

In the Senate of the United States,

November 14, 2002.

Resolved, That the bill from the House of Representatives (H.R. 4664) entitled “An Act to authorize appropriations for fiscal years 2003, 2004, and 2005 for the National Science Foundation, and for other purposes.”, do pass with the following

AMENDMENTS:

Strike out all after the enacting clause and insert:

1 ***SECTION 1. SHORT TITLE.***

2 *This Act may be cited as the “National Science Foun-*
3 *ation Authorization Act of 2002”.*

1 **SEC. 2. FINDINGS.**

2 *Congress finds the following:*

3 *(1) The National Science Foundation has made*
4 *major contributions for more than 50 years to*
5 *strengthen and sustain the Nation's academic research*
6 *enterprise that is the envy of the world.*

7 *(2) The economic strength and national security*
8 *of the United States and the quality of life of all*
9 *Americans are grounded in the Nation's scientific and*
10 *technological capabilities.*

11 *(3) The National Science Foundation carries out*
12 *important functions in supporting basic research in*
13 *all science and engineering disciplines and in sup-*
14 *porting science, mathematics, engineering, and tech-*
15 *nology education at all levels.*

16 *(4) The research and education activities of the*
17 *National Science Foundation promote the discovery,*
18 *integration, dissemination, and application of new*
19 *knowledge in service to society and prepare future*
20 *generations of scientists, mathematicians, and engi-*
21 *neers who will be necessary to ensure America's lead-*
22 *ership in the global marketplace.*

23 *(5) The National Science Foundation must be*
24 *provided with sufficient resources to enable it to carry*
25 *out its responsibilities to develop intellectual capital,*
26 *strengthen the scientific infrastructure, integrate re-*

1 *search and education, enhance the delivery of mathe-*
2 *matics and science education in the United States,*
3 *and improve the technological literacy of all people in*
4 *the United States.*

5 *(6) The emerging global economic, scientific, and*
6 *technical environment challenges long-standing as-*
7 *sumptions about domestic and international policy,*
8 *requiring the National Science Foundation to play a*
9 *more proactive role in sustaining the competitive ad-*
10 *vantage of the United States through superior re-*
11 *search capabilities.*

12 *(7) Commercial application of the results of Fed-*
13 *eral investment in basic and computing science is*
14 *consistent with longstanding United States technology*
15 *transfer policy and is a critical national priority,*
16 *particularly with regard to cybersecurity and other*
17 *homeland security applications, because of the urgent*
18 *needs of commercial, academic, and individual users*
19 *as well as the Federal and State Governments.*

20 **SEC. 3. POLICY OBJECTIVES.**

21 *In allocating resources made available under section*
22 *5, the Foundation shall have the following policy objectives:*

23 *(1) To strengthen the Nation's lead in science*
24 *and technology by—*

1 (A) increasing the national investment in
2 general scientific research and increasing invest-
3 ment in strategic areas;

4 (B) balancing the Nation's research port-
5 folio among the life sciences, mathematics, the
6 physical sciences, computer and information
7 science, geoscience, engineering, and social, be-
8 havioral, and economic sciences, all of which are
9 important for the continued development of ena-
10 bling technologies necessary for sustained inter-
11 national competitiveness;

12 (C) expanding the pool of scientists and en-
13 gineers in the United States;

14 (D) modernizing the Nation's research in-
15 frastructure; and

16 (E) establishing and maintaining coopera-
17 tive international relationships with premier re-
18 search institutions, with the goal of such rela-
19 tionships being the exchange of personnel, data,
20 and information in an effort to alleviate prob-
21 lems common to the global community.

22 (2) To increase overall workforce skills by—

23 (A) improving the quality of mathematics
24 and science education, particularly in kinder-
25 garten through grade 12;

1 (B) promoting access to information tech-
2 nology for all students;

3 (C) raising postsecondary enrollment rates
4 in science, mathematics, engineering, and tech-
5 nology disciplines for individuals identified in
6 section 33 or 34 of the Science and Engineering
7 Equal Opportunities Act (42 U.S.C. 1885a or
8 1885b);

9 (D) increasing access to higher education in
10 science, mathematics, engineering, and tech-
11 nology fields for students from low-income house-
12 holds; and

13 (E) expanding science, mathematics, engi-
14 neering, and technology training opportunities
15 at institutions of higher education.

16 (3) To strengthen innovation by expanding the
17 focus of competitiveness and innovation policy at the
18 regional and local level.

19 **SEC. 4. DEFINITIONS.**

20 *In this Act:*

21 (1) **ACADEMIC UNIT.**—The term “academic unit”
22 means a department, division, institute, school, col-
23 lege, or other subcomponent of an institution of higher
24 education.

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

5 (3) *COMMUNITY COLLEGE.*—*The term “commu-*
6 *nity college” has the meaning given such term in sec-*
7 *tion 3301(3) of the Elementary and Secondary Edu-*
8 *cation Act of 1965 (20 U.S.C. 7011(3)).*

9 (4) *DIRECTOR.*—*The term “Director” means the*
10 *Director of the National Science Foundation estab-*
11 *lished under section 2 of the National Science Foun-*
12 *dation Act of 1950 (42 U.S.C. 1861).*

13 (5) *ELEMENTARY SCHOOL.*—*The term “elemen-*
14 *tary school” has the meaning given that term by sec-*
15 *tion 9101(18) of the Elementary and Secondary Edu-*
16 *cation Act of 1965 (20 U.S.C. 7801(18)).*

17 (6) *ELIGIBLE NONPROFIT ORGANIZATION.*—*The*
18 *term “eligible nonprofit organization” means a non-*
19 *profit research institute, or a nonprofit professional*
20 *association, with demonstrated experience and effec-*
21 *tiveness in mathematics or science education as deter-*
22 *mined by the Director.*

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

1 *under section 2 of the National Science Foundation*
2 *Act of 1950 (42 U.S.C. 1861).*

3 (8) *HIGH-NEED LOCAL EDUCATIONAL AGENCY.*—

4 *The term “high-need local educational agency” means*
5 *a local educational agency that meets one or more of*
6 *the following criteria:*

7 (A) *It has at least one school in which 50*
8 *percent or more of the enrolled students are eligi-*
9 *ble for participation in the free and reduced*
10 *price lunch program established by the Richard*
11 *B. Russell National School Lunch Act (42 U.S.C.*
12 *1751 et seq.).*

13 (B) *It has at least one school in which—*

14 (i) *more than 34 percent of the aca-*
15 *ademic classroom teachers at the secondary*
16 *level (across all academic subjects) do not*
17 *have an undergraduate degree with a major*
18 *or minor in, or a graduate degree in, the*
19 *academic field in which they teach the larg-*
20 *est percentage of their classes; or*

21 (ii) *more than 34 percent of the teach-*
22 *ers in two of the academic departments do*
23 *not have an undergraduate degree with a*
24 *major or minor in, or a graduate degree in,*

1 *the academic field in which they teach the*
2 *largest percentage of their classes.*

3 *(C) It has at least one school whose teacher*
4 *attrition rate has been 15 percent or more over*
5 *the last three school years.*

6 *(9) INSTITUTION OF HIGHER EDUCATION.—The*
7 *term “institution of higher education” has the mean-*
8 *ing given such term in section 101(a) of the Higher*
9 *Education Act of 1965 (20 U.S.C. 1001(a)).*

10 *(10) LOCAL EDUCATIONAL AGENCY.—The term*
11 *“local educational agency” has the meaning given*
12 *such term by section 9101(26) of the Elementary and*
13 *Secondary Education Act of 1965 (20 U.S.C.*
14 *7801(26)).*

15 *(11) MASTER TEACHER.—The term “master*
16 *teacher” means a mathematics or science teacher who*
17 *works to improve the instruction of mathematics or*
18 *science in kindergarten through grade 12 through—*

19 *(A) participating in the development or re-*
20 *vision of science, mathematics, engineering, or*
21 *technology curricula;*

22 *(B) serving as a mentor to mathematics or*
23 *science teachers;*

24 *(C) coordinating and assisting teachers in*
25 *the use of hands-on inquiry materials, equip-*

1 *ment, and supplies, and when appropriate, su-*
2 *pervising acquisition and repair of such mate-*
3 *rials;*

4 *(D) providing in-classroom teaching assist-*
5 *ance to mathematics or science teachers; and*

6 *(E) providing professional development, in-*
7 *cluding for the purposes of training other master*
8 *teachers, to mathematics and science teachers.*

9 (12) *NATIONAL RESEARCH FACILITY.*—*The term*
10 *“national research facility” means a research facility*
11 *funded by the Foundation which is available, subject*
12 *to appropriate policies allocating access, for use by all*
13 *scientists and engineers affiliated with research insti-*
14 *tutions located in the United States.*

15 (13) *SECONDARY SCHOOL.*—*The term “secondary*
16 *school” has the meaning given that term by section*
17 *9101(38) of the Elementary and Secondary Edu-*
18 *cation Act of 1965 (20 U.S.C. 7801(38)).*

19 (14) *STATE.*—*Except with respect to the Experi-*
20 *mental Program to Stimulate Competitive Research,*
21 *the term “State” means one of the several States, the*
22 *District of Columbia, the Commonwealth of Puerto*
23 *Rico, the Virgin Islands, Guam, American Samoa,*
24 *the Commonwealth of the Northern Mariana Islands,*

1 *or any other territory or possession of the United*
2 *States.*

3 (15) *STATE EDUCATIONAL AGENCY.*—*The term*
4 *“State educational agency” has the meaning given*
5 *such term by section 9101(41) of the Elementary and*
6 *Secondary Education Act of 1965 (20 U.S.C.*
7 *7801(41)).*

8 (16) *UNITED STATES.*—*The term “United*
9 *States” means the several States, the District of Co-*
10 *lumbia, the Commonwealth of Puerto Rico, the Virgin*
11 *Islands, Guam, American Samoa, the Commonwealth*
12 *of the Northern Mariana Islands, and any other terri-*
13 *tory or possession of the United States.*

14 **SEC. 5. AUTHORIZATION OF APPROPRIATIONS.**

15 (a) *FISCAL YEAR 2003.*—

16 (1) *IN GENERAL.*—*There are authorized to be ap-*
17 *propriated to the Foundation \$5,536,390,000 for fis-*
18 *cal year 2003.*

19 (2) *SPECIFIC ALLOCATIONS.*—*Of the amount au-*
20 *thorized under paragraph (1)—*

21 (A) *\$4,155,690,000 shall be made available*
22 *to carry out research and related activities, of*
23 *which \$704,000,000 shall be for information*
24 *technology research described in paragraph (1) of*
25 *section 8 and \$301,000,000 shall be for nanoscale*

1 *science and engineering described in paragraph*
2 *(2) of section 8;*

3 *(B) \$1,006,250,000 shall be made available*
4 *for education and human resources, of which—*

5 *(i) \$200,000,000 shall be for mathe-*
6 *matics and science education partnerships*
7 *described in section 9;*

8 *(ii) \$20,000,000 shall be for the Robert*
9 *Noyce Scholarship Program described in*
10 *section 10; and*

11 *(iii) \$25,000,000 shall be for the*
12 *science, mathematics, engineering, and tech-*
13 *nology talent expansion program described*
14 *in paragraph (7) of section 8;*

15 *(C) \$172,050,000 shall be made available*
16 *for major research equipment and facilities con-*
17 *struction;*

18 *(D) \$191,200,000 shall be made available*
19 *for salaries and expenses;*

20 *(E) \$3,500,000 shall be made available for*
21 *the Office of the National Science Board, includ-*
22 *ing salaries and compensation for members of*
23 *the Board and staff appointed under section 4 of*
24 *the National Science Foundation Act of 1950 (42*
25 *U.S.C. 1863), travel and training costs for mem-*

1 *bers of the Board and such staff, general and*
2 *Board operating expenses, representational ex-*
3 *periences for the Board, honorary awards made by*
4 *the Board, Board reports (other than the report*
5 *entitled “Science and Engineering Indicators”),*
6 *and contracts; and*

7 *(F) \$7,700,000 shall be made available for*
8 *the Office of Inspector General.*

9 *(b) FISCAL YEAR 2004.—*

10 *(1) IN GENERAL.—There are authorized to be ap-*
11 *propriated to the Foundation \$6,390,832,000 for fis-*
12 *cal year 2004.*

13 *(2) SPECIFIC ALLOCATIONS.—Of the amount au-*
14 *thorized under paragraph (1)—*

15 *(A) \$4,799,822,000 shall be made available*
16 *to carry out research and related activities, of*
17 *which \$774,000,000 shall be for information*
18 *technology research described in paragraph (1) of*
19 *section 8 and \$350,000,000 shall be for nanoscale*
20 *science and engineering described in paragraph*
21 *(2) of section 8;*

22 *(B) \$1,157,188,000 shall be made available*
23 *for education and human resources, of which—*

1 (i) \$300,000,000 shall be for mathe-
2 matics and science education partnerships
3 described in section 9;

4 (ii) \$20,000,000 shall be for the Robert
5 Noyce Scholarship Program described in
6 section 10; and

7 (iii) \$30,000,000 shall be for the
8 science, mathematics, engineering, and tech-
9 nology talent expansion program described
10 in paragraph (7) of section 8;

11 (C) \$211,182,000 shall be made available
12 for major research equipment and facilities con-
13 struction;

14 (D) \$210,320,000 shall be made available
15 for salaries and expenses;

16 (E) \$3,850,000 shall be made available for
17 the Office of the National Science Board for the
18 purposes described in subsection (a)(2)(E); and

19 (F) \$8,470,000 shall be made available for
20 the Office of Inspector General.

21 (c) *FISCAL YEAR 2005.*—

22 (1) *IN GENERAL.*—*There are authorized to be ap-*
23 *propriated to the Foundation \$7,378,343,000 for fis-*
24 *cal year 2005.*

1 (2) *SPECIFIC ALLOCATIONS.*—*Of the amount au-*
2 *thorized under paragraph (1)—*

3 (A) *\$5,543,794,000 shall be made available*
4 *to carry out research and related activities;*

5 (B) *\$1,330,766,000 shall be made available*
6 *to carry out education and human resources, of*
7 *which—*

8 (i) *\$400,000,000 shall be for mathe-*
9 *matics and science education partnerships*
10 *described in section 9;*

11 (ii) *\$20,000,000 shall be for the Robert*
12 *Noyce Scholarship Program described in*
13 *section 10; and*

14 (iii) *\$35,000,000 shall be for the*
15 *science, mathematics, engineering, and tech-*
16 *nology talent expansion program described*
17 *in paragraph (7) of section 8;*

18 (C) *\$258,879,000 shall be made available*
19 *for major research equipment and facilities con-*
20 *struction;*

21 (D) *\$231,337,000 shall be made available*
22 *for salaries and expenses;*

23 (E) *\$4,250,000 shall be made available for*
24 *the Office of the National Science Board for the*
25 *purposes described in subsection (a)(2)(E); and*

1 (F) \$9,317,000 shall be made available for
2 the Office of Inspector General.

3 (d) FISCAL YEAR 2006.—There are authorized to be
4 appropriated to the Foundation \$8,519,776,000 for fiscal
5 year 2006.

6 (e) FISCAL YEAR 2007.—There are authorized to be
7 appropriated to the Foundation \$9,839,262,000 for fiscal
8 year 2007.

9 (f) CONTINGENT AUTHORIZATION.—

10 (1) IN GENERAL.—Funds are authorized to be
11 appropriated under subsections (d) and (e), contin-
12 gent on a determination by Congress that the Foun-
13 dation has made successful progress toward meeting
14 management goals consisting of—

- 15 (A) strategic management of human cap-
16 ital;
- 17 (B) competitive sourcing;
- 18 (C) improved financial performance;
- 19 (D) expanded electronic government; and
- 20 (E) budget and performance integration.

21 (2) CONSIDERATION.—In making that deter-
22 mination, Congress shall take into consideration
23 whether or not the Director of the Office of Manage-
24 ment and Budget has certified that the Foundation

1 *has, overall, made successful progress toward meeting*
2 *those goals.*

3 **SEC. 6. OBLIGATION OF MAJOR RESEARCH EQUIPMENT**
4 **AND FACILITIES CONSTRUCTION FUNDS.**

5 *(a) FISCAL YEAR 2003.—None of the funds authorized*
6 *under section 5(a)(2)(C) may be obligated until 30 days*
7 *after the first report required under section 14(a)(2) is*
8 *transmitted to the Congress.*

9 *(b) FISCAL YEAR 2004.—None of the funds authorized*
10 *under section 5(b)(2)(C) may be obligated until 30 days*
11 *after the report required by June 15, 2003, under section*
12 *14(a)(2) is transmitted to the Congress.*

13 *(c) FISCAL YEAR 2005.—None of the funds authorized*
14 *under section 5(c)(2)(C) may be obligated until 30 days*
15 *after the report required by June 15, 2004, under section*
16 *14(a)(2) is transmitted to the Congress.*

17 *(d) FISCAL YEAR 2006.—None of the funds authorized*
18 *under section 5(d) may be obligated for major research*
19 *equipment and facilities construction until 30 days after*
20 *the report required by June 15, 2005, under section*
21 *14(a)(2) is transmitted to the Congress.*

22 *(e) FISCAL YEAR 2007.—None of the funds authorized*
23 *under section 5(e) may be obligated for major research*
24 *equipment and facilities construction until 30 days after*

1 *the report required by June 15, 2006, under section*
2 *14(a)(2) is transmitted to the Congress.*

3 **SEC. 7. ANNUAL PLAN FOR ALLOCATION OF FUNDING.**

4 *Not later than 60 days after the date of enactment of*
5 *legislation providing for the annual appropriation of funds*
6 *for the Foundation, the Director shall submit to the Com-*
7 *mittee on Science and the Committee on Appropriations of*
8 *the House of Representatives, and to the Committee on*
9 *Commerce, Science, and Transportation, the Committee on*
10 *Health, Education, Labor, and Pensions, and the Com-*
11 *mittee on Appropriations of the Senate, a plan for the allo-*
12 *cation of funds authorized by this Act for the corresponding*
13 *fiscal year. The portion of the plan pertaining to Research*
14 *and Related Activities shall include a description of how*
15 *the allocation of funding—*

16 *(1) will affect the average size and duration of*
17 *research grants supported by the Foundation by field*
18 *of science, mathematics, and engineering;*

19 *(2) will affect trends in research support for*
20 *major fields and subfields of science, mathematics,*
21 *and engineering, including for emerging multidisci-*
22 *plinary research areas; and*

23 *(3) is designed to achieve an appropriate balance*
24 *among major fields and subfields of science, mathe-*
25 *matics, and engineering.*

1 **SEC. 8. SPECIFIC PROGRAM AUTHORIZATIONS.**

2 *From amounts authorized to be appropriated under*
3 *section 5, the Director shall carry out the Foundation's re-*
4 *search and education programs, including the following ini-*
5 *tiatives in accordance with this section:*

6 (1) *INFORMATION TECHNOLOGY.—An informa-*
7 *tion technology research program to support competi-*
8 *tive, merit-reviewed proposals for research, education,*
9 *and infrastructure support in areas related to*
10 *cybersecurity, terascale computing systems, software,*
11 *networking, scalability, communications, data man-*
12 *agement, and remote sensing and geospatial informa-*
13 *tion technologies.*

14 (2) *NANOSCALE SCIENCE AND ENGINEERING.—A*
15 *nanoscale science and engineering research and edu-*
16 *cation program to support competitive, merit-re-*
17 *viewed proposals that emphasize—*

18 (A) *research aimed at discovering novel*
19 *phenomena, processes, materials, and tools that*
20 *address grand challenges in materials, elec-*
21 *tronics, optoelectronics and magnetics, manufac-*
22 *turing, the environment, and health care; and*

23 (B) *supporting new research and inter-*
24 *disciplinary centers and networks of excellence,*
25 *including shared national user facilities, infra-*
26 *structure, research, and education activities on*

1 *the societal implications of advances in*
2 *nanoscale science and engineering.*

3 (3) *PLANT GENOME RESEARCH.—(A) A plant ge-*
4 *nome research program to support competitive, merit-*
5 *reviewed proposals—*

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

9 *(ii) that accelerate the use of new knowledge*
10 *and innovative technologies toward a more com-*
11 *plete understanding of basic biological processes*
12 *in plants, especially in economically important*
13 *plants such as corn and soybeans.*

14 (B) *Regional plant genome and gene expression*
15 *research centers to conduct research and dissemina-*
16 *tion activities that may include—*

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

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

1 (iii) basic research on alternative uses for
2 plants and plant materials, including the use of
3 plants as renewable feedstock for alternative en-
4 ergy production and nonpetroleum-based indus-
5 trial chemicals and precursors; and

6 (iv) basic research and dissemination of in-
7 formation on the ecological and other con-
8 sequences of genetically engineered plants.

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

18 (C) Research partnerships to focus on—

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

21 (ii) basic plant genome research that will
22 advance and expedite the development of im-
23 proved cultivars, including those that are pest-re-
24 sistant, produce increased yield, reduce the need

1 *for fertilizers, herbicides, or pesticides, or have*
2 *increased tolerance to stress;*

3 *(iii) basic research that could lead to the de-*
4 *velopment of technologies to produce pharma-*
5 *ceutical compounds such as vaccines and medi-*
6 *cations in plants that can be grown in the devel-*
7 *oping world; and*

8 *(iv) research on the impact of plant bio-*
9 *technology on the social, political, economic,*
10 *health, and environmental conditions in coun-*
11 *tries in the developing world.*

12 *Competitive, merit-based awards for partnerships*
13 *under this subparagraph shall be to institutions of*
14 *higher education, nonprofit organizations, or con-*
15 *sortia of such entities that enter into a partnership*
16 *that shall include one or more research institutions in*
17 *one or more developing nations, and that may also*
18 *include for-profit companies involved in plant bio-*
19 *technology. The Director, by means of outreach, shall*
20 *encourage inclusion of historically Black colleges and*
21 *universities, Hispanic-serving institutions, tribally*
22 *controlled colleges and universities, Alaska Native-*
23 *serving institutions, and Native Hawaiian-serving*
24 *institutions in consortia that enter into such partner-*
25 *ships.*

1 (4) *INNOVATION PARTNERSHIPS.*—*An innovation*
2 *partnerships program to support competitive, merit-*
3 *reviewed proposals that seek to stimulate innovation*
4 *at the regional level through new partnerships involv-*
5 *ing States, regional governmental entities, local gov-*
6 *ernmental entities, industry, academic institutions,*
7 *and other related organizations in strategically im-*
8 *portant fields of science and technology.*

9 (5) *MATHEMATICS AND SCIENCE EDUCATION*
10 *PARTNERSHIPS.*—*The mathematics and science edu-*
11 *cation partnerships program described in section 9.*

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

15 (7) *SCIENCE, MATHEMATICS, ENGINEERING, AND*
16 *TECHNOLOGY TALENT EXPANSION PROGRAM.*—(A) *A*
17 *program of competitive, merit-based, multi-year*
18 *grants for eligible applicants to increase the number*
19 *of students studying toward and completing associ-*
20 *ate's or bachelor's degrees in science, mathematics, en-*
21 *gineering, and technology, particularly in fields that*
22 *have faced declining enrollment in recent years.*

23 (B) *In selecting projects under this paragraph,*
24 *the Director shall strive to increase the number of stu-*
25 *dents studying toward and completing baccalaureate*

1 *degrees, concentrations, or certificates in science,*
2 *mathematics, engineering, or technology who are indi-*
3 *viduals identified in section 33 or 34 of the Science*
4 *and Engineering Equal Opportunities Act (42 U.S.C.*
5 *1885a or 1885b).*

6 *(C) The types of projects the Foundation may*
7 *support under this paragraph include those that pro-*
8 *mote high quality—*

9 *(i) interdisciplinary teaching;*

10 *(ii) undergraduate-conducted research;*

11 *(iii) mentor relationships for students;*

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

16 *(v) internships carried out in partnership*
17 *with industry; and*

18 *(vi) innovative uses of digital technologies,*
19 *particularly at institutions of higher education*
20 *that serve high numbers or percentages of eco-*
21 *nomically disadvantaged students.*

22 *(D)(i) In order to receive a grant under this*
23 *paragraph, an eligible applicant shall establish tar-*
24 *gets to increase the number of students studying to-*

1 *ward and completing associate's or bachelor's degrees*
2 *in science, mathematics, engineering, or technology.*

3 *(ii) A grant under this paragraph shall be*
4 *awarded for a period of 5 years, with the final 2*
5 *years of funding contingent on the Director's deter-*
6 *mination that satisfactory progress has been made by*
7 *the grantee toward meeting the targets established*
8 *under clause (i).*

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

15 *(E) For each grant awarded under this para-*
16 *graph to an institution of higher education, at least*
17 *1 principal investigator shall be in a position of ad-*
18 *ministrative leadership at the institution of higher*
19 *education, and at least 1 principal investigator shall*
20 *be a faculty member from an academic department*
21 *included in the work of the project. For each grant*
22 *awarded to a consortium or partnership, at each in-*
23 *stitution of higher education participating in the con-*
24 *sortium or partnership, at least 1 of the individuals*
25 *responsible for carrying out activities authorized*

1 *under this paragraph at that institution shall be in*
2 *a position of administrative leadership at the institu-*
3 *tion, and at least 1 shall be a faculty member from*
4 *an academic department included in the work of the*
5 *project at that institution.*

6 *(F) In this paragraph, the term “eligible appli-*
7 *cant” means—*

8 *(i) an institution of higher education;*

9 *(ii) a consortium of institutions of higher*
10 *education; or*

11 *(iii) a partnership between—*

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

14 *(II) a nonprofit organization, a State*
15 *or local government, or a private company,*
16 *with demonstrated experience and effective-*
17 *ness in science, mathematics, engineering,*
18 *or technology education.*

19 *(8) SECONDARY SCHOOL SYSTEMIC INITIA-*
20 *TIVE.—A program of competitive, merit-based grants*
21 *for State educational agencies or local educational*
22 *agencies that supports the planning and implementa-*
23 *tion of agency-wide secondary school reform initia-*
24 *tives designed to promote scientific and technological*
25 *literacy, meet the mathematics and science education*

1 *needs of students at risk of not achieving State stu-*
2 *dent academic achievement standards, reduce the need*
3 *for basic skill training by employers, and heighten*
4 *college completion rates through activities, such as—*

5 *(A) systemic alignment of secondary school*
6 *curricula and higher education freshman place-*
7 *ment requirements;*

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

11 *(C) implementation of enriched mathe-*
12 *matics and science curricula for all secondary*
13 *school students;*

14 *(D) strengthened teacher training in mathe-*
15 *matics, science, and reading as it relates to tech-*
16 *nical and specialized texts;*

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

21 *or*

22 *(F) other secondary school systemic initia-*
23 *tives that enable grantees to leverage private sec-*
24 *tor funding for mathematics, science, engineer-*
25 *ing, and technology scholarships.*

1 *In awarding grants under this paragraph, the Direc-*
2 *tor shall give priority to agencies that serve high pov-*
3 *erty communities.*

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

10 (A) *research in mathematics, science, and*
11 *engineering throughout the States eligible to par-*
12 *ticipate in the program and the Commonwealth*
13 *of Puerto Rico;*

14 (B) *research infrastructure in the States eli-*
15 *gible to participate in the program and the Com-*
16 *monwealth of Puerto Rico; and*

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

19 (10) *THE SCIENCE AND ENGINEERING EQUAL OP-*
20 *PORTUNITIES ACT.—A comprehensive program de-*
21 *signed to advance the goals of the Science and Engi-*
22 *neering Equal Opportunities Act (42 U.S.C. 1885 et*
23 *seq.), including programs to—*

24 (A) *provide support to minority-serving in-*
25 *stitutions; and*

1 (B) ensure that reports required under sec-
2 tions 36 and 37 of such Act are submitted to
3 the—

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

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

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

10 (11) *ASTRONOMICAL RESEARCH AND INSTRU-*
11 *MENTATION.*—An astronomical research program to
12 support competitive, merit-reviewed proposals that—

13 (A) will advance understanding of—

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

18 (ii) the structure and origin of the uni-
19 verse; and

20 (B) support related activities such as devel-
21 oping advanced technologies and instrumenta-
22 tion, funding undergraduate and graduate stu-
23 dents, and satisfying other instrumentation and
24 research needs.

1 **SEC. 9. MATHEMATICS AND SCIENCE EDUCATION PARTNER-**
2 **SHIPS.**

3 (a) *PROGRAM AUTHORIZED.*—

4 (1) *IN GENERAL.*—(A) *The Director shall carry*
5 *out a program to award grants to institutions of*
6 *higher education or eligible nonprofit organizations*
7 *(or consortia of such institutions or organizations) to*
8 *establish mathematics and science education partner-*
9 *ship programs to improve elementary and secondary*
10 *mathematics and science instruction.*

11 (B) *Grants shall be awarded under this sub-*
12 *section on a competitive, merit-reviewed basis.*

13 (2) *PARTNERSHIPS.*—(A) *In order to be eligible*
14 *to receive a grant under this subsection, an institu-*
15 *tion of higher education or eligible nonprofit organi-*
16 *zation (or consortium of such institutions or organi-*
17 *zations) shall enter into a partnership with one or*
18 *more local educational agencies that may also include*
19 *a State educational agency or one or more businesses.*

20 (B) *A participating institution of higher edu-*
21 *cation shall include mathematics, science, or engineer-*
22 *ing departments in the programs carried out through*
23 *a partnership under this paragraph.*

24 (3) *USES OF FUNDS.*—*Grants awarded under*
25 *this subsection shall be used for activities that draw*
26 *upon the expertise of the partners to improve elemen-*

1 *tary or secondary education in mathematics or*
2 *science and that are consistent with State mathe-*
3 *matics and science student academic achievement*
4 *standards, including—*

5 *(A) recruiting and preparing students for*
6 *careers in elementary or secondary mathematics*
7 *or science education;*

8 *(B) offering professional development pro-*
9 *grams, including summer or academic year in-*
10 *stitutes or workshops, designed to strengthen the*
11 *capabilities of mathematics and science teachers;*

12 *(C) offering innovative preservice and in-*
13 *service programs that instruct teachers on using*
14 *technology more effectively in teaching mathe-*
15 *matics and science, including programs that re-*
16 *recruit and train undergraduate and graduate stu-*
17 *dents to provide technical support to teachers;*

18 *(D) developing distance learning programs*
19 *for teachers or students, including developing*
20 *courses, curricular materials, and other resources*
21 *for the in-service professional development of*
22 *teachers that are made available to teachers*
23 *through the Internet;*

1 (E) developing a cadre of master teachers
2 who will promote reform and improvement in
3 schools;

4 (F) offering teacher preparation and certifi-
5 cation programs for professional mathemati-
6 cians, scientists, and engineers who wish to begin
7 a career in teaching;

8 (G) developing tools to evaluate activities
9 conducted under this subsection;

10 (H) developing or adapting elementary
11 school and secondary school mathematics and
12 science curricular materials that incorporate
13 contemporary research on the science of learning;

14 (I) developing initiatives to increase and
15 sustain the number, quality, and diversity of
16 prekindergarten through grade 12 teachers of
17 mathematics and science, especially in under-
18 served areas;

19 (J) using mathematicians, scientists, and
20 engineers employed by private businesses to help
21 recruit and train mathematics and science teach-
22 ers;

23 (K) developing and offering mathematics or
24 science enrichment programs for students, in-
25 cluding after-school and summer programs;

1 (L) providing research opportunities in
2 business or academia for students and teachers;

3 (M) bringing mathematicians, scientists,
4 and engineers from business and academia into
5 elementary school and secondary school class-
6 rooms; and

7 (N) any other activities the Director deter-
8 mines will accomplish the goals of this sub-
9 section.

10 (4) MASTER TEACHERS.—Activities carried out
11 in accordance with paragraph (3)(E) shall—

12 (A) emphasize the training of master teach-
13 ers who will improve the instruction of mathe-
14 matics or science in kindergarten through grade
15 12;

16 (B) include training in both content and
17 pedagogy; and

18 (C) provide training only to teachers who
19 will be granted sufficient nonclassroom time to
20 serve as master teachers, as demonstrated by as-
21 surances their employing school has provided to
22 the Director, in such time and such manner as
23 the Director may require.

24 (5) SCIENCE ENRICHMENT PROGRAMS FOR
25 GIRLS.—Activities carried out in accordance with

1 paragraph (3)(K) and (L) shall include elementary
2 school and secondary school programs to encourage
3 the ongoing interest of girls in science, mathematics,
4 engineering, and technology and to prepare girls to
5 pursue undergraduate and graduate degrees and ca-
6 reers in science, mathematics, engineering, or tech-
7 nology. Funds made available through awards to
8 partnerships for the purposes of this paragraph may
9 support programs for—

10 (A) encouraging girls to pursue studies in
11 science, mathematics, engineering, and tech-
12 nology and to major in such fields in postsec-
13 ondary education;

14 (B) tutoring girls in science, mathematics,
15 engineering, and technology;

16 (C) providing mentors for girls in person
17 and through the Internet to support such girls in
18 pursuing studies in science, mathematics, engi-
19 neering, and technology;

20 (D) educating the parents of girls about the
21 difficulties faced by girls to maintain an interest
22 and desire to achieve in science, mathematics,
23 engineering, and technology, and enlisting the
24 help of parents in overcoming these difficulties;
25 and

1 (E) acquainting girls with careers in
2 science, mathematics, engineering, and tech-
3 nology and encouraging girls to plan for careers
4 in such fields.

5 (6) *RESEARCH IN SECONDARY SCHOOLS.*—Ac-
6 tivities carried out in accordance with paragraph
7 (3)(K) may include support for research projects per-
8 formed by students at secondary schools. Uses of funds
9 made available through awards to partnerships for
10 purposes of this paragraph may include—

11 (A) training secondary school mathematics
12 and science teachers in the design of research
13 projects for students;

14 (B) establishing a system for students and
15 teachers involved in research projects funded
16 under this subsection to exchange information
17 about their projects and research results; and

18 (C) assessing the educational value of the
19 student research projects by such means as track-
20 ing the academic performance and choice of aca-
21 demic majors of students conducting research.

22 (7) *STIPENDS.*—Grants awarded under this sub-
23 section may be used to provide stipends for teachers
24 or students participating in training or research ac-

1 *tivities that would not be part of their typical class-*
2 *room activities.*

3 *(b) SELECTION PROCESS.—*

4 *(1) APPLICATION.—An institution of higher edu-*
5 *cation or an eligible nonprofit organization (or a con-*
6 *sortium of such institutions or organizations) seeking*
7 *funding under subsection (a) shall submit an applica-*
8 *tion to the Director at such time, in such manner,*
9 *and containing such information as the Director may*
10 *require. The application shall include, at a*
11 *minimum—*

12 *(A) a description of the partnership and the*
13 *role that each member will play in implementing*
14 *the proposal;*

15 *(B) a description of each of the activities to*
16 *be carried out, including—*

17 *(i) how such activities will be aligned*
18 *with State mathematics and science student*
19 *academic achievement standards and with*
20 *other activities that promote student*
21 *achievement in mathematics and science;*

22 *(ii) how such activities will be based*
23 *on a review of relevant research;*

24 *(iii) why such activities are expected to*
25 *improve student performance and strenght-*

1 *en the quality of mathematics and science*
2 *instruction; and*

3 *(iv) any activities that will encourage*
4 *the interest of individuals identified in sec-*
5 *tion 33 or 34 of the Science and Engineer-*
6 *ing Equal Opportunities Act (42 U.S.C.*
7 *1885a or 1885b) in mathematics, science,*
8 *engineering, and technology and will help*
9 *prepare such individuals to pursue postsec-*
10 *ondary studies in these fields;*

11 *(C) a description of the number, size, and*
12 *nature of any stipends that will be provided to*
13 *students or teachers and the reasons such sti-*
14 *pends are needed;*

15 *(D) a description of how the partnership*
16 *will serve as a catalyst for reform of mathe-*
17 *matics and science education programs;*

18 *(E) a description of how the partnership*
19 *will assess its success;*

20 *(F) a description of how the partnership*
21 *will collaborate with the State educational agen-*
22 *cy to ensure that successful partnership activities*
23 *may be replicated throughout the State; and*

1 (G) a description of the manner in which
2 the partnership will be continued after assistance
3 under this section ends.

4 (2) *REVIEW OF APPLICATIONS.*—In evaluating
5 the applications submitted under paragraph (1), the
6 Director shall consider, at a minimum—

7 (A) the ability of the partnership to carry
8 out effectively the proposed programs;

9 (B) the extent to which the members of the
10 partnership are committed to making the part-
11 nership a central organizational focus;

12 (C) the degree to which activities carried
13 out by the partnership are based on relevant re-
14 search and are likely to result in increased stu-
15 dent achievement;

16 (D) the degree to which such activities are
17 aligned with State mathematics and science stu-
18 dent academic achievement standards;

19 (E) the likelihood that the partnership will
20 demonstrate activities that can be widely imple-
21 mented as part of larger scale reform efforts; and

22 (F) the extent to which the activities will
23 encourage the interest of individuals identified
24 in section 33 or 34 of the Science and Engineer-
25 ing Equal Opportunities Act (42 U.S.C. 1885a

1 or 1885b) in mathematics, science, engineering,
2 and technology and will help prepare such indi-
3 viduals to pursue postsecondary studies in these
4 fields.

5 (3) AWARDS.—In awarding grants under this
6 section, the Director shall—

7 (A) give priority to applications in which
8 the partnership includes a high-need local edu-
9 cational agency or a high-need local educational
10 agency in which at least one school does not
11 make adequate yearly progress, as determined
12 pursuant to part A of title I of the Elementary
13 and Secondary Education Act of 1965 (20
14 U.S.C. 6311 *et seq.*); and

15 (B) ensure that, to the extent practicable, a
16 substantial number of the partnerships funded
17 under this section include businesses.

18 (c) ACCOUNTABILITY AND DISSEMINATION.—

19 (1) ASSESSMENT REQUIRED.—The Director shall
20 evaluate the program established under subsection (a).
21 At a minimum, such evaluation shall—

22 (A) use a common set of benchmarks and
23 assessment tools to identify best practices and
24 materials developed and demonstrated by the
25 partnerships; and

1 (B) to the extent practicable, compare the
2 effectiveness of practices and materials developed
3 and demonstrated by the partnerships authorized
4 under this section with those of partnerships
5 funded by other State or Federal agencies.

6 (2) *DISSEMINATION OF RESULTS.*—(A) The re-
7 sults of the evaluation required under paragraph (1)
8 shall be made available to the public and shall be pro-
9 vided to the Committee on Science of the House of
10 Representatives, the Committee on Commerce,
11 Science, and Transportation of the Senate, and the
12 Committee on Health, Education, Labor, and Pen-
13 sions of the Senate.

14 (B) Materials developed under the program es-
15 tablished under subsection (a) that are demonstrated
16 to be effective shall be made widely available to the
17 public.

18 (3) *ANNUAL MEETING.*—The Director, in con-
19 sultation with the Secretary of Education, shall con-
20 vene an annual meeting of the partnerships partici-
21 pating under this section to foster greater national
22 collaboration.

23 (4) *REPORT ON COORDINATION.*—The Director,
24 in consultation with the Secretary of Education, shall
25 provide an annual report to the Committee on

1 *Science of the House of Representatives, the Com-*
2 *mittee on Education and the Workforce of the House*
3 *of Representatives, the Committee on Commerce,*
4 *Science, and Transportation of the Senate, and the*
5 *Committee on Health, Education, Labor, and Pen-*
6 *sions of the Senate describing how the program au-*
7 *thorized under this section has been and will be co-*
8 *ordinated with the program authorized under part B*
9 *of title II of the Elementary and Secondary Edu-*
10 *cation Act of 1965 (20 U.S.C. 6601 et seq.). The re-*
11 *port under this paragraph shall be submitted along*
12 *with the President's annual budget request.*

13 (5) *TECHNICAL ASSISTANCE.—At the request of*
14 *an eligible partnership or a State educational agency,*
15 *the Director shall provide the partnership or agency*
16 *with technical assistance in meeting any requirements*
17 *of this section, including providing advice from ex-*
18 *perts on how to develop—*

19 (A) *a quality application for a grant; and*

20 (B) *quality activities from funds received*
21 *from a grant under this section.*

22 **SEC. 10. ROBERT NOYCE SCHOLARSHIP PROGRAM.**

23 (a) *SCHOLARSHIP PROGRAM.—*

24 (1) *IN GENERAL.—The Director shall carry out*
25 *a program to award grants to institutions of higher*

1 *education (or consortia of such institutions) to pro-*
2 *vide scholarships, stipends, and programming de-*
3 *signed to recruit and train mathematics and science*
4 *teachers. Such program shall be known as the “Robert*
5 *Noyce Scholarship Program”.*

6 (2) *MERIT REVIEW.*—*Grants shall be provided*
7 *under this subsection on a competitive, merit-reviewed*
8 *basis.*

9 (3) *USE OF GRANTS.*—*Grants provided under*
10 *this section shall be used by institutions of higher*
11 *education or consortia—*

12 (A) *to develop and implement a program to*
13 *encourage top college juniors and seniors major-*
14 *ing in mathematics, science, and engineering at*
15 *the grantee’s institution to become mathematics*
16 *and science teachers, through—*

17 (i) *administering scholarships in ac-*
18 *cordance with subsection (c);*

19 (ii) *offering programs to help scholar-*
20 *ship recipients to teach in elementary*
21 *schools and secondary schools, including*
22 *programs that will result in teacher certifi-*
23 *cation or licensing; and*

24 (iii) *offering programs to scholarship*
25 *recipients, both before and after they receive*

1 *their baccalaureate degree, to enable the re-*
2 *cipients to become better mathematics and*
3 *science teachers, to fulfill the service require-*
4 *ments of this section, and to exchange ideas*
5 *with others in their fields; or*

6 *(B) to develop and implement a program to*
7 *encourage science, mathematics, or engineering*
8 *professionals to become mathematics and science*
9 *teachers, through—*

10 *(i) administering stipends in accord-*
11 *ance with subsection (d);*

12 *(ii) offering programs to help stipend*
13 *recipients obtain teacher certification or li-*
14 *censing; and*

15 *(iii) offering programs to stipend re-*
16 *cipients, both during and after matricula-*
17 *tion in the program for which the stipend*
18 *is received, to enable recipients to become*
19 *better mathematics and science teachers, to*
20 *fulfill the service requirements of this sec-*
21 *tion, and to exchange ideas with others in*
22 *their fields.*

23 *(b) SELECTION PROCESS.—*

24 *(1) APPLICATION.—An institution of higher edu-*
25 *cation or consortium seeking funding under this sec-*

1 *tion shall submit an application to the Director at*
2 *such time, in such manner, and containing such in-*
3 *formation as the Director may require. The applica-*
4 *tion shall include, at a minimum—*

5 *(A) a description of the scholarship or sti-*
6 *pend program that the applicant intends to op-*
7 *erate, including the number of scholarships or*
8 *the size and number of stipends the applicant in-*
9 *tends to award, and the selection process that*
10 *will be used in awarding the scholarships or sti-*
11 *pend;*

12 *(B) evidence that the applicant has the ca-*
13 *pability to administer the scholarship or stipend*
14 *program in accordance with the provisions of*
15 *this section; and*

16 *(C) a description of the programming that*
17 *will be offered to scholarship or stipend recipi-*
18 *ents during and after their matriculation in the*
19 *program for which the scholarship or stipend is*
20 *received.*

21 *(2) REVIEW OF APPLICATIONS.—In evaluating*
22 *the applications submitted under paragraph (1), the*
23 *Director shall consider, at a minimum—*

24 *(A) the ability of the applicant to effectively*
25 *carry out the program;*

1 (B) *the extent to which the applicant is*
2 *committed to making the program a central or-*
3 *ganizational focus;*

4 (C) *the degree to which the proposed pro-*
5 *gramming will enable scholarship or stipend re-*
6 *cipients to become successful mathematics and*
7 *science teachers;*

8 (D) *the number and quality of the students*
9 *that will be served by the program; and*

10 (E) *the ability of the applicant to recruit*
11 *students who would otherwise not pursue a ca-*
12 *reer in teaching.*

13 (c) *SCHOLARSHIP REQUIREMENTS.—*

14 (1) *IN GENERAL.—Scholarships under this sec-*
15 *tion shall be available only to students who are—*

16 (A) *majoring in science, mathematics, or*
17 *engineering; and*

18 (B) *in the last 2 years of a baccalaureate*
19 *degree program.*

20 (2) *SELECTION.—Individuals shall be selected to*
21 *receive scholarships primarily on the basis of aca-*
22 *ademic merit, with consideration given to financial*
23 *need and to the goal of promoting the participation*
24 *of individuals identified in section 33 or 34 of the*

1 *Science and Engineering Equal Opportunities Act*
2 *(42 U.S.C. 1885a or 1885b).*

3 (3) *AMOUNT.*—*The Director shall establish for*
4 *each year the amount to be awarded for scholarships*
5 *under this section for that year, which shall be not*
6 *less than \$7,500 per year, except that no individual*
7 *shall receive for any year more than the cost of at-*
8 *tendance at that individual's institution. Individuals*
9 *may receive a maximum of 2 years of scholarship*
10 *support.*

11 (4) *SERVICE OBLIGATION.*—*If an individual re-*
12 *ceives a scholarship, that individual shall be required*
13 *to complete, within 6 years after graduation from the*
14 *baccalaureate degree program for which the scholar-*
15 *ship was awarded, 2 years of service as a mathe-*
16 *matics or science teacher for each year a scholarship*
17 *was received. Service required under this paragraph*
18 *shall be performed in a high-need local educational*
19 *agency.*

20 (d) *STIPENDS.*—

21 (1) *IN GENERAL.*—*Stipends under this section*
22 *shall be available only to mathematics, science, and*
23 *engineering professionals who, while receiving the sti-*
24 *pend, are enrolled in a program to receive certifi-*
25 *cation or licensing to teach.*

1 (2) *SELECTION.*—*Individuals shall be selected to*
2 *receive stipends under this section primarily on the*
3 *basis of academic merit, with consideration given to*
4 *financial need and to the goal of promoting the par-*
5 *ticipation of individuals identified in section 33 or*
6 *34 of the Science and Engineering Equal Opportuni-*
7 *ties Act (42 U.S.C. 1885a or 1885b).*

8 (3) *DURATION.*—*Individuals may receive a max-*
9 *imum of 1 year of stipend support.*

10 (4) *SERVICE OBLIGATION.*—*If an individual re-*
11 *ceives a stipend under this section, that individual*
12 *shall be required to complete, within 6 years after*
13 *graduation from the program for which the stipend*
14 *was awarded, 2 years of service as a mathematics or*
15 *science teacher for each year a stipend was received.*
16 *Service required under this paragraph shall be per-*
17 *formed in a high-need local educational agency.*

18 (e) *CONDITIONS OF SUPPORT.*—*As a condition of ac-*
19 *ceptance of a scholarship or stipend under this section, a*
20 *recipient shall enter into an agreement with the institution*
21 *of higher education—*

22 (1) *accepting the terms of the scholarship or sti-*
23 *pend pursuant to subsections (c) and (g), or sub-*
24 *section (d);*

1 (2) *agreeing to provide the awarding institution*
2 *of higher education with annual certification of em-*
3 *ployment and up-to-date contact information and to*
4 *participate in surveys provided by the institution of*
5 *higher education as part of an ongoing assessment*
6 *program; and*

7 (3) *establishing that any scholarship recipient*
8 *shall be liable to the United States for any amount*
9 *that is required to be repaid in accordance with the*
10 *provisions of subsection (g).*

11 *(f) COLLECTION FOR NONCOMPLIANCE.—*

12 (1) *MONITORING COMPLIANCE.—An institution*
13 *of higher education (or consortium thereof) receiving*
14 *a grant under this section shall, as a condition of*
15 *participating in the program, enter into an agree-*
16 *ment with the Director to monitor the compliance of*
17 *scholarship and stipend recipients with their respec-*
18 *tive service requirements.*

19 (2) *COLLECTION OF REPAYMENT.—(A) In the*
20 *event that a scholarship recipient is required to repay*
21 *the scholarship under subsection (g), the institution*
22 *shall be responsible for collecting the repayment*
23 *amounts.*

1 (B) *Except as provided in subparagraph (C),*
2 *any such repayment shall be returned to the Treasury*
3 *of the United States.*

4 (C) *A grantee may retain a percentage of any*
5 *repayment it collects to defray administrative costs*
6 *associated with the collection. The Director shall es-*
7 *tablish a single, fixed percentage that will apply to*
8 *all grantees.*

9 (g) *FAILURE TO COMPLETE SERVICE OBLIGATION.—*

10 (1) *GENERAL RULE.—If an individual who has*
11 *received a scholarship under this section—*

12 (A) *fails to maintain an acceptable level of*
13 *academic standing in the educational institution*
14 *in which the individual is enrolled, as deter-*
15 *mined by the Director;*

16 (B) *is dismissed from such educational in-*
17 *stitution for disciplinary reasons;*

18 (C) *withdraws from the baccalaureate de-*
19 *gree program for which the award was made be-*
20 *fore the completion of such program;*

21 (D) *declares that the individual does not in-*
22 *tend to fulfill the service obligation under this*
23 *section; or*

24 (E) *fails to fulfill the service obligation of*
25 *the individual under this section,*

1 *such individual shall be liable to the United States as*
2 *provided in paragraph (2).*

3 (2) *AMOUNT OF REPAYMENT.—(A) If a cir-*
4 *cumstance described in paragraph (1) occurs before*
5 *the completion of one year of a service obligation*
6 *under this section, the United States shall be entitled*
7 *to recover from the individual, within one year after*
8 *the date of the occurrence of such circumstance, an*
9 *amount equal to—*

10 (i) *the total amount of awards received by*
11 *such individual under this section; plus*

12 (ii) *the interest on the amounts of such*
13 *awards which would be payable if at the time*
14 *the awards were received they were loans bearing*
15 *interest at the maximum legal prevailing rate,*
16 *as determined by the Treasurer of the United*
17 *States,*

18 *multiplied by 2.*

19 (B) *If a circumstance described in paragraph*
20 *(1)(D) or (E) occurs after the completion of one year*
21 *of a service obligation under this section, the United*
22 *States shall be entitled to recover from the individual,*
23 *within one year after the date of the occurrence of*
24 *such circumstance, an amount equal to the total*
25 *amount of awards received by such individual under*

1 *this section minus 1/2 of the amount of the award re-*
2 *ceived per year for each full year of service completed,*
3 *plus the interest on such amounts which would be*
4 *payable if at the time the amounts were received they*
5 *were loans bearing interest at the maximum legal*
6 *prevailing rate, as determined by the Treasurer of the*
7 *United States.*

8 (3) *EXCEPTIONS.*—*The Director may provide for*
9 *the partial or total waiver or suspension of any serv-*
10 *ice or payment obligation by an individual under*
11 *this section whenever compliance by the individual*
12 *with the obligation is impossible or would involve ex-*
13 *treme hardship to the individual, or if enforcement of*
14 *such obligation with respect to the individual would*
15 *be unconscionable.*

16 (h) *DATA COLLECTION.*—*Institutions or consortia re-*
17 *ceiving grants under this section shall supply to the Direc-*
18 *tor any relevant statistical and demographic data on schol-*
19 *arship recipients and stipend recipients the Director may*
20 *request, including information on employment required by*
21 *subsection (e).*

22 (i) *DEFINITIONS.*—*In this section—*

23 (1) *the term “cost of attendance” has the mean-*
24 *ing given such term in section 472 of the Higher Edu-*
25 *cation Act of 1965 (20 U.S.C. 1087l);*

1 (2) *the term “mathematics and science teacher”*
 2 *means a mathematics, science, or technology teacher*
 3 *at the elementary school or secondary school level;*

4 (3) *the term “mathematics, science, or engineer-*
 5 *ing professional” means a person who holds a baccala-*
 6 *ureate, masters, or doctoral degree in science, math-*
 7 *ematics, or engineering and is working in that field*
 8 *or a related area;*

9 (4) *the term “scholarship” means an award*
 10 *under subsection (c); and*

11 (5) *the term “stipend” means an award under*
 12 *subsection (d).*

13 **SEC. 11. ESTABLISHMENT OF CENTERS FOR RESEARCH ON**
 14 **MATHEMATICS AND SCIENCE LEARNING AND**
 15 **EDUCATION IMPROVEMENT.**

16 (a) *ESTABLISHMENT.—*

17 (1) *IN GENERAL.—(A) The Director shall award*
 18 *grants to institutions of higher education (or con-*
 19 *sortia thereof) to establish multidisciplinary Centers*
 20 *for Research on Learning and Education Improve-*
 21 *ment.*

22 (B) *Grants shall be awarded under this para-*
 23 *graph on a competitive, merit-reviewed basis.*

24 (2) *PURPOSE.—The purpose of the Centers shall*
 25 *be to conduct and evaluate research in cognitive*

1 science, education, and related fields and to develop
2 ways in which the results of such research can be ap-
3 plied in elementary school and secondary school class-
4 rooms to improve the teaching of mathematics and
5 science.

6 (3) *FOCUS.*—(A) Each Center shall be focused on
7 a different challenge faced by elementary school or
8 secondary school teachers of mathematics and science.
9 In determining the research focus of the Centers, the
10 Director shall consult with the National Academy of
11 Sciences and the Secretary of Education and take
12 into account the extent to which other Federal pro-
13 grams support research on similar questions.

14 (B) The proposal solicitation issued by the Di-
15 rector shall state the focus of each Center and appli-
16 cants shall apply for designation as a specific Center.

17 (C) At least one Center shall focus on developing
18 ways in which the results of research described in
19 paragraph (2) can be applied, duplicated, and scaled
20 up for use in low-performing elementary schools and
21 secondary schools to improve the teaching and student
22 achievement levels in mathematics and science.

23 (D) To the extent practicable and relevant to its
24 focus, every Center shall include, as part of its re-
25 search, work designed to quantitatively assess and im-

1 *prove the ways that information technology is used in*
2 *the teaching of mathematics and science.*

3 **(b) SELECTION PROCESS.—**

4 **(1) APPLICATION.—***An institution of higher edu-*
5 *cation (or a consortium of such institutions) seeking*
6 *funding under this section shall submit an applica-*
7 *tion to the Director at such time, in such manner,*
8 *and containing such information as the Director may*
9 *require. The application shall include, at a min-*
10 *imum, a description of—*

11 **(A)** *the initial research projects that will be*
12 *undertaken by the Center and the process by*
13 *which new projects will be identified;*

14 **(B)** *how the Center will work with other re-*
15 *search institutions and schools to broaden the*
16 *national research agenda on learning and teach-*
17 *ing;*

18 **(C)** *how the Center will promote active col-*
19 *laboration among physical, biological, and social*
20 *science researchers;*

21 **(D)** *how the Center will promote active par-*
22 *ticipation by elementary and secondary mathe-*
23 *matics and science teachers and administrators;*
24 *and*

1 *(E) how the results of the Center’s research*
2 *can be incorporated into educational practices,*
3 *and how the Center will assess the success of*
4 *those practices.*

5 (2) *REVIEW OF APPLICATIONS.—In evaluating*
6 *the applications submitted under paragraph (1), the*
7 *Director shall consider, at a minimum—*

8 *(A) the ability of the applicant to effectively*
9 *carry out the research program, including the*
10 *activities described in paragraph (1)(E);*

11 *(B) the experience of the applicant in con-*
12 *ducting research on the science of teaching and*
13 *learning and the capacity of the applicant to fos-*
14 *ter new multidisciplinary collaborations;*

15 *(C) the capacity of the applicant to attract*
16 *elementary school and secondary school teachers*
17 *from a diverse array of schools, and with diverse*
18 *professional experiences, for participation in*
19 *Center activities; and*

20 *(D) the capacity of the applicant to attract*
21 *and provide adequate support for graduate stu-*
22 *dents to pursue research at the intersection of*
23 *educational practice and basic research on*
24 *human cognition and learning.*

1 (3) *AWARDS.*—*The Director shall ensure, to the*
2 *extent practicable, that the Centers funded under this*
3 *section conduct research and develop educational*
4 *practices designed to improve the educational per-*
5 *formance of a broad range of students, including indi-*
6 *viduals identified in section 33 or 34 of the Science*
7 *and Engineering Equal Opportunities Act (42 U.S.C.*
8 *1885a or 1885b).*

9 (c) *ANNUAL CONFERENCE.*—*The Director shall con-*
10 *vene an annual meeting of the Centers to foster collabora-*
11 *tion among the Centers and to further disseminate the re-*
12 *sults of the Centers' activities.*

13 (d) *COORDINATION.*—*The Director shall coordinate*
14 *with the Secretary of Education in—*

15 (1) *disseminating the results of the research con-*
16 *ducted pursuant to grants awarded under this section*
17 *to elementary school teachers and secondary school*
18 *teachers; and*

19 (2) *providing programming, guidance, and sup-*
20 *port to ensure that such teachers—*

21 (A) *understand the implications of the re-*
22 *search disseminated under paragraph (1) for*
23 *classroom practice; and*

24 (B) *can use the research to improve such*
25 *teachers' performance in the classroom.*

1 **SEC. 12. DUPLICATION OF PROGRAMS.**

2 (a) *IN GENERAL.*—*The Director shall review the edu-*
3 *cation programs of the Foundation that are in operation*
4 *as of the date of enactment of this Act to determine whether*
5 *any of such programs duplicate the programs authorized*
6 *under this Act.*

7 (b) *IMPLEMENTATION.*—*As programs authorized under*
8 *this Act are implemented, the Director shall—*

9 (1) *terminate any duplicative program being*
10 *carried out by the Foundation or merge the duplica-*
11 *tive program into a program authorized under this*
12 *Act; and*

13 (2) *not establish any new program that dupli-*
14 *cates a program that has been implemented pursuant*
15 *to this Act.*

16 (c) *REPORT.*—

17 (1) *REVIEW.*—*The Director of the Office of*
18 *Science and Technology Policy shall review the edu-*
19 *cation programs of the Foundation to ensure compli-*
20 *ance with the provisions of this section.*

21 (2) *SUBMISSION.*—*Not later than 1 year after*
22 *the date of enactment of this Act, and annually there-*
23 *after as part of the annual Office of Science and*
24 *Technology Policy's budget submission to Congress,*
25 *the Director of the Office of Science and Technology*
26 *Policy shall complete a report on the review carried*

1 *out under this subsection and shall submit the report*
2 *to the Committee on Science and the Committee on*
3 *Appropriations of the House of Representatives, and*
4 *to the Committee on Commerce, Science, and Trans-*
5 *portation, the Committee on Health, Education,*
6 *Labor, and Pensions, and the Committee on Appro-*
7 *priations of the Senate.*

8 **SEC. 13. MAJOR RESEARCH INSTRUMENTATION.**

9 (a) *REVIEW AND ASSESSMENT.*—*The Director shall*
10 *conduct a review and assessment of the major research in-*
11 *strumentation program and, not later than 1 year after the*
12 *date of enactment of this Act, submit a report of findings*
13 *and recommendations to the Committee on Science of the*
14 *House of Representatives, the Committee on Commerce,*
15 *Science, and Transportation of the Senate, and the Com-*
16 *mittee on Health, Education, Labor, and Pensions of the*
17 *Senate. The report shall include—*

18 (1) *estimates of the needs, by major field of*
19 *science and engineering and by types of institutions*
20 *of higher education, for the types of research instru-*
21 *mentation that are eligible for acquisition under the*
22 *guidelines of the major research instrumentation pro-*
23 *gram;*

24 (2) *a description of the distribution of awards*
25 *and funding levels by year, by major field of science*

1 *and engineering, and by type of institution of higher*
2 *education for the program, since the inception of the*
3 *major research instrumentation program; and*

4 *(3) an analysis of the impact of the major re-*
5 *search instrumentation program on the research in-*
6 *strumentation needs that were documented in the*
7 *Foundation's 1994 survey of academic research in-*
8 *strumentation needs.*

9 **(b) NATIONAL ACADEMY OF SCIENCES ASSESSMENT**
10 **ON INTERDISCIPLINARY RESEARCH AND ADVANCED IN-**
11 **STRUMENTATION CENTERS.—**

12 *(1) ASSESSMENT.—Not later than 3 months after*
13 *the date of enactment of this Act, the Director shall*
14 *enter into an arrangement with the National Acad-*
15 *emy of Sciences to assess the need for an interagency*
16 *program to establish and support fully equipped,*
17 *state-of-the-art university-based centers for inter-*
18 *disciplinary research and advanced instrumentation*
19 *development.*

20 *(2) TRANSMITTAL TO CONGRESS.—Not later than*
21 *15 months after the date of the enactment of this Act,*
22 *the Director shall transmit to the Committee on*
23 *Science of the House of Representatives, the Com-*
24 *mittee on Commerce, Science, and Transportation of*
25 *the Senate, and the Committee on Health, Education,*

1 *Labor, and Pensions of the Senate the assessment con-*
2 *ducted by the National Academy of Sciences together*
3 *with the Foundation's reaction to the assessment au-*
4 *thorized under paragraph (1).*

5 **SEC. 14. MAJOR RESEARCH EQUIPMENT AND FACILITIES**
6 **CONSTRUCTION PLAN.**

7 *(a) PRIORITIZATION OF PROPOSED MAJOR RESEARCH*
8 *EQUIPMENT AND FACILITIES CONSTRUCTION.—*

9 *(1) DEVELOPMENT OF PRIORITIES.—(A) The Di-*
10 *rector shall—*

11 *(i) develop a list indicating by number the*
12 *relative priority for funding under the major re-*
13 *search equipment and facilities construction ac-*
14 *count that the Director assigns to each project*
15 *the Board has approved for inclusion in a future*
16 *budget request; and*

17 *(ii) submit the list described in clause (i) to*
18 *the Board for approval.*

19 *(B) The Director shall update the list prepared*
20 *under subparagraph (A) each time the Board ap-*
21 *proves a new project that would receive funding under*
22 *the major research equipment and facilities construc-*
23 *tion account, as necessary to prepare reports under*
24 *paragraph (2), and, from time to time, submit any*
25 *updated list to the Board for approval.*

1 (2) *ANNUAL REPORT.*—Not later than 90 days
2 after the date of enactment of this Act, and not later
3 than each June 15 thereafter, the Director shall trans-
4 mit to the Committee on Science of the House of Rep-
5 resentatives, the Committee on Commerce, Science,
6 and Transportation of the Senate, and the Committee
7 on Health, Education, Labor, and Pensions of the
8 Senate a report containing—

9 (A) the most recent Board-approved pri-
10 ority list developed under paragraph (1)(A);

11 (B) a description of the criteria used to de-
12 velop such list; and

13 (C) a description of the major factors for
14 each project that determined the ranking of such
15 project on the list, based on the application of
16 the criteria described pursuant to subparagraph
17 (B).

18 (3) *CRITERIA.*—The criteria described pursuant
19 to paragraph (2)(B) shall include, at a minimum—

20 (A) scientific merit;

21 (B) broad societal need and probable im-
22 pact;

23 (C) consideration of the results of formal
24 prioritization efforts by the scientific commu-
25 nity;

1 (D) readiness of plans for construction and
2 operation;

3 (E) the applicant's management and ad-
4 ministrative capacity of large research facilities;

5 (F) international and interagency commit-
6 ments; and

7 (G) the order in which projects were ap-
8 proved by the Board for inclusion in a future
9 budget request.

10 (b) *FACILITIES PLAN*.—

11 (1) *IN GENERAL*.—Section 201(a)(1) of the Na-
12 tional Science Foundation Authorization Act of 1998
13 (42 U.S.C. 1862l(a)(1)) is amended to read as follows:

14 “(1) *IN GENERAL*.—The Director shall prepare,
15 and include as part of the Foundation's annual budg-
16 et request to Congress, a plan for the proposed con-
17 struction of, and repair and upgrades to, national re-
18 search facilities, including full life-cycle cost informa-
19 tion.”.

20 (2) *CONTENTS OF PLAN*.—Section 201(a)(2) of
21 the National Science Foundation Authorization Act of
22 1998 (42 U.S.C. 1862l(a)(2)) is amended—

23 (A) in subparagraph (A), by striking “(1);”
24 and inserting “(1), including costs for instru-
25 mentation development;”;

1 (B) in subparagraph (B), by striking “and”
2 after the semicolon;

3 (C) in subparagraph (C), by striking “con-
4 struction.” and inserting “construction;”; and

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

6 “(D) for each project funded under the
7 major research equipment and facilities con-
8 struction account—

9 “(i) estimates of the total project cost
10 (from planning to commissioning); and

11 “(ii) the source of funds, including
12 Federal funding identified by appropria-
13 tions category and non-Federal funding;

14 “(E) estimates of the full life-cycle cost of
15 each national research facility;

16 “(F) information on any plans to retire na-
17 tional research facilities; and

18 “(G) estimates of funding levels for grants
19 supporting research that will be conducted using
20 each national research facility.”.

21 (3) *DEFINITION.*—Section 2 of the National
22 Science Foundation Authorization Act of 1998 (42
23 U.S.C. 1862k note) is amended—

1 (A) by redesignating paragraphs (3)
2 through (5) as paragraphs (4) through (6), re-
3 spectively; and

4 (B) by inserting after paragraph (2) the fol-
5 lowing:

6 “(3) *FULL LIFE-CYCLE COST.*—The term ‘full
7 life-cycle cost’ means all costs of planning, develop-
8 ment, procurement, construction, operations and sup-
9 port, and shut-down costs, without regard to funding
10 source and without regard to what entity manages the
11 project or facility involved.”.

12 (c) *PROJECT MANAGEMENT.*—No national research fa-
13 cility project funded under the major research equipment
14 and facilities construction account shall be managed by an
15 individual whose appointment to the Foundation is tem-
16 porary.

17 (d) *BOARD APPROVAL OF MAJOR RESEARCH EQUIP-*
18 *MENT AND FACILITIES PROJECTS.*—

19 (1) *IN GENERAL.*—The Board shall explicitly ap-
20 prove any project to be funded out of the major re-
21 search equipment and facilities construction account
22 before any funds may be obligated from such account
23 for such project.

24 (2) *REPORT.*—Not later than September 15 of
25 each fiscal year, the Board shall report to the Com-

1 *mittee on Commerce, Science, and Transportation of*
2 *the Senate, the Committee on Health, Education,*
3 *Labor, and Pensions of the Senate, and the Com-*
4 *mittee on Science of the House of Representatives on*
5 *the conditions of any delegation of authority under*
6 *section 4 of the National Science Foundation Act of*
7 *1950 (42 U.S.C. 1863) that relates to funds appro-*
8 *priated for any project in the major research equip-*
9 *ment and facilities construction account.*

10 *(e) NATIONAL ACADEMY OF SCIENCES STUDY ON*
11 *MAJOR RESEARCH EQUIPMENT AND FACILITIES CON-*
12 *STRUCTION.—*

13 *(1) STUDY.—Not later than 3 months after the*
14 *date of enactment of this Act, the Director shall enter*
15 *into an arrangement with the National Academy of*
16 *Sciences to perform a study on setting priorities for*
17 *a diverse array of disciplinary and interdisciplinary*
18 *Foundation-sponsored large research facility projects.*

19 *(2) TRANSMITTAL TO CONGRESS.—Not later than*
20 *15 months after the date of the enactment of this Act,*
21 *the Director shall transmit to the Committee on*
22 *Science and the Committee on Appropriations of the*
23 *House of Representatives, and to the Committee on*
24 *Commerce, Science, and Transportation, the Com-*
25 *mittee on Health, Education, Labor, and Pensions,*

1 *and the Committee on Appropriations of the Senate,*
2 *the study conducted by the National Academy of*
3 *Sciences together with the Foundation's reaction to*
4 *the study authorized under paragraph (1).*

5 **SEC. 15. ADMINISTRATIVE AMENDMENTS.**

6 *(a) BOARD MEETINGS.—*

7 *(1) IN GENERAL.—Section 4(e) of the National*
8 *Science Foundation Act of 1950 (42 U.S.C. 1863(e))*
9 *is amended by striking the second and third sentences*
10 *and inserting “The Board shall adopt procedures gov-*
11 *erning the conduct of its meetings, including delivery*
12 *of notice and a definition of a quorum, which in no*
13 *case shall be less than one-half plus one of the con-*
14 *firmed members of the Board.”.*

15 *(2) OPEN MEETINGS.—The Board and all of its*
16 *committees, subcommittees, and task forces (and any*
17 *other entity consisting of members of the Board and*
18 *reporting to the Board) shall be subject to section*
19 *552b of title 5, United States Code.*

20 *(3) COMPLIANCE AUDIT.—The Inspector General*
21 *of the Foundation shall conduct an annual audit of*
22 *the compliance by the Board with the requirements*
23 *described in paragraph (2). The audit shall examine*
24 *the proposed and actual content of closed meetings*
25 *and determine whether the closure of the meetings was*

1 *consistent with section 552b of title 5, United States*
2 *Code.*

3 (4) *REPORT.*—*Not later than February 15 of*
4 *each year, the Inspector General of the Foundation*
5 *shall transmit to the Committee on Science of the*
6 *House of Representatives, the Committee on Com-*
7 *merce, Science, and Transportation of the Senate,*
8 *and the Committee on Health, Education, Labor, and*
9 *Pensions of the Senate the audit required under para-*
10 *graph (3) along with recommendations for corrective*
11 *actions that need to be taken to achieve fuller compli-*
12 *ance with the requirements described in paragraph*
13 *(2), and recommendations on how to ensure public*
14 *access to the Board's deliberations.*

15 (b) *CONFIDENTIALITY OF CERTAIN INFORMATION.*—
16 *Section 14(i) of the National Science Foundation Act of*
17 *1950 (42 U.S.C. 1873(i)) is amended to read as follows:*

18 “(i)(1)(A) *Information supplied to the Foundation or*
19 *a contractor of the Foundation in survey forms, question-*
20 *naires, or similar instruments for purposes of section*
21 *3(a)(5) or (6) by an individual, an industrial or commer-*
22 *cial organization, or an educational, academic, or other*
23 *nonprofit institution when the institution has received a*
24 *pledge of confidentiality from the Foundation, shall not be*
25 *disclosed to the public unless the information has been*

1 *transformed into statistical or abstract formats that do not*
2 *allow for the identification of the supplier.*

3 “(B) *Information that has not been transformed into*
4 *formats described in subparagraph (A) may be used only*
5 *for statistical or research purposes.*

6 “(C) *The identities of individuals, organizations, and*
7 *institutions supplying information described in subpara-*
8 *graph (A) may not be disclosed to the public.*

9 “(2) *In support of functions authorized by section*
10 *3(a)(5) or (6), the Foundation may designate, at its discre-*
11 *tion, authorized persons, including employees of Federal,*
12 *State, or local agencies or instrumentalities (including local*
13 *educational agencies) and employees of private organiza-*
14 *tions, to have access, for statistical or research purposes*
15 *only, to information collected pursuant to section 3(a)(5)*
16 *or (6) that allows for the identification of the supplier. No*
17 *such person may—*

18 “(A) *publish information collected pursuant to*
19 *section 3(a)(5) or (6) in such a manner that either*
20 *an individual, an industrial or commercial organiza-*
21 *tion, or an educational, academic, or other nonprofit*
22 *institution that has received a pledge of confiden-*
23 *tiality from the Foundation can be specifically identi-*
24 *fied;*

1 “(B) permit anyone other than individuals au-
2 thorized by the Foundation to examine data that al-
3 lows for such identification relating to an individual,
4 an industrial or commercial organization, or an aca-
5 demic, educational, or other nonprofit institution that
6 has received a pledge of confidentiality from the
7 Foundation; or

8 “(C) knowingly and willfully request or obtain
9 any nondisclosable information described in para-
10 graph (1) from the Foundation under false pretenses.

11 “(3) Violation of this subsection is punishable by a fine
12 of not more than \$10,000, imprisonment for not more than
13 5 years, or both.”.

14 (c) *APPOINTMENT.*—Section 4(g) of the National
15 Science Foundation Act of 1950 (42 U.S.C. 1863(g)) is
16 amended by striking the second sentence and inserting
17 “Such staff shall be appointed by the Chairman and as-
18 signed at the direction of the Board.”.

19 (d) *SCHOLARSHIP ELIGIBILITY.*—The Director shall
20 not exclude part-time students from eligibility for scholar-
21 ships under the Computer Science, Engineering, and Math-
22 ematics Scholarship program.

1 **SEC. 16. SCIENCE AND ENGINEERING EQUAL OPPORTUNI-**
2 **TIES ACT AMENDMENTS.**

3 *Section 32 of the Science and Engineering Equal Op-*
4 *portunities Act (42 U.S.C. 1885) is amended—*

5 *(1) in subsection (a), by striking “backgrounds.”*
6 *and inserting “backgrounds, including persons with*
7 *disabilities.”; and*

8 *(2) in subsection (b)—*

9 *(A) by inserting “, including persons with*
10 *disabilities,” after “backgrounds”; and*

11 *(B) by striking “and minorities” each place*
12 *the term appears and inserting “, minorities,*
13 *and persons with disabilities”.*

14 **SEC. 17. UNDERGRADUATE EDUCATION REFORM.**

15 *(a) IN GENERAL.—The Director shall award grants,*
16 *on a competitive, merit-reviewed basis, to institutions of*
17 *higher education to expand previously implemented reforms*
18 *of undergraduate science, mathematics, engineering, or*
19 *technology education that have been demonstrated to have*
20 *been successful in increasing the number and quality of stu-*
21 *dents studying toward and completing associate’s or bacca-*
22 *laureate degrees in science, mathematics, engineering, or*
23 *technology.*

24 *(b) USES OF FUNDS.—Activities supported by grants*
25 *under this section may include—*

1 (1) *expansion of successful reform efforts beyond*
2 *a single course or group of courses to achieve reform*
3 *within an entire academic unit;*

4 (2) *expansion of successful reform efforts beyond*
5 *a single academic unit to other science, mathematics,*
6 *engineering, or technology academic units within an*
7 *institution;*

8 (3) *creation of multidisciplinary courses or pro-*
9 *grams that formalize collaborations for the purpose of*
10 *improved student instruction and research in science,*
11 *mathematics, engineering, and technology;*

12 (4) *expansion of undergraduate research oppor-*
13 *tunities beyond a particular laboratory, course, or*
14 *academic unit to engage multiple academic units in*
15 *providing multidisciplinary research opportunities*
16 *for undergraduate students;*

17 (5) *expansion of innovative tutoring or men-*
18 *toring programs proven to enhance student recruit-*
19 *ment or persistence to degree completion in science,*
20 *mathematics, engineering, or technology;*

21 (6) *improvement of undergraduate science, math-*
22 *ematics, engineering, and technology education for*
23 *nonmajors, including education majors; and*

24 (7) *implementation of technology-driven reform*
25 *efforts, including the installation of technology to fa-*

1 *ilitate such reform, that directly impact under-*
2 *graduate science, mathematics, engineering, or tech-*
3 *nology instruction or research experiences.*

4 *(c) SELECTION PROCESS.—*

5 *(1) APPLICATIONS.—An institution of higher*
6 *education seeking a grant under this section shall*
7 *submit an application to the Director at such time,*
8 *in such manner, and containing such information as*
9 *the Director may require. The application shall in-*
10 *clude, at a minimum—*

11 *(A) a description of the proposed reform ef-*
12 *fort;*

13 *(B) a description of the previously imple-*
14 *mented reform effort that will serve as the basis*
15 *for the proposed reform effort and evidence of*
16 *success of that previous effort, including data on*
17 *student recruitment, persistence to degree com-*
18 *pletion, and academic achievement;*

19 *(C) evidence of active participation in the*
20 *proposed project by individuals who were central*
21 *to the success of the previously implemented re-*
22 *form effort; and*

23 *(D) evidence of institutional support for,*
24 *and commitment to, the proposed reform effort,*
25 *including a description of existing or planned*

1 *institutional policies and practices regarding*
2 *faculty hiring, promotion, tenure, and teaching*
3 *assignment that reward faculty contributions to*
4 *undergraduate education equal to, or greater*
5 *than, scholarly scientific research.*

6 (2) *REVIEW OF APPLICATIONS.*—*In evaluating*
7 *applications submitted under paragraph (1), the Di-*
8 *rector shall consider at a minimum—*

9 (A) *the evidence of past success in imple-*
10 *menting undergraduate education reform and the*
11 *likelihood of success in undertaking the proposed*
12 *expanded effort;*

13 (B) *the extent to which the faculty, staff,*
14 *and administrators of the institution are com-*
15 *mitted to making the proposed institutional re-*
16 *form a priority of the participating academic*
17 *unit;*

18 (C) *the degree to which the proposed reform*
19 *will contribute to change in institutional culture*
20 *and policy such that a greater value is placed on*
21 *faculty engagement in undergraduate education,*
22 *as evidenced through promotion and tenure poli-*
23 *cies; and*

1 (D) the likelihood that the institution will
2 sustain or expand the reform beyond the period
3 of the grant.

4 (3) GRANT DISTRIBUTION.—The Director shall
5 ensure, to the extent practicable, that grants awarded
6 under this section are made to a variety of types of
7 institutions of higher education.

8 **SEC. 18. REPORTS.**

9 (a) GRANT SIZE AND DURATION.—Not later than 6
10 months after the date of enactment of this Act, the Director
11 shall transmit to the Committee on Science of the House
12 of Representatives, the Committee on Commerce, Science,
13 and Transportation of the Senate, and the Committee on
14 Health, Education, Labor, and Pensions of the Senate a
15 report describing the impact that increasing the average
16 grant size and duration would have on minority-serving
17 institutions and on institutions located in States where the
18 Foundation's Experimental Program to Stimulate Com-
19 petitive Research (established under section 113 of the Na-
20 tional Science Foundation Authorization Act of 1988 (42
21 U.S.C. 1862g)) is carrying out activities.

22 (b) FACULTY.—Not later than 3 months after the date
23 of enactment of this Act, the Director shall enter into an
24 arrangement with the National Academy of Sciences to as-
25 sess gender differences in the careers of science and engineer-

1 *ing faculty. This study shall build on the Academy's work*
2 *on gender differences in the carriers of doctoral scientists*
3 *and engineers and examine issues such as faculty hiring,*
4 *promotion, tenure, and allocation of resources including*
5 *laboratory space. Upon completion, the results of this study*
6 *shall be transmitted to the Committee on Science of the*
7 *House of Representatives, the Committee on Commerce,*
8 *Science, and Transportation of the Senate, and the Com-*
9 *mittee on Health, Education, Labor, and Pensions of the*
10 *Senate.*

11 *(c) GRANT FUNDING.—Not later than 3 months after*
12 *the date of enactment of this Act, the Director shall enter*
13 *into an agreement with an appropriate party to assess gen-*
14 *der differences in the distribution of external Federal re-*
15 *search and development funding. This study shall examine*
16 *differences in amounts requested and awarded, by gender,*
17 *in major Federal external grant programs. Upon comple-*
18 *tion, the results of this study shall be transmitted to the*
19 *Committee on Science of the House of Representatives, the*
20 *Committee on Commerce, Science, and Transportation of*
21 *the Senate, and the Committee on Health, Education,*
22 *Labor, and Pensions of the Senate.*

23 *(d) STUDY OF BROADBAND NETWORK ACCESS FOR*
24 *SCHOOLS AND LIBRARIES.—*

1 (1) *REPORT TO CONGRESS.*—*The Director shall*
2 *conduct a study of the issues described in paragraph*
3 *(3), and not later than 1 year after the date of the*
4 *enactment of this Act, transmit to the Committee on*
5 *Science of the House of Representatives, the Com-*
6 *mittee on Commerce, Science, and Transportation of*
7 *the Senate, and the Committee on Health, Education,*
8 *Labor, and Pensions of the Senate a report including*
9 *recommendations to address those issues. Such report*
10 *shall be updated annually for 4 additional years.*

11 (2) *CONSULTATION.*—*In preparing the reports*
12 *under paragraph (1), the Director shall consult with*
13 *Federal agencies and educational entities as the Di-*
14 *rector considers appropriate.*

15 (3) *ISSUES TO BE ADDRESSED.*—*The reports*
16 *shall—*

17 (A) *identify the availability of high-speed,*
18 *large bandwidth capacity access to different de-*
19 *mographic groups served by elementary schools,*
20 *secondary schools, and libraries in the United*
21 *States;*

22 (B) *identify how the provision of high-*
23 *speed, large bandwidth capacity access to the*
24 *Internet to such schools and libraries can be ef-*
25 *fectively utilized within each school and library;*

1 (C) consider the effect that specific or re-
2 gional circumstances may have on the ability of
3 such institutions to acquire high-speed, large
4 bandwidth capacity access to achieve universal
5 connectivity as an effective tool in the education
6 process; and

7 (D) include options and recommendations
8 to address the challenges and issues identified in
9 the reports.

10 (e) *MINORITY-SERVING INSTITUTION FUNDING.*—

11 (1) *ANNUAL REPORTING REQUIRED.*—*The Direc-*
12 *tor shall submit an annual report, along with the*
13 *President’s annual budget request, to the Committee*
14 *on Science of the House of Representatives, the Com-*
15 *mittee on Commerce, Science, and Transportation of*
16 *the Senate, and the Committee on Health, Education,*
17 *Labor, and Pensions of the Senate on the amount of*
18 *funding awarded by the Foundation to minority-serv-*
19 *ing institutions, including funding received as mem-*
20 *bers of consortia. The report shall include information*
21 *on such funding to minority-serving institutions—*

22 (A) expressed as a percentage of funding to
23 all institutions of higher education for each ap-
24 propriations account within the Foundation’s
25 budget; and

1 (B) for the preceding 10 years.

2 (2) *REPORT ON WAYS TO IMPROVE FUNDING.*—

3 *Within one year after the date of enactment of this*
4 *Act, the Director shall submit to the Committee on*
5 *Science of the House of Representatives, the Com-*
6 *mittee on Commerce, Science, and Transportation of*
7 *the Senate, and the Committee on Health, Education,*
8 *Labor, and Pensions of the Senate a report on rec-*
9 *ommendations on how the Foundation can improve*
10 *funding to minority-serving institutions.*

11 **SEC. 19. EVALUATIONS.**

12 (a) *EDUCATION.*—

13 (1) *IN GENERAL.*—*The Director, through the Re-*
14 *search, Evaluation and Communication Division of*
15 *the Education and Human Resources Directorate of*
16 *the Foundation, shall evaluate the effectiveness of all*
17 *undergraduate science, mathematics, engineering, or*
18 *technology education activities supported by the*
19 *Foundation in increasing the number and quality of*
20 *students, including individuals identified in section*
21 *33 or 34 of the Science and Engineering Equal Op-*
22 *portunities Act (42 U.S.C. 1885a or 1885b) studying*
23 *toward and completing associate's or baccalaureate*
24 *degrees in science, mathematics, engineering, and*

1 *technology. In conducting the evaluation, the Director*
2 *shall consider information on—*

3 *(A) the number of students enrolled in un-*
4 *dergraduate science, mathematics, engineering,*
5 *and technology programs;*

6 *(B) student academic achievement, includ-*
7 *ing quantifiable measurements of students' mas-*
8 *tery of content and skills;*

9 *(C) persistence to degree completion, includ-*
10 *ing students who transfer from science, mathe-*
11 *matics, engineering, and technology programs to*
12 *programs in other academic disciplines; and*

13 *(D) placement during the first year after*
14 *degree completion in post-graduate education or*
15 *career pathways.*

16 *(2) ASSESSMENT BENCHMARKS AND TOOLS.—*
17 *The Director, through the Research, Evaluation and*
18 *Communication Division of the Education and*
19 *Human Resources Directorate of the Foundation,*
20 *shall establish a common set of assessment bench-*
21 *marks and tools, and shall enable every Foundation-*
22 *sponsored project to incorporate the use of these*
23 *benchmarks and tools in their project-based assess-*
24 *ment activities.*

1 *of enactment of this Act, the Committee on Equal Opportu-*
2 *nities in Science and Engineering shall include—*

3 *(1) a summary of its findings over the previous*
4 *10 years;*

5 *(2) a description of past and present policies*
6 *and activities of the Foundation to encourage full*
7 *participation of women, minorities, and persons with*
8 *disabilities in science, mathematics, and engineering*
9 *fields, including activities in support of minority-*
10 *serving institutions; and*

11 *(3) an assessment of the trends in participation*
12 *in Foundation activities, and an assessment of the*
13 *success of Foundation policies and activities, along*
14 *with proposals for new strategies or the broadening of*
15 *existing successful strategies toward facilitating the*
16 *goals of that Act.*

17 **SEC. 21. ADVANCED TECHNOLOGICAL EDUCATION PRO-**
18 **GRAM.**

19 *(a) CORE SCIENCE AND MATHEMATICS COURSES.—*
20 *Section 3(a) of the Scientific and Advanced-Technology Act*
21 *of 1992 (42 U.S.C. 1862i(a)) is amended—*

22 *(1) by inserting “, and to improve the quality of*
23 *their core education courses in science and mathe-*
24 *matics” after “education in advanced-technology*
25 *fields”;*

1 (2) *in paragraph (1) by inserting “and in core*
2 *science and mathematics courses” after “advanced-*
3 *technology fields”; and*

4 (3) *in paragraph (2) by striking “in advanced-*
5 *technology fields” and inserting “who provide instruc-*
6 *tion in science, mathematics, and advanced-tech-*
7 *nology fields”.*

8 (b) *ARTICULATION PARTNERSHIPS.—Section*
9 *3(c)(1)(B) of the Scientific and Advanced-Technology Act*
10 *of 1992 (42 U.S.C. 1862i(c)(1)(B)) is amended—*

11 (1) *by striking “and” at the end of clause (i);*

12 (2) *by striking the period at the end of clause*
13 *(ii) and inserting a semicolon; and*

14 (3) *by adding after clause (ii) the following new*
15 *clauses:*

16 *“(iii) provide students with research experi-*
17 *ences at bachelor’s-degree-granting institutions*
18 *participating in the partnership, including sti-*
19 *pend support for students participating in sum-*
20 *mer programs; and*

21 *“(iv) provide faculty mentors for students*
22 *participating in activities under clause (iii), in-*
23 *cluding summer salary support for faculty men-*
24 *tors.”.*

1 (c) *NATIONAL SCIENCE FOUNDATION REPORT.*—With-
2 *in 6 months after the date of the enactment of this Act,*
3 *the Director shall transmit a report to the Committee on*
4 *Science of the House of Representatives, the Committee on*
5 *Commerce, Science, and Transportation of the Senate, and*
6 *the Committee on Health, Education, Labor, and Pensions*
7 *of the Senate on—*

8 (1) *efforts by the Foundation and awardees*
9 *under the program carried out under section 3 of the*
10 *Scientific and Advanced-Technology Act of 1992 (42*
11 *U.S.C. 1862i) to disseminate information about the*
12 *results of projects;*

13 (2) *the effectiveness of national centers of sci-*
14 *entific and technical education established under sec-*
15 *tion 3(b) of the Scientific and Advanced-Technology*
16 *Act of 1992 (42 U.S.C. 1862i(b)) in serving as na-*
17 *tional and regional clearinghouses of information and*
18 *models for best practices in undergraduate science,*
19 *mathematics, and technology education; and*

20 (3) *efforts to satisfy the requirement of section*
21 *3(f)(4) of the Scientific and Advanced-Technology Act*
22 *of 1992 (42 U.S.C. 1862i(f)(4)).*

1 **SEC. 22. REPORT ON FOUNDATION BUDGETARY AND PRO-**
2 **GRAMMATIC EXPANSION.**

3 *The Board shall prepare a report to address and exam-*
4 *ine the Foundation's budgetary and programmatic growth*
5 *provided for by this Act. The report shall be submitted to*
6 *the Committee on Science of the House of Representatives,*
7 *the Committee on Commerce, Science, and Transportation*
8 *of the Senate, and the Committee on Health, Education,*
9 *Labor, and Pensions of the Senate within one year after*
10 *the date of the enactment of this Act and shall include—*

11 *(1) recommendations on how the increased fund-*
12 *ing should be utilized;*

13 *(2) an examination of the projected impact that*
14 *the budgetary increases will have on the Nation's sci-*
15 *entific and technological workforce;*

16 *(3) a description of new or expanded programs*
17 *that will enable institutions of higher education to ex-*
18 *pand their participation in Foundation-funded ac-*
19 *tivities;*

20 *(4) an estimate of the national scientific and*
21 *technological research infrastructure needed to ade-*
22 *quately support the Foundation's increased funding*
23 *and additional programs; and*

24 *(5) a description of the impact the budgetary in-*
25 *creases provided under this Act will have on the size*
26 *and duration of grants awarded by the Foundation.*

1 **SEC. 23. ASTRONOMY AND ASTROPHYSICS ADVISORY COM-**
2 **MITTEE.**

3 (a) *ESTABLISHMENT.*—*The Foundation and the Na-*
4 *tional Aeronautics and Space Administration shall jointly*
5 *establish an Astronomy and Astrophysics Advisory Com-*
6 *mittee (in this section referred to as the “Advisory Com-*
7 *mittee”).*

8 (b) *DUTIES.*—*The Advisory Committee shall—*

9 (1) *assess, and make recommendations regard-*
10 *ing, the coordination of astronomy and astrophysics*
11 *programs of the Foundation and the National Aero-*
12 *nautics and Space Administration;*

13 (2) *assess, and make recommendations regard-*
14 *ing, the status of the activities of the Foundation and*
15 *the National Aeronautics and Space Administration*
16 *as they relate to the recommendations contained in*
17 *the National Research Council’s 2001 report entitled*
18 *“Astronomy and Astrophysics in the New Millen-*
19 *nium”, and the recommendations contained in subse-*
20 *quent National Research Council reports of a similar*
21 *nature; and*

22 (3) *not later than March 15 of each year, trans-*
23 *mit a report to the Director, the Administrator of the*
24 *National Aeronautics and Space Administration, and*
25 *the Committee on Science of the House of Representa-*
26 *tives, the Committee on Commerce, Science, and*

1 *Transportation of the Senate, and the Committee on*
2 *Health, Education, Labor, and Pensions of the Senate*
3 *on the Advisory Committee's findings and rec-*
4 *ommendations under paragraphs (1) and (2).*

5 (c) *MEMBERSHIP.*—*The Advisory Committee shall*
6 *consist of 13 members, none of whom shall be a Federal*
7 *employee, including—*

8 (1) *5 members selected by the Director;*

9 (2) *5 members selected by the Administrator of*
10 *the National Aeronautics and Space Administration;*
11 *and*

12 (3) *3 members selected by the Director of the Of-*
13 *fice of Science and Technology Policy.*

14 (d) *SELECTION PROCESS.*—*Initial selections under*
15 *subsection (c) shall be made within 3 months after the date*
16 *of the enactment of this Act. Vacancies shall be filled in*
17 *the same manner as provided in subsection (c).*

18 (e) *CHAIRPERSON.*—*The Advisory Committee shall se-*
19 *lect a chairperson from among its members.*

20 (f) *COORDINATION.*—*The Advisory Committee shall co-*
21 *ordinate with the advisory bodies of other Federal agencies,*
22 *such as the Department of Energy, which may engage in*
23 *related research activities.*

24 (g) *COMPENSATION.*—*The members of the Advisory*
25 *Committee shall serve without compensation, but shall re-*

1 *ceive travel expenses, including per diem in lieu of subsist-*
2 *ence, in accordance with sections 5702 and 5703 of title*
3 *5, United States Code.*

4 (h) *MEETINGS.*—*The Advisory Committee shall con-*
5 *vene, in person or by electronic means, at least 4 times a*
6 *year.*

7 (i) *QUORUM.*—*A majority of the members serving on*
8 *the Advisory Committee shall constitute a quorum for pur-*
9 *poses of conducting the business of the Advisory Committee.*

10 (j) *DURATION.*—*Section 14 of the Federal Advisory*
11 *Committee Act shall not apply to the Advisory Committee.*

12 **SEC. 24. MINORITY-SERVING INSTITUTIONS UNDER-**
13 **GRADUATE PROGRAM.**

14 (a) *IN GENERAL.*—*The Director is authorized to estab-*
15 *lish a new program to award grants on a competitive,*
16 *merit-reviewed basis to Hispanic-serving institutions, Alas-*
17 *ka Native-serving institutions, Native Hawaiian-serving*
18 *institutions, and other institutions of higher education serv-*
19 *ing a substantial number of minority students to enhance*
20 *the quality of undergraduate science, mathematics, and en-*
21 *gineering education at such institutions and to increase the*
22 *retention and graduation rates of students pursuing associ-*
23 *ate's or baccalaureate degrees in science, mathematics, engi-*
24 *neering, or technology.*

1 *in Federal reports on obligations and actual expenditures*
2 *of Federal research and development funding.*

3 (b) *CONTENTS.*—*The study shall—*

4 (1) *examine the relevance and accuracy of re-*
5 *porting classifications and definitions used in the re-*
6 *ports described in subsection (a);*

7 (2) *examine whether the classifications and defi-*
8 *nitions are used consistently across Federal agencies*
9 *for data gathering;*

10 (3) *examine whether and how Federal agencies*
11 *use reports described in subsection (a), and describe*
12 *any other sources of similar data used by those agen-*
13 *cies;*

14 (4) *recommend alternatives for modifications to*
15 *the current reporting process and system that*
16 *would—*

17 (A) *accommodate emerging fields of science*
18 *and changing practices in the conduct of re-*
19 *search and development;*

20 (B) *minimize, to the extent possible, the*
21 *burden imposed on the reporters of these data;*

22 (C) *increase the consistency of application*
23 *of the system across the Federal agencies includ-*
24 *ing the Office of Management and Budget and*
25 *the Foundation;*

1 (D) encourage the use of new technologies to
2 increase accuracy, timeliness, and consistency of
3 the reported data between the agencies and the
4 research performers; and

5 (E) overcome systemic shortfalls; and

6 (5) recommend an implementation timeline for
7 the modifications recommended under paragraph (4),
8 and recommend specific responsibilities for the pro-
9 gram and budget offices in the agencies, taking into
10 consideration required changes to the current com-
11 puter systems and processes used by the agencies.

12 (c) *SUBMISSION.*—The Director shall submit a report
13 on the results of the study to the Committee on Science of
14 the House of Representatives, the Committee on Commerce,
15 Science, and Transportation of the Senate, and the Com-
16 mittee on Health, Education, Labor, and Pensions of the
17 Senate within one year after the date of enactment of this
18 Act.

19 (d) *IMPLEMENTATION.*—Within 6 months after the
20 completion of the study required by subsection (a), the Di-
21 rector of the Office of Science and Technology Policy shall
22 submit to the Committee on Science of the House of Rep-
23 resentatives, the Committee on Commerce, Science, and
24 Transportation of the Senate, and the Committee on
25 Health, Education, Labor, and Pensions of the Senate a

1 *plan for implementation of the recommendations of the*
2 *study.*

3 **SEC. 26. PLANNING GRANTS.**

4 *The Director is authorized to accept planning pro-*
5 *posals from applicants who are within .075 percentage*
6 *points of the current eligibility level for the Experimental*
7 *Program to Stimulate Competitive Research. Such pro-*
8 *posals shall be reviewed by the Foundation to determine*
9 *their merit for support under the Experimental Program*
10 *to Stimulate Competitive Research or any other appro-*
11 *priate program.*

Amend the title so as to read: “An Act to authorize appropriations for fiscal years 2003, 2004, 2005, 2006, and 2007 for the National Science Foundation, and for other purposes.”.

Attest:

Secretary.

107TH CONGRESS
2D SESSION

H. R. 4664

AMENDMENTS