risk, high-reward technologies in areas of critical national need that promise widespread economic benefits for the Nation.

''(b) GRANTS.—

''(1) IN GENERAL.—The Director shall make grants under this section for research and development on high-risk, high-reward emerging and enabling technologies (including any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use) that address critical national needs and have a wide breadth of potential application, and form an important technical basis for future innovations. Such grants shall be made to—

''(A) eligible companies that are small- or medium-sized businesses that are substantially involved in the research and development, in-

cluding having a leadership role in programmatically steering the project and defining the research agenda; or

''(B) joint ventures.

''(2) SINGLE COMPANY GRANTS.—No grant made under paragraph (1)(A) shall exceed $3,000,000 over 3 years. The Federal share of a project funded by such a grant shall not be more than 50 percent of total project costs. An award under paragraph (1)(A) may be extended beyond 3 years only if the Director transmits to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a full and complete explanation of such award, including reasons for exceeding 3 years. Federal funds granted under paragraph (1)(A) may be used only for direct costs and not for indirect costs, profits, or management fees of a contractor.

''(3) JOINT VENTURE GRANTS.—No grant made under paragraph (1)(B) shall exceed $9,000,000 over 5 years. The Federal share of a project funded by such a grant shall not be more than 50 percent of total project costs.

''(c) AWARD CRITERIA.—The Director shall award grants under this section only to an eligible company—

''(1) whose proposal has scientific and technological merit;

''(2) whose application establishes that the proposed technology has strong potential to generate substantial benefits to the Nation that extend significantly beyond the direct return to the applicant;

''(3) whose application establishes that the research has strong potential for advancing the state-of-the-art and contributing significantly to the United States scientific and technical knowledge base;

''(4) whose application establishes that the research is aimed at overcoming a scientific or technological barrier;

''(5) who has provided a technical plan that clearly identifies the core innovation, the technical approach, major technical hurdles, and the attendant risks, and that clearly establishes the feasibility of the technology through adequately detailed plans linked to major technical barriers;

''(6) whose application establishes that the team proposed to carry out the work has a high level of scientific and technical expertise to conduct re-

search and development, has a high level of commitment to the project, and has access to appropriate research facilities;

''(7) whose proposal explains why Technology Innovation Program support is necessary;

''(8) whose application includes a plan for advancing the technology into commercial use; and

''(9) whose application assesses the project's organizational structure and management plan.

''(d) EXTERNAL REVIEW OF PROPOSALS.—In order to analyze the need for or the value of any proposal made by a joint venture or company requesting the Director's assistance under this section, or to monitor the progress of any project which receives funds under this section, the Director shall consult with industry or other expert sources that do not have a proprietary or financial interest in the proposal or project.

''(e) INTELLECTUAL PROPERTY RIGHTS OWNERSHIP.—

''(1) IN GENERAL.—Title to any intellectual property developed by a joint venture from assistance provided under this section may vest in any participant in the joint venture, as agreed by the members of the joint venture, notwithstanding section 202(a) and (b) of title 35, United States Code.

The United States may reserve a nonexclusive, nontransferable, irrevocable paid-up license, to have practiced for or on behalf of the United States in connection with any such intellectual property, but shall not in the exercise of such license publicly disclose proprietary information related to the license. Title to any such intellectual property shall not be transferred or passed, except to a participant in the joint venture, until the expiration of the first patent obtained in connection with such intellectual property.

''(2) LICENSING.—Nothing in this subsection shall be construed to prohibit the licensing to any company of intellectual property rights arising from assistance provided under this section.

''(3) DEFINITION.—For purposes of this subsection, the term 'intellectual property' means an invention patentable under title 35, United States Code, or any patent on such an invention, or any work for which copyright protection is available under title 17, United States Code.

''(f) PROGRAM OPERATION.—Not later than 9 months after the date of enactment of the Technology Innovation and Manufacturing Stimulation Act of 2007, the Director shall issue regulations—

''(1) establishing criteria for the selection of recipients of assistance under this section;

''(2) establishing procedures regarding financial reporting and auditing to ensure that contracts and awards are used for the purposes specified in this section, are in accordance with sound accounting practices, and are not funding existing or planned research programs that would be conducted in the same time period in the absence of financial assistance under this section; and

''(3) providing for appropriate dissemination of Technology Innovation Program research results.

''(g) CONTINUATION OF ATP GRANTS.—The Director shall, through the Technology Innovation Program, continue to provide support originally awarded under the Advanced Technology Program, in accordance with the terms of the original award.

''(h) COORDINATION WITH OTHER STATE AND FEDERAL TECHNOLOGY PROGRAMS.—In carrying out this section, the Director shall, as appropriate, coordinate with other senior State and Federal officials to ensure cooperation and coordination in State and Federal technology programs and to avoid unnecessary duplication of efforts.

''(i) ACCEPTANCE OF FUNDS FROM OTHER FEDERAL AGENCIES.—In addition to amounts appropriated to

carry out this section, the Secretary and the Director may accept funds from other Federal agencies to support awards under the Technology Innovation Program. Any award under this section which is supported with funds from other Federal agencies shall be selected and carried out according to the provisions of this section.

''(j) TIP ADVISORY BOARD.—

''(1) ESTABLISHMENT.—There is established within the Institute a Technology Innovation Program Advisory Board. The TIP Advisory Board shall consist of 10 members appointed by the Director, at least 7 of which shall be from United States industry, chosen to reflect the wide diversity of technical disciplines and industrial sectors represented in Technology Innovation Program projects. No member shall be an employee of the Federal Government.

''(2) TERMS OF OFFICE.—(A) Except as provided in subparagraph (B) or (C), the term of office of each member of the TIP Advisory Board shall be 3 years.

''(B) The original members of the TIP Advisory Board shall be appointed to 3 classes. One class of 3 members shall have an initial term of 1 year, one class of 3 members shall have an initial term of 2

years, and one class of 4 members shall have an initial term of 3 years.

''(C) Any member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term.

''(D) Any person who has completed two consecutive full terms of service on the TIP Advisory Board shall thereafter be ineligible for appointment during the one-year period following the expiration of the second such term.

''(3) PURPOSE.—The TIP Advisory Board shall meet no less than 2 times annually, and provide to the Director—

''(A) advice on programs, plans, and policies of the Technology Innovation Program;

''(B) reviews of the Technology Innovation Program's efforts to assess its economic impact;

''(C) reports on the general health of the program and its effectiveness in achieving its legislatively mandated mission;

''(D) guidance on areas of technology that are appropriate for Technology Innovation Program funding; and

''(E) recommendations as to whether, in order to better assess whether specific innovations to be pursued are being adequately supported by the private sector, the Director could benefit from advice and information from additional industry and other expert sources without a proprietary or financial interest in proposals being evaluated.

''(4) ADVISORY CAPACITY.—In discharging its duties under this subsection, the TIP Advisory Board shall function solely in an advisory capacity, in accordance with the Federal Advisory Committee Act.

''(5) ANNUAL REPORT.—The TIP Advisory Board shall transmit an annual report to the Secretary for transmittal to the Congress within 30 days after the submission to Congress of the President's annual budget request in each year. Such report shall address the status of the Technology Innovation Program and comment on the relevant sections of the programmatic planning document and updates thereto transmitted to the Congress by the Director under section 23(c) and (d).

''(k) DEFINITIONS.—For purposes of this section—

"(1) the term 'eligible company' means a company that is incorporated in the United States and does a majority of its business in the United States, and that either—

"(A) is majority owned by citizens of the United States; or

"(B) is owned by a parent company incorporated in another country and the Director finds that—

"(i) the company's participation in the Technology Innovation Program would be in the economic interest of the United States, as evidenced by—

"(I) investments in the United States in research and manufacturing (including the manufacture of major components or subassemblies in the United States);

"(II) significant contributions to employment in the United States; and

"(III) agreement with respect to any technology arising from assistance provided under this section to promote the manufacture within the United States of products resulting from that

technology (taking into account the goals of promoting the competitiveness of United States industry); and

''(ii) the company is incorporated in a country which—

''(I) affords to United States-owned companies opportunities, comparable to those afforded to any other company, to participate in any joint venture similar to those receiving funding under this section;

''(II) affords to United States-owned companies local investment opportunities comparable to those afforded any other company; and

''(III) affords adequate and effective protection for the intellectual property rights of United States-owned companies;

''(2) the term 'high-risk, high-reward research' means research that—

''(A) has the potential for yielding results with far-ranging or wide-ranging implications;

''(B) addresses critical national needs related to technology and measurement standards; and

''(C) is too novel or spans too diverse a range of disciplines to fare well in the traditional peer review process.

''(3) the term 'institution of higher education' has the meaning given that term in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001);

''(4) the term 'joint venture' means a joint venture that—

''(A) includes either—

''(i) at least 2 separately owned for-profit companies that are both substantially involved in the project and both of which are contributing to the cost-sharing required under this section, with the lead entity of the joint venture being one of those companies that is a small or medium-sized business; or

''(ii) at least one small or medium-sized business and one institution of higher education or other organization, such as a national laboratory or nonprofit research

institute, that are both substantially involved in the project and both of which are contributing to the cost-sharing required under this section, with the lead entity of the joint venture being either that small or medium-sized business or that institution of higher education; and

''(B) may include additional for-profit companies, institutions of higher education, and other organizations, such as national laboratories and nonprofit research institutes, that may or may not contribute non-Federal funds to the project; and

''(5) the term 'TIP Advisory Board' means the advisory board established under subsection (j).''.

**SEC. 425. RESEARCH FELLOWSHIPS.**

Section 18 of the National Institute of Standards and Technology Act (15 U.S.C. 278g–l) is amended by striking ''up to 1 per centum of the'' and inserting ''up to 1.5 percent of the''.

**SEC. 426. COLLABORATIVE MANUFACTURING RESEARCH PILOT GRANTS.**

The National Institute of Standards and Technology Act is amended—

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

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

**"SEC. 33. COLLABORATIVE MANUFACTURING RESEARCH PILOT GRANTS.**

''(a) AUTHORITY.—

''(1) ESTABLISHMENT.—The Director shall establish a pilot program of awards to partnerships among participants described in paragraph (2) for the purposes described in paragraph (3). Awards shall be made on a peer-reviewed, competitive basis.

''(2) PARTICIPANTS.—Such partnerships shall include at least—

''(A) 1 manufacturing industry partner; and

''(B) 1 nonindustry partner.

''(3) PURPOSE.—The purpose of the program under this section is to foster cost-shared collaborations among firms, educational institutions, research institutions, State agencies, and nonprofit organizations to encourage the development of innovative, multidisciplinary manufacturing technologies. Partnerships receiving awards under this section shall

conduct applied research to develop new manufacturing processes, techniques, or materials that would contribute to improved performance, productivity, and competitiveness of United States manufacturing, and build lasting alliances among collaborators.

''(b) PROGRAM CONTRIBUTION.—Awards under this section shall provide for not more than one-third of the costs of a partnership. Not more than an additional one-third of such costs may be obtained directly or indirectly from other Federal sources.

''(c) APPLICATIONS.—Applications for awards under this section shall be submitted in such manner, at such time, and containing such information as the Director shall require. Such applications shall describe at a minimum—

''(1) how each partner will participate in developing and carrying out the research agenda of the partnership;

''(2) the research that the grant would fund; and

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

''(d) SELECTION CRITERIA.—In selecting applications for awards under this section, the Director shall consider at a minimum—

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

''(2) the novelty and scientific and technical merit of the proposed projects; and

''(3) the demonstrated capabilities of the applicants to successfully carry out the proposed research.

''(e) DISTRIBUTION.—In selecting applications under this section the Director shall ensure, to the extent practicable, a distribution of overall awards among a variety of manufacturing industry sectors and a range of firm sizes.

''(f) DURATION.—In carrying out this section, the Director shall run a single pilot competition to solicit and make awards. Each award shall be for a 3-year period.''.

**SEC. 427. MANUFACTURING FELLOWSHIP PROGRAM.**

Section 18 of the National Institute of Standards and Technology Act (15 U.S.C. 278g–1) is amended—

(1) by inserting ''(a) IN GENERAL.—'' before ''The Director is authorized''; and

(2) by adding at the end the following new subsection:

''(b) MANUFACTURING FELLOWSHIP PROGRAM.—

''(1) ESTABLISHMENT.—To promote the development of a robust research community working at the leading edge of manufacturing sciences, the Director shall establish a program to award—

''(A) postdoctoral research fellowships at the Institute for research activities related to manufacturing sciences; and

''(B) senior research fellowships to established researchers in industry or at institutions of higher education who wish to pursue studies related to the manufacturing sciences at the Institute.

''(2) APPLICATIONS.—To be eligible for an award under this subsection, an individual shall submit an application to the Director at such time, in such manner, and containing such information as the Director may require.

''(3) STIPEND LEVELS.—Under this subsection, the Director shall provide stipends for postdoctoral research fellowships at a level consistent with the National Institute of Standards and Technology Postdoctoral Research Fellowship Program, and senior research fellowships at levels consistent with support for a faculty member in a sabbatical position.''.

**SEC. 428. MEETINGS OF VISITING COMMITTEE ON ADVANCED TECHNOLOGY.**

Section 10(d) of the National Institute of Standards and Technology Act (15 U.S.C. 278(d)) is amended by striking ''quarterly'' and inserting ''twice each year''.

**SEC. 429. MANUFACTURING RESEARCH DATABASE.**

(a) ESTABLISHMENT.—The National Institute of Standards and Technology shall provide for the establishment of a manufacturing research database to enable private sector individuals and Federal officials to access a broad range of information on manufacturing research carried out with funding support from the Federal Government.

(b) CONTENTS.—The database established under subsection (a) shall contain—

(1) all publicly available information maintained by a Federal agency relating to manufacturing research projects funded in whole or in part by the Federal Government; and

(2) information about all Federal programs that may be of interest to manufacturers.

(c) ACCESSIBILITY.—Information contained in the database shall be accessible in a manner to enable users of the database to easily retrieve information of specific interest to them.

(d) FEES.—The National Institute of Standards and Technology may authorize charging a nominal fee for using the database to access information described in subsection (b)(1) as necessary to recover the costs of maintaining the database.

(e) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the National Institute of Standards and Technology $2,000,000 for carrying out this section.

# Subtitle C—Miscellaneous

**SEC. 441. POST-DOCTORAL FELLOWS.**

Section 19 of the National Institute of Standards and Technology Act (15 U.S.C. 278g–2) is amended by striking ''nor more than 60 new fellows'' and inserting ''nor more than 120 new fellows''.

**SEC. 442. FINANCIAL AGREEMENTS CLARIFICATION.**

Section 2(b)(4) of the National Institute of Standards and Technology Act (15 U.S.C. 272(b)(4)) is amended by inserting ''and grants and cooperative agreements,'' after ''arrangements,''.

**SEC. 443. WORKING CAPITAL FUND TRANSFERS.**

Section 12 of the National Institute of Standards and Technology Act (15 U.S.C. 278b) is amended by adding at the end the following:

''(g) AMOUNT AND SOURCE OF TRANSFERS.—Not more than one-quarter of one percent 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.''.

**SEC. 444. RETENTION OF DEPRECIATION SURCHARGE.**

Section 14 of the National Institute of Standards and Technology Act (15 U.S.C. 278d) is amended—

(1) by inserting ''(a) IN GENERAL.—'' before ''Within''; and

(2) by adding at the end the following:

''(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 the Institute's existing facilities.''.

**SEC. 445. NON-ENERGY INVENTIONS PROGRAM.**

Section 27 of the National Institute of Standards and Technology Act (15 U.S.C. 278m) is repealed.

**SEC. 446. REDEFINITION OF THE METRIC SYSTEM.**

Section 3570 of the Revised Statues of the United States (derived from section 2 of the Act of July 28, 1866, entitled ''An Act to authorize the Use of the Metric System of Weights and Measures'' (15 U.S.C. 205; 14 Stat. 339)) is amended to read as follows:

**''SEC. 3570. 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.''.

**SEC. 447. REPEAL OF REDUNDANT AND OBSOLETE AUTHORITY.**

The Act of July 21, 1950, entitled ''An Act To redefine the units and establish the standards of electrical and photometric measurements'' (15 U.S.C. 223 and 224) is repealed.

**SEC. 448. CLARIFICATION OF STANDARD TIME AND TIME ZONES.**

(a) Section 1 of the Act of March 19, 1918, (commonly known as the ''Calder Act'') (15 U.S.C. 261) is amended—

(1) by striking the second sentence and the extra period after it and inserting ''Except as pro-

vided in section 3(a) of the Uniform Time Act of 1966 (15 U.S.C. 260a), 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 four zone retarded by 7 hours; that of the fifth zone retarded by 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.''; and

(2) by adding at the end the following: ''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 in coordination with the Secretary of the Navy.''.

(b) Section 3 of the Act of March 19, 1918, (commonly known as the ''Calder Act'') (15 U.S.C. 264) is amended by striking ''third zone'' and inserting ''fourth zone''.

**SEC. 449. PROCUREMENT OF TEMPORARY AND INTERMITTENT SERVICES.**

(a) IN GENERAL.—The Director of the National Institute of Standards and Technology may procure the temporary or intermittent services of experts or consultants (or organizations thereof) in accordance with section 3109(b) of title 5, United States Code to assist on urgent or short-term research projects.

(b) EXTENT OF AUTHORITY.—A procurement under this section may not exceed 1 year in duration, and the Director shall procure no more than 200 experts and consultants per year.

(c) SUNSET.—This section shall cease to be effective after September 30, 2010.

(d) REPORT TO CONGRESS.—Not later than 2 years after the date of enactment of this Act, the Comptroller General shall report to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate on whether additional safeguards would be needed with respect to the use of authorities granted under this section if such authorities were to be made permanent.

**SEC. 450. MALCOLM BALDRIGE AWARDS.**

Section 17(c)(3) of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3711a(c)(3)) is amended to read as follows:

''(3) In any year, not more than 18 awards may be made under this section to recipients who have not previously received an award under this section, and no award shall be made within any category described in paragraph (1) if there are no qualifying enterprises in that category.''.

# TITLE V—HIGH-PERFORMANCE COMPUTING

## SEC. 501. HIGH-PERFORMANCE COMPUTING RESEARCH AND DEVELOPMENT PROGRAM.

Title I of the High-Performance Computing Act of 1991 (15 U.S.C. 5511 et seq.) is amended—

(1) in the title heading, by striking ''**AND THE NATIONAL RESEARCH AND EDUCATION NETWORK**'' and inserting ''**RESEARCH AND DEVELOPMENT**'';

(2) in section 101(a)—

(A) by striking subparagraphs (A) and (B) of paragraph (1) and inserting the following:

''(A) provide for long-term basic and applied research on high-performance computing;

''(B) provide for research and development on, and demonstration of, technologies to advance the capacity and capabilities of high-performance computing and networking systems;

''(C) provide for sustained access by the research community in the United States to high-performance computing systems that are among the most advanced in the world in terms of performance in solving scientific and engineering problems, including provision for technical support for users of such systems;

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

''(E) provide for high-performance networks, including experimental testbed networks, to enable research and development on, and demonstration of, advanced applications enabled by such networks;

''(F) provide for computational science and engineering research on mathematical modeling and algorithms for applications in all fields of science and engineering;

''(G) provide for the technical support of, and research and development on, high-performance computing systems and software required to address Grand Challenges;

''(H) provide for educating and training additional undergraduate and graduate students in software engineering, computer science, computer and

network security, applied mathematics, library and information science, and computational science; and

''(I) provide for improving the security of computing and networking systems, including Federal systems, including research required to establish security standards and practices for these systems.'';

(B) by striking paragraph (2) and redesignating paragraphs (3) and (4) as paragraphs (2) and (3), respectively;

(C) in paragraph (2), as so redesignated by subparagraph (B) of this paragraph—

(i) by striking subparagraph (B);

(ii) by redesignating subparagraphs (A) and (C) as subparagraphs (D) and (F), respectively;

(iii) by inserting before subparagraph (D), as so redesignated by clause (ii) of this subparagraph, the following new subparagraphs:

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

''(B) establish Program Component Areas that implement the goals established under subparagraph

(A), and identify the Grand Challenges that the Program should address;

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

(iv) by inserting after subparagraph (D), as so redesignated by clause (ii) of this subparagraph, the following new subparagraph:

''(E) develop and maintain a research, development, and deployment roadmap for the provision of high-performance computing systems under paragraph (1)(C); and''; and

(D) in paragraph (3), as so redesignated by subparagraph (B) of this paragraph—

(i) by striking ''paragraph (3)(A)'' and inserting ''paragraph (2)(D)'';

(ii) by amending subparagraph (A) to read as follows:

''(A) provide a detailed description of the Program Component Areas, including a description of any changes in the definition of or activities under the Program Component Areas from the preceding report, and the reasons for such changes, and a de-

scription of Grand Challenges supported under the Program;'';

(iii) in subparagraph (C), by striking ''specific activities'' and all that follows through ''the Network'' and inserting ''each Program Component Area'';

(iv) in subparagraph (D), by inserting ''and for each Program Component Area'' after ''participating in the Program'';

(v) in subparagraph (D), by striking ''applies;'' and inserting ''applies; and'';

(vi) by striking subparagraph (E) and redesignating subparagraph (F) as subparagraph (E); and

(vii) in subparagraph (E), as so redesignated by clause (vi) of this subparagraph, by inserting ''and the extent to which the Program incorporates the recommendations of the advisory committee established under subsection (b)'' after ''for the Program'';

(3) by striking subsection (b) of section 101 and inserting the following:

''(b) ADVISORY COMMITTEE.—(1) The President shall establish an 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—

''(A) progress made in implementing the Program;

''(B) the need to revise the Program;

''(C) the balance between the components of the Program, including funding levels for the Program Component Areas;

''(D) whether the research and development undertaken pursuant to the Program is helping to maintain United States leadership in high-performance computing and networking technology; and

''(E) other issues identified by the Director.

''(2) In addition to the duties outlined in paragraph (1), the advisory committee shall conduct periodic evaluations of the funding, management, coordination, implementation, and activities of the Program, and shall report not less frequently than once every two fiscal years to the

Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate on its findings and recommendations. The first report shall be due within one year after the date of enactment of this paragraph.

''(3) Section 14 of the Federal Advisory Committee Act shall not apply to the advisory committee established by this subsection.''; and

(4) in section 101(c)(1)(A), by striking ''Program or'' and inserting ''Program Component Areas or''.

**SEC. 502. DEFINITIONS.**

Section 4 of the High-Performance Computing Act of 1991 (15 U.S.C. 5503) is amended—

(1) in paragraph (2), by inserting ''and multidisciplinary teams of researchers'' after ''high-performance computing resources'';

(2) in paragraph (3)—

(A) by striking ''scientific workstations,'';

(B) by striking ''(including vector supercomputers and large scale parallel systems)'';

(C) by striking ''and applications'' and inserting ''applications''; and

(D) by inserting '', and the management of large data sets'' after ''systems software'';

(3) in paragraph (4), by striking ''packet switched'';

(4) by striking ''and'' at the end of paragraph (5);

(5) by striking the period at the end of paragraph (6) and inserting ''; and''; and

(6) by adding at the end the following new paragraph:

''(7) 'Program Component Areas' means the major subject areas under which are grouped related individual projects and activities carried out under the Program.''.

Passed the House of Representatives May 21, 2007.

Attest:

*Clerk.*

110TH CONGRESS
1ST SESSION

# H. R. 2272

# AN ACT

To invest in innovation through research and development, and to improve the competitiveness of the United States.