

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.

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

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

2 (a) **SHORT TITLE.**—This Act may be cited as the
3 “21st Century Competitiveness Act of 2007”.

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

Sec. 1. Short title; table of contents.

**TITLE I—SCIENCE AND MATHEMATICS SCHOLARSHIPS AND
EDUCATION IMPROVEMENT**

Sec. 101. Findings.

Sec. 102. Definitions.

Subtitle A—Science Scholarships

Sec. 111. Short title.

Sec. 112. Findings.

Sec. 113. Policy objective.

Sec. 114. Robert Noyce Teacher Scholarship Program.

Subtitle B—Mathematics and Science Education Improvement

Sec. 121. Mathematics and science education partnerships amendments.

Sec. 122. Teacher institutes.

Sec. 123. Graduate degree program.

Sec. 124. Curricula.

Sec. 125. Science, Technology, Engineering, and Mathematics Talent Expansion Program.

Sec. 126. High-need local educational agency definition.

Sec. 127. Teacher leaders.

Sec. 128. Laboratory science pilot program.

Sec. 129. Study on laboratory equipment donations for schools.

TITLE II—SCIENCE AND ENGINEERING RESEARCH

Sec. 201. Short title.

Sec. 202. National Science Foundation early career awards for science and engineering researchers.

Sec. 203. Department of Energy early career awards for science and engineering researchers.

Sec. 204. Integrative graduate education and research traineeship program.

Sec. 205. Presidential innovation award.

Sec. 206. National Coordination Office for Research Infrastructure.

Sec. 207. Research on innovation and inventiveness.

Sec. 208. Report on National Institute of Standards and Technology efforts to recruit and retain early CAREER science and engineering researchers.

Sec. 209. NASA’s contribution to innovation.

Sec. 210. Undergraduate scholarships for science, technology, engineering, and mathematics.

TITLE III—NATIONAL SCIENCE FOUNDATION

- Sec. 301. Short title.
- Sec. 302. Definitions.
- Sec. 303. Authorization of appropriations.
- Sec. 304. Centers for research on learning and education improvement.
- Sec. 305. Interdisciplinary research.
- Sec. 306. Pilot program of grants for new investigators.
- Sec. 307. Broader impacts merit review criterion.
- Sec. 308. Postdoctoral research fellows.
- Sec. 309. Responsible conduct of research.
- Sec. 310. Reporting of research results.
- Sec. 311. Sharing research results.
- Sec. 312. Funding for successful stem education programs.
- Sec. 313. Cost sharing.
- Sec. 314. Donations.
- Sec. 315. Additional reports.
- Sec. 316. Administrative amendments.
- Sec. 317. National Science Board reports.
- Sec. 318. National Academy of Science Report on Diversity in STEM fields.
- Sec. 319. Sense of the Congress regarding the mathematics and science partnership programs of the Department of Education and the National Science Foundation.
- Sec. 320. Hispanic-serving institutions undergraduate program.
- Sec. 321. Communications training for scientists.

TITLE IV—NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

- Sec. 401. Short title.

Subtitle A—Authorization of Appropriations

- Sec. 411. Scientific and technical research and services.
- Sec. 412. Industrial technology services.

Subtitle B—Innovation and Technology Policy Reforms

- Sec. 421. Institute-wide planning report.
- Sec. 422. Report by Visiting Committee.
- Sec. 423. Manufacturing extension partnership.
- Sec. 424. Technology Innovation Program.
- Sec. 425. Research fellowships.
- Sec. 426. Collaborative manufacturing research pilot grants.
- Sec. 427. Manufacturing fellowship program.
- Sec. 428. Meetings of Visiting Committee on Advanced Technology.
- Sec. 429. Manufacturing research database.

Subtitle C—Miscellaneous

- Sec. 441. Post-doctoral fellows.
- Sec. 442. Financial agreements clarification.
- Sec. 443. Working capital fund transfers.
- Sec. 444. Retention of depreciation surcharge.
- Sec. 445. Non-Energy Inventions Program.
- Sec. 446. Redefinition of the metric system.
- Sec. 447. Repeal of redundant and obsolete authority.
- Sec. 448. Clarification of standard time and time zones.
- Sec. 449. Procurement of temporary and intermittent services.

Sec. 450. Malcolm Baldrige awards.

TITLE V—HIGH-PERFORMANCE COMPUTING

Sec. 501. High-performance computing research and development program.

Sec. 502. Definitions.

1 **TITLE I—SCIENCE AND MATHE-**
2 **MATICS SCHOLARSHIPS AND**
3 **EDUCATION IMPROVEMENT**

4 **SEC. 101. FINDINGS.**

5 Congress finds the following:

6 (1) The National Science Foundation has made
7 significant and valuable contributions to the im-
8 provement of K–12 and undergraduate science, tech-
9 nology, engineering, and mathematics education
10 throughout its 56 year history.

11 (2) Under section 3 of the National Science
12 Foundation Act of 1950 (42 U.S.C. 1862), the Na-
13 tional Science Foundation is explicitly required to
14 strengthen science, mathematics, and engineering re-
15 search potential and education programs at all lev-
16 els.

17 **SEC. 102. DEFINITIONS.**

18 In this title:

19 (1) The term “cost of attendance” has the
20 meaning given that term in section 472 of the High-
21 er Education Act of 1965 (20 U.S.C. 1087ll).

22 (2) The term “Director” means the Director of
23 the National Science Foundation.

1 (3) The term “institution of higher education”
2 has the meaning given that term in section 101(a)
3 of the Higher Education Act of 1965 (20 U.S.C.
4 1001(a)).

5 (4) The term “mathematics and science teach-
6 er” means a mathematics, science, or technology
7 teacher at the elementary school or secondary school
8 level.

9 **Subtitle A—Science Scholarships**

10 **SEC. 111. SHORT TITLE.**

11 This subtitle may be cited as the “10,000 Teachers,
12 10 Million Minds Science and Math Scholarship Act”.

13 **SEC. 112. FINDINGS.**

14 Congress finds the following:

15 (1) The prosperity the United States enjoys
16 today is due in no small part to investments the Na-
17 tion has made in research and development over the
18 past 50 years.

19 (2) Corporate, government, and national sci-
20 entific and technical leaders have raised concerns
21 that current trends affecting the science and tech-
22 nology enterprise of the Nation could result in ero-
23 sion of this past success and jeopardize future pros-
24 perity.

1 (3) The National Academy of Sciences, the Na-
2 tional Academy of Engineering, and the Institute of
3 Medicine were tasked in a congressional request to
4 recommend actions that the Federal Government
5 could take to enhance the science and technology en-
6 terprise so that the United States can successfully
7 compete, prosper, and be secure in the global com-
8 munity of the 21st century.

9 (4) The Academies' highest priority rec-
10 ommendation in its report, "Rising Above the Gath-
11 ering Storm: Energizing and Employing America for
12 a Brighter Economic Future", is to improve K-12
13 mathematics and science education, and the Acad-
14 emies' first recommended action item is to institute
15 a major scholarship program to recruit and educate
16 annually 10,000 mathematics and science teachers.

17 **SEC. 113. POLICY OBJECTIVE.**

18 In carrying out the program under section 10 of the
19 National Science Foundation Authorization Act of 2002,
20 the National Science Foundation shall seek to increase by
21 up to 10,000 per year the number of elementary and sec-
22 ondary mathematics and science teachers in the Nation's
23 schools having both exemplary subject knowledge and ped-
24 agogical skills.

1 **SEC. 114. ROBERT NOYCE TEACHER SCHOLARSHIP PRO-**
2 **GRAM.**

3 (a) PROGRAM AMENDMENTS.—Section 10 of the Na-
4 tional Science Foundation Authorization Act of 2002 (42
5 U.S.C. 1862n–1) is amended—

6 (1) by inserting “**TEACHER**” after “**NOYCE**”
7 in the section heading;

8 (2) in subsection (a)(1)—

9 (A) by striking “to provide scholarships,
10 stipends, and programming designed”;

11 (B) by inserting “and to provide scholar-
12 ships and stipends to students participating in
13 the program” after “science teachers”; and

14 (C) by inserting “Teacher” after “Noyce”;

15 (3) in subsection (a)(3)(A)—

16 (A) by striking “encourage top college jun-
17 iors and seniors” and inserting “recruit and
18 prepare undergraduate students”; and

19 (B) by inserting “qualified as” after “to
20 become”;

21 (4) in subsection (a)(3)(A)(ii)—

22 (A) by striking “programs to help scholar-
23 ship recipients” and inserting “academic
24 courses and early field teaching experiences de-
25 signed to prepare students participating in the
26 program”;

1 (B) by striking “programs that will result
2 in” and inserting “such preparation as is nec-
3 essary to meet requirements for”; and

4 (C) by striking “licensing; and” and insert-
5 ing “licensing;”;

6 (5) in subsection (a)(3)(A)(iii)—

7 (A) by striking “scholarship recipients”
8 and inserting “students participating in the
9 program”;

10 (B) by striking “enable the recipients” and
11 inserting “enable the students”; and

12 (C) by striking “; or” and inserting “;
13 and”;

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

16 “(iv) providing summer internships
17 for freshman students participating in the
18 program; or”;

19 (7) in subsection (a)(3)(B)—

20 (A) by striking “encourage” and inserting
21 “recruit and prepare”; and

22 (B) by inserting “qualified as” after “to
23 become”;

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

1 “(ii) offering academic courses and
2 field teaching experiences designed to pre-
3 pare stipend recipients to teach in elemen-
4 tary schools and secondary schools, includ-
5 ing such preparation as is necessary to
6 meet requirements for teacher certification
7 or licensing; and”;

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

10 “(4) ELIGIBILITY REQUIREMENT.—To be eligi-
11 ble for an award under this section, an institution
12 of higher education (or consortia of such institu-
13 tions) shall ensure that specific faculty members and
14 staff from the institution’s mathematics, science, or
15 engineering departments and specific education fac-
16 ulty are designated to carry out the development and
17 implementation of the program. An institution of
18 higher education may also include teacher leaders to
19 participate in developing the pedagogical content of
20 the program and to supervise students participating
21 in the program in their field teaching experiences.
22 No institution of higher education shall be eligible
23 for an award unless faculty from the institution’s
24 mathematics, science, or engineering departments
25 are active participants in the program.

1 “(5) AWARDS.—In awarding grants under this
2 section, the Director shall endeavor to ensure that
3 the recipients are from a variety of types of institu-
4 tions of higher education. In support of this goal,
5 the Director shall broadly disseminate information
6 about when and how to apply for grants under this
7 section, including by conducting outreach to Histori-
8 cally Black Colleges and Universities that are part
9 B institutions as defined in section 322(2) of the
10 Higher Education Act of 1965 (20 U.S.C. 1061(2))
11 and minority institutions (as defined in section
12 365(3) of that Act (20 U.S.C. 1067k(3))).”;

13 (10) in subsection (b)(1)(A)—

14 (A) by striking “scholarship or stipend”;

15 (B) by inserting “and summer intern-
16 ships” after “number of scholarships”; and

17 (C) by inserting “the type of activities pro-
18 posed for the recruitment of students to the
19 program,” after “intends to award,”;

20 (11) in subsection (b)(1)(B)—

21 (A) by striking “scholarship or stipend”;

22 and

23 (B) by striking “; and” and inserting “,
24 which may include a description of any existing
25 programs at the applicant’s institution that are

1 targeted to the education of mathematics and
2 science teachers and the number of teachers
3 graduated annually from such programs;”;

4 (12) in subsection (b)(1), by striking subpara-
5 graph (C) and inserting the following:

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

9 “(i) a description of the under-
10 graduate program that will enable a stu-
11 dent to graduate within 5 years with a
12 major in mathematics, science, or engineer-
13 ing and to obtain teacher certification or li-
14 censing;

15 “(ii) a description of the field teaching
16 experiences proposed; and

17 “(iii) evidence of agreements between
18 the applicant and the schools or school dis-
19 tricts that are identified as the locations at
20 which field teaching experiences will occur;

21 “(D) a description of the programs re-
22 quired under subsection (a)(3)(A)(iii) and
23 (B)(iii), including activities to assist new teach-
24 ers in fulfilling their service requirements under
25 this section; and

1 “(E) an identification of the applicant’s
2 mathematics, science, or engineering faculty
3 and its education faculty who will carry out the
4 development and implementation of the pro-
5 gram as required under subsection (a)(4).”;

6 (13) in subsection (b)(2)—

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

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

12 “(B) the extent to which the applicant’s
13 mathematics, science, or engineering faculty
14 and its education faculty have worked or will
15 work collaboratively to design new or revised
16 curricula that recognizes the specialized peda-
17 gogy required to teach mathematics, science,
18 and technology effectively in elementary and
19 secondary schools;”;

20 (C) by amending subparagraph (F), as so
21 redesignated by subparagraph (A) of this para-
22 graph, to read as follows:

23 “(F) the ability of the applicant to recruit
24 students who are individuals identified in sec-
25 tion 33 or 34 of the Science and Engineering

1 Equal Opportunities Act (42 U.S.C. 1885a or
2 1885b).”;

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

5 (15) in subsection (c)(3)—

6 (A) by striking “\$7,500” and inserting
7 “\$10,000”; and

8 (B) by striking “2 years of scholarship
9 support” and inserting “3 years of scholarship
10 support, unless the Director establishes a policy
11 by which part-time students may receive addi-
12 tional years of support”;

13 (16) in subsection (c)(4)—

14 (A) by striking “6 years” and inserting “8
15 years”;

16 (B) by inserting “, with a maximum serv-
17 ice requirement of 6 years” after “was re-
18 ceived”; and

19 (C) by striking “Service required under
20 this paragraph shall be performed in a high-
21 need local educational agency.”;

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

24 “(5) EXCEPTION.—The period of service obliga-
25 tion under paragraph (4) is reduced by 1 year for

1 scholarship recipients whose service is performed in
2 a high-need local educational agency. The Director
3 shall establish and maintain a central clearinghouse
4 of information on teaching opportunities available in
5 high-need local educational agencies throughout the
6 United States, which shall be made available to indi-
7 viduals having a service obligation under this sec-
8 tion.”;

9 (18) in subsection (d)(1), by striking “to re-
10 ceive certification or licensing to teach” and insert-
11 ing “established under subsection (a)(3)(B)”;

12 (19) in subsection (d)(2), by inserting “and
13 professional achievement” after “academic merit”;

14 (20) in subsection (d)(3), by striking “1 year”
15 and inserting “16 months”;

16 (21) in subsection (d)(4)—

17 (A) by striking “6 years” and inserting “4
18 years”; and

19 (B) by striking “for each year a stipend
20 was received”;

21 (22) in subsection (e)—

22 (A) by inserting “or section 10A” after
23 “under this section”; and

24 (B) in paragraph (1) by inserting “or sec-
25 tion 10A” after “subsection (d)”;

1 (23) in subsection (f)(1), by inserting “or sec-
2 tion 10A” after “under this section”;

3 (24) in subsection (g)(2)(A)—

4 (A) by striking “Treasurer of the United
5 States,” and inserting “Treasurer of the United
6 States.”; and

7 (B) by striking “multiplied by 2.”;

8 (25) in subsection (h), by inserting “or section
9 10A” after “under this section”;

10 (26) in subsection (i)(3), by inserting “or had
11 a career in” after “is working in”;

12 (27) in subsection (i)—

13 (A) by striking “and” at the end of para-
14 graph (4);

15 (B) in paragraph (5), by inserting “or sec-
16 tion 10A” after “subsection (d)”;

17 (C) by striking the period at the end of
18 paragraph (5) and inserting “; and”; and

19 (D) by adding at the end the following:

20 “(6) the term ‘teacher leader’ means a mathe-
21 matics or science teacher who works to improve the
22 instruction of mathematics or science in kinder-
23 garten through grade 12 through—

1 “(A) participating in the development or
2 revision of science, mathematics, engineering, or
3 technology curricula;

4 “(B) serving as a mentor to mathematics
5 or science teachers;

6 “(C) coordinating and assisting teachers in
7 the use of hands-on inquiry materials, equip-
8 ment, and supplies, and when appropriate, su-
9 pervising acquisition and repair of such mate-
10 rials;

11 “(D) providing in-classroom teaching as-
12 sistance to mathematics or science teachers;
13 and

14 “(E) providing professional development,
15 for the purposes of training other teacher lead-
16 ers, to mathematics and science teachers.”; and
17 (28) by adding at the end the following:

18 “(j) MATHEMATICS AND SCIENCE SCHOLARSHIP
19 GIFT FUND.—In accordance with section 11(f) of the Na-
20 tional Science Foundation Act of 1950, the Director is au-
21 thorized to accept donations from the private sector to
22 support scholarships, stipends, or internships associated
23 with programs under this section.

24 “(k) ASSESSMENT OF TEACHER SERVICE AND RE-
25 TENTION.—Not later than 4 years after the date of enact-

1 ment of this subsection, the Director shall transmit to
 2 Congress a report on the effectiveness of the program car-
 3 ried out under this section. The report shall include the
 4 proportion of individuals receiving scholarships or stipends
 5 under the program who—

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

9 “(2) elect to fulfill their service obligation in a
 10 high-need local educational agency but fail to com-
 11 plete it, as defined in subsection (g);

12 “(3) remain in the teaching profession beyond
 13 their service obligation; and

14 “(4) remain in the teaching profession in a
 15 high-need local educational agency beyond their serv-
 16 ice obligation.”.

17 (b) SPECIAL PARTNERSHIP PROGRAM FOR STI-
 18 PENDS.—The National Science Foundation Authorization
 19 Act of 2002 is amended by inserting after section 10 the
 20 following new section:

21 **“SEC. 10A. SPECIAL PARTNERSHIP PROGRAM FOR STI-
 22 PENDS.**

23 “(a) IN GENERAL.—As part of the Robert Noyce
 24 Teacher Scholarship Program established under section
 25 10, the Director shall establish a separate type of award

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

6 “(b) ELIGIBILITY.—In order to be eligible to receive
7 a grant under this section, an institution of higher edu-
8 cation (or consortia of such institutions) shall enter into
9 a partnership with one or more private sector nonprofit
10 organizations, local or State government organizations,
11 and businesses. The members of the partnership shall pro-
12 vide the teaching supplements described in subsection (f).

13 “(c) USE OF GRANTS.—Grants provided under this
14 section shall be used by institutions of higher education
15 or consortia to develop and implement a program to en-
16 courage science, mathematics, or engineering professionals
17 to become qualified as mathematics and science teachers,
18 through—

19 “(1) administering stipends in accordance with
20 this section;

21 “(2) offering academic courses and field teach-
22 ing experiences designed to prepare stipend recipi-
23 ents to teach in elementary and secondary schools,
24 including such preparation as is necessary to meet
25 the requirements for certification or licensing; and

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

7 “(d) SELECTION PROCESS.—

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

11 “(2) APPLICATIONS.—An eligible institution of
12 higher education or consortium seeking funding
13 under this section shall submit an application to the
14 Director at such time, in such manner, and con-
15 taining such information as the Director may re-
16 quire. The application shall include, at a minimum—

17 “(A) a description of the program that the
18 applicant intends to operate, including the num-
19 ber of stipends the applicant intends to award,
20 the type of activities proposed for the recruit-
21 ment of students to the program, and the
22 amount of the teaching supplements to be pro-
23 vided in accordance with subsection (f);

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

1 ing a description of the rigorous, nationally rec-
2 ognized test that will be administered during
3 the selection process in order to determine
4 whether individuals applying for stipends have
5 advanced content knowledge of science or math-
6 ematics;

7 “(C) evidence that the applicant has the
8 capability to administer the program in accord-
9 ance with the provisions of this section, which
10 may include a description of any existing pro-
11 grams at the applicant’s institution that are
12 targeted to the education of mathematics and
13 science teachers and the number of teachers
14 graduated annually from such programs;

15 “(D) a description of the academic courses
16 and field teaching experiences described in sub-
17 section (c)(2), including—

18 “(i) a description of an educational
19 program that will enable a student to ob-
20 tain teacher certification or licensing with-
21 in 16 months; and

22 “(ii) evidence of agreements between
23 the applicant and the schools or school dis-
24 tricts that are identified as the locations at
25 which field teaching experiences will occur;

1 “(E) a description of the programs de-
2 scribed in subsection (c)(3), including activities
3 to assist new teachers in fulfilling their service
4 requirements under this section; and

5 “(F) evidence that the partnership will
6 provide the teaching supplements required
7 under subsection (f).

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

11 “(A) the ability of the applicant to effec-
12 tively carry out the program and to meet the
13 requirement of subsection (f);

14 “(B) the extent to which the applicant’s
15 mathematics, science, or engineering faculty
16 and its education faculty have worked or will
17 work collaboratively to design new or revised
18 curricula that recognizes the specialized peda-
19 gogy required to teach mathematics and science
20 effectively in elementary and secondary schools;

21 “(C) the extent to which the applicant is
22 committed to making the program a central or-
23 ganizational focus;

24 “(D) the degree to which the proposed pro-
25 gramming will enable stipend recipients to be-

1 come successful mathematics and science teach-
2 ers;

3 “(E) the number and quality of the stu-
4 dents that will be served by the program; and

5 “(F) the ability of the applicant to recruit
6 students who would otherwise not pursue a ca-
7 reer in teaching.

8 “(e) STIPENDS.—Individuals shall be selected to re-
9 ceive stipends under this section primarily on the basis
10 of their content knowledge of science or mathematics as
11 demonstrated by their performance on a test designated
12 in accordance with subsection (d)(2)(B). Among individ-
13 uals demonstrating equivalent content knowledge, consid-
14 eration may be given to financial need and to the goal
15 of promoting the participation of individuals identified in
16 section 33 or 34 of the Science and Engineering Equal
17 Opportunities Act (42 U.S.C. 1885a or 1885b).

18 “(f) TEACHING SUPPLEMENTS.—The members of a
19 partnership shall identify a source of non-Federal funding
20 to provide salary supplements to individuals who partici-
21 pate in the program under this section during the period
22 of their service obligation under subsection (h).

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

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

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

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

12 (1) in the paragraph heading by inserting
 13 “TEACHER” after “NOYCE”; and

14 (2) by inserting “Teacher” after “Noyce”.

15 **Subtitle B—Mathematics and**
 16 **Science Education Improvement**

17 **SEC. 121. MATHEMATICS AND SCIENCE EDUCATION PART-**
 18 **NEERSHIPS AMENDMENTS.**

19 Section 9 of the National Science Foundation Au-
 20 thorization Act of 2002 (42 U.S.C. 1862n) is amended—

21 (1) in subsection (a)(2)—

22 (A) by striking “(A)”;

23 (B) by striking subparagraph (B);

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

1 gineering,” after “institution of higher edu-
2 cation”; and

3 (D) by striking “a State educational agen-
4 cy” and inserting “education faculty from the
5 participating institution or institutions of high-
6 er education, a State educational agency,”;

7 (2) in subsection (a)(3)(B)—

8 (A) by inserting “content-specific” before
9 “professional development programs”;

10 (B) by inserting “which are” before “de-
11 signed”; and

12 (C) by inserting “and which may include
13 teacher training activities to prepare mathe-
14 matics and science teachers to teach challenging
15 mathematics, science, and technology college-
16 preparatory courses, including Advanced Place-
17 ment and International Baccalaureate courses”
18 after “and science teachers”;

19 (3) in subsection (a)(3)(C)—

20 (A) by inserting “and laboratory experi-
21 ences” after “technology”; and

22 (B) by inserting “and laboratory” after
23 “provide technical”;

1 (4) in subsection (a)(3)(I) by inserting “includ-
2 ing model induction programs for teachers in their
3 first 2 years of teaching,” after “and science,”;

4 (5) in subsection (a)(3)(K) by striking “devel-
5 oping and offering mathematics or science enrich-
6 ment programs for students, including after-school
7 and summer programs;” and inserting “developing
8 educational programs and materials and conducting
9 mathematics, science, and technology enrichment
10 programs for students, including after-school pro-
11 grams and summer camps for students described in
12 subsection (b)(2)(G);”;

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

15 “(8) MASTER’S DEGREE PROGRAMS.—Activities
16 carried out in accordance with paragraph (3)(B)
17 shall include the development and offering of mas-
18 ter’s degree programs for in-service mathematics
19 and science teachers that will strengthen their sub-
20 ject area knowledge and pedagogical skills, as de-
21 scribed in section 123 of the Act enacting this para-
22 graph. Grants provided under this section may be
23 used to develop and implement courses of instruction
24 for the master’s degree programs, which may involve

1 online learning, and develop related educational ma-
2 terials.

3 “(9) MENTORS FOR TEACHERS AND STUDENTS
4 OF CHALLENGING COURSES.—Partnerships carrying
5 out activities to prepare mathematics and science
6 teachers to teach challenging mathematics, science,
7 and technology college-preparatory courses, includ-
8 ing Advanced Placement and International Baccalaureate
9 courses, in accordance with paragraph
10 (3)(B) shall encourage companies employing sci-
11 entists, mathematicians, or engineers to provide
12 mentors to teachers and students and provide for
13 the coordination of such mentoring activities.

14 “(10) INVENTIVENESS.—Activities carried out
15 in accordance with paragraph (3)(H) may include
16 the development and dissemination of curriculum
17 tools that will help foster inventiveness and innova-
18 tion.”;

19 (7) in subsection (b)(2) by redesignating sub-
20 paragraphs (E) and (F) as subparagraphs (F) and
21 (G), respectively, and inserting after subparagraph
22 (D) the following new subparagraph:

23 “(E) the extent to which the evaluation de-
24 scribed in paragraph (1)(E) will be independent
25 and based on objective measures;”;

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

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

7 (9) in subsection (c)—

8 (A) by striking paragraph (2);

9 (B) by redesignating paragraphs (3), (4),
10 and (5) as paragraphs (4), (5), and (6), respec-
11 tively; and

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

14 “(2) REPORT ON MODEL PROJECTS.—The Di-
15 rector shall determine which completed projects
16 funded through the program under this section
17 should be seen as models to be replicated on a more
18 expansive basis at the State or national levels. Not
19 later than 1 year after the date of enactment of this
20 paragraph, the Director shall transmit a report de-
21 scribing the results of this study to the Committee
22 on Science and Technology and the Committee on
23 Education and Labor of the House of Representa-
24 tives and to the Committee on Commerce, Science,

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

3 “(3) REPORT ON EVALUATIONS.—Not later
4 than 4 years after the date of enactment of this
5 paragraph, the Director shall transmit a report sum-
6 marizing the evaluations required under subsection
7 (b)(1)(E) of grants received under this program and
8 describing any changes to the program recommended
9 as a result of these evaluations to the Committee on
10 Science and Technology and the Committee on Edu-
11 cation and Labor of the House of Representatives
12 and to the Committee on Commerce, Science, and
13 Transportation and the Committee on Health, Edu-
14 cation, Labor, and Pensions of the Senate. Such re-
15 port shall be made widely available to the public.”;
16 and

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

19 “(d) DEFINITIONS.—In this section—

20 “(1) the term ‘mathematics and science teacher’
21 means a mathematics, science, or technology teacher
22 at the elementary school or secondary school level;
23 and

1 “(2) the term ‘science’, in the context of ele-
2 mentary and secondary education, includes tech-
3 nology and pre-engineering.”.

4 **SEC. 122. TEACHER INSTITUTES.**

5 (a) NATIONAL SCIENCE FOUNDATION INSTITUTES.—

6 (1) IN GENERAL.—The Director shall establish
7 a grant program to provide for summer or academic
8 year teacher institutes or workshops authorized by
9 section 9(a)(3)(B) of the National Science Founda-
10 tion Authorization Act of 2002 (42 U.S.C.
11 1862n(a)(3)(B)) and shall allow grantees under the
12 Teacher Institutes for the 21st Century program to
13 operate 1 to 2 week summer teacher institutes with
14 the goal of reaching the maximum number of in-
15 service mathematics and science teachers, particu-
16 larly elementary and middle school teachers, to im-
17 prove their content knowledge and pedagogical skills.

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

1 including Advanced Placement and International
2 Baccalaureate courses.

3 (3) AWARDS.—In awarding grants under this
4 section, the Director shall give priority to applica-
5 tions that propose programs that will attract mathe-
6 matics and science teachers from local educational
7 agencies that—

8 (A) are receiving grants under title I of the
9 Elementary and Secondary Education Act of
10 1965 (20 U.S.C. 6301 et seq.) as a result of
11 having within their jurisdictions concentrations
12 of children from low income families; and

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

18 (b) LABORATORY SCIENCE TEACHER PROFESSIONAL
19 DEVELOPMENT.—There are authorized to be appropriated
20 to the Secretary of Energy for the Laboratory Science
21 Teacher Professional Development program, \$3,000,000
22 for fiscal year 2008, \$8,000,000 for fiscal year 2009,
23 \$10,000,000 for fiscal year 2010, \$10,000,000 for fiscal
24 year 2011, and \$10,000,000 for fiscal year 2012.

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

2 (a) IN GENERAL.—The Director shall ensure that
3 master’s degree programs for in-service mathematics and
4 science teachers that will strengthen their subject area
5 knowledge and pedagogical skills are instituted in accord-
6 ance with section 9(a)(8) of the National Science Founda-
7 tion Authorization Act of 2002 (42 U.S.C. 1862n(a)(8)).
8 The degree programs shall be designed for current teach-
9 ers, who will enroll as part-time students, and to allow
10 participants to obtain master’s degrees within a period of
11 3 years.

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

16 (c) PROGRAM ACTIVITIES.—Activities supported
17 through master’s degree programs established under sub-
18 section (a) may include—

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

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

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

1 **SEC. 124. CURRICULA.**

2 Nothing in this title, or the amendments made by this
3 title, shall be construed to limit the authority of State gov-
4 ernments or local school boards to determine the curricula
5 of their students.

6 **SEC. 125. SCIENCE, TECHNOLOGY, ENGINEERING, AND**
7 **MATHEMATICS TALENT EXPANSION PRO-**
8 **GRAM.**

9 (a) **AMENDMENTS.**—Section 8(7) of the National
10 Science Foundation Authorization Act of 2002 is amend-
11 ed—

12 (1) in subparagraph (A) by striking “competi-
13 tive, merit-based” and all that follows through “in
14 recent years.” and inserting “competitive, merit-re-
15 viewed multiyear grants for eligible applicants to im-
16 prove undergraduate education in science, mathe-
17 matics, engineering, and technology through—

18 “(i) the creation of programs to increase
19 the number of students studying toward and
20 completing associate’s or bachelor’s degrees in
21 science, technology, engineering, and mathe-
22 matics, particularly in fields that have faced de-
23 clining enrollment in recent years; and

24 “(ii) the creation of centers (in this para-
25 graph referred to as ‘Centers’) to develop un-
26 dergraduate curriculum, teaching methods for

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

9 Grants made under clause (ii) shall be awarded
10 jointly through the Education and Human Re-
11 sources Directorate and at least 1 research direc-
12 torate of the Foundation.”;

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

15 “(B) In selecting projects under subparagraph
16 (A)(i), the Director shall strive to increase the num-
17 ber of students studying toward and completing bac-
18 calaureate degrees, concentrations, or certificates in
19 science, mathematics, engineering, or technology who
20 are—

21 “(i) individuals identified in section 33 or
22 34 of the Science and Engineering Equal Op-
23 portunities Act (42 U.S.C. 1885a or 1885b); or

24 “(ii) graduates of a secondary school that
25 is administered by a local educational agency

1 that is receiving grants under title I of the Ele-
2 mentary and Secondary Education Act of 1965
3 (20 U.S.C. 6301 et seq.) as a result of having
4 within its jurisdiction concentrations of children
5 from low income families.”;

6 (3) in subparagraph (C)—

7 (A) by inserting “(i)” before “The types
8 of”;

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

11 (C) by striking “under this paragraph”
12 and inserting “under subparagraph (A)(i)”; and

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

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

17 “(I) creating model curricula and labora-
18 tory programs;

19 “(II) developing and demonstrating re-
20 search-based instructional methods and tech-
21 nologies;

22 “(III) developing methods to train grad-
23 uate students and faculty to be more effective
24 teachers of undergraduates;

1 “(IV) conducting programs to disseminate
2 curricula, instructional methods, or training
3 methods to faculty at the grantee institutions
4 and at other institutions;

5 “(V) conducting assessments of the effec-
6 tiveness of the Center at accomplishing the
7 goals described in subparagraph (A)(ii); and

8 “(VI) conducting any other activities the
9 Director determines will accomplish the goals
10 described in subparagraph (A)(ii).”;

11 (4) in subparagraph (D)(i), by striking “under
12 this paragraph” and inserting “under subparagraph
13 (A)(i)”;

14 (5) in subparagraph (D)(ii), by striking “under
15 this paragraph” and inserting “under subparagraph
16 (A)(i)”;

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

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

22 (7) in subparagraph (E), by striking “under
23 this paragraph” both places it appears and inserting
24 “under subparagraph (A)(i)”;

1 (8) by redesignating subparagraph (F) as sub-
2 paragraph (J); and

3 (9) by inserting after subparagraph (E) the fol-
4 lowing new subparagraphs:

5 “(F) Grants awarded under subparagraph
6 (A)(ii) shall be carried out by a department or de-
7 partments of science, mathematics, or engineering at
8 institutions of higher education (or a consortia
9 thereof), which may partner with education faculty.
10 Applications for awards under subparagraph (A)(ii)
11 shall be submitted to the Director at such time, in
12 such manner, and containing such information as
13 the Director may require. At a minimum, the appli-
14 cation shall include—

15 “(i) a description of the activities to be
16 carried out by the Center;

17 “(ii) a plan for disseminating programs re-
18 lated to the activities carried out by the Center
19 to faculty at the grantee institution and at
20 other institutions;

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

1 “(iv) a plan for assessing the effectiveness
2 of the Center at accomplishing the goals de-
3 scribed in subparagraph (A)(ii).

4 “(G) In evaluating the applications submitted
5 under subparagraph (F), the Director shall consider,
6 at a minimum—

7 “(i) the ability of the applicant to effec-
8 tively carry out the proposed activities, includ-
9 ing the dissemination activities described in
10 subparagraph (C)(ii)(IV); and

11 “(ii) the extent to which the faculty, staff,
12 and administrators of the applicant institution
13 are committed to improving undergraduate
14 science, mathematics, and engineering edu-
15 cation.

16 “(H) In awarding grants under subparagraph
17 (A)(ii), the Director shall endeavor to ensure that a
18 wide variety of science, technology, engineering, and
19 mathematics fields and types of institutions of high-
20 er education, including 2-year colleges and minority-
21 serving institutions, are covered, and that—

22 “(i) at least 1 Center is housed at a Doc-
23 toral/Research University as defined by the
24 Carnegie Foundation for the Advancement of
25 Teaching; and

1 “(8) HIGH-NEED LOCAL EDUCATIONAL AGEN-
2 CY.—The term ‘high-need local educational agency’
3 means a local educational agency that—

4 “(A) is receiving grants under title I of the
5 Elementary and Secondary Education Act of
6 1965 (20 U.S.C. 6301 et seq.) as a result of
7 having within its jurisdiction concentrations of
8 children from low income families; and

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

14 **SEC. 127. TEACHER LEADERS.**

15 The National Science Foundation Authorization Act
16 of 2002 is amended—

17 (1) in section 4(11)—

18 (A) by striking “MASTER TEACHER” and
19 inserting “TEACHER LEADER”;

20 (B) by striking “master teacher” and in-
21 serting “teacher leader”; and

22 (C) in subparagraph (E), by striking
23 “master teachers” and inserting “teacher lead-
24 ers”; and

25 (2) in section 9—

1 (A) in subsection (a)(3)(E), by striking
2 “master teachers” and inserting “teacher lead-
3 ers”; and

4 (B) in subsection (a)(4)—

5 (i) by striking “MASTER TEACHERS”
6 and inserting “TEACHER LEADERS”; and

7 (ii) by striking “master teachers”
8 each place it appears and inserting “teach-
9 er leaders”.

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

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

12 (1) To remain competitive in science and tech-
13 nology in the global economy, the United States
14 must increase the number of students graduating
15 from high school prepared to pursue postsecondary
16 education in science, technology, engineering, and
17 mathematics.

18 (2) There is broad agreement in the scientific
19 community that learning science requires direct in-
20 volvement by students in scientific inquiry and that
21 laboratory experience is so integral to the nature of
22 science that it must be included in every science pro-
23 gram for every science student.

24 (3) In America’s Lab Report, the National Re-
25 search Council concluded that the current quality of

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

6 (4) The National Research Council found that
7 schools with higher concentrations of non-Asian mi-
8 norities and schools with higher concentrations of
9 poor students are less likely to have adequate labora-
10 tory facilities than other schools.

11 (5) The Government Accountability Office re-
12 ported that 49.1 percent of schools where the minor-
13 ity student population is greater than 50.5 percent
14 reported not meeting functional requirements for
15 laboratory science well or at all.

16 (6) 40 percent of those college students who left
17 the science fields reported some problems related to
18 high school science preparation, including lack of
19 laboratory experience and no introduction to theo-
20 retical or to analytical modes of thought.

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

1 (b) GRANT PROGRAM.—Section 8(8) of the National
2 Science Foundation Authorization Act of 2002 is amend-
3 ed—

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

6 (2) by inserting “(A)” before “A program of
7 competitive”; and

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

10 “(B) In accordance with subparagraph (A)(v),
11 the Director shall establish a research pilot program
12 designated as ‘Partnerships for Access to Labora-
13 tory Science’ to award grants to partnerships to im-
14 prove laboratories and provide instrumentation as
15 part of a comprehensive program to enhance the
16 quality of mathematics, science, engineering, and
17 technology instruction at the secondary school level.
18 Grants under this subparagraph may be used for—

19 “(i) purchase, rental, or leasing of equip-
20 ment, instrumentation, and other scientific edu-
21 cational materials;

22 “(ii) maintenance, renovation, and im-
23 provement of laboratory facilities;

24 “(iii) development of instructional pro-
25 grams designed to integrate the laboratory ex-

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

4 “ (iv) training in laboratory safety for
5 school personnel;

6 “ (v) design and implementation of hands-
7 on laboratory experiences to encourage the in-
8 terest of individuals identified in section 33 or
9 34 of the Science and Engineering Equal Op-
10 portunities Act (42 U.S.C. 1885a or 1885b) in
11 mathematics, science, engineering, and tech-
12 nology and help prepare such individuals to
13 pursue postsecondary studies in these fields;
14 and

15 “ (vi) assessment of the activities funded
16 under this subparagraph.

17 “ (C) Grants may be made under subparagraph
18 (B) only to a partnership—

19 “ (i) for a project that includes significant
20 teacher training and professional development
21 components; or

22 “ (ii) that establishes that appropriate
23 teacher training and professional development
24 is being addressed, or has been addressed,
25 through other means.

1 “(D) Grants awarded under subparagraph (B)
2 shall be to a partnership that—

3 “(i) includes an institution of higher edu-
4 cation or a community college;

5 “(ii) includes a high-need local educational
6 agency;

7 “(iii) includes a business or eligible non-
8 profit organization; and

9 “(iv) may include a State educational
10 agency, other public agency, National Labora-
11 tory, or community-based organization.

12 “(E) The Federal share of the cost of activities
13 carried out using amounts from a grant under sub-
14 paragraph (B) shall not exceed 50 percent.

15 “(F) The Director shall require grant recipients
16 to submit a report to the Director on the results of
17 the project supported by the grant.”.

18 (c) REPORT.—The Director shall evaluate the effec-
19 tiveness of activities carried out under the research pilot
20 projects funded by the grant program established pursu-
21 ant to the amendment made by subsection (b) in improv-
22 ing student performance in mathematics, science, engi-
23 neering, and technology. A report documenting the results
24 of that evaluation shall be submitted to the Committee on
25 Science and Technology of the House of Representatives

1 and the Committees on Commerce, Science, and Transpor-
2 tation and on Health, Education, Labor, and Pensions of
3 the Senate not later than 5 years after the date of enact-
4 ment of this Act. The report shall identify best practices
5 and materials developed and demonstrated by grant
6 awardees.

7 (d) AUTHORIZATION OF APPROPRIATIONS.—From
8 the amount authorized in section 303(a)(2)(B), (b)(2)(B),
9 and (c)(2)(B) of this Act, there are authorized to be ap-
10 propriated to carry out this section and the amendments
11 made by this section \$5,000,000 for fiscal year 2008, and
12 such sums as may be necessary for each of the 2 suc-
13 ceeding fiscal years.

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

16 Not later than 2 years after the date of enactment
17 of this Act, the Director shall transmit a report to the
18 Congress examining the extent to which institutions of
19 higher education are donating used laboratory equipment
20 to elementary and secondary schools. The Director, in con-
21 sultation with the Secretary of Education, shall survey in-
22 stitutions of higher education to determine—

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

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

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

7 (4) how appropriate donations can be encour-
8 aged.

9 **TITLE II—SCIENCE AND**
10 **ENGINEERING RESEARCH**

11 **SEC. 201. SHORT TITLE.**

12 This title may be cited as the “Sowing the Seeds
13 Through Science and Engineering Research Act”.

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

17 (a) IN GENERAL.—The Director of the National
18 Science Foundation shall carry out a program to award
19 grants to scientists and engineers at the early stage of
20 their careers at institutions of higher education and orga-
21 nizations described in subsection (c)(2) to conduct re-
22 search in fields relevant to the mission of the Foundation.
23 The existing Faculty Early Career Development (CA-
24 REER) Program may be designated as the mechanism for
25 awarding such grants.

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

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

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

10 (2) an organization in the United States that is
11 a nonprofit, nondegree-granting research organiza-
12 tion such as a museum, observatory, or research lab-
13 oratory.

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

16 (e) SELECTION PROCESS AND CRITERIA FOR
17 AWARDS.—An applicant seeking funding under this sec-
18 tion shall submit a proposal to the Director at such time,
19 in such manner, and containing such information as the
20 Director may require. In evaluating the proposals sub-
21 mitted under this section, the Director shall consider, at
22 a minimum—

23 (1) the intellectual merit of the proposed work;

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

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

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

6 (f) AWARDS.—In awarding grants under this section,
7 the Director shall endeavor to ensure that the recipients
8 are from a variety of types of institutions of higher edu-
9 cation and nonprofit, nondegree-granting research organi-
10 zations. In support of this goal, the Director shall broadly
11 disseminate information about when and how to apply for
12 grants under this section, including by conducting out-
13 reach to Historically Black Colleges and Universities that
14 are part B institutions as defined in section 322(2) of the
15 Higher Education Act of 1965 (20 U.S.C. 1061(2)) and
16 minority institutions (as defined in section 365(3) of that
17 Act (20 U.S.C. 1067k(3))). In awarding grants under this
18 section, the Director shall give special consideration to eli-
19 gible early-career researchers who have followed alter-
20 native career paths such as working part-time or in non-
21 academic settings, or who have taken a significant career
22 break or other leave of absence.

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

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

5 (h) REPORT.—Not later than 6 months after the date
6 of enactment of this Act, the Director shall transmit to
7 the Committee on Science and Technology of the House
8 of Representatives and to the Committee on Commerce,
9 Science, and Transportation of the Senate a report de-
10 scribing the distribution of the institutions from which in-
11 dividuals have participated in the Faculty Early Career
12 Development Program since fiscal year 2001 among each
13 of the categories of institutions of higher education de-
14 fined by the Carnegie Foundation for the Advancement
15 of Teaching and the organizations in subsection (c)(2).

16 (i) EVALUATION.—Not later than 2 years after the
17 date of enactment of this Act, the Director shall transmit
18 to the Committee on Science and Technology of the House
19 of Representatives and to the Committee on Commerce,
20 Science, and Transportation of the Senate a report evalu-
21 ating the impact of the program carried out under this
22 section on the ability of young faculty to compete for Na-
23 tional Science Foundation research grants.

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

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

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

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

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

22 (2) an organization in the United States that is
23 a nonprofit, nondegree-granting research organiza-
24 tion such as a museum, observatory, or research lab-
25 oratory.

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

3 (e) SELECTION PROCESS AND CRITERIA FOR
4 AWARDS.—An applicant seeking funding under this sec-
5 tion shall submit a proposal to the Director of the Office
6 of Science at such time, in such manner, and containing
7 such information as the Director may require. In evalu-
8 ating the proposals submitted under this section, the Di-
9 rector shall consider, at a minimum—

10 (1) the intellectual merit of the proposed work;

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

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

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

18 (f) COLLABORATION WITH NATIONAL LABORA-
19 TORIES.—In awarding grants under this section, the Di-
20 rector shall give priority to proposals in which the pro-
21 posed work includes collaboration with the Department of
22 Energy National Laboratories.

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

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

10 (h) AUTHORIZATION OF APPROPRIATIONS.—There
11 are authorized to be appropriated to the Secretary of En-
12 ergy to carry out the Director’s responsibilities under this
13 section \$25,000,000 for each of the fiscal years 2008
14 through 2012.

15 (i) REPORT ON RECRUITING AND RETAINING EARLY
16 CAREER SCIENCE AND ENGINEERING RESEARCHERS AT
17 THE NATIONAL LABORATORIES.—Not later than 3
18 months after the date of enactment of this Act, the Direc-
19 tor of the Office of Science shall transmit to the Com-
20 mittee on Science and Technology of the House of Rep-
21 resentatives and to the Committee on Energy and Natural
22 Resources of the Senate a report on efforts to recruit and
23 retain young scientists and engineers at the early stages
24 of their careers at the Department of Energy National
25 Laboratories. The report shall include—

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

7 (2) an evaluation of the impact of these incen-
8 tives on the careers of young scientists and engi-
9 neers at Department of Energy National Labora-
10 tories, and also on the quality of the research at the
11 National Laboratories and in Department of Energy
12 programs;

13 (3) a description of what barriers, if any, exist
14 to efforts to recruit and retain young scientists and
15 engineers, including limited availability of full time
16 equivalent positions, legal and procedural require-
17 ments, and pay grading systems; and

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

21 **SEC. 204. INTEGRATIVE GRADUATE EDUCATION AND RE-**
22 **SEARCH TRAINEESHIP PROGRAM.**

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

1 priated for Research and Related Activities to the Integra-
2 tive Graduate Education and Research Traineeship pro-
3 gram.

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

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

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

14 (a) ESTABLISHMENT.—The President shall periodi-
15 cally present the Presidential Innovation Award, on the
16 basis of recommendations received from the Director of
17 the Office of Science and Technology Policy or on the
18 basis of such other information as the President considers
19 appropriate, to individuals who develop one or more
20 unique scientific or engineering ideas in the national inter-
21 est at the time the innovation occurs.

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

24 (1) stimulate scientific and engineering ad-
25 vances in the national interest;

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

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

7 (4) provide an example to students of the con-
8 tribution they could make to society by entering the
9 science and engineering profession.

10 (c) CITIZENSHIP.—An individual is not eligible to re-
11 ceive the award under this section unless at the time such
12 award is made the individual—

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

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

17 (A) has filed an application for naturaliza-
18 tion in the manner prescribed by section 334 of
19 the Immigration and Nationality Act (8 U.S.C.
20 1445); and

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

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

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

3 **SEC. 206. NATIONAL COORDINATION OFFICE FOR RE-**
4 **SEARCH INFRASTRUCTURE.**

5 (a) IN GENERAL.—The Office of Science and Tech-
6 nology Policy shall establish a National Coordination Of-
7 fice for Research Infrastructure. Such Office shall—

8 (1) identify and prioritize the deficiencies in re-
9 search facilities and major instrumentation located
10 at academic institutions and at national laboratories
11 that are available for use by academic researchers;
12 and

13 (2) institute and coordinate the planning by
14 Federal agencies for the acquisition, refurbishment,
15 and maintenance of research facilities and major in-
16 strumentation required to address the deficiencies
17 identified under paragraph (1).

18 In prioritizing the deficiencies identified under paragraph
19 (1), the Office shall consider research needs in areas rel-
20 evant to the Nation's economic competitiveness.

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

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

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

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

8 (2) listing research facilities projects and budg-
9 et proposals, by agency, for major instrumentation
10 acquisitions that are included in the President’s
11 budget proposal; and

12 (3) explaining how these facilities projects and
13 instrumentation acquisitions relate to the defi-
14 ciencies and priorities arrived at in accordance with
15 subsection (a).

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

17 In carrying out its research programs on science pol-
18 icy and on the science of learning, the National Science
19 Foundation may support research on the process of inno-
20 vation and the teaching of inventiveness.

1 **SEC. 208. REPORT ON NATIONAL INSTITUTE OF STAND-**
2 **ARDS AND TECHNOLOGY EFFORTS TO RE-**
3 **CRUIT AND RETAIN EARLY CAREER SCIENCE**
4 **AND ENGINEERING RESEARCHERS.**

5 Not later than 3 months after the date of enactment
6 of this Act, the Director of the National Institute of
7 Standards and Technology shall transmit to the Com-
8 mittee on Science and Technology of the House of Rep-
9 resentatives and to the Committee on Commerce, Science,
10 and Transportation of the Senate a report on efforts to
11 recruit and retain young scientists and engineers at the
12 early stages of their careers at the National Institute of
13 Standards and Technology laboratories and joint insti-
14 tutes. The report shall include—

15 (1) a description of National Institute of Stand-
16 ards and Technology policies and procedures, includ-
17 ing financial incentives, awards, promotions, time set
18 aside for independent research, access to equipment
19 or facilities, and other forms of recognition, designed
20 to attract and retain young scientists and engineers;

21 (2) an evaluation of the impact of these incen-
22 tives on the careers of young scientists and engi-
23 neers at the National Institute of Standards and
24 Technology, and also on the quality of the research
25 at the National Institute of Standards and Tech-

1 nology’s laboratories and in the National Institute of
2 Standards and Technology’s programs;

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

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

11 **SEC. 209. NASA’S CONTRIBUTION TO INNOVATION.**

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

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

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

1 cians across a broad range of fields in science, tech-
2 nology, mathematics, and engineering.

3 (b) PARTICIPATION IN INNOVATION AND COMPETI-
4 TIVENESS PROGRAMS.—The Administrator of the Na-
5 tional Aeronautics and Space Administration shall fully
6 participate in any interagency efforts to promote innova-
7 tion and economic competitiveness through scientific re-
8 search and development within the spending levels cited
9 in subsection (a).

10 **SEC. 210. UNDERGRADUATE SCHOLARSHIPS FOR SCIENCE,**
11 **TECHNOLOGY, ENGINEERING, AND MATHE-**
12 **MATICS.**

13 (a) ESTABLISHMENT.—The National Science Foun-
14 dation shall establish a program, to be known as the Un-
15 dergraduate Scholarships for Science, Technology, Engi-
16 neering, and Mathematics, or US–STEM, program, for
17 awarding scholarships to undergraduate scholars in
18 science, technology, engineering, and mathematics.

19 (b) ELIGIBILITY.—A student is eligible for a scholar-
20 ship under this section only if the student—

21 (1) is enrolled at a public, 4-year college or uni-
22 versity;

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

1 fore beginning studies to be funded by the scholar-
2 ship;

3 (3) has maintained a grade point average in un-
4 dergraduate studies of at least 3.0 on a scale of 4.0,
5 or an equivalent level as calculated by the National
6 Science Foundation, except that if the student's in-
7 stitution appeals this criterion on the basis of undue
8 hardship on the student, the National Science Foun-
9 dation may waive this paragraph;

10 (4) has a total family income of less than
11 \$75,000 per year, with such amount to be adjusted
12 annually by the National Science Foundation for in-
13 flation;

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

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

17 (c) SELECTION CRITERIA.—Scholarship recipients
18 shall be selected on the basis of merit and such other cri-
19 teria as the National Science Foundation shall establish.

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

1 (e) ADVISORY BOARD.—The Director of the National
2 Science Foundation shall establish an advisory board,
3 which shall make recommendations to the Director for se-
4 lection criteria for scholarship recipients, and provide
5 guidance and oversight for the program.

6 **TITLE III—NATIONAL SCIENCE**
7 **FOUNDATION**

8 **SEC. 301. SHORT TITLE.**

9 This title may be cited as the “National Science
10 Foundation Authorization Act of 2007”.

11 **SEC. 302. DEFINITIONS.**

12 In this title:

13 (1) BOARD.—The term “Board” means the Na-
14 tional Science Board established under section 2 of
15 the National Science Foundation Act of 1950 (42
16 U.S.C. 1861).

17 (2) DIRECTOR.—The term “Director” means
18 the Director of the Foundation.

19 (3) ELEMENTARY SCHOOL.—The term “elemen-
20 tary school” has the meaning given that term by
21 section 9101(18) of the Elementary and Secondary
22 Education Act of 1965 (20 U.S.C. 7801(18)).

23 (4) FOUNDATION.—The term “Foundation”
24 means the National Science Foundation.

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

5 (6) SECONDARY SCHOOL.—The term “sec-
6 ondary school” has the meaning given that term by
7 section 9101(38) of the Elementary and Secondary
8 Education Act of 1965 (20 U.S.C. 7801(38)).

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

10 (a) FISCAL YEAR 2008.—

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

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

16 (A) \$5,080,000,000 shall be made avail-
17 able for research and related activities, of which
18 \$115,000,000 shall be made available for the
19 Major Research Instrumentation program;

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

22 (i) \$94,000,000 shall be for Mathe-
23 matics and Science Education Partner-
24 ships established under section 9 of the
25 National Science Foundation Authorization

1 Act of 2002 (42 U.S.C. 1862n), of which
2 \$32,000,000 shall be made available for
3 the purposes of section 122(a) of this Act
4 and \$46,000,000 shall be made available
5 for the purposes of section 123 of this Act;

6 (ii) \$70,000,000 shall be for the Rob-
7 ert Noyce Scholarship Program established
8 under section 10 of the National Science
9 Foundation Authorization Act of 2002 (42
10 U.S.C. 1862n-1);

11 (iii) \$44,000,000 shall be for the
12 Science, Mathematics, Engineering, and
13 Technology Talent Expansion Program es-
14 tablished under section 8(7) of the Na-
15 tional Science Foundation Authorization
16 Act of 2002 (Public Law 107-368); and

17 (iv) \$51,620,000 shall be for the Ad-
18 vanced Technological Education program
19 established by section 3(a) of the Scientific
20 and Advanced-Technology Act of 1992
21 (Public Law 102-476);

22 (C) \$245,000,000 shall be made available
23 for major research equipment and facilities con-
24 struction;

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

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

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

7 (b) FISCAL YEAR 2009.—

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

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

13 (A) \$5,457,400,000 shall be made avail-
14 able for research and related activities, of which
15 \$123,100,000 shall be made available for the
16 Major Research Instrumentation program;

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

19 (i) \$100,600,000 shall be for Mathe-
20 matics and Science Education Partner-
21 ships established under section 9 of the
22 National Science Foundation Authorization
23 Act of 2002 (42 U.S.C. 1862n), of which
24 \$35,200,000 shall be made available for
25 the purposes of section 122(a) of this Act

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

3 (ii) \$101,000,000 shall be for the
4 Robert Noyce Scholarship Program estab-
5 lished under section 10 of the National
6 Science Foundation Authorization Act of
7 2002 (42 U.S.C. 1862n-1);

8 (iii) \$55,000,000 shall be for the
9 Science, Mathematics, Engineering, and
10 Technology Talent Expansion Program es-
11 tablished under section 8(7) of the Na-
12 tional Science Foundation Authorization
13 Act of 2002 (Public Law 107-368); and

14 (iv) \$55,200,000 shall be for the Ad-
15 vanced Technological Education program
16 as established by section 3(a) of the Sci-
17 entific and Advanced-Technology Act of
18 1992 (Public Law 102-476);

19 (C) \$262,000,000 shall be made available
20 for major research equipment and facilities con-
21 struction;

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

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

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

3 (c) FISCAL YEAR 2010.—

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

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

9 (A) \$5,863,200,000 shall be made avail-
10 able for research and related activities, of which
11 \$131,700,000 shall be made available for the
12 Major Research Instrumentation program;

13 (B) \$1,003,000,000 shall be made avail-
14 able for education and human resources, of
15 which—

16 (i) \$107,600,000 shall be for Mathe-
17 matics and Science Education Partner-
18 ships established under section 9 of the
19 National Science Foundation Authorization
20 Act of 2002 (42 U.S.C. 1862n), of which
21 \$38,700,000 shall be made available for
22 the purposes of section 122(a) of this Act
23 and \$55,700,000 shall be made available
24 for the purposes of section 123 of this Act;

1 (ii) \$133,000,000 shall be for the
2 Robert Noyce Scholarship Program estab-
3 lished under section 10 of the National
4 Science Foundation Authorization Act of
5 2002 (42 U.S.C. 1862n-1);

6 (iii) \$60,000,000 shall be for the
7 Science, Mathematics, Engineering, and
8 Technology Talent Expansion Program es-
9 tablished under section 8(7) of the Na-
10 tional Science Foundation Authorization
11 Act of 2002 (Public Law 107-368); and

12 (iv) \$59,100,000 shall be for the Ad-
13 vanced Technological Education program
14 as established by section 3(a) of the Sci-
15 entific and Advanced-Technology Act of
16 1992 (Public Law 102-476);

17 (C) \$280,000,000 shall be made available
18 for major research equipment and facilities con-
19 struction;

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

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

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

1 (d) MAJOR RESEARCH INSTRUMENTATION.—

2 (1) AWARD AMOUNT.—The minimum amount
3 of an award under the Major Research Instrumenta-
4 tion program shall be \$100,000. The maximum
5 amount of an award under the program shall be
6 \$4,000,000, except if the total amount appropriated
7 for the program for a fiscal year exceeds
8 \$125,000,000, in which case the maximum amount
9 of an award shall be \$6,000,000.

10 (2) USE OF FUNDS.—In addition to the acquisi-
11 tion of instrumentation and equipment, funds made
12 available by awards under the Major Research In-
13 strumentation program may be used to support the
14 operations and maintenance of such instrumentation
15 and equipment.

16 (3) COST SHARING.—

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

21 (B) EXCEPTIONS.—Institutions of higher
22 education that are not Ph.D.-granting institu-
23 tions are exempt from the cost sharing require-
24 ment in subparagraph (A), and the Director

1 may reduce or waive the cost sharing require-
2 ment for—

3 (i) institutions—

4 (I) which are not ranked among
5 the top 100 institutions receiving Fed-
6 eral research and development fund-
7 ing, as documented by the statistical
8 data published by the Foundation;
9 and

10 (II) for which the proposed
11 project will make a substantial im-
12 provement in the institution's capa-
13 bilities to conduct leading edge re-
14 search, to provide research experi-
15 ences for undergraduate students
16 using leading edge facilities, and to
17 broaden the participation in science
18 and engineering research by individ-
19 uals identified in section 33 or 34 of
20 the Science and Engineering Equal
21 Opportunities Act (42 U.S.C. 1885a
22 or 1885b); and

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

1 tion that is not a Ph.D-granting institu-
2 tion.

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

11 (f) LIMIT ON PROPOSALS.—

12 (1) POLICY.—For programs that require as
13 part of the selection process for awards the submis-
14 sion of preproposals and that also limit the number
15 of preproposals that may be submitted by an institu-
16 tion, the Director shall allow the subsequent submis-
17 sion of a full proposal based on each preproposal
18 that is determined to have merit following the Foun-
19 dation’s merit review process.

20 (2) REVIEW AND ASSESSMENT OF POLICIES.—

21 The Board shall review and assess the effects on in-
22 stitutions of higher education of the policies of the
23 Foundation regarding the imposition of limitations
24 on the number of proposals that may be submitted
25 by a single institution for programs supported by the

1 Foundation. The Board shall determine whether cur-
2 rent policies are well justified and appropriate for
3 the types of programs that limit the number of pro-
4 posal submissions. Not later than 1 year after the
5 date of enactment of this Act, the Board shall sum-
6 marize its findings and any recommendations re-
7 garding changes to the current policy on the restric-
8 tion of proposal submissions in a report to the Com-
9 mittee on Science and Technology of the House of
10 Representatives and to the Committee on Commerce,
11 Science, and Transportation and the Committee on
12 Health, Education, Labor, and Pensions of the Sen-
13 ate.

14 (g) RESEARCH EXPERIENCES FOR UNDERGRADU-
15 ATES.—The Director shall increase funding for the Re-
16 search Experiences for Undergraduates program in pro-
17 portion to the increase in the total amount appropriated
18 to the Foundation for research and related activities in
19 any year for which appropriations are authorized by this
20 title.

21 (h) GLOBAL WARMING EDUCATION.—

22 (1) INFORMAL EDUCATION.—As part of Infor-
23 mal Science Education activities, the Director shall
24 support activities to create informal educational ma-
25 terials, exhibits, and multimedia presentations rel-

1 evant to global warming, climate science, and green-
2 house gas reduction strategies.

3 (2) K–12 INSTRUCTIONAL MATERIALS.—As
4 part of Discovery Research K–12 activities, the Di-
5 rector shall support the development of K–12 edu-
6 cational materials relevant to global warming, cli-
7 mate science, and greenhouse gas reduction strate-
8 gies.

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

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

16 (b) ELIGIBILITY FOR CENTERS.—Section 11 of the
17 National Science Foundation Authorization Act of 2002
18 (42 U.S.C. 1862n–2) is amended—

19 (1) in subsection (a)(1), by inserting “or eligi-
20 ble nonprofit organizations” after “institutions of
21 higher education”;

22 (2) in subsection (b)(1) by inserting “or an eli-
23 gible nonprofit organization” after “institution of
24 higher education”; and

1 (3) in subsection (b)(1) by striking “of such in-
2 stitutions” and inserting “thereof”.

3 **SEC. 305. INTERDISCIPLINARY RESEARCH.**

4 (a) IN GENERAL.—The Board shall evaluate the role
5 of the Foundation in supporting interdisciplinary research,
6 including through the Major Research Instrumentation
7 program, the effectiveness of the Foundation’s efforts in
8 providing information to the scientific community about
9 opportunities for funding of interdisciplinary research pro-
10 posals, and the process through which interdisciplinary
11 proposals are selected for support. The Board shall also
12 evaluate the effectiveness of the Foundation’s efforts to
13 engage undergraduate students in research experiences in
14 interdisciplinary settings, including through the Research
15 in Undergraduate Institutions program and the Research
16 Experiences for Undergraduates program.

17 (b) REPORT.—Not later than 1 year after the date
18 of enactment of this Act, the Board shall provide the re-
19 sults of its evaluation under subsection (a), including a
20 recommendation for the proportion of the Foundation’s re-
21 search and related activities funding that should be allo-
22 cated for interdisciplinary research, to the Committee on
23 Science and Technology of the House of Representatives
24 and the Committee on Commerce, Science, and Transpor-

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

3 **SEC. 306. PILOT PROGRAM OF GRANTS FOR NEW INVES-**
4 **TIGATORS.**

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

10 (b) USE OF FUNDS.—Grants awarded under this sec-
11 tion shall be used to enable an individual to resubmit an
12 updated research proposal for review by the Foundation
13 through the agency’s competitive merit review process.
14 Uses of funds made available under this section may in-
15 clude the generation of new data and the performance of
16 additional analysis.

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

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

22 (2) have submitted a proposal to the Founda-
23 tion, which may include a proposal submitted to the
24 Research in Undergraduate Institutions program,

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

3 (d) SELECTION PROCESS.—The Director shall make
4 awards under this section based on the advice of the pro-
5 gram officers of the Foundation.

6 (e) PROGRAM ADMINISTRATION.—The Director may
7 carry out this section through the Small Grants for Ex-
8 ploratory Research program.

9 (f) NATIONAL SCIENCE BOARD REVIEW.—The
10 Board shall conduct a review and assessment of the pilot
11 program under this section, including the number of new
12 investigators funded, the distribution of awards by type
13 of institution of higher education, and the success rate
14 upon resubmittal of proposals by new investigators funded
15 through this pilot program. Not later than 3 years after
16 the date of enactment of this Act, the Board shall summa-
17 rize its findings and any recommendations regarding
18 changes to or the continuation of the pilot program in a
19 report to the Committee on Science and Technology of the
20 House of Representatives and the Committee on Com-
21 merce, Science, and Transportation and the Committee on
22 Health, Education, Labor, and Pensions of the Senate.

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

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

1 rector shall give special consideration to proposals that in-
2 volve partnerships between academic researchers and in-
3 dustrial scientists and engineers that address research
4 areas that have been identified as having high importance
5 for future national economic competitiveness, such as
6 nanotechnology.

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

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

- 20 (1) identify the criteria that each division and
21 directorate of the Foundation uses to evaluate the
22 broader impacts aspects of research proposals;
- 23 (2) provide a breakdown of the types of activi-
24 ties by division that awardees have proposed to carry
25 out to meet the broader impacts criterion;

1 (3) provide any evaluations performed by the
2 Foundation to assess the degree to which the broad-
3 er impacts aspects of research proposals were car-
4 ried out and how effective they have been at meeting
5 the goals described in the research proposals;

6 (4) describe what national goals, such as im-
7 proving undergraduate science, mathematics, and
8 engineering education, improving K–12 science and
9 mathematics education, promoting university-indus-
10 try collaboration and technology transfer, and broad-
11 ening participation of underrepresented groups, the
12 broader impacts criterion is best suited to promote;
13 and

14 (5) describe what steps the Foundation is tak-
15 ing and should take to use the broader impacts cri-
16 terion to improve undergraduate science, mathe-
17 matics, and engineering education.

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

19 (a) MENTORING.—The Director shall require that all
20 grant applications that include funding to support
21 postdoctoral researchers include a description of the men-
22 toring activities that will be provided for such individuals,
23 and shall ensure that this part of the application is evalu-
24 ated under the Foundation’s broader impacts merit review
25 criterion. Mentoring activities may include career coun-

1 seling, training in preparing grant applications, guidance
2 on ways to improve teaching skills, and training in re-
3 search ethics.

4 (b) REPORTS.—The Director shall require that an-
5 nual reports and the final report for research grants that
6 include funding to support postdoctoral researchers in-
7 clude a description of the mentoring activities provided to
8 such researchers.

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

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

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

19 The Director shall ensure that all final project re-
20 ports and citations of published research documents re-
21 sulting from research funded, in whole or in part, by the
22 Foundation, are made available to the public in a timely
23 manner and in electronic form through the Foundation's
24 Web site.

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

2 An investigator supported under a Foundation
3 award, whom the Director determines has failed to comply
4 with the provisions of section 734 of the Foundation Grant
5 Policy Manual, shall be ineligible for a future award under
6 any Foundation supported program or activity. The Direc-
7 tor may restore the eligibility of such an investigator on
8 the basis of the investigator's subsequent compliance with
9 the provisions of section 734 of the Foundation Grant Pol-
10 icy Manual and with such other terms and conditions as
11 the Director may impose.

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

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

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

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

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

1 beyond their scheduled expiration without the requirement
2 for a recompetition. The Director may extend such grants
3 for an additional 3 years following a second review within
4 1 year before the extended completion date, in accordance
5 with subsection (a), and the determination by the Director
6 that the objectives of the grant are being achieved.

7 (c) REPORT TO CONGRESS.—Not later than 2 years
8 after the date of enactment of this Act, the Director shall
9 submit a report to the Committee on Science and Tech-
10 nology of the House of Representatives and to the Com-
11 mittee on Commerce, Science, and Transportation and the
12 Committee on Health, Education, Labor, and Pensions of
13 the Senate that—

14 (1) lists the grants which have been extended in
15 duration by the authority provided under this sec-
16 tion; and

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

21 **SEC. 313. COST SHARING.**

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

1 torically required industry cost sharing, such as the Engi-
2 neering Research Centers and Industry/University Coop-
3 erative Research Centers. The Board shall also consider
4 the impact that the cost sharing policy has on initiating
5 new programs for which industry interest and participa-
6 tion are sought.

7 (b) REPORT.—Not later than 6 months after the date
8 of enactment of this Act, the Board shall report to the
9 Committee on Science and Technology and the Committee
10 on Appropriations of the House of Representatives, and
11 the Committee on Commerce, Science, and Transpor-
12 tation, the Committee on Health, Education, Labor, and
13 Pensions, and the Committee on Appropriations of the
14 Senate, on the results of the evaluation under subsection
15 (a).

16 **SEC. 314. DONATIONS.**

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

21 **SEC. 315. ADDITIONAL REPORTS.**

22 (a) REPORT ON FUNDING FOR MAJOR FACILITIES.—

23 (1) PRECONSTRUCTION FUNDING.—The Board
24 shall evaluate the appropriateness of the require-
25 ment that funding for detailed design work and

1 other preconstruction activities for major research
2 equipment and facilities come exclusively from the
3 sponsoring research division rather than being avail-
4 able, at least in part, from the Major Research
5 Equipment and Facilities Construction account.

6 (2) MAINTENANCE AND OPERATION COSTS.—
7 The Board shall evaluate the appropriateness of the
8 Foundation’s policies for allocation of costs for, and
9 oversight of, maintenance and operation of major re-
10 search equipment and facilities.

11 (3) REPORT.—Not later than 6 months after
12 the date of enactment of this Act, the Board shall
13 report on the results of the evaluations under para-
14 graphs (1) and (2) and on any recommendations for
15 modifying the current policies related to allocation of
16 funding for major research equipment and facilities
17 to the Committee on Science and Technology and
18 the Committee on Appropriations of the House of
19 Representatives, and to the Committee on Com-
20 merce, Science, and Transportation, the Committee
21 on Health, Education, Labor, and Pensions, and the
22 Committee on Appropriations of the Senate.

23 (b) INCLUSION OF POLAR FACILITIES UPGRADES IN
24 MAJOR RESEARCH EQUIPMENT AND FACILITIES CON-
25 STRUCTION PLAN.—Section 201(a)(2)(D) of the National

1 Science Foundation Authorization Act of 1998 (42 U.S.C.
2 18621(a)(2)(D)) is amended by inserting “and for major
3 upgrades of facilities in support of Antarctic research pro-
4 grams” after “facilities construction account”.

5 (c) REPORT ON EDUCATION PROGRAMS WITHIN THE
6 RESEARCH DIRECTORATES.—Not later than 6 months
7 after the date of enactment of this Act, the Director shall
8 transmit to the Committee on Science and Technology of
9 the House of Representatives and the Committee on Com-
10 merce, Science, and Transportation and the Committee on
11 Health, Education, Labor, and Pensions of the Senate a
12 report cataloging all elementary and secondary school, in-
13 formal, and undergraduate educational programs and ac-
14 tivities supported through appropriations for Research
15 and Related Activities. The report shall display the pro-
16 grams and activities by directorate, along with estimated
17 funding levels for the fiscal years 2006, 2007, and 2008,
18 and shall provide a description of the goals of each pro-
19 gram and activity. The report shall also describe how the
20 programs and activities relate to or are coordinated with
21 the programs supported by the Education and Human Re-
22 sources Directorate.

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

1 a report listing the funding success rates and distribution
2 of awards for the Research in Undergraduate Institutions
3 program, by type of institution based on the highest aca-
4 demic degree conferred by the institution, for fiscal years
5 2008, 2009, and 2010.

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

8 (1) IN GENERAL.—Not later than 60 days after
9 the date of enactment of legislation providing for the
10 annual appropriation of funds for the Foundation,
11 the Director shall submit to the Committee on
12 Science and Technology and the Committee on Ap-
13 propriations of the House of Representatives, and to
14 the Committee on Commerce, Science, and Trans-
15 portation, the Committee on Health, Education,
16 Labor, and Pensions, and the Committee on Appro-
17 priations of the Senate, a plan for the allocation of
18 education and human resources funds authorized by
19 this title for the corresponding fiscal year, including
20 any funds from within the research and related ac-
21 tivities account used to support activities that have
22 the primary purpose of improving education or
23 broadening participation.

1 (2) SPECIFIC REQUIREMENTS.—The plan shall
2 include a description of how the allocation of fund-
3 ing—

4 (A) will affect the average size and dura-
5 tion of education and human resources grants
6 supported by the Foundation;

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

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

13 (D) will encourage the interest of individ-
14 uals identified in section 33 or 34 of the
15 Science and Engineering Equal Opportunities
16 Act (42 U.S.C. 1885a or 1885b) in mathe-
17 matics, science, engineering, and technology,
18 and help prepare such individuals to pursue
19 postsecondary studies in these fields.

20 **SEC. 316. ADMINISTRATIVE AMENDMENTS.**

21 (a) TRIANNUAL AUDIT OF THE OFFICE OF THE NA-
22 TIONAL SCIENCE BOARD.—Section 15(a) of the National
23 Science Foundation Authorization Act of 2002 (42 U.S.C.
24 4862n–5) is amended—

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

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

5 (3) by inserting after paragraph (4) the fol-
6 lowing new paragraph:

7 “(5) MATERIALS RELATING TO CLOSED POR-
8 TIONS OF MEETINGS.—To facilitate the audit re-
9 quired under paragraph (3) of this subsection, the
10 Office of the National Science Board shall maintain
11 the General Counsel’s certificate, the presiding offi-
12 cer’s statement, and a transcript or recording of any
13 closed meeting, for at least 3 years after such meet-
14 ing.”.

15 (b) LIMITED TERM PERSONNEL FOR THE NATIONAL
16 SCIENCE BOARD.—Subsection (g) of section 4 of the Na-
17 tional Science Foundation Act of 1950 (42 U.S.C.
18 1863(g)) is amended to read as follows:

19 “(g) The Board may, with the concurrence of a ma-
20 jority of its members, permit the appointment of a staff
21 consisting of not more than 5 professional staff members,
22 technical and professional personnel on leave of absence
23 from academic, industrial, or research institutions for a
24 limited term and such operations and support staff mem-
25 bers as may be necessary. Such staff shall be appointed

1 by the Chairman and assigned at the direction of the
2 Board. The professional members and limited term tech-
3 nical and professional personnel of such staff may be ap-
4 pointed without regard to the provisions of title 5, United
5 States Code, governing appointments in the competitive
6 service, and the provisions of chapter 51 of such title relat-
7 ing to classification, and shall be compensated at a rate
8 not exceeding the maximum rate payable under section
9 5376 of such title, as may be necessary to provide for the
10 performance of such duties as may be prescribed by the
11 Board in connection with the exercise of its powers and
12 functions under this Act. Section 14(a)(3) shall apply to
13 each limited term appointment of technical and profes-
14 sional personnel under this subsection. Each appointment
15 under this subsection shall be subject to the same security
16 requirements as those required for personnel of the Foun-
17 dation appointed under section 14(a).”.

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

22 “(c) Up to three awards may be made under this sec-
23 tion in any one fiscal year.”.

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

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

7 **SEC. 318. NATIONAL ACADEMY OF SCIENCE REPORT ON DI-**
8 **VERSITY IN STEM FIELDS.**

9 (a) IN GENERAL.—The Foundation shall enter into
10 an arrangement with the National Academy of Sciences
11 for a report, to be transmitted to the Congress not later
12 than 1 year after the date of enactment of this Act, about
13 barriers to increasing the number of underrepresented mi-
14 norities in science, technology, engineering, and mathe-
15 matics fields and to identify strategies for bringing more
16 underrepresented minorities into the science, technology,
17 engineering, and mathematics workforce.

18 (b) SPECIFIC REQUIREMENTS.—The Director shall
19 ensure that the study described in subsection (a) address—
20 es—

21 (1) social and institutional factors that shape
22 the decisions of minority students to commit to edu-
23 cation and careers in the science, technology, engi-
24 neering, and mathematics fields;

1 (2) specific barriers preventing greater minority
2 student participation in the science, technology, en-
3 gineering, and mathematics fields;

4 (3) primary focus points for policy intervention
5 to increase the recruitment and retention of under-
6 represented minorities in America's future work-
7 force;

8 (4) programs already underway to increase di-
9 versity in the science, technology, engineering, and
10 mathematics fields, and their level of effectiveness;

11 (5) factors that make such programs effective,
12 and how to expand and improve upon existing pro-
13 grams;

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

18 (7) how the public and private sectors can bet-
19 ter assist minority students in their efforts to join
20 America's workforce in these fields.

1 **SEC. 319. SENSE OF THE CONGRESS REGARDING THE**
2 **MATHEMATICS AND SCIENCE PARTNERSHIP**
3 **PROGRAMS OF THE DEPARTMENT OF EDU-**
4 **CATION AND THE NATIONAL SCIENCE FOUN-**
5 **DATION.**

6 It is the sense of the Congress that—

7 (1) although the mathematics and science edu-
8 cation partnership program at the National Science
9 Foundation and the mathematics and science part-
10 nership program at the Department of Education
11 practically share the same name, the 2 programs are
12 intended to be complementary, not duplicative;

13 (2) the National Science Foundation partner-
14 ship programs are innovative, model reform initia-
15 tives that move promising ideas in education from
16 research into practice to improve teacher quality, de-
17 velop challenging curricula, and increase student
18 achievement in mathematics and science, and Con-
19 gress intends that the National Science Foundation
20 peer-reviewed partnership programs found to be ef-
21 fective should be put into wider practice by dissemi-
22 nation through the Department of Education part-
23 nership programs; and

24 (3) the Director of the National Science Foun-
25 dation and the Secretary of Education should have
26 ongoing collaboration to ensure that the 2 compo-

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

4 **SEC. 320. HISPANIC-SERVING INSTITUTIONS UNDER-**
5 **GRADUATE PROGRAM.**

6 (a) IN GENERAL.—The Director is authorized to es-
7 tablish a new program to award grants on a competitive,
8 merit-reviewed basis to Hispanic-serving institutions to
9 enhance the quality of undergraduate science, mathe-
10 matics, engineering, and technology education at such in-
11 stitutions and to increase the retention and graduation
12 rates of students pursuing associate’s or baccalaureate de-
13 grees in science, mathematics, engineering, or technology.

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

16 (1) activities to improve courses and curriculum
17 in science, mathematics, engineering, and tech-
18 nology;

19 (2) faculty development;

20 (3) stipends for undergraduate students partici-
21 pating in research; and

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

1 (c) INSTRUMENTATION.—Funding for instrumenta-
2 tion is an allowed use of grants awarded under this sec-
3 tion.

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

5 (a) GRANT SUPPLEMENTS FOR COMMUNICATIONS
6 TRAINING.—The Director shall provide grant supple-
7 ments, on a competitive, merit-reviewed basis, to institu-
8 tions receiving awards under the Integrative Graduate
9 Education and Research Traineeship program. The
10 grant supplements shall be used to train graduate stu-
11 dents in the communication of the substance and impor-
12 tance of their research to nonscientist audiences, including
13 policymakers.

14 (b) REPORT TO CONGRESS.—Not later than 3 years
15 after the date of enactment of this Act, the Director shall
16 transmit a report to the Committee on Science and Tech-
17 nology of the House of Representatives, and to the Com-
18 mittee on Commerce, Science, and Transportation and the
19 Committee on Health, Education, Labor, and Pensions of
20 the Senate, describing how the activities required under
21 subsection (a) have been implemented. The report shall
22 include data on the number of graduate students trained
23 and the number and size of grant supplements awarded,
24 and a description of the types of activities funded through
25 the grant supplements.

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

4 **SEC. 401. SHORT TITLE.**

5 This title may be cited as the “Technology Innovation
6 and Manufacturing Stimulation Act of 2007”.

7 **Subtitle A—Authorization of**
8 **Appropriations**

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

11 (a) **LABORATORY ACTIVITIES.**—There are authorized
12 to be appropriated to the Secretary of Commerce for the
13 scientific and technical research and services laboratory
14 activities of the National Institute of Standards and Tech-
15 nology—

16 (1) \$470,879,000 for fiscal year 2008;

17 (2) \$497,750,000 for fiscal year 2009; and

18 (3) \$537,569,000 for fiscal year 2010.

19 (b) **MALCOLM BALDRIGE NATIONAL QUALITY**
20 **AWARD PROGRAM.**—There are authorized to be appro-
21 priated to the Secretary of Commerce for the Malcolm
22 Baldrige National Quality Award program under section
23 17 of the Stevenson-Wydler Technology Innovation Act of
24 1980 (15 U.S.C. 3711a)—

25 (1) \$7,860,000 for fiscal year 2008;

1 (2) \$8,096,000 for fiscal year 2009; and

2 (3) \$8,339,000 for fiscal year 2010.

3 (c) CONSTRUCTION AND MAINTENANCE.—There are
4 authorized to be appropriated to the Secretary of Com-
5 merce for construction and maintenance of facilities of the
6 National Institute of Standards and Technology—

7 (1) \$93,865,000 for fiscal year 2008;

8 (2) \$86,371,000 for fiscal year 2009; and

9 (3) \$49,719,000 for fiscal year 2010.

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

11 There are authorized to be appropriated to the Sec-
12 retary of Commerce for Industrial Technology Services ac-
13 tivities of the National Institute of Standards and Tech-
14 nology—

15 (1) \$222,968,000 for fiscal year 2008, of
16 which—

17 (A) \$110,000,000 shall be for the Tech-
18 nology Innovation Program under section 28 of
19 the National Institute of Standards and Tech-
20 nology Act (15 U.S.C. 278n), of which at least
21 \$45,000,000 shall be for new awards; and

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

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

4 (2) \$263,505,000 for fiscal year 2009, of
5 which—

6 (A) \$141,500,000 shall be for the Tech-
7 nology Innovation Program under section 28 of
8 the National Institute of Standards and Tech-
9 nology Act (15 U.S.C. 278n), of which at least
10 \$45,000,000 shall be for new awards; and

11 (B) \$122,005,000 shall be for the Manu-
12 facturing Extension Partnership Program
13 under sections 25 and 26 of the National Insti-
14 tute of Standards and Technology Act (15
15 U.S.C. 278k and 278l), of which not more than
16 \$4,000,000 shall be for the competitive grant
17 program under section 25(f) of such Act; and

18 (3) \$282,266,000 for fiscal year 2010, of
19 which—

20 (A) \$150,500,000 shall be for the Tech-
21 nology Innovation Program under section 28 of
22 the National Institute of Standards and Tech-
23 nology Act (15 U.S.C. 278n), of which at least
24 \$45,000,000 shall be for new awards; and

1 (B) \$131,766,000 shall be for the Manu-
2 facturing Extension Partnership Program
3 under sections 25 and 26 of the National Insti-
4 tute of Standards and Technology Act (15
5 U.S.C. 278k and 278l), of which not more than
6 \$4,000,000 shall be for the competitive grant
7 program under section 25(f) of such Act.

8 **Subtitle B—Innovation and**
9 **Technology Policy Reforms**

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

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

14 “(c) Concurrent with the submission to Congress of
15 the President’s annual budget request in the first year
16 after the date of enactment of the Technology Innovation
17 and Manufacturing Stimulation Act of 2007, the Director
18 shall transmit to the Congress a 3-year programmatic
19 planning document for the Institute, including programs
20 under the Scientific and Technical Research and Services,
21 Industrial Technology Services, and Construction of Re-
22 search Facilities functions.

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

1 Manufacturing Stimulation Act of 2007, the Director shall
2 transmit to the Congress an update to the 3-year pro-
3 grammatic planning document transmitted under sub-
4 section (c), revised to cover the first 3 fiscal years after
5 the date of that update.”.

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

7 Section 10(h)(1) of the National Institute of Stand-
8 ards and Technology Act (15 U.S.C. 278(h)(1)) is amend-
9 ed—

10 (1) by striking “on or before January 31 in
11 each year” and inserting “within 30 days after the
12 submission to Congress of the President’s annual
13 budget request in each year”; and

14 (2) by adding to the end the following: “Such
15 report also shall comment on the programmatic
16 planning document and updates thereto transmitted
17 to the Congress by the Director under section 23(c)
18 and (d).”.

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

20 (a) MEP ADVISORY BOARD.—Section 25 of the Na-
21 tional Institute of Standards and Technology Act (15
22 U.S.C. 278k) is amended by adding at the end the fol-
23 lowing new subsection:

24 “(e) MEP ADVISORY BOARD.—(1) There is estab-
25 lished within the Institute a Manufacturing Extension

1 Partnership Advisory Board (in this Act referred to as the
2 ‘MEP Advisory Board’). The MEP Advisory Board shall
3 consist of 10 members broadly representative of stake-
4 holders, to be appointed by the Director. At least 2 mem-
5 bers shall be employed by or on an advisory board for the
6 Centers, and at least 5 other members shall be from
7 United States small businesses in the manufacturing sec-
8 tor. No member shall be an employee of the Federal Gov-
9 ernment.

10 “(2)(A) Except as provided in subparagraph (B) or
11 (C), the term of office of each member of the MEP Advi-
12 sory Board shall be 3 years.

13 “(B) The original members of the MEP Advisory
14 Board shall be appointed to 3 classes. One class of 3 mem-
15 bers shall have an initial term of 1 year, one class of 3
16 members shall have an initial term of 2 years, and one
17 class of 4 members shall have an initial term of 3 years.

18 “(C) Any member appointed to fill a vacancy occur-
19 ring prior to the expiration of the term for which his pred-
20 ecessor was appointed shall be appointed for the remain-
21 der of such term.

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

1 year period following the expiration of the second such
2 term.

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

5 “(A) advice on Manufacturing Extension Part-
6 nership programs, plans, and policies;

7 “(B) assessments of the soundness of Manufac-
8 turing Extension Partnership plans and strategies;
9 and

10 “(C) assessments of current performance
11 against Manufacturing Extension Partnership pro-
12 gram plans.

13 “(4) In discharging its duties under this subsection,
14 the MEP Advisory Board shall function solely in an advi-
15 sory capacity, in accordance with the Federal Advisory
16 Committee Act.

17 “(5) The MEP Advisory Board shall transmit an an-
18 nual report to the Secretary for transmittal to the Con-
19 gress within 30 days after the submission to the Congress
20 of the President’s annual budget request in each year.
21 Such report shall address the status of the Manufacturing
22 Extension Partnership program and comment on the rel-
23 evant sections of the programmatic planning document
24 and updates thereto transmitted to the Congress by the
25 Director under section 23(c) and (d).”

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

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

14 (c) MANUFACTURING EXTENSION CENTER COMPETI-
15 TIVE GRANT PROGRAM.—Section 25 of the National Insti-
16 tute of Standards and Technology Act (15 U.S.C. 278k),
17 as amended by subsection (a) of this section, is further
18 amended by adding at the end the following new sub-
19 section:

20 “(f) COMPETITIVE GRANT PROGRAM.—

21 “(1) ESTABLISHMENT.—The Director shall es-
22 tablish, within the Manufacturing Extension Part-
23 nership program under this section and section 26
24 of this Act, a program of competitive awards among

1 participants described in paragraph (2) for the pur-
2 poses described in paragraph (3).

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

6 “(3) PURPOSE.—The purpose of the program
7 under this subsection is to develop projects to solve
8 new or emerging manufacturing problems as deter-
9 mined by the Director, in consultation with the Di-
10 rector of the Manufacturing Extension Partnership
11 program, the Manufacturing Extension Partnership
12 Advisory Board, and small and medium-sized manu-
13 facturers. One or more themes for the competition
14 may be identified, which may vary from year to year,
15 depending on the needs of manufacturers and the
16 success of previous competitions. These themes shall
17 be related to projects associated with manufacturing
18 extension activities, including supply chain integra-
19 tion and quality management, and including the
20 transfer of technology based on the technological
21 needs of manufacturers and available technologies
22 from institutions of higher education, laboratories,
23 and other technology producing entities, or extend
24 beyond these traditional areas.

1 “(4) APPLICATIONS.—Applications for awards
2 under this subsection shall be submitted in such
3 manner, at such time, and containing such informa-
4 tion as the Director shall require, in consultation
5 with the Manufacturing Extension Partnership Advi-
6 sory Board.

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

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

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

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

19 “(6) PROGRAM CONTRIBUTION.—Recipients of
20 awards under this subsection shall not be required
21 to provide a matching contribution.”.

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

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

1 “TECHNOLOGY INNOVATION PROGRAM

2 “SEC. 28. (a) ESTABLISHMENT.—There is estab-
3 lished in the Institute a Technology Innovation Program
4 for the purpose of assisting United States businesses and
5 institutions of higher education or other organizations,
6 such as national laboratories and nonprofit research insti-
7 tutes, to accelerate the research and development and ap-
8 plication of challenging, high-risk, high-reward tech-
9 nologies in areas of critical national need that promise
10 widespread economic benefits for the Nation.

11 “(b) GRANTS.—

12 “(1) IN GENERAL.—The Director shall make
13 grants under this section for research and develop-
14 ment on high-risk, high-reward emerging and ena-
15 bling technologies (including any technological appli-
16 cation that uses biological systems, living organisms,
17 or derivatives thereof, to make or modify products or
18 processes for specific use) that address critical na-
19 tional needs and have a wide breadth of potential
20 application, and form an important technical basis
21 for future innovations. Such grants shall be made
22 to—

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

1 including having a leadership role in program-
2 matically steering the project and defining the
3 research agenda; or

4 “(B) joint ventures.

5 “(2) SINGLE COMPANY GRANTS.—No grant
6 made under paragraph (1)(A) shall exceed
7 \$3,000,000 over 3 years. The Federal share of a
8 project funded by such a grant shall not be more
9 than 50 percent of total project costs. An award
10 under paragraph (1)(A) may be extended beyond 3
11 years only if the Director transmits to the Com-
12 mittee on Science and Technology of the House of
13 Representatives and the Committee on Commerce,
14 Science, and Transportation of the Senate a full and
15 complete explanation of such award, including rea-
16 sons for exceeding 3 years. Federal funds granted
17 under paragraph (1)(A) may be used only for direct
18 costs and not for indirect costs, profits, or manage-
19 ment fees of a contractor.

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

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

3 “(1) whose proposal has scientific and techno-
4 logical merit;

5 “(2) whose application establishes that the pro-
6 posed technology has strong potential to generate
7 substantial benefits to the Nation that extend sig-
8 nificantly beyond the direct return to the applicant;

9 “(3) whose application establishes that the re-
10 search has strong potential for advancing the state-
11 of-the-art and contributing significantly to the
12 United States scientific and technical knowledge
13 base;

14 “(4) whose application establishes that the re-
15 search is aimed at overcoming a scientific or techno-
16 logical barrier;

17 “(5) who has provided a technical plan that
18 clearly identifies the core innovation, the technical
19 approach, major technical hurdles, and the attend-
20 ant risks, and that clearly establishes the feasibility
21 of the technology through adequately detailed plans
22 linked to major technical barriers;

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

1 search and development, has a high level of commit-
2 ment to the project, and has access to appropriate
3 research facilities;

4 “(7) whose proposal explains why Technology
5 Innovation Program support is necessary;

6 “(8) whose application includes a plan for ad-
7 vancing the technology into commercial use; and

8 “(9) whose application assesses the project’s or-
9 ganizational structure and management plan.

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

18 “(e) INTELLECTUAL PROPERTY RIGHTS OWNER-
19 SHIP.—

20 “(1) IN GENERAL.—Title to any intellectual
21 property developed by a joint venture from assist-
22 ance provided under this section may vest in any
23 participant in the joint venture, as agreed by the
24 members of the joint venture, notwithstanding sec-
25 tion 202(a) and (b) of title 35, United States Code.

1 The United States may reserve a nonexclusive, non-
2 transferable, irrevocable paid-up license, to have
3 practiced for or on behalf of the United States in
4 connection with any such intellectual property, but
5 shall not in the exercise of such license publicly dis-
6 close proprietary information related to the license.
7 Title to any such intellectual property shall not be
8 transferred or passed, except to a participant in the
9 joint venture, until the expiration of the first patent
10 obtained in connection with such intellectual prop-
11 erty.

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

16 “(3) DEFINITION.—For purposes of this sub-
17 section, the term ‘intellectual property’ means an in-
18 vention patentable under title 35, United States
19 Code, or any patent on such an invention, or any
20 work for which copyright protection is available
21 under title 17, United States Code.

22 “(f) PROGRAM OPERATION.—Not later than 9
23 months after the date of enactment of the Technology In-
24 novation and Manufacturing Stimulation Act of 2007, the
25 Director shall issue regulations—

1 “(1) establishing criteria for the selection of re-
2 cipients of assistance under this section;

3 “(2) establishing procedures regarding financial
4 reporting and auditing to ensure that contracts and
5 awards are used for the purposes specified in this
6 section, are in accordance with sound accounting
7 practices, and are not funding existing or planned
8 research programs that would be conducted in the
9 same time period in the absence of financial assist-
10 ance under this section; and

11 “(3) providing for appropriate dissemination of
12 Technology Innovation Program research results.

13 “(g) CONTINUATION OF ATP GRANTS.—The Direc-
14 tor shall, through the Technology Innovation Program,
15 continue to provide support originally awarded under the
16 Advanced Technology Program, in accordance with the
17 terms of the original award.

18 “(h) COORDINATION WITH OTHER STATE AND FED-
19 ERAL TECHNOLOGY PROGRAMS.—In carrying out this sec-
20 tion, the Director shall, as appropriate, coordinate with
21 other senior State and Federal officials to ensure coopera-
22 tion and coordination in State and Federal technology pro-
23 grams and to avoid unnecessary duplication of efforts.

24 “(i) ACCEPTANCE OF FUNDS FROM OTHER FED-
25 ERAL AGENCIES.—In addition to amounts appropriated to

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

7 “(j) TIP ADVISORY BOARD.—

8 “(1) ESTABLISHMENT.—There is established
9 within the Institute a Technology Innovation Pro-
10 gram Advisory Board. The TIP Advisory Board
11 shall consist of 10 members appointed by the Direc-
12 tor, at least 7 of which shall be from United States
13 industry, chosen to reflect the wide diversity of tech-
14 nical disciplines and industrial sectors represented in
15 Technology Innovation Program projects. No mem-
16 ber shall be an employee of the Federal Government.

17 “(2) TERMS OF OFFICE.—(A) Except as pro-
18 vided in subparagraph (B) or (C), the term of office
19 of each member of the TIP Advisory Board shall be
20 3 years.

21 “(B) The original members of the TIP Advisory
22 Board shall be appointed to 3 classes. One class of
23 3 members shall have an initial term of 1 year, one
24 class of 3 members shall have an initial term of 2

1 years, and one class of 4 members shall have an ini-
2 tial term of 3 years.

3 “(C) Any member appointed to fill a vacancy
4 occurring prior to the expiration of the term for
5 which his predecessor was appointed shall be ap-
6 pointed for the remainder of such term.

7 “(D) Any person who has completed two con-
8 secutive full terms of service on the TIP Advisory
9 Board shall thereafter be ineligible for appointment
10 during the one-year period following the expiration
11 of the second such term.

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

15 “(A) advice on programs, plans, and poli-
16 cies of the Technology Innovation Program;

17 “(B) reviews of the Technology Innovation
18 Program’s efforts to assess its economic impact;

19 “(C) reports on the general health of the
20 program and its effectiveness in achieving its
21 legislatively mandated mission;

22 “(D) guidance on areas of technology that
23 are appropriate for Technology Innovation Pro-
24 gram funding; and

1 “(E) recommendations as to whether, in
2 order to better assess whether specific innova-
3 tions to be pursued are being adequately sup-
4 ported by the private sector, the Director could
5 benefit from advice and information from addi-
6 tional industry and other expert sources without
7 a proprietary or financial interest in proposals
8 being evaluated.

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

14 “(5) ANNUAL REPORT.—The TIP Advisory
15 Board shall transmit an annual report to the Sec-
16 retary for transmittal to the Congress within 30
17 days after the submission to Congress of the Presi-
18 dent’s annual budget request in each year. Such re-
19 port shall address the status of the Technology In-
20 novation Program and comment on the relevant sec-
21 tions of the programmatic planning document and
22 updates thereto transmitted to the Congress by the
23 Director under section 23(e) and (d).

24 “(k) DEFINITIONS.—For purposes of this section—

1 “(1) the term ‘eligible company’ means a com-
2 pany that is incorporated in the United States and
3 does a majority of its business in the United States,
4 and that either—

5 “(A) is majority owned by citizens of the
6 United States; or

7 “(B) is owned by a parent company incor-
8 porated in another country and the Director
9 finds that—

10 “(i) the company’s participation in the
11 Technology Innovation Program would be
12 in the economic interest of the United
13 States, as evidenced by—

14 “(I) investments in the United
15 States in research and manufacturing
16 (including the manufacture of major
17 components or subassemblies in the
18 United States);

19 “(II) significant contributions to
20 employment in the United States; and

21 “(III) agreement with respect to
22 any technology arising from assistance
23 provided under this section to promote
24 the manufacture within the United
25 States of products resulting from that

1 technology (taking into account the
2 goals of promoting the competitive-
3 ness of United States industry); and

4 “(ii) the company is incorporated in a
5 country which—

6 “(I) affords to United States-
7 owned companies opportunities, com-
8 parable to those afforded to any other
9 company, to participate in any joint
10 venture similar to those receiving
11 funding under this section;

12 “(II) affords to United States-
13 owned companies local investment op-
14 portunities comparable to those af-
15 forded any other company; and

16 “(III) affords adequate and effec-
17 tive protection for the intellectual
18 property rights of United States-
19 owned companies;

20 “(2) the term ‘high-risk, high-reward research’
21 means research that—

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

1 “(B) addresses critical national needs re-
2 lated to technology and measurement stand-
3 ards; and

4 “(C) is too novel or spans too diverse a
5 range of disciplines to fare well in the tradi-
6 tional peer review process.

7 “(3) the term ‘institution of higher education’
8 has the meaning given that term in section 101 of
9 the Higher Education Act of 1965 (20 U.S.C.
10 1001);

11 “(4) the term ‘joint venture’ means a joint ven-
12 ture that—

13 “(A) includes either—

14 “(i) at least 2 separately owned for-
15 profit companies that are both substan-
16 tially involved in the project and both of
17 which are contributing to the cost-sharing
18 required under this section, with the lead
19 entity of the joint venture being one of
20 those companies that is a small or me-
21 dium-sized business; or

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

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

8 “(B) may include additional for-profit com-
9 panies, institutions of higher education, and
10 other organizations, such as national labora-
11 tories and nonprofit research institutes, that
12 may or may not contribute non-Federal funds
13 to the project; and

14 “(5) the term ‘TIP Advisory Board’ means the
15 advisory board established under subsection (j).”.

16 **SEC. 425. RESEARCH FELLOWSHIPS.**

17 Section 18 of the National Institute of Standards and
18 Technology Act (15 U.S.C. 278g-1) is amended by striking
19 “up to 1 per centum of the” and inserting “up to 1.5 per-
20 cent of the”.

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

23 The National Institute of Standards and Technology
24 Act is amended—

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

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

6 **“SEC. 33. COLLABORATIVE MANUFACTURING RESEARCH**
7 **PILOT GRANTS.**

8 “(a) AUTHORITY.—

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

14 “(2) PARTICIPANTS.—Such partnerships shall
15 include at least—

16 “(A) 1 manufacturing industry partner;
17 and

18 “(B) 1 nonindustry partner.

19 “(3) PURPOSE.—The purpose of the program
20 under this section is to foster cost-shared collabora-
21 tions among firms, educational institutions, research
22 institutions, State agencies, and nonprofit organiza-
23 tions to encourage the development of innovative,
24 multidisciplinary manufacturing technologies. Part-
25 nerships receiving awards under this section shall

1 conduct applied research to develop new manufac-
2 turing processes, techniques, or materials that would
3 contribute to improved performance, productivity,
4 and competitiveness of United States manufacturing,
5 and build lasting alliances among collaborators.

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

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

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

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

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

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

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

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

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

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

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

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

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

22 (1) by inserting “(a) IN GENERAL.—” before
23 “The Director is authorized”; and

24 (2) by adding at the end the following new sub-
25 section:

1 “(b) MANUFACTURING FELLOWSHIP PROGRAM.—

2 “(1) ESTABLISHMENT.—To promote the devel-
3 opment of a robust research community working at
4 the leading edge of manufacturing sciences, the Di-
5 rector shall establish a program to award—

6 “(A) postdoctoral research fellowships at
7 the Institute for research activities related to
8 manufacturing sciences; and

9 “(B) senior research fellowships to estab-
10 lished researchers in industry or at institutions
11 of higher education who wish to pursue studies
12 related to the manufacturing sciences at the In-
13 stitute.

14 “(2) APPLICATIONS.—To be eligible for an
15 award under this subsection, an individual shall sub-
16 mit an application to the Director at such time, in
17 such manner, and containing such information as
18 the Director may require.

19 “(3) STIPEND LEVELS.—Under this subsection,
20 the Director shall provide stipends for postdoctoral
21 research fellowships at a level consistent with the
22 National Institute of Standards and Technology
23 Postdoctoral Research Fellowship Program, and sen-
24 ior research fellowships at levels consistent with sup-
25 port for a faculty member in a sabbatical position.”.

1 **SEC. 428. MEETINGS OF VISITING COMMITTEE ON AD-**
2 **VANCED TECHNOLOGY.**

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

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

7 (a) ESTABLISHMENT.—The National Institute of
8 Standards and Technology shall provide for the establish-
9 ment of a manufacturing research database to enable pri-
10 vate sector individuals and Federal officials to access a
11 broad range of information on manufacturing research
12 carried out with funding support from the Federal Gov-
13 ernment.

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

16 (1) all publicly available information maintained
17 by a Federal agency relating to manufacturing re-
18 search projects funded in whole or in part by the
19 Federal Government; and

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

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

1 (d) FEES.—The National Institute of Standards and
2 Technology may authorize charging a nominal fee for
3 using the database to access information described in sub-
4 section (b)(1) as necessary to recover the costs of main-
5 taining the database.

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

10 **Subtitle C—Miscellaneous**

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

12 Section 19 of the National Institute of Standards and
13 Technology Act (15 U.S.C. 278g–2) is amended by strik-
14 ing “nor more than 60 new fellows” and inserting “nor
15 more than 120 new fellows”.

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

17 Section 2(b)(4) of the National Institute of Stand-
18 ards and Technology Act (15 U.S.C. 272(b)(4)) is amend-
19 ed by inserting “and grants and cooperative agreements,”
20 after “arrangements,”.

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

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

1 “(g) AMOUNT AND SOURCE OF TRANSFERS.—Not
2 more than one-quarter of one percent of the amounts ap-
3 propriated to the Institute for any fiscal year may be
4 transferred to the fund, in addition to any other transfer
5 authority. In addition, funds provided to the Institute
6 from other Federal agencies for the purpose of production
7 of Standard Reference Materials may be transferred to the
8 fund.”.

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

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

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

14 (2) by adding at the end the following:

15 “(b) RETENTION OF FEES.—The Director is author-
16 ized to retain all building use and depreciation surcharge
17 fees collected pursuant to OMB Circular A-25. Such fees
18 shall be collected and credited to the Construction of Re-
19 search Facilities Appropriation Account for use in mainte-
20 nance and repair of the Institute’s existing facilities.”.

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

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

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

2 Section 3570 of the Revised Statutes of the United
3 States (derived from section 2 of the Act of July 28, 1866,
4 entitled “An Act to authorize the Use of the Metric Sys-
5 tem of Weights and Measures” (15 U.S.C. 205; 14 Stat.
6 339)) is amended to read as follows:

7 **“SEC. 3570. METRIC SYSTEM DEFINED.**

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

14 **SEC. 447. REPEAL OF REDUNDANT AND OBSOLETE AU-**
15 **THORITY.**

16 The Act of July 21, 1950, entitled “An Act To rede-
17 fine the units and establish the standards of electrical and
18 photometric measurements” (15 U.S.C. 223 and 224) is
19 repealed.

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

22 (a) Section 1 of the Act of March 19, 1918, (com-
23 monly known as the “Calder Act”) (15 U.S.C. 261) is
24 amended—

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

1 vided in section 3(a) of the Uniform Time Act of
2 1966 (15 U.S.C. 260a), the standard time of the
3 first zone shall be Coordinated Universal Time re-
4 tarded by 4 hours; that of the second zone retarded
5 by 5 hours; that of the third zone retarded by 6
6 hours; that of the four zone retarded by 7 hours;
7 that of the fifth zone retarded by 8 hours; that of
8 the sixth zone retarded by 9 hours; that of the sev-
9 enth zone retarded by 10 hours; that of the eighth
10 zone retarded by 11 hours; and that of the ninth
11 zone shall be Coordinated Universal Time advanced
12 by 10 hours.”; and

13 (2) by adding at the end the following: “In this
14 section, the term ‘Coordinated Universal Time’
15 means the time scale maintained through the Gen-
16 eral Conference of Weights and Measures and inter-
17 preted or modified for the United States by the Sec-
18 retary of Commerce in coordination with the Sec-
19 retary of the Navy.”.

20 (b) Section 3 of the Act of March 19, 1918, (com-
21 monly known as the “Calder Act”) (15 U.S.C. 264) is
22 amended by striking “third zone” and inserting “fourth
23 zone”.

1 **SEC. 449. PROCUREMENT OF TEMPORARY AND INTERMIT-**
2 **TENT SERVICES.**

3 (a) IN GENERAL.—The Director of the National In-
4 stitute of Standards and Technology may procure the tem-
5 porary or intermittent services of experts or consultants
6 (or organizations thereof) in accordance with section
7 3109(b) of title 5, United States Code to assist on urgent
8 or short-term research projects.

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

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

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

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

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

1 “(C) provide for sustained access by the re-
2 search community in the United States to high-per-
3 formance computing systems that are among the
4 most advanced in the world in terms of performance
5 in solving scientific and engineering problems, in-
6 cluding provision for technical support for users of
7 such systems;

8 “(D) provide for efforts to increase software
9 availability, productivity, capability, security, port-
10 ability, and reliability;

11 “(E) provide for high-performance networks, in-
12 cluding experimental testbed networks, to enable re-
13 search and development on, and demonstration of,
14 advanced applications enabled by such networks;

15 “(F) provide for computational science and en-
16 gineering research on mathematical modeling and al-
17 gorithms for applications in all fields of science and
18 engineering;

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

23 “(H) provide for educating and training addi-
24 tional undergraduate and graduate students in soft-
25 ware engineering, computer science, computer and

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

3 “(I) provide for improving the security of com-
4 puting and networking systems, including Federal
5 systems, including research required to establish se-
6 curity standards and practices for these systems.”;

7 (B) by striking paragraph (2) and redesign-
8 ating paragraphs (3) and (4) as paragraphs
9 (2) and (3), respectively;

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

12 (i) by striking subparagraph (B);

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

16 (iii) by inserting before subparagraph
17 (D), as so redesignated by clause (ii) of
18 this subparagraph, the following new sub-
19 paragraphs:

20 “(A) establish the goals and priorities for Fed-
21 eral high-performance computing research, develop-
22 ment, networking, and other activities;

23 “(B) establish Program Component Areas that
24 implement the goals established under subparagraph

1 (A), and identify the Grand Challenges that the Pro-
2 gram should address;

3 “(C) provide for interagency coordination of
4 Federal high-performance computing research, devel-
5 opment, networking, and other activities undertaken
6 pursuant to the Program;”; and

7 (iv) by inserting after subparagraph
8 (D), as so redesignated by clause (ii) of
9 this subparagraph, the following new sub-
10 paragraph:

11 “(E) develop and maintain a research, develop-
12 ment, and deployment roadmap for the provision of
13 high-performance computing systems under para-
14 graph (1)(C); and”; and

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

17 (i) by striking “paragraph (3)(A)”
18 and inserting “paragraph (2)(D)”; and

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

21 “(A) provide a detailed description of the Pro-
22 gram Component Areas, including a description of
23 any changes in the definition of or activities under
24 the Program Component Areas from the preceding
25 report, and the reasons for such changes, and a de-

1 description of Grand Challenges supported under the
2 Program;”;

3 (iii) in subparagraph (C), by striking
4 “specific activities” and all that follows
5 through “the Network” and inserting
6 “each Program Component Area”;

7 (iv) in subparagraph (D), by inserting
8 “and for each Program Component Area”
9 after “participating in the Program”;

10 (v) in subparagraph (D), by striking
11 “applies;” and inserting “applies; and”;

12 (vi) by striking subparagraph (E) and
13 redesignating subparagraph (F) as sub-
14 paragraph (E); and

15 (vii) in subparagraph (E), as so reded-
16 icated by clause (vi) of this subpara-
17 graph, by inserting “and the extent to
18 which the Program incorporates the rec-
19 ommendations of the advisory committee
20 established under subsection (b)” after
21 “for the Program”;

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

24 “(b) ADVISORY COMMITTEE.—(1) The President
25 shall establish an advisory committee on high-performance

1 computing consisting of non-Federal members, including
2 representatives of the research, education, and library
3 communities, network providers, and industry, who are
4 specially qualified to provide the Director with advice and
5 information on high-performance computing. The rec-
6 ommendations of the advisory committee shall be consid-
7 ered in reviewing and revising the Program. The advisory
8 committee shall provide the Director with an independent
9 assessment of—

10 “(A) progress made in implementing the Pro-
11 gram;

12 “(B) the need to revise the Program;

13 “(C) the balance between the components of the
14 Program, including funding levels for the Program
15 Component Areas;

16 “(D) whether the research and development un-
17 dertaken pursuant to the Program is helping to
18 maintain United States leadership in high-perform-
19 ance computing and networking technology; and

20 “(E) other issues identified by the Director.

21 “(2) In addition to the duties outlined in paragraph
22 (1), the advisory committee shall conduct periodic evalua-
23 tions of the funding, management, coordination, imple-
24 mentation, and activities of the Program, and shall report
25 not less frequently than once every two fiscal years to the

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

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

9 (4) in section 101(c)(1)(A), by striking “Pro-
10 gram or” and inserting “Program Component Areas
11 or”.

12 **SEC. 502. DEFINITIONS.**

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

15 (1) in paragraph (2), by inserting “and multi-
16 disciplinary teams of researchers” after “high-per-
17 formance computing resources”;

18 (2) in paragraph (3)—

19 (A) by striking “scientific workstations,”;

20 (B) by striking “(including vector super-
21 computers and large scale parallel systems)”;

22 (C) by striking “and applications” and in-
23 serting “applications”; and

24 (D) by inserting “, and the management of
25 large data sets” after “systems software”;

1 (3) in paragraph (4), by striking “packet
2 switched”;

3 (4) by striking “and” at the end of paragraph
4 (5);

5 (5) by striking the period at the end of para-
6 graph (6) and inserting “; and”; and

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

9 “(7) ‘Program Component Areas’ means the
10 major subject areas under which are grouped related
11 individual projects and activities carried out under
12 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.