107TH CONGRESS
2D SESSION

S. 2817

To authorize appropriations for fiscal years 2003, 2004, 2005, 2006, and 2007 for the National Science Foundation, and for other purposes.

IN THE SENATE OF THE UNITED STATES

JULY 29, 2002

Mr. KENNEDY (for himself, Mr. HOLLINGS, Mr. BOND, and Ms. MIKULSKI) introduced the following bill; which was read twice and referred to the Committee on Health, Education, Labor, and Pensions

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A BILL

To authorize appropriations for fiscal years 2003, 2004, 2005, 2006, and 2007 for the National Science Foundation, and for other purposes.

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

SECTION 1. SHORT TITLE.

This Act may be cited as the ''National Science Foundation Doubling Act''.

SEC. 2. DEFINITIONS.

In this Act:

(1) BOARD.—The term ''Board'' means the National Science Board established under section 2 of

the National Science Foundation Act of 1950 (42 U.S.C. 1861).

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

(3) ELIGIBLE APPLICANT.—The term ''eligible applicant'' means—

(A) an institution of higher education;

(B) consortia of institutions of higher education;

(C)(i) an institution of higher education or consortia of such institutions; and

(ii) a nonprofit organization with demonstrated experience in delivering science, mathematics, engineering, or technology education; or

(D)(i) an institution of higher education or consortia of such institutions;

(ii) a nonprofit organization with demonstrated experience in delivering science, mathematics, engineering, or technology education; and

(iii) State governments, local governments, or private companies.

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

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

(6) NATIONAL RESEARCH FACILITY.—The term ''national research facility'' means a research facility funded by the Foundation which is available, subject to appropriate policies allocating access, for use by all scientists and engineers affiliated with research institutions located in the United States.

SEC. 3. FINDINGS.

Congress finds the following:

(1) The National Science Foundation has made major contributions during the past 50 years to strengthen and sustain the Nation's academic research enterprise that is the envy of the world.

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

(3) The National Science Foundation carries out an important function in supporting basic research in all science and engineering disciplines and in supporting science, mathematics, engineering, and technology education at all levels.

(4) The research and education activities of the National Science Foundation promote the discovery, integration, dissemination, and application of new knowledge in service to society and prepare future generations of scientists, mathematicians, and engineers who will be necessary to ensure America's leadership in the global marketplace.

(5) The National Science Foundation must be provided with sufficient resources to enable it to carry out its responsibilities to develop intellectual capital, strengthen the scientific infrastructure, integrate research and education, enhance the delivery of mathematics and science education in the United States, and improve the technological literacy of all people in the United States.

(6) The emerging global economic, scientific, and technical environment challenges long-standing assumptions about the dichotomy between domestic and international policy, requiring the National Science Foundation to play a more proactive role in

sustaining the competitive advantage of the United States through superior research capabilities.

SEC. 4. POLICY OBJECTIVES.

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

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

(A) increasing the national investment in research in strategic areas;

(B) balancing the Nation's research portfolio among the life sciences and fundamental disciplines that are important for the continued development of enabling technologies necessary for sustained international competitiveness;

(C) expanding the pool of scientists and engineers in the United States;

(D) modernizing the Nation's research infrastructure; and

(E) establishing and maintaining cooperative international relationships with premier research institutions, with the goal of such relationships being the exchange of personnel, data, and information in an effort to alleviate problems common to the global community.

(2) To increase overall workforce skills by—

(A) improving the quality of mathematics and science education, particularly in kindergarten through grade 12;

(B) providing access to information technology for all students;

(C) raising postsecondary enrollment rates for underrepresented minorities;

(D) increasing access to higher education for students from low-income households; and

(E) expanding technical training opportunities at institutions of higher education.

(3) To strengthen innovation by—

(A) expanding the focus of competitiveness and innovation policy at the regional and local level;

(B) supporting initiatives and organizations that enhance and mobilize regional innovation; and

(C) identifying best policy practices in fostering innovation at the State, regional, and local levels.

SEC. 5. AUTHORIZATION OF APPROPRIATIONS.

(a) FISCAL YEAR 2003.—

(1) IN GENERAL.—There are authorized to be appropriated to the National Science Foundation $5,536,390,000 for fiscal year 2003.

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

(A) $4,174,840,000 shall be made available to carry out research and related activities;

(B) $1,006,250,000 shall be made available for education and human resources;

(C) $152,900,000 shall be made available for major research equipment and facilities construction;

(D) $194,700,000 shall be made available for salaries and expenses; and

(E) $7,700,000 shall be made available for the Office of Inspector General.

(b) FISCAL YEAR 2004.—

(1) IN GENERAL.—There are authorized to be appropriated to the National Science Foundation $6,390,832,000 for fiscal year 2004.

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

(A) $4,842,814,000 shall be made available to carry out research and related activities;

(B) $1,157,188,000 shall be made available for education and human resources;

(C) $168,190,000 shall be made available for major research equipment and facilities construction;

(D) $214,170,000 shall be made available for salaries and expenses; and

(E) $8,470,000 shall be made available for the Office of Inspector General.

(c) FISCAL YEAR 2005.—

(1) IN GENERAL.—There are authorized to be appropriated to the National Science Foundation $7,378,343,000 for fiscal year 2005.

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

(A) $5,617,665,000 shall be made available to carry out research and related activities;

(B) $1,330,766,000 shall be made available to carry out education and human resources;

(C) $185,009,000 shall be made available for major research equipment and facilities construction;

(D) $235,587,000 shall be made available for salaries and expenses; and

(E) $9,317,000 shall be made available for the Office of Inspector General.

(d) FISCAL YEAR 2006.—

(1) IN GENERAL.—There are authorized to be appropriated to the National Science Foundation $8,519,776,000 for fiscal year 2006.

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

(A) $6,516,491,000 shall be made available to carry out research and related activities;

(B) $1,530,380,000 shall be made available to carry out education and human resources;

(C) $203,509,900 shall be made available for major research equipment and facilities construction;

(D) $259,145,700 shall be made available for salaries and expenses; and

(E) $10,248,700 shall be made available for the Office of Inspector General.

(e) FISCAL YEAR 2007.—

(1) IN GENERAL.—There are authorized to be appropriated to the National Science Foundation $9,839,262,000 for fiscal year 2007.

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

(A) $7,559,130,000 shall be made available to carry out research and related activities;

(B) $1,759,938,000 shall be made available to carry out education and human resources;

(C) $223,860,900 shall be made available for major research equipment and facilities construction;

(D) $285,060,300 shall be made available for salaries and expenses; and

(E) $11,273,570 shall be made available for the Office of Inspector General.

SEC. 6. SPECIFIC PROGRAM AUTHORIZATIONS.

From amounts authorized to be appropriated under section 5, the Director shall continue the following initiatives:

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

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

(A) discovering novel phenomena, processes, materials, and tools that address grand challenges in materials, electronics, optoelectronics and magnetics, manufacturing, the environment, and healthcare; and

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

(3) PLANT GENOME RESEARCH.—A plant genome research program to support competitive, merit-based proposals—

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

(B) that accelerate the use of new knowledge and innovative technologies toward a more complete understanding of basic biological proc-

esses in plants, especially in economically important plants such as corn and soybeans.

(4) INNOVATION PARTNERSHIPS.—An innovation partnerships program with the purpose of providing competitive, merit-based support for proposals that seek to stimulate innovation at the regional level through partnerships involving States, regional governmental entities, local governmental entities, industry, academic institutions, and other related organizations in strategically important fields of science and technology.

(5) MATHEMATICS AND SCIENCE PARTNERSHIPS.—An education improvement initiative for current teachers that provides eligible partnerships with grants to model ways in which to enhance the capacity of elementary schools and secondary schools, particularly those in high-poverty urban and rural areas, to provide challenging mathematics and science curricula to all students through—

(A) the use of professional mathematicians, scientists, and engineers both in and outside the classroom;

(B) the provision of stipends and technological materials (including computers, training, and other support) for individuals identified by

local educational agencies as potential master teachers, who such agencies assure shall—

(i) mentor and systematically assist other teachers in mathematics and science instruction and the use of technology; and

(ii) be provided with paid, sufficient time to participate in eligible partnership supported activities and those activities described in clause (i);

(C) implementation of summer and academic year professional development institutes that train teachers in mathematics and science content areas and promising pedagogical techniques;

(D) support for distance learning programs in mathematics and science; and

(E) other activities the Director determines will accomplish the goals of this paragraph.

(6) ROBERT C. NOYCE SCHOLARSHIP.—

(A) IN GENERAL.—Multi-year awards to institutions of higher education to provide future teachers who have not less than 2 years of completed work toward a baccalaureate degree in a mathematics or science area with scholar-

ships, stipends, and training toward teacher certification or alternative certification.

(B) SELECTION.—An institution of higher education that receives an award under this paragraph shall provide scholarships, stipends, and training to future teachers based on academic merit, with consideration given to the financial need of such future teachers and the goal of promoting participation of women, minorities, and persons with disabilities.

(C) AMOUNT.—Scholarships and stipends awarded pursuant to this paragraph shall be equal to the lesser of $7,500, or the cost of attendance at the institution of higher education.

(D) SERVICE OBLIGATION.—Not later than 3 years after receiving a scholarship or stipend under this paragraph, an individual shall—

(i) begin to undertake 2 years of teaching mathematics or science in a high poverty school;

(ii) provide the institution of higher education attended by the individual with 2 years of certification of completed full time employment as a mathematics or science teacher in a high poverty school; and

(iii) if necessary return all relevant funds, including interest, awarded pursuant to this paragraph in the event of noncompliance with the terms of this paragraph, unless the Director provides for partial or total waiver of the terms of this subparagraph for individuals due to extreme hardship.

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

(A) IN GENERAL.—A merit-based, multiyear, competitive grant program for eligible applicants to increase the number of students studying toward and receiving associate's or bachelor's degrees in science, mathematics, engineering, and technology.

(B) TYPES OF PROJECTS.—The types of projects the Foundation may support under this paragraph include those that promote high quality—

(i) interdisciplinary teaching;

(ii) undergraduate-conducted research;

(iii) mentor relationships for students in underrepresented groups;

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

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

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

(C) PERFORMANCE ACCOUNTABILITY.—

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

(ii) CONTINUED FUNDING.—In order to receive continued annual funding under this paragraph, an eligible applicant shall meet the benchmarks established under clause (i).

(8) SECONDARY SCHOOL SYSTEMIC INITIATIVE.—A merit-based, competitive grant program for State educational agencies or local educational agencies that supports the planning and implementation of agency-wide secondary school reform initiatives designed to prepare graduating secondary school students to read and comprehend specialized technical and scientific texts, such as computer training materials or the science section of a major newspaper, meet the mathematics and science education needs of students at risk of not achieving State academic achievement standards, reduce the need for basic skill training by employers, and heighten college completion rates, through—

(A) adoption of enriched mathematics and science curricula for all students;

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

(C) creation of smaller learning communities, including initiatives that substantially reduce class size, support new small schools, or small schools within schools;

(D) collaborations between State and local secondary school systems and institutions of

higher education that align curricula and higher education placement requirements; and

(E) other activities the Director determines will accomplish the goals of this paragraph.

(9) EXPERIMENTAL PROGRAM TO STIMULATE COMPETITIVE RESEARCH.—The Experimental Program to Stimulate Competitive Research established under section 113 of the National Science Foundation Authorization Act of 1988 (42 U.S.C. 1862g) as part of the Foundation's crosscutting/interdisciplinary programs. The program shall provide for activities, which may include research infrastructure improvement grants, co-funding initiatives, and outreach initiatives.

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

SEC. 7. MAJOR RESEARCH INSTRUMENTATION.

(a) REVIEW AND ASSESSMENT.—The Director shall conduct a review and assessment of the major research instrumentation program and, not later than 1 year after the date of enactment of this Act, submit a report of find-

ings and recommendations to the Committee on Commerce, Science, and Transportation of the Senate, the Committee on Health, Education, Labor, and Pensions of the Senate, and the Committee on Science of the House of Representatives. The report shall include—

(1) estimates of the needs, by major field of science and engineering and by types of institutions of higher education, for the types of research instrumentation that are eligible for acquisition under the guidelines of the major research instrumentation program;

(2) since the inception of the major research instrumentation program, the distribution of awards and funding levels by year, by major field of science and engineering, and by type of institution of higher education for the program; and

(3) an analysis of the impact of the major research instrumentation program on the research instrumentation needs that were documented in the Foundation's 1994 survey of academic research instrumentation needs.

(b) OSTP ASSESSMENT.—The Director of the Office of Science and Technology Policy shall—

(1) assess the need for and develop an interagency program to establish fully equipped, state-of-

the-art university-based centers for interdisciplinary research and advanced instrumentation development; and

(2) submit a report, not later than 14 months after the date of enactment of this Act, that contains the assessment and the recommended interagency program developed under paragraph (1) to the Committee on Commerce, Science, and Transportation of the Senate, the Committee on Health, Education, Labor, and Pensions of the Senate, and the Committee on Science of the House of Representatives .

SEC. 8. MAJOR RESEARCH EQUIPMENT AND FACILITIES CONSTRUCTION PLAN.

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

(1) DEVELOPMENT OF PRIORITIES.—

(A) LIST.—The Director shall—

(i) develop a list indicating by number the relative priority for funding under the major research equipment and facilities construction account that the Director assigns to each project the Board has approved for inclusion in a future budget request; and

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

(B) UPDATES.—The Director shall update the list prepared under subparagraph (A) each time the Board approves a new project that would receive funding under the major research equipment and facilities construction account, as necessary to prepare reports under paragraph (2), and, from time to time, submit any updated list to the Board for approval.

(2) ANNUAL REPORT.—Not later than 90 days after the date of enactment of this Act, and not later than each June 15 thereafter, the Director shall transmit to Congress a report containing—

(A) the most recent Board-approved priority list developed under paragraph (1)(A);

(B) a description of the criteria used to develop such list; and

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

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

(A) scientific merit;

(B) broad societal need and probable impact;

(C) consideration of the results of formal prioritization efforts by the scientific community;

(D) readiness of plans for construction and operation;

(E) the applicant's management and administrative capacity of large research facilities;

(F) international and interagency commitments; and

(G) the order in which projects were approved by the Board for inclusion in a future budget request.

(b) FACILITIES PLAN.—

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

''(1) IN GENERAL.—The Director shall prepare, and include as part of the Foundation's annual budget request to Congress, a plan for the proposed construction of, and repair and upgrades to, national

research facilities, including full life-cycle cost information.''.

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

(A) in subparagraph (A), by striking ''(1);'' and inserting ''(1), including costs for instrumentation development;'';

(B) at the end of subparagraph (B), by striking ''and'';

(C) in subparagraph (C), by striking ''construction.'' and inserting ''construction;''; and

(D) by adding at the end the following:

''(D) for each project funded under the major research equipment and facilities construction account—

''(i) estimates of the total project cost (from planning to commissioning); and

''(ii) the source of funds, including Federal funding identified by appropriations category and non-Federal funding;

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

''(F) information on any plans to retire national research facilities; and

''(G) estimates of funding levels for grants supporting research that will make use of each national research facility.''.

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

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

(B) by inserting after paragraph (2) the following:

''(3) FULL LIFE-CYCLE COST.—The term 'full life-cycle cost' means all costs of development, procurement, construction, operations and support, and shut-down costs, without regard to funding source and without regard to what entity manages the project.''.

(c) PROJECT MANAGEMENT.—No national research facility project funded under the major research equipment and facilities construction account shall be managed by an individual whose appointment to the Foundation is temporary.

(d) BOARD APPROVAL OF MAJOR RESEARCH EQUIPMENT AND FACILITIES PROJECTS.—

(1) IN GENERAL.—The Board shall explicitly approve any project to be funded out of the major research equipment and facilities construction account before any funds may be obligated from such account for such project.

(2) REPORT.—Not later than September 15 of each fiscal year, the Board shall report to the Committee on Commerce, Science, and Transportation of the Senate, the Committee on Health, Education, Labor, and Pensions of the Senate, and the Committee on Science of the House of Representatives on the conditions of any delegation of authority under section 4 of the National Science Foundation Act of 1950 (42 U.S.C. 1863) that relates to funds appropriated for any project in the major research equipment and facilities construction account.

SEC. 9. ADMINISTRATIVE AMENDMENTS.

(a) ADOPTION OF PROCEDURES FOR MEETINGS.—Section 4(e) of the National Science Foundation Act of 1950 (42 U.S.C. 1863(e)), is amended by striking the second and third sentences and inserting ''The Board shall adopt procedures governing the conduct of its meetings, including a definition of a quorum and delivery of notice.''.

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

"(i) CONFIDENTIALITY OF CERTAIN INFORMATION.—

"(1) IN GENERAL.—

"(A) NONDISCLOSURE.—Information supplied to the Foundation or a contractor of the Foundation in survey forms, questionnaires, or similar instruments for purposes of section 3(a)(5) or (6) by an individual, an industrial or commercial organization, or an educational or academic institution when the institution has received a pledge of confidentiality from the Foundation, shall not be disclosed to the public unless the information has been transformed into statistical or abstract formats that do not allow for the identification of the supplier.

"(B) STATISTICAL OR RESEARCH PURPOSES.—Information that has not been transformed into nonidentifiable formats as described in subparagraph (A) may be used only for statistical or research purposes.

"(C) IDENTITIES.—The identities of individuals and organizations supplying information

described in subparagraph (A) may not be disclosed to the public.

"(2) OBLIGATIONS OF RESEARCHERS.—In support of functions authorized by section 3(a) (5) or (6), the Foundation may designate, at its discretion, authorized persons, including employees of Federal, State or local agencies or instrumentalities (including local educational agencies) and employees of private organizations, to have access, for statistical or research purposes only, to identifiable information collected pursuant to section 3(a) (5) or (6). No such person may—

"(A) publish information collected pursuant to section 3(a) (5) or (6) in such a manner that either an individual, an industrial or commercial organization, or an educational, academic, or other nonprofit institution that has received a pledge of confidentiality from the Foundation can be specifically identified;

"(B) permit anyone other than individuals authorized by the Foundation to examine, in identifiable form, data relating to an individual, an industrial or commercial organization, or an academic, educational, or other non-profit insti-

tution that has received a pledge of confidentiality from the Foundation; or

''(C) knowingly and willfully request or obtain any confidential information described in paragraph (1) from the Foundation under false pretenses.

''(3) PENALTY.—Violation of this subsection is punishable by a fine of not more than $10,000, imprisonment for not more than 5 years, or both.''.

SEC. 10. REPORTS.

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

(b) OPEN MEETINGS.—Not later than 6 months after the date of enactment of this Act, the Chair of the Board

shall transmit to the Committee on Commerce, Science, and Transportation of the Senate, the Committee on Health, Education, Labor, and Pensions of the Senate, and the Committee on Science of the House of Representatives a report describing proposed procedures under which the Board could conduct its meetings so as to ensure greater public access to its deliberations.

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