

NATIONAL SCIENCE FOUNDATION AUTHORIZATION ACT OF
1997

APRIL 21, 1997.—Committed to the Committee of the Whole House on the State of
the Union and ordered to be printed

Mr. SENSENBRENNER, from the Committee on Science,
submitted the following

R E P O R T

together with

ADDITIONAL VIEWS

[To accompany H.R. 1273]

[Including cost estimate of the Congressional Budget Office]

The Committee on Science, to whom was referred the bill (H.R. 1273) to authorize appropriations for fiscal years 1998 and 1999 for the National Science Foundation, and for other purposes, having considered the same, report favorably thereon with an amendment and recommend that the bill as amended do pass.

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I. AMENDMENT

The amendment is as follows:

Strike out all after the enacting clause and insert in lieu thereof the following:

SECTION 1. SHORT TITLE.

This Act may be cited as the “National Science Foundation Authorization Act of 1997”.

SEC. 2. DEFINITIONS.

For purposes of this Act—

- (1) the term “Director” means the Director of the Foundation;
- (2) the term “Foundation” means the National Science Foundation;
- (3) the term “institution of higher education” has the meaning given such term in section 1201(a) of the Higher Education Act of 1965;
- (4) 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; and
- (5) the term “United States” means the several States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and any other territory or possession of the United States.

TITLE I—NATIONAL SCIENCE FOUNDATION AUTHORIZATION

SEC. 101. AUTHORIZATION OF APPROPRIATIONS.

(a) FINDINGS.—The Congress finds that—

- (1) the programs of the Foundation are important for the Nation to strengthen basic research and develop human resources in science and engineering, and that those programs should be funded at an adequate level;
- (2) the primary mission of the Foundation continues to be the support of basic scientific research and science education and the support of research fundamental to the engineering process and engineering education; and
- (3) the Foundation’s efforts to contribute to the economic competitiveness of the United States should be in accord with that primary mission.

(b) FISCAL YEAR 1998.—There are authorized to be appropriated to the Foundation \$3,505,630,000 for fiscal year 1998, which shall be available for the following categories:

- (1) Research and Related Activities, \$2,563,330,000, of which—
 - (A) \$330,820,000 shall be for Biological Sciences;
 - (B) \$289,170,000 shall be for Computer and Information Science and Engineering;
 - (C) \$360,470,000 shall be for Engineering;
 - (D) \$452,610,000 shall be for Geosciences;
 - (E) \$715,710,000 shall be for Mathematical and Physical Sciences;
 - (F) \$130,660,000 shall be for Social, Behavioral, and Economic Sciences, including \$1,000,000 for the United States-Mexico Foundation for Science;
 - (G) \$165,930,000 shall be for United States Polar Research Programs;
 - (H) \$62,600,000 shall be for United States Antarctic Logistical Support Activities; and
 - (I) \$2,730,000 shall be for the Critical Technologies Institute.
- (2) Education and Human Resources Activities, \$625,500,000.
- (3) Major Research Equipment, \$175,000,000.
- (4) Salaries and Expenses, \$136,950,000, of which \$5,200,000 shall be for Headquarters Relocation.

(5) Office of Inspector General, \$4,850,000.

(c) FISCAL YEAR 1999.—There are authorized to be appropriated to the Foundation \$3,613,630,000 for fiscal year 1999, which shall be available for the following categories:

(1) Research and Related Activities, \$2,740,000,000, including \$1,000,000 for the United States-Mexico Foundation for Science.

(2) Education and Human Resources Activities, \$644,245,000.

(3) Major Research Equipment, \$90,000,000, of which no funds are authorized for the Large Hadron Collider project at the European Organization for Nuclear Research (CERN) unless the Director, in consultation with the Secretary of Energy, has transmitted to the Committee on Science of the House of Representatives and the Committees on Labor and Human Resources and Commerce, Science, and Transportation of the Senate a report on the impacts of such funding on the operations and viability of United States high energy and nuclear physics facilities.

(4) Salaries and Expenses, \$134,385,000.

(5) Office of Inspector General, \$5,000,000.

SEC. 102. PROPORTIONAL REDUCTION OF RESEARCH AND RELATED ACTIVITIES AMOUNTS.

If the amount appropriated pursuant to section 101(b)(1) or (c)(1) is less than the amount authorized under that paragraph, the amount available for each scientific directorate under that paragraph shall be reduced by the same proportion.

SEC. 103. CONSULTATION AND REPRESENTATION EXPENSES.

From appropriations made under authorizations provided in this Act, not more than \$10,000 may be used in each fiscal year for official consultation, representation, or other extraordinary expenses at the discretion of the Director. The determination of the Director shall be final and conclusive upon the accounting officers of the Government.

TITLE II—GENERAL PROVISIONS

SEC. 201. NATIONAL RESEARCH FACILITIES.

(a) FACILITIES PLAN.—The Director shall provide to Congress, not later than December 1 of each year, a plan for the proposed construction of, and repair and upgrades to, national research facilities. The plan shall include estimates of the cost for such construction, repairs, and upgrades, and estimates of the cost for the operation and maintenance of existing and proposed new facilities. For proposed new construction and for major upgrades to existing facilities, the plan shall include funding profiles by fiscal year and milestones for major phases of the construction. The plan shall include cost estimates in the categories of construction, repair, and upgrades for the year in which the plan is submitted to Congress and for not fewer than the succeeding 4 years.

(b) STATUS OF FACILITIES UNDER CONSTRUCTION.—The plan required under subsection (a) shall include a status report for each uncompleted construction project included in the current and previous plans. The status report shall include data on cumulative construction costs by project compared with estimated costs, and shall compare the current and original schedules for achievement of milestones for major phases of the construction.

(c) LIMITATION ON OBLIGATION OF UNAUTHORIZED APPROPRIATIONS.—No funds appropriated for any project which involves construction of new national research facilities or construction necessary for upgrading the capabilities of existing national research facilities shall be obligated unless the funds are specifically authorized for such purpose by this Act or any other Act which is not an appropriations Act, or unless the total estimated cost to the Foundation of the construction project is less than \$50,000,000. This subsection shall not apply to construction projects approved by the National Science Board prior to June 30, 1997.

SEC. 202. ADMINISTRATIVE AMENDMENTS.

(a) NATIONAL SCIENCE FOUNDATION ACT OF 1950 AMENDMENTS.—The National Science Foundation Act of 1950 (42 U.S.C. 1861 et seq.) is amended—

(1) in section 4 (42 U.S.C. 1863)—

(A) by striking “the appropriate rate provided for individuals in grade GS–18 of the General Schedule under section 5332” in subsection (g) and inserting in lieu thereof “the maximum rate payable under section 5376”; and

- (B) by redesignating the subsection (k) that was added by section 108 of the National Science Foundation Authorization Act of 1988 as subsection (l);
- (2) in section 5(e) (42 U.S.C. 1864(e)) by amending paragraph (2) to read as follows:
- “(2) Any delegation of authority or imposition of conditions under paragraph (1) shall be promptly published in the Federal Register and reported to the Committees on Labor and Human Resources and Commerce, Science, and Transportation of the Senate and the Committee on Science of the House of Representatives.”;
- (3) in section 14(c) (42 U.S.C. 1873(c))—
- (A) by inserting “be entitled to” between “shall” and “receive”;
- (B) by inserting “, including traveltime,” after “Foundation”;
- (C) by striking “the rate specified for the daily rate for GS-18 of the General Schedule under section 5332” and inserting in lieu thereof “the maximum rate payable under section 5376”; and
- (D) by adding at the end the following new sentence: “Members of the Board and special commissions may waive compensation and reimbursement for travel expenses.”; and
- (4) by striking “Atomic Energy Commission” in section 15(a) (42 U.S.C. 1874(a)) and inserting in lieu thereof “Secretary of Energy”.
- (b) NATIONAL SCIENCE FOUNDATION AUTHORIZATION ACT, 1976 AMENDMENTS.—Section 6(a) of the National Science Foundation Authorization Act, 1976 (42 U.S.C. 1881a(a)) is amended by striking “social,” the first place it appears.
- (c) NATIONAL SCIENCE FOUNDATION AUTHORIZATION ACT OF 1988 AMENDMENTS.—(1) Section 117(a)(1)(B)(v) of the National Science Foundation Authorization Act of 1988 (42 U.S.C. 1881b(1)(B)(v)) is amended to read as follows:
- “(v) from schools established outside the several States and the District of Columbia by any agency of the Federal Government for dependents of its employees.”.
- (2) Section 117(a)(3)(A) of such Act (42 U.S.C. 1881b(3)(A)) is amended by striking “Science and Engineering Education” and inserting in lieu thereof “Education and Human Resources”.
- (d) SCIENCE AND ENGINEERING EQUAL OPPORTUNITIES ACT AMENDMENTS.—The Science and Engineering Equal Opportunities Act is amended—
- (1) in section 34 (42 U.S.C. 1885b)—
- (A) by amending the section heading to read as follows: “PARTICIPATION IN SCIENCE AND ENGINEERING OF MINORITIES AND PERSONS WITH DISABILITIES”; and
- (B) by amending subsection (b) to read as follows:
- “(b) The Foundation is authorized to undertake or support programs and activities to encourage the participation of persons with disabilities in the science and engineering professions.”; and
- (2) in section 36 (42 U.S.C. 1885c)—
- (A) by striking “minorities,” and all that follows through “in scientific” in subsection (a) and inserting in lieu thereof “minorities, and persons with disabilities in scientific”;
- (B) in subsection (b)—
- (i) by striking “with the concurrence of the National Science Board”; and
- (ii) by amending the second sentence thereof to read as follows: “In addition, the Chairman of the National Science Board may designate a member of the Board as a member of the Committee.”;
- (C) by striking subsections (c) and (d);
- (D) by redesignating subsections (e) and (f) as subsections (d) and (e), respectively;
- (E) by inserting after subsection (b) the following new subsection:
- “(c) The Committee shall be responsible for reviewing and evaluating all Foundation matters relating to participation in, opportunities for, and advancement in education, training, and research in science and engineering of women, minorities, and persons with disabilities.”; and
- (F) in subsection (d), as so redesignated by subparagraph (D) of this paragraph, by striking “additional”.
- (e) TECHNICAL AMENDMENT.—The second subsection (g) of section 3 of the National Science Foundation Act of 1950 is repealed.

SEC. 203. INDIRECT COSTS.

- (a) MATCHING FUNDS.—Matching funds required pursuant to section 204(a)(2)(C) of the Academic Research Facilities Modernization Act of 1988 (42 U.S.C.

1862c(a)(2)(C)) shall not be considered facilities costs for purposes of determining indirect cost rates.

(b) REPORT.—The Director of the Office of Science and Technology Policy, in consultation with other relevant agencies, shall prepare a report analyzing what steps would be needed to—

(1) reduce by 10 percent the proportion of Federal assistance to institutions of higher education that are allocated for indirect costs; and

(2) reduce the variance among indirect cost rates of different institutions of higher education, including an evaluation of the relative benefits and burdens of each option on institutions of higher education. Such report shall be transmitted to the Congress no later than December 31, 1997.

SEC. 204. FINANCIAL DISCLOSURE.

Persons temporarily employed by or at the Foundation shall be subject to the same financial disclosure requirements and related sanctions under the Ethics in Government Act of 1978 as are permanent employees of the Foundation in equivalent positions.

SEC. 205. EDUCATIONAL LEAVE OF ABSENCE FOR ACTIVE DUTY.

In order to be eligible to receive funds from the Foundation after September 30, 1997, an institution of higher education must provide that whenever any student of the institution who is a member of the National Guard, or other reserve component of the Armed Forces of the United States, is called or ordered to active duty, other than active duty for training, the institution shall grant the member a military leave of absence from their education. Persons on military leave of absence from their institution shall be entitled, upon release from military duty, to be restored to the educational status they had attained prior to their being ordered to military duty without loss of academic credits earned, scholarships or grants awarded, or tuition and other fees paid prior to the commencement of the military duty. It shall be the duty of the institution to refund tuition or fees paid or to credit the tuition and fees to the next semester or term after the termination of the educational military leave of absence at the option of the student.

SEC. 206. SCIENCE AND TECHNOLOGY POLICY INSTITUTE.

(a) AMENDMENT.—Section 822 of the National Defense Authorization Act for Fiscal Year 1991 (42 U.S.C. 6686) is amended—

(1) by striking “Critical Technologies Institute” in the section heading and in subsection (a), and inserting in lieu thereof “Science and Technology Policy Institute”;

(2) in subsection (b) by striking “As determined by the chairman of the committee referred to in subsection (c), the” and inserting in lieu thereof “The”;

(3) by striking subsection (c), and redesignating subsections (d), (e), (f), and (g) as subsections (c), (d), (e), and (f), respectively;

(4) in subsection (c), as so redesignated by paragraph (3) of this subsection—
(A) by inserting “science and” after “developments and trends in” in paragraph (1);

(B) by striking “with particular emphasis” in paragraph (1) and all that follows through the end of such paragraph and inserting in lieu thereof “and developing and maintaining relevant informational and analytical tools.”;

(C) by striking “to determine” and all that follows through “technology policies” in paragraph (2) and inserting in lieu thereof “with particular attention to the scope and content of the Federal science and technology research and development portfolio as it affects interagency and national issues”;

(D) by amending paragraph (3) to read as follows:

“(3) Initiation of studies and analysis of alternatives available for ensuring the long-term strength of the United States in the development and application of science and technology, including appropriate roles for the Federal Government, State governments, private industry, and institutions of higher education in the development and application of science and technology.”;

(E) by inserting “science and” after “Executive branch on” in paragraph (4)(A); and

(F) by amending paragraph (4)(B) to read as follows:

“(B) to the interagency committees and panels of the Federal Government concerned with science and technology.”;

(5) in subsection (d), as so redesignated by paragraph (3) of this subsection, by striking “subsection (d)” and inserting in lieu thereof “subsection (c)”;

(6) by amending subsection (f), as so redesignated by paragraph (3) of this subsection, to read as follows:

“(f) SPONSORSHIP.—The Director of the Office of Science and Technology Policy shall be the sponsor of the Institute.”.

(b) CONFORMING USAGE.—All references in Federal law or regulations to the Critical Technologies Institute shall be considered to be references to the Science and Technology Policy Institute.

SEC. 207. NEXT GENERATION INTERNET.

None of the funds authorized by this Act, or any other Act enacted before the date of the enactment of this Act, may be used for the Next Generation Internet. Notwithstanding the previous sentence, funds may be used for the continuation of programs and activities that were funded and carried out during fiscal year 1997.

SEC. 208. LIMITATIONS.

(a) PROHIBITION OF LOBBYING ACTIVITIES.—None of the funds authorized by this Act shall be available for any activity whose purpose is to influence legislation pending before the Congress, except that this subsection shall not prevent officers or employees of the United States or of its departments or agencies from communicating to Members of Congress on the request of any Member or to Congress, through the proper channels, requests for legislation or appropriations which they deem necessary for the efficient conduct of the public business.

(b) LIMITATION ON APPROPRIATIONS.—No sums are authorized to be appropriated to the Director for fiscal years 1998 and 1999 for the activities for which sums are authorized by this Act, unless such sums are specifically authorized to be appropriated by this Act.

(c) ELIGIBILITY FOR AWARDS.—

(1) IN GENERAL.—The Director shall exclude from consideration for grant agreements made by the Foundation after fiscal year 1997 any person who received funds, other than those described in paragraph (2), appropriated for a fiscal year after fiscal year 1997, under a grant agreement from any Federal funding source for a project that was not subjected to a competitive, merit-based award process. Any exclusion from consideration pursuant to this subsection shall be effective for a period of 5 years after the person receives such Federal funds.

(2) EXCEPTION.—Paragraph (1) shall not apply to the receipt of Federal funds by a person due to the membership of that person in a class specified by law for which assistance is awarded to members of the class according to a formula provided by law.

(3) DEFINITION.—For purposes of this subsection, the term “grant agreement” means a legal instrument whose principal purpose is to transfer a thing of value to the recipient to carry out a public purpose of support or stimulation authorized by a law of the United States, and does not include the acquisition (by purchase, lease, or barter) of property or services for the direct benefit or use of the United States Government. Such term does not include a cooperative agreement (as such term is used in section 6305 of title 31, United States Code) or a cooperative research and development agreement (as such term is defined in section 12(d)(1) of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3710a(d)(1))).

SEC. 209. NOTICE.

(a) NOTICE OF REPROGRAMMING.—If any funds authorized by this Act are subject to a reprogramming action that requires notice to be provided to the Appropriations Committees of the House of Representatives and the Senate, notice of such action shall concurrently be provided to the Committee on Science of the House of Representatives and the Committees on Labor and Human Resources and Commerce, Science, and Transportation of the Senate.

(b) NOTICE OF REORGANIZATION.—The Director shall provide notice to the Committees on Science and Appropriations of the House of Representatives, and the Committees on Labor and Human Resources, Commerce, Science, and Transportation, and Appropriations of the Senate, not later than 15 days before any major reorganization of any program, project, or activity of the Foundation.

SEC. 210. SENSE OF CONGRESS ON THE YEAR 2000 PROBLEM.

With the year 2000 fast approaching, it is the sense of Congress that the Foundation should—

(1) give high priority to correcting all 2-digit date-related problems in its computer systems to ensure that those systems continue to operate effectively in the year 2000 and beyond;

- (2) assess immediately the extent of the risk to the operations of the Foundation posed by the problems referred to in paragraph (1), and plan and budget for achieving Year 2000 compliance for all of its mission-critical systems; and
- (3) develop contingency plans for those systems that the Foundation is unable to correct in time.

SEC. 211. NATIONAL OCEANOGRAPHIC PARTNERSHIP PROGRAM.

The National Science Foundation is authorized to participate in the National Oceanic Partnership Program established by the National Oceanic Partnership Act (Public Law 104–201).

SEC. 212. BUY AMERICAN.

(a) **COMPLIANCE WITH BUY AMERICAN ACT.**—No funds appropriated pursuant to this Act may be expended by an entity unless the entity agrees that in expending the assistance the entity will comply with sections 2 through 4 of the Act of March 3, 1933 (41 U.S.C. 10a–10c, popularly known as the “Buy American Act”).

(b) **SENSE OF CONGRESS.**—In the case of any equipment or products that may be authorized to be purchased with financial assistance provided under this Act, it is the sense of Congress that entities receiving such assistance should, in expending the assistance, purchase only American-made equipment and products.

(c) **NOTICE TO RECIPIENTS OF ASSISTANCE.**—In providing financial assistance under this Act, the Director shall provide to each recipient of the assistance a notice describing the statement made in subsection (a) by the Congress.

II. PURPOSE OF THE BILL

The purpose of the bill is to authorize appropriations for FY 98 and FY 99 for the National Science Foundation (NSF) and other purposes. H.R. 1273 contains \$3,505,630,000 in authorization for the programs of the NSF in FY 1998 and \$3,613,630,000 for FY 99.

III. BACKGROUND AND NEED FOR LEGISLATION

The National Science Foundation Act of 1950 authorizes and directs NSF to initiate and support basic research and programs to strengthen research potential and education at all levels in the sciences and engineering. The Act reinforces that basic research and education have traditionally constituted the heart of the NSF’s mission.

IV. SUMMARY OF HEARINGS

On March 5, 1997, the Subcommittee on Basic Research held the first of three hearings (with a fourth hearing conducted by the full Committee) to receive testimony on the Administration’s fiscal year (FY) 1998 budget request for the National Science Foundation (NSF). NSF is a key supporter of U.S. scientific strength by funding research and education activities in all fields of science and engineering at more than 2,000 colleges, universities and research institutions throughout the United States. NSF provides approximately 25 percent of basic research funding at universities and over 50 percent of the federal funding for basic research in certain fields of science, including math, computer sciences, environmental sciences, and the social sciences. Moreover, NSF plays an important role in pre-college and undergraduate science and mathematics education through programs of model curriculum development, teacher preparation and enhancement, and informal science education.

Witnesses at the first hearing included: Dr. Richard Zare, Chairman of the National Science Board, and Dr. Neal Lane, Director of the National Science Foundation, accompanied by Dr. Joseph

Bordogna, Acting Deputy Director of the National Science Foundation.

Dr. Zare's testimony focused on the research and education activities supported by the NSF as well as the work of the National Science Board (NSB) in developing the NSF budget for FY 1998 and in achieving a better understanding of how federal agency research programs fit into the broader national picture of federal support for research. According to Dr. Zare, NSF's FY 1998 budget will fund thousands of research projects and efforts to improve the United States' education in science, mathematics, engineering, and technology. Dr. Zare highlighted a new NSF initiative, Knowledge and Distributed Intelligence (KDI), which seeks to improve the connection between research and teaching and learning technologies. He noted that the NSF's investments in the Next Generation Internet will be a part of the KDI package, but added that although NSF will have an important role in the development of the Next Generation Internet, NSF is looking beyond that project. Dr. Zare also indicated the NSB's intention to adopt revised criteria for proposal review, reducing the number of criteria from four to two, for NSF project selection. In addition, he announced that the revised plan has been open for public comment from the scientific community. The NSB, added Dr. Zare, will also be providing oversight of NSF as it develops methods and processes to comply with the Government Performance and Results Act. Dr. Zare pointed out that aside from the its oversight of NSF, the NSB has a role in monitoring the health of science and engineering in the U.S. and in providing advice on national policy in research and education.

Dr. Lane stated that the \$3.367 billion budget request for the NSF in FY 1998 allows for investment in more than 19,000 science and engineering research and education projects and emphasized the budget's compliance with the NSF Strategic Plan. He emphasized the NSF's efforts to develop performance measurements so that the next budget submission complies with the Government Performance and Results Act as well. Dr. Lane indicated that numerous innovations, from biotechnology to high speed computational and communications technologies, all have roots in the fundamental research and education supported through the NSF and other agencies and are the key to productivity in a wide array of industries and sectors. In addition, Dr. Lane pointed out that the NSF's role in support of university-based research and education, a vital link to the competitive position of U.S. industry, is among the most productive of all public investments. Responding to concerns over the recompetition and planned down-selection of the NSF's supercomputing centers, Dr. Lane indicated the NSF's goal for a seamless transition for high-end users under the new plan and stated that detailed information on the impact of the down-selection will be available later this month. Dr. Lane highlighted priorities in the FY 1998 request, including: a focused, multidisciplinary \$58 million program of activities in support of KDI research, infrastructure development, and education; continued development of the program for the study of life in extreme environments; and support of innovative, systematic approaches to education and training at all levels to address the challenges of the changing scientific landscape facing students of the 21st century.

Further, Dr. Lane indicated the NSF's understanding of the need for investment in research facilities to support the activities of researchers and educators. Addressing concerns of cost-overruns in the construction of new NSF-funded facilities, Dr. Lane informed the Subcommittee that the NSF is not only aware of the problem, but is actively designing a plan to minimize cost-overruns.

On March 12, 1997, the Committee on Science held a hearing entitled, "The United States and Antarctica in the 21st Century." The hearing was held to review the United States Antarctic Program External Panel's report entitled, "The United States and Antarctica in the 21st Century." The discussion focused on the importance of U.S. presence in the Antarctic. The hearing also addressed the long-term funding issues of the U.S. Antarctic Program, including the future of the South Pole Station. The U.S. Antarctic Program is managed by the NSF.

Witness: Mr. Norman Augustine, Chairman of the United States Antarctic Program External Panel for the National Science Foundation.

Mr. Augustine testified that U.S. presence in Antarctica is essential for continued political stability in the area and the preservation of its ecological system. He further discussed the Panel's conclusion that it is a necessity to redevelop America's research facility at the South Pole in order to respond to the challenges of modern-day science in the Antarctic. The Panel recommends a continued year-round presence in the Antarctic to protect the U.S. position on sovereignty in the region and to provide the U.S. a decisive role in the Antarctic Treaty's activities-based decision system, both of which are essential to maintaining the political and legal balance that makes the Treaty work. Mr. Augustine identified four factors which make the time between now and the year 2000 a particularly significant period to develop new means of reducing costs and re-inventing ways of conducting Antarctic activities. In his testimony he listed twelve principle recommendations made by the Panel to continue U.S. leadership in Antarctic issues.

On March 13, 1997, the Subcommittee on Basic Research held the second of three Subcommittee hearings to receive testimony on the Administration's fiscal year (FY) 1998 budget request for the National Science Foundation (NSF). Witnesses were asked to assess the NSF's science, math, and engineering education programs. In addition, to examining the budget requests for these programs, witnesses were also asked to address the impacts and expectations of the programs.

Witnesses included: Mr. Richard P. Mills, Commissioner of Education, New York State Department of Education, and President of the University of the State of New York; Dr. Edward A. Friedman, Director, Center for Improvement of Engineering and Science Education, Stevens Institute of Technology; Dr. Nathan S. Lewis, Professor of Chemistry and Chemical Engineering, California Institute of Technology; and Dr. Alfredo de los Santos, Jr., Vice Chancellor for Student and Educational Development, Maricopa County Colleges.

Mr. Mills emphasized the importance of NSF education initiatives, not only as a funding source, but also as a strategic resource to improve the achievement level of New York State's students. Ac-

According to Mr. Mills, as result of NSF's urging and the State's own needs, The New York State Systematic Initiative (NYSSI), from its inception in 1993, has evolved from an attempt to improve math, science, and technology education in New York's challenging urban schools to become the focus of the statewide effort to implement new learning standards in math, science, and technology. He explained that SSI is a philosophy of changes that help teachers develop habits of planning and teaching that guide students to deeper understanding of concepts and application of knowledge. Mr. Mills pointed out that the NSF's \$10 million investment has been the driving force to bring together the capacity to meet these higher standards. He added that NSF has brought vision and discipline to elementary and secondary education as well as an insistence upon results, and a systematic approach that allows students to engage in inquiry-based learning. However, Mr. Mills indicated that, in addition to NSF's contribution to the establishment of higher standards, the curriculum, the teacher training, and the links with higher education are all necessary factors for achieving better results in the education of the nation's children.

Dr. Friedman expressed frustration that school systems currently lag behind industry and higher education in integrating information technology into the educational process. He also indicated his concern that some schools are in danger of moving ahead with hardware without the capability to implement the technology into classroom learning. According to Dr. Friedman, NSF should play a leadership role in transforming schools into technological front runners by developing an effective strategy and incorporating the technology into the mainstream of NSF's various educational programs. He stressed a need for the participation of practicing scientists in NSF education programs as well as support for multidisciplinary team efforts. As these programs develop, Dr. Friedman emphasized that they will need mechanisms to facilitate timely wide-scale dissemination requiring coordination with publishers, educational television producers, and state departments of education. In addition, he indicated the advantage of regional centers where teachers and school systems can receive guidance and support for the integration of technology. Dr. Friedman suggested NSF engage in the implementation of an infrastructure that makes use of distance learning technologies with on-site support from such regional resource centers. He emphasized these training centers should be pursued in parallel with curriculum development, teacher enhancement, evaluation, and other programs which NSF supports. Mr. Friedman added that although teachers and students in some foreign countries, like Bulgaria, have superior training and education in math and science, the U.S. leads the world in the use of technology in the classroom. According to Mr. Friedman, the U.S. has a real opportunity to expand its effectiveness in math and science education by capitalizing on this resource.

Dr. Lewis commended NSF for allowing Caltech to establish a national model for a coordinated, institution-wide effort to incorporate multimedia materials into the routine course experiences of the science and engineering student. His testimony focused on the new NSF-supported Teaching and Interdisciplinary Education program (TIDE) at Caltech which was designed to foster Institute-

wide development of multi-media educational tools involving the combined teaching skills and technical backgrounds of undergraduate students and Caltech faculty. Although the program was primarily designed to enhance the educational experience of Caltech students, according to Dr. Lewis, the project is now involved in expanding the effort to make the new media and technology widely available for many science and technology disciplines in order to educate the broadest cross section of students at a variety of educational levels. Dr. Lewis cited the Caltech Chemistry Animation Project, one example of an effective teaching resource developed at Caltech, which is used in six countries by over half a million students to help teach chemistry to students and teachers. In addition to its support of education programs at Caltech, Dr. Lewis commended NSF for not putting all of its eggs into one basket and allowing for experimental technology integration programs at all educational levels. He added that networking among teachers is the highest leverage that the U.S. has to improve its entire educational system and advocates a teacher training center at which educators from the K-12 and community college level can share experimental ideas and results.

Dr. de los Santos noted that increasingly, as adults must return to school to obtain new skills and upgrade old ones, the task of providing that education falls upon undergraduate institutions, especially community colleges. He explained that the NSF and its Division of Undergraduate Education supports institutes, laboratories, and curriculum development projects that are having a substantial effect on the ability of community colleges to provide the high level of education and training necessary for a technology-based society. According to Dr. de los Santos, one of Division's programs, the Advanced Technology Education (ATE) program, is a unique partnership designed for associate degree-granting institutions to promote improvement in advanced technological education through the support of curriculum development and program improvement, and by targeting technicians being educated for employment that requires the use of advanced technologies. He explained that the ATE program's success can be measured in several ways: It produces new ways to train and educate the workforce; it brings business and education together in new and productive ways; and it stimulates innovation among those competing for the grants. Dr. de los Santos added that ATE's greatest strength is the very close partnerships between industry and educational institutions it fosters, and he indicated that companies such as Motorola and Intel are contributing equipment, software and scholarships. He praised NSF for fostering a fundamental change in the relationships between community colleges and business and industry.

On April 9, 1997, the Subcommittee on Basic Research held a third and final hearing to receive testimony on the National Science Foundation's (NSF) fiscal year (FY) 1998 authorization. Witnesses testified on the results of the National Science Board's Partnership for Advanced Computational Infrastructure (PACI) program as well as the new proposed facilities within the Major Research Equipment (MRE) Account of the NSF budget and the Internet II/Next Generation Internet (NGI) initiative.

Witnesses testifying on the PACI program included Dr. Richard Zare, Chairman, National Science Board; Dr. Neal Lane, Director, National Science Foundation; Dr. Paul Young, Senior Advisor, Computer and Information Science and Engineering (CISE), National Science Foundation; and Dr. Shirley M. Malcom, Member of the Executive Committee, National Science Board. Testimony on programs within the MRE Account and the Internet II/Next Generation Internet (NGI) initiative was received from Dr. Graham B. Spanier, President, Penn State University; Dr. Michael Kelley, Professor, School of Electrical Engineering, Cornell University; and Dr. Paul A. Vanden Bout, Director, National Radio Astronomy Observatory.

Dr. Zare announced the National Science Board's (NSB) approval for selection of two awardees for the PACI program and the phase out awards for two existing supercomputer centers. Dr. Zare emphasized that the rapidly shifting world of computer science and engineering has forced the Board to make difficult choices to curtail support for good projects and initiate support for others that promise to produce better results. According to Dr. Zare, this is why the NSB requested that the NSF develop a plan for supercomputing designed to take advantage of the new distributed environment in information science and technology. He indicated that the new PACI program is made possible by breakthroughs in high-speed networking and advanced computer architecture and is consistent with the Board's vision of the future in information science and technology. According to Dr. Zare, the program will keep the U.S. ahead in all fields of science and engineering while also pushing the technological advances that will fuel economic growth. Dr. Zare stated that the program will also allow students and scientists at all levels to enjoy a vast resource for education and training through the multitude of new participating PACI institutions. He emphasized that innovative partnerships, which increase the opportunities for more people to use these resources and push the frontiers of knowledge, are the core of the PACI program.

Dr. Lane stated that NSF's PACI program goes well beyond the current paradigm of supercomputing centers and was carefully designed to build the infrastructure needed for both the education and training of future generations of world leaders in science and technology. He stated that after 10 years of the successful Supercomputer Centers Program, the NSB asked whether NSF should continue support for the current program or phase out the existing program to make room for a new one. To answer that question, Dr. Lane appointed the Hayes Task Force, comprised of high performance computing experts from academia, industry and government, who presented a vision of the future of supercomputing and proposed that NSF announce a new competition for a restructured High Performance Computing Centers program that would permit funding of selected sites for a period of 5 years. Dr. Lane stated the two major changes to the existing program recommended by the task force: First, support of national "leading-edge sites" with a balanced set of high-end hardware and software capabilities, coupled with appropriate staff; and second, partnering of each leading-edge site with experimental facilities at universities, NSF research centers, and/or national and regional high performance computing cen-

ters. According to Dr. Lane, the task force also urged that the new PACI program support the needs of the national computational science community through leading edge sites and their partners, rather than through independent basic research. He highlighted the report's recommendation that the computational capability of the leading edge centers should be one or two orders of magnitude beyond what is available at leading research universities. According to Dr. Lane, it was clear that a reduction in the number of sites would likely be necessary to achieve such economies of operation and to maintain the very high end capability.

Dr. Young stated that the new PACI program is an important element in the Foundation's future infrastructure for the support of academic science and engineering, research and education. He announced that the selection of the National Computational Science Alliance (NCSA), led by the University of Illinois at Urbana/Champaign, and the National Partnership for Advanced Computational Infrastructure (NPACI), led by the University of California, San Diego represents the formal beginning of the new PACI Program. Dr. Young indicated that the Hayes Task Force felt that two major technological factors called for a change in the structure of the existing Centers Program: The increasing dominance of scaleable parallel computers, with their promise of highly cost effective computing power; and the expected growth and ubiquity of high speed networks. According to Dr. Young, breakthrough technologies and intellectual challenges led the Task Force to recommend a new program based on extensive partnerships and to be selected through a rigorous open competition for the best ideas and minds. He emphasized that the panel's decision was unanimous that two of the organizations had met the requirements in the program solicitation and the two successful proposals were highly complementary, forming together, a balanced national program involving some of the best minds and the finest institutions in the country. Dr. Young also stated that the Board approved funds to phase out NSF's support for the current NSF Supercomputer Centers at Pittsburgh and Cornell, convinced that after a transition period, the new program would fully pick up the load and that the new directions were the best way to insure that computation would continue to flourish in the coming environment.

Dr. Malcom provided insight into the processes and workings of the National Science Board in considering the proposals presented during the recompetition of the NSF Supercomputer Centers. She stated that in May 1994, the Board delegated to the Director the authority to approve awards up to \$3 million in one year and \$15 million over 5 years. Dr. Malcom indicated that the NSB reviews and acts directly on the proposals above that threshold. She stated that the NSF staff process includes reviews at higher management levels, including, for packages that come to the NSB, a review by the Director's Review Board, or DRB. Once packages are approved by the DRB, they come to the Board and are assigned to one of our committees for in-depth consideration, then presented to the Board for action. According to Dr. Malcom, the NSF staff provided a presentation to the Board on the supercomputer centers' proposal packages, after which a lead reviewer and a secondary reviewer provided detailed reviews, commented on issues for which more infor-

mation was needed, and made comments as to the fairness of the procedures and the appropriateness of the recommendations from staff. She emphasized that the Board's discussion of the proposals considered issues such as assurance that a diverse set of computer architectures were used by the partnerships, the management of large, far flung partnerships, the effects of budget reductions on the overall coherence of the proposed projects, and the transition process to the new program and its impact on the user community. Dr. Malcom assured the Subcommittee that the Board was aware of challenges that had been made by competitors about the fairness of the selection process, asked hard questions, reviewed reports from the merit review process, and assured themselves that the review process was thorough, fair, and consistent with NSF's high standards.

In testimony on the Internet II/Next Generation Internet Initiative, Dr. Spanier explained that in order to continue the rapid growth of the Internet, investment in both basic and applied research in networking will be necessary to meet the expanding information and communication needs of the 21st Century. He emphasized that the "one size fits all" Internet currently used must be overhauled to support a greater variety of uses and that there must also be an organized process through which discoveries at the basic research level are moved into the applied development phase and then transitioned into routine commercial use. Dr. Spanier explained that the Internet II will address the major challenges facing the next generation of university networks by: creating and sustaining a leading edge network capability for the national research community; directing network development efforts to enable a new generation of applications to exploit fully the capabilities of broadband networks; and integrating the work of Internet II with ongoing efforts to improve production Internet services for all members of the academic community. According to Dr. Spanier, the President's Next Generation Internet (NGI) Initiative's goals are compatible with those of the Internet II with the joint goal of ensuring that a developmental high performance network is available to the academic and research community at the earliest opportunity. However, he noted that like all partnerships, there are areas of NGI and Internet II that reflect the specific needs of the government and of the universities that will be conducted separately. Finally, Dr. Spanier recommended that the High Performance Connections (HPC) element of the NSF's Very High Performance Backbone Network System (vBNS) be used as the means to fulfill the federal role in implementing the first goal of the NGI program.

In testimony on the NSF's Major Research Equipment (MRE) account, Dr. Kelley announced that the proposed Polar Cap Observatory (PCO) will be the next evolutionary step in an existing chain of facilities sponsored by NSF. He indicated the Foundation's support of four existing stations: one at the magnetic equator near Lima, Peru (operated by Cornell University); a second near Arecibo, Puerto Rico (also operated by Cornell University); a third near Boston, Massachusetts (operated by MIT); and the fourth station located in southern Greenland (operated by SRI International). According to Dr. Kelly, the need for the completion of this chain with

an upper atmospheric observatory near the magnetic North Pole has become clear as scientists have realized the importance of the polar cap. He explained that the capstone instrument at each site is a high power radar, capable of measuring temperature, densities and wind velocity from the top of the atmosphere to thousands of kilometers into space. Dr. Kelley added the PCO will be able to measure the electronic field that originates from solar wind which interacts with the Earth's magnetic field and penetrates downward into the Earth's upper atmosphere, sometimes causing disruptions in communications and satellite transmissions. He emphasized that space weather can also destroy satellites, damage electrical power grids and present a health hazard to astronauts. Dr. Kelley indicated that the PCO will be a major contributor to understanding space weather and assist in making timely and accurate space environment forecasts in order to prevent damage from powerful space storms.

Dr. Vanden Bout stated that the Millimeter Array (MMA) radio telescope will provide images of astronomical objects as they appear at millimeter wavelengths which exceed the quality of those at optical and infrared wavelengths taken with the Hubble Space Telescope. He highlighted the MMA's capability to provide an unprecedented view of the origins of galaxies, stars and planets. According to Dr. Vanden Bout, the MMA has had an extensive planning history, during which the community developed the concept in response to scientific requirements. He emphasized that no aperture synthesis telescope on the scale of the Millimeter Array has ever been built at millimeter wavelengths, and for that reason, two stages were proposed: a development phase and a construction phase. He explained that during the development phase, the antenna, key electronic and software systems will all be designed and prototyped. Dr. Vanden Bout stated that the goals of the development phase are working prototypes, architectures of software systems, firm cost estimates, schedule, and a site, and established arrangements with partners. He added that a number of interested foreign partners for the endeavor are being pursued including Chile, Canada, the Netherlands, Spain and Mexico. In addition, he indicated that a series of workshops have been conducted to forge a possible cooperation between the MMA and a project proposed by Japanese radio astronomers.

V. COMMITTEE ACTIONS

The Subcommittee on Basic Research held authorization hearings for National Science Foundation programs under its jurisdiction, summarized in the previous section. The Chairman, with the consent of the Ranking Democratic Member, considered the legislation only at full Committee in order to speed up the legislative process to take advantage of the House floor time available in early May.

The Full Committee marked up H.R. 1273, the National Science Foundation Authorization Act of 1997 on April 16, 1997. The bill was adopted, with amendments, by a voice vote and ordered reported to the full House for consideration. A motion was then adopted to prepare a clean bill for introduction in the House, and

that the measure be deemed reported by the Committee. Amendments to the committee print were offered in the following order:

1. Mr. Schiff's (manager's en bloc) amendment was offered by Mr. Sensenbrenner. This amendment offered several clarifying language provisions and allowed continuation for present activities in the Next Generation Internet (NGI) programs. The amendment was adopted by voice vote.

2. Mr. Coburn offered an amendment to freeze funding for the Education and Human Resources Directorate at 1997 levels for FY 98 and FY 99. This amendment was defeated on a roll call vote of 11 to 26.

3. Mr. Traficant's "Buy American" amendment, which was offered by Mr. Hastings, was adopted by voice vote.

VI. SUMMARY OF MAJOR PROVISIONS OF THE BILL

The National Science Foundation Act of 1997 authorizes appropriations for the major activities and budget categories of the NSF for FY 1998 and FY 1999. In addition, the bill provides full authorization of the Antarctic rehabilitation program, and authorizes the Polar Cap Observatory and design and development of the Millimeter Array radio telescope in the Major Research Equipment account. Further, the bill requires an annual report on the construction, repair and upgrades to National Research Facilities; a report on indirect cost savings; subjects temporary NSF employees to the same financial disclosure requirements as permanent employees; requires NSF supported universities to develop policies to compensate military reservists who are involuntarily called to active duty; redesignates the Critical Technology Institute as the Science and Technology Policy Institute; contains no new authorization for the Next Generation Internet (NGI) initiative; places limits on lobbying activities; places a funding ban on institutions which receive earmarks; requires reprogramming notification to all the relevant Committees of both the House and Senate; and includes a sense of Congress that NSF should have a plan that its date-related computer programs will operate effectively in the year 2000 and beyond.

VII. SECTION-BY-SECTION ANALYSIS (BY TITLE AND SECTION)

SECTION-BY-SECTION

THE NATIONAL SCIENCE FOUNDATION AUTHORIZATION ACT OF 1997

Section 1. Short Title

Cites the Act as the "National Science Foundation Authorization Act of 1997."

Section 2. Definitions

Contains definitions of the terms used in the Act.

Title I National Science Foundation Authorization

Section 101. Authorization of Appropriations

(b) Authorizes \$3,505,630,000 for the National Science Foundation (NSF) for fiscal year 1998 of which:

(A) \$2,563,330,000 is authorized to be appropriated for Research and Related Activities, of which:

(i) Biological Sciences, \$330,820,000.

(ii) Computer & Information Science and Engineering, \$289,170,000.

(iii) Engineering, \$360,470,000.

(iv) Geosciences, \$452,610,000.

(v) Mathematical & Physical Sciences, \$715,710,000.

(vi) Social, Behavioral, and Economic Sciences, \$130,660,000.

(vii) United States Polar Research Programs, \$165,930,000.

(viii) United States Antarctic Logistical Activities, \$62,600,000.

(ix) Critical Technologies Institute, \$2,730,000.

(B) Education & Human Resources, \$625,500,000.

(C) Major Research Equipment, \$175,000,000.

(D) Salaries & Expenses, \$136,950,000 of which \$5,200,000 is for Headquarters Relocation.

(E) Office of Inspector General, \$4,850,000.

(c) Authorizes \$3,613,630,000 to be appropriated for the National Science Foundation for Fiscal Year 1999 as follows:

(A) Research & Related Activities, \$2,740,000,000.

(B) Education & Human Resources, \$644,245,000.

(C) Major Research Equipment, \$90,000,000.

(D) Salaries & Expenses, \$134,385,000.

(E) Office of Inspector General, \$5,000,000.

Section 102. Proportional Reduction of Research and Related Activities

If the amount appropriated pursuant to the Authorization is less than the amount authorized, the amount authorized for each subcategory under that subparagraph shall be reduced by the same proportion.

Section 103. Consultation and Representation Expenses

From appropriations made under authorizations provided in this Act, not more than \$10,000 may be used in each fiscal year for official consultation, representation, or other extraordinary expenses at the discretion of the Director. The determination of the Director shall be final and conclusive upon the accounting officers of the Government.

Title II General Provisions

Section 201. National Research Facilities

(a) Facilities plan. The Director shall provide to Congress, annually, a plan for the proposed construction of, and repair and upgrades to, national research facilities.

(b) Status of facilities under construction. The report shall provide a status report for each uncompleted construction project with current and original schedules for achievement.

(c) Limitation of obligation of unauthorized appropriations. Only funds which are specifically authorized to be appropriated shall be obligated for any project of new national research facilities, unless the total estimated cost is less than \$50,000,000.

Section 202. Administrative Amendments

Amends sections of the National Science Foundation Act of 1950, the National Science Foundation Authorization Act of 1976, and the National Science Foundation Act of 1988.

Section 203. Indirect Costs

(a) Matching funds. Matching funds required of the academic research facilities Modernization Act of 1988 shall not be considered facilities cost for purposes of determining indirect cost rates.

(b) Report. The Director of Office of Science and Technology Policy shall prepare a report analyzing ways to reduce indirect cost rates.

Section 204. Financial Disclosure

Persons temporarily employed by or at the Foundation shall be subject to the same financial disclosure requirements under the Ethics in Government Act of 1978 as are permanent employees of the Foundation.

Section 205. Educational Leave of Absence for Active Duty

In order to be eligible to receive a grant, an institution of higher education must provide a member of the National Guard or other reserve component of the Armed Forces called or ordered to active duty to be restored to the educational status they had attained prior to their being ordered to military duty without loss of academic credit, scholarships, or tuition and other fees.

Section 206. Science and Technology Policy Institute

The Critical Technologies Institute is renamed the "Science Technology and Policy Institute"; the duties of the Institute are redefined; and the sponsor of the Institute is designated as the Office of Science and Technology Policy.

Section 207. Next Generation Internet

No funds are authorized for the Next Generation Internet (NGI), except that activities which were initiated during FY 1997 and were identified as part of the NGI in the FY 1997 budget request may continue.

Section 208. Limitations

(a) Prohibition of Lobbying Activities. Prohibits the use of funds authorized by this Act for any activity whose purpose is to influence legislation pending before the Congress. This section does not prevent employees of the departments and agencies from communicating with Members of Congress to conduct public business.

(b) **Limitation on Appropriations.** Disallows authorization of funds for NSF which are not specifically authorized to be appropriated by this Act for FY's 1998 and 1999, or by an Act of Congress in succeeding fiscal years.

(c) **Eligibility for Awards.** Requires the Director of NSF to exclude, for a period of 5 years, any person who received funds for a project not subject to competitive, merit-based review process after FY 1997. This section is not applicable to the long-standing Cooperative Research and Development Agreement program nor awards to persons who are members of a class specified by law for which assistance is awarded according to formula provided by law.

Section 209. Notice

If any funds of this Act, or amendments made by this Act, are subject to reprogramming which requires notice to be given to the Appropriations Committees of the House of Representatives and the Senate, notice of such action shall be concurrently provided the Committee on Science of the House of Representatives and the Committees on Labor and Human Resources and Commerce, Science, and Transportation of the Senate.

If any program, project, or activity of the National Science Foundation is preparing to undergo any major reorganization, the Director of the National Science Foundation shall notify the Committees on Science and Appropriations of the House of Representatives, and the Committees on Labor and Human Resources, Commerce, Science, and Transportation, and Appropriations of the Senate no later than 15 days prior to such reorganization.

Section 210. Sense of the Congress on the Year 2000 Problem

It is the sense of Congress that the National Science Foundation should give high priority to correcting the year 2000 problem in all of its computer systems to ensure effective operation in the year 2000 and beyond. The National Science Foundation needs to assess immediately the risk of the problem upon their systems and develop a plan and a budget to correct the problem for its mission-critical programs. The National Science Foundation also needs to begin consideration of contingency plans, in the event that certain systems are unable to be corrected in time.

Section 211. National Oceanographic Partnership Program

The National Science Foundation is authorized to participate in the National Oceanic Partnership Program established by the National Oceanic Partnership Act.

Section 212. Buy American

Requires any entity that is appropriated funds pursuant to this act or amendments thereto, to comply with sections 2-4 of the Act of March 3, 1933 (41 U.S.C. 10a-10c, popularly known as the "Buy American Act"). Requires that recipients of funds pursuant to this act shall be notified of subsection (a)'s requirement of compliance with the Buy American Act.

VIII. COMMITTEE VIEWS

The Future of the National Science Foundation

The Committee on Science strongly asserts that the mission statement for the NSF as contained in section 3 of the NSF Act of 1950 requires that the NSF continue its focus in support of basic research and education in science and engineering. The Committee further asserts that the NSF mission may be altered only by amendment of the NSF Act of 1950, and consequently, the Committee expects the NSF's programs and activities to conform to the functions authorized by the 1950 Act, as amended. The Committee understands that methodology for assessment of basic research is not well established, but strongly believes that the NSF must develop methodology that will provide a sound basis for justifying current and future federal support for the NSF, as required by the Government Performance Results Act (PL 103-62).

Undergraduate Education

The Committee continues to be concerned that federal research grants to colleges and universities have shifted the focus of faculty away from one of their primary obligations, that of undergraduate teaching. Federally funded research should enhance, not detract from, the educational experience of undergraduate and graduate students. The Committee believes that the NSF and other federal agencies must do more to ensure that federal grants are indeed improving the quality of science and engineering education at our nation's colleges and universities.

The Committee commends the Foundation on the increasing attention it is paying to undergraduate education at all institutions of higher education and its new initiatives in this area. The Committee appreciates the report NSF submitted in response to the Committee's request last year.

The Committee requests that NSF report on how it is evaluating its efforts to increase the focus research institutions place on undergraduate education and any results that have come in so far from those evaluations, be they formal or informal. The report should be submitted by January 31, 1998.

National Research Facilities

The Committee has encouraged NSF to develop a comprehensive plan and prioritization process for the selection of projects for construction of new national research facilities and for the replacement and refurbishment of existing facilities. The Committee believes that the establishment of the Major Equipment Account (MRE), along with developing the procedures for selecting projects to include in the account, is an important step for rationalizing the allocation of resources for new facilities construction and upgrading of existing facilities.

In section 201 of the bill, the Committee has included a requirement for the annual submittal of a five-year plan for national research facilities. The Committee intends that this annual document on national research facilities provide a full description of current and planned expenditures for all major facilities, including costs for construction, operation, and maintenance.

The Committee expects the plan to describe projects which are in the pipeline for selection under the process NSF has instituted for selection of projects to include in the MRE account. The Committee recognizes that projects described in the plan ultimately may not be selected and approved by the National Science Board nor appear in the President's budget request for NSF. Also, the Committee realizes that estimated funding profiles for projects in the earlier stages of development are subject to change. However, the Committee seeks information about potential resource requirements for infrastructure improvements and expects estimated schedule and cost profiles to be included for all projects under consideration. This information is of particular importance since the Committee normally will pursue multi-year authorization legislation.

In addition to information on construction plans, the plan should include a status report on all construction projects currently underway. The Committee notes that schedule delays and potential cost overruns have occurred for two current radio telescope construction projects. The purpose of the reporting requirement is to formally document the status of construction projects and to reinforce the Committee's view on the need for high level management attention at NSF to major facilities construction projects. The reporting requirement does not relieve NSF of the responsibility to inform the Committee, at the time they are identified, of problems that will significantly impact cost or schedule for major construction projects.

Finally, the plan should include information on the resources budgeted for the operation and maintenance of new and existing facilities for the period covered by the plan. Resources for operation and maintenance of major facilities are budgeted within the same accounts that fund research awards. The Committee is seeking information on how research support is affected by the routine costs associated with major facilities and what the impact will be when new facilities come on line.

The authorization of appropriations for MRE contained in the bill fully authorizes construction of South Pole station and the Polar Cap Observatory and also authorizes activities necessary for the design and development of the Millimeter Array radio telescope. The Committee has not authorized construction of the MMA.

Computer Security

The Committee notes that the use of the Internet and other computer networks is growing at an unprecedented rate, with 500 million users expected to be on-line by the year 2000. As these networked systems become larger and more complex, the frequency and severity of unauthorized intrusions into computers connected to these networks has become an increasingly serious problem. Unless the associated risks and vulnerabilities are properly addressed, the full potential of networking will not be realized. The Committee encourages NSF to promote research and education on all aspects of computer security. Only through an educated teacher base will the United States create a knowledgeable public sector with the necessary resources to engage in electronic commerce.

U.S. Antarctic Program

The Committee has been, and remains, a strong supporter of the U.S. Antarctic Program. The Committee recognizes the need for this nation to retain an active and influential presence on the continent. This presumes that Presidential Memorandum 6642 still represents the Administration's policy with respect to the funding, operation and management of the U.S. Antarctic Program. In that light, the Committee applauds the Foundation's long standing support and management of this important national program.

A number of important issues continue to face this program and are likely to increase in significance over the next few years. Within the authorization of the Major Research Equipment account, \$115 million is available for appropriation to the replacement and refurbishment of Antarctic facilities. The Committee shares NSF's concern for safety of personnel and the protection of the environment.

Replacement and Refurbishment of Antarctic Facilities

Background

Over the past year, the Committee has received testimony on two major reviews of the U.S. Antarctic Program (USAP), which is managed by and funded through the NSF. A hearing in July 1996 considered a study conducted by the National Science and Technology Council (NSTC) regarding the need for maintaining three major U.S. stations in Antarctica; the roles of NSF, DOD and other agencies in the USAP; the degree to which the USAP satisfies our national interests in Antarctica; and the affordability of a continued U.S. presence in Antarctica. The NSTC provided a general endorsement of the USAP, recommended that the number of permanent stations not be reduced, and suggested that NSF commission an outside review of how to sustain a vigorous USAP and provide for required facilities.

The USAP External Panel is an external advisory committee that was established by NSF pursuant to the NSTC recommendation. It was tasked to examine and make recommendations concerning:

“ . . . the stations and logistics systems that support the science while maintaining appropriate environmental, safety, and health standards; the efficiency and appropriateness of the management of these support systems; and how and at what level the science programs are implemented. The panel's views and recommendations should include consideration of eventual replacement of South Pole Station and other infrastructure.”

The USAP External Panel was asked to consider options for replacement of South Pole Station under the assumption of no-growth budgets. Recommendations were sought for ways to achieve cost savings in the USAP, including the deployment of new technologies to gain efficiencies in the operation of remote facilities.

The recommendations of the USAP External Panel, which the Committee received in a hearing in March 1997, include the following:

1. As a matter of national policy, the United States should maintain a year-round presence in Antarctica, including at the South

Pole, and the United States should continue to operate the three existing permanent stations.

2. South Pole Station should be replaced by 2005 with a moderate-sized facility costing \$130 million (an additional \$15 million was recommended for necessary upgrades to the McMurdo and Palmer stations). In order to complete construction by 2005, necessary budgetary steps should be taken immediately for funding over the five-year period FY 1998–FY 2002.

3. Resources for rebuilding South Pole Station should be provided by a combination of reprogramming \$20 million over 5 years from USAP research activities, achieving savings of \$30 million over the same period in Antarctic logistics support operations, and obtaining new funding for the balance of the cost.

4. NSF should prepare and annually update a long-range plan that coordinates science, support, and facility needs to carry out the USAP. Without such a plan and the supporting budget it will be impossible to maintain an efficient and modern set of facilities.

Committee View

The Committee endorses the principal recommendations of the USAP External Panel regarding replacement of South Pole Station and providing upgrades to the other two permanent USAP stations. The authorization of appropriations for the Major Research Equipment account is \$175 million, which is \$90 million above the request. Of the amount authorized, the Committee intends that \$115 million be provided for construction and refurbishment of USAP facilities. In testimony before the Committee, the chairman of the USAP External Panel indicated that the cost of rebuilding South Pole Station is estimated to be \$130 million and that the cost of needed upgrades at McMurdo and Palmer stations totals \$15 million. The authorization provided is \$30 million below the total amount required for these construction projects.

The USAP External Panel recommended that part of the construction cost be offset by moving \$20 million from USAP research activities and by achieving \$30 million in savings from Antarctic logistics operations over the 5 year construction period for South Pole Station. The Committee has authorized all but \$30 million of the estimated construction costs with the expectation that the shortfall can be met from savings in logistics operations. The Committee expects NSF to make every effort to achieve the savings required to meet the funding shortfall and to avoid, if possible, reprogramming funds from research activities.

The Committee endorses the recommendation of the USAP External Panel to prepare and annually update a long-range plan that coordinates science, support, and facility needs to carry out the USAP. The Committee recommends that this long-range plan be included as part of the national research facilities plan required by section 201 of the bill.

Grant Review Process

The Committee demands that use of taxpayers' federal revenues be maximized to the greatest extent. Should a grant be awarded which duplicates or competes with work done by the private sector, and this is brought to the attention of the Director in a timely

manner, the Director is responsible for taking appropriate action to end this conflict.

Advanced Technological Education Program

The Committee commends the Foundation for its efforts to improve science and engineering education at two year and community colleges through the Advanced Technological Education (ATE) program, and in particular, fully endorses the proposed 5 percent increase for the ATE budget for fiscal year 1998. The ATE program was established under the authority of the Scientific and Advanced Technology Act (P.L. 102-476), which was a legislative initiative of the Committee.

The Committee has strongly encouraged NSF to focus more attention on strengthening science education at two year colleges both because of their important role in training technicians needed for the increasingly high-technology workplace and because they are a major point of entry and provide preparatory science and mathematics courses for students who will go on to complete their education at four year colleges and universities. The ATE program supports curriculum and faculty development, and it helps to establish partnerships between two year institutions and business, industry, secondary schools and universities. Programs and educational materials developed under ATE serve as models for dissemination throughout the nation.

Indirect Cost

The Committee continues to be concerned that too great a share of academic research funds may be allocated to indirect costs. According to the President's budget, over one-quarter of the \$12 billion the government spends on research at universities and colleges are used to cover indirect costs. While the government has a responsibility to reimburse that portion of the overhead directly associated with carrying out federally sponsored research, the Committee is concerned that the current system of indirect cost payments is consuming too large a share of a limited research budget.

The bill directs the Office of Science and Technology (OSTP) to develop options to reduce by at least 10 percent the proportion of federal assistance to universities that is allocated for indirect costs, and to reduce the variation among indirect cost rates at different institutions. The report should also evaluate the benefits and other impacts that each option would have on colleges and universities. OSTP should work with other relevant agencies, particularly the Office of Management and Budget, the Office of Naval Research, the Department of Health and Human Services, and the National Institute of Health in preparing the report. The report is due by December 31, 1997.

The Committee believes that any resultant savings in indirect cost payments should be used to increase overall federal research support.

The Future of the Gemini Program

The Committee expresses its concern over the status of payments by certain member countries to the Gemini Telescope Program. The Committee urges NSF to seek full funding by all member nations

and to ensure the program cost for the Gemini program stays within cost estimates. Should a member country not be able to meet its commitment to the program, NSF is encouraged to seek new partnerships in the program. The Committee does not believe that any shortfall in the program should be unilaterally absorbed by the United States.

Tariff Relief

The Committee expresses its extreme displeasure at the Administration's interpretation of the Florence Agreement regarding multi-national research facilities. In the case of the Gemini telescope program, the Administration's interpretation would have resulted in tariff fees to NSF in excess of \$2 million for the completion of the Gemini telescope. This interpretation would have moved valuable research dollars from one government account to another. Because of this interpretation, the Congress was required to grant special tariff relief for NSF. As the Committee, the Administration and the science community work toward promoting large international scientific collaboration programs, the Committee believes the Congress should not have to provide individual tariff relief for large multi-national scientific projects. The Committee is firmly convinced that the Florence Agreement exempts such projects from tariffs and encourages NSF to work with the Commerce Department to revise tariff regulations as necessary to conform to the intention of the Florence Agreement.

Competition with Private Laboratories

The Committee expresses continued concern about NSF's enforcement of Important Notice 91. Still too often, the Committee is receiving complaints of universities in competition with the private sector. While the Committee strongly endorses university/private sector collaboration, the Committee does not desire to see federal resources used to compete against private sector interests.

Next Generation Internet

The progression of our country's computer networking technology plays a vital role in our nation's continued leadership in scientific research. The Committee is working with the Administration to develop a comprehensive plan for implementation of NGI. The Committee expects to hold hearings on NGI in the future to better understand how it will further the goals of advancing network technologies and meeting the needs of the research and education communities.

Prohibition of Lobbying Activities

The Committee is committed to ensuring that awards for research and education are used solely for those purposes. Funds should not be used for any purpose, other than that specified in the award. The Committee, however, does not exclude appropriate communications between the executive branch and the Congress.

Limitation on Appropriations

This section emphasizes the Committee's position that the only funds authorized to be appropriated for the National Science Foun-

dation are made available through this Act. It is the Committee's position that authorizations designating specific sums are required for appropriations of such sums to be authorized.

Eligibility for Awards

The Committee has a long-standing position that awards should be based on a competitive merit-based process. Merit review allow taxpayers' dollars to be spent in the most cost-effective manner.

Notice of Reprogramming

The Committee believes that such notice must be given if it is to carry out its oversight responsibilities under the Rules of the House.

Sense of the Congress on the Year 2000 Problem

Despite knowing of the problem for years, the Federal Government has yet to adequately create strategies to address the year 2000 problem. The Committee believes Congress should continue to take a leadership role in raising awareness about the issue with both government and the private sector.

The potential impact on federal programs if the year 2000 problem is not corrected in an effective and timely manner is substantial and potentially serious. If federal computers are not prepared to handle the change of date on January 1, 2000, there is a risk to all government systems and the programs they support. It is imperative that such corrective action be taken to avert disruption to critical Federal Government programs.

Experimental Program to Stimulate Competitive Research (EPSCoR)

EPSCoR is an important effort by the National Science Foundation to insure that all parts of the nation share in the research, educational and economic benefits of a strong science and technology research base and to meet the mandate of its original legislation to insure geographic distribution of federal support. EPSCoR contributes to increased regional and institutional research capacity by directing funding to merit-based awards for proposals from states that historically have not participated fully in federal research and development funding. EPSCoR offers the mechanism to help institutions in the participating states improve their competitive positions in selected research specialties and fields through the development of infrastructure necessary to sustain these new capabilities. The development and support of infrastructure has—and continues to be—the cornerstone of the program. Without such infrastructure, nothing else is possible. NSF is, however, also embarking upon new efforts to bring principal investigators and institutions in the participating states into the mainstream of U.S. science and technological research and policy. Such mainstreaming must, of course, be the ultimate goal of the EPSCoR program. Consequently, the Committee expects continued NSF support for infrastructure and viable assistance in developing the contacts and participating in advisory, review and policy activities which will lead to mainstreaming of these states into the nationwide science and technology structure.

Support for Astronomy and Astrophysical Research

The Committee is concerned over the plans for long term support for basic research in astronomy and astrophysics. Although the first priority recommended by the "Bahcall Report" on the future of astronomy addressed core funding for basic research grants and for operation and maintenance of existing facilities, these have generally lagged in agency planning.

In addition, the Committee is concerned over the extent to which the major funding agencies, NSF and NASA, have coordinated their respective plans for basic research. NASA has taken on an increasing share of basic research responsibility in astronomy because of the need to complement major facility class missions such as the Space Telescope, the Advanced X-Ray Astrophysics Facility and the Space Infrared Telescope. However, this basic research support is associated with the mission lifetimes. NSF must address more fully the need to provide ongoing stable and balanced support for basic research. The Committee urges NSF and NASA to conduct a joint review of the division of responsibilities and funding for core support in astronomy and astrophysics and to develop a plan which addresses the long term needs of the science community in this area.

National High Magnetic Field Laboratory

The Committee commends the National High Magnetic Field Laboratory in Tallahassee, Florida, a unique consortium of Florida State University, the University of Florida, and the Los Alamos National Laboratory which has led to a world-class facility and international leadership in research and development in this crucial area. The NSF recently extended the support for the NHMFL for an additional 5 years and increased the level of NSF support for that facility substantially. One of the areas that NSF was unable to fund, however, are the research areas related to structural biology and aspects of magnetic resonance. The Committee strongly encourages the NSF to work with the NHMFL, its partners, and new collaborators such as the University of Miami in securing the National Institutes of Health (NIH) as a partner with NSF and the Department of Energy in supporting the Laboratory. The NIH role in supporting structural biology and the medical applications of magnetic resonance is well-known and indispensable to future breakthroughs in this crucial area. The advanced instrumentation at the NHMFL will be necessary for utilization by scientists and engineers to push back the frontiers of knowledge in these medically-related areas. We look forward to receiving a report from the NSF on progress made in assisting the NHMFL and the NIH to work together as partners with other federal R&D agencies.

The state-of-the art equipment at the NHMFL, like all advanced scientific equipment, needs to be upgraded in order to maintain international scientific leadership in this arena. For that reason, the Committee hopes the NSF is sensitive to the need to upgrade these major equipment systems. The Committee is aware of a major initiative being discussed in Japan related to magnetic resonance in Secuba City. Japanese industry, working with the Government of Japan, is considering a major push, far surpassing the U.S. investment at the NHMFL. The Committee requests NSF to review

the Japanese initiative, review plans for upgrading the major equipment at the NHMFL, and report on its findings to this Committee by October 1, 1997. Maintaining U.S. leadership in this key area is an important endeavor.

National Oceanographic Partnership Program

The Committee has included bill language specifically authorizing NSF participation in the National Oceanographic Partnership Program. The Committee supports the goals of the Program to maximize efficiency in the execution of ocean research efforts among nine federal agencies, academia and industry. The Committee encourages NSF to take a proactive role in the Program via membership on the National Oceanographic Research Leadership Council; to use the Partnership Program mechanism to leverage NSF oceanographic resources; and to coordinate with ongoing and planned efforts of federal agencies and other entities having similar research requirements. Further, the Committee strongly encourages NSF to incorporate funding requests for the National Oceanographic Partnership Program into future budget requests.

Buy American

It is the view of this Committee that the Federal Government buy goods manufactured in the United States when feasible, where cost-effective, and practicable.

Partnerships for Advanced Computational Infrastructure (PACI)

The Committee commends the Foundation for moving ahead with the PACI. However, the Committee is concerned that insufficient attention has been paid to the problems that will occur during the transition from the supercomputer center program to PACI. The Foundation's own documents, the National Science Board and the PACI peer review panels all expressed concerns about how high-end users of the supercomputer centers will be treated during the transition. In addition, the Committee heard from users who expressed the same concern. These problems are likely to be exacerbated because the transition period began at virtually the moment the new PACI awards were made.

To enable the Committee to track and help remedy any issues that arise during the transition, NSF shall submit reports on July 1 and October 1, 1997 and on April 1, 1998 detailing how the transition has been proceeding. The reports should describe how users have been transferred to other centers, how many users are continuing to use the supercomputer centers and any problems encountered in this transition. The reports should also include an assessment of whether any additional funding is needed to smooth the transition.

Recusal Policy

As a result of the competition for the Partnerships for Advanced Computational Infrastructure (PACI), the Committee is concerned about the way the Foundation handles recusals. The issues raised are not unique to that program, but could arise any time NSF is running a competition for a large, national program for which large consortia are applying.

The Committee requests that NSF review its recusal criteria and to report on the results of that review by January 31, 1998. The review should include a comparison of NSF policies with those of other agencies handling similar programs and should involve other government agencies that set ethics policies.

Education and Human Resources Directorate

While the Committee recognizes the benefits of the National Science Foundation's science education programs, the Committee is concerned about possible misuse of funds for particular education projects and inefficiency in the administration of programs within the Education and Human Resources Directorate. The Committee intends to hold hearings on the management and programs of this Directorate and recommends the Director review current policies and take any corrective action to improve the operations of this Directorate.

Large Hadron Collider

The Committee is concerned that negotiations, past and present, between the United States and Member States of CERN on international collaboration in the construction, management and operation of high energy physics facilities, have not resulted in mutually satisfying agreements for the negotiating parties.

The Committee is specifically concerned over the potential impacts on U.S. high energy and nuclear physics facilities of proposed U.S. funding for the Large Hadron Collider project at CERN. As a result, the Committee has not authorized any funds in FY 99 in the Major Research Equipment account for construction of the proposed ATLAS and CSM detectors until the Director, in consultation with the Secretary of Energy, has provided a report to the Committee on such impacts.

This restriction does not apply to the \$1.4 million in the Research and Related Activities Account requested by NSF for the LHC-related planning and research and development support for FY 98 and FY 99.

Outreach

The Committee is supportive of the National Science Foundation's efforts to reach out to Hispanics with culturally and linguistically appropriate outreach efforts. Specifically, the Committee supports the culturally and linguistically appropriate outreach efforts aimed at increasing the understanding of science, math, and engineering concepts among traditionally underserved populations in the United States. These activities should continue.

U.S./Mexico Foundation for Science

The bill authorizes \$1 million per year for funding the non-governmental U.S./Mexico Foundation for Science. The Foundation was established in 1992 by the Governments of Mexico and the United States with the strong support of the research and business communities of both countries. Each country provided equal financial support to the Foundation (a total of \$4 million).

The Foundation's mission is to contribute to the technological and scientific strength of the two countries through fostering rel-

evant research, training and human resource development, and promoting collaborative and comprehensive solutions of common problems. The Foundation is uniquely structured to accomplish this mission. The Foundation's Board of Governors consists of high level and influential members from the Mexican Academy of Scientific Investigation, the National Academy of Medicine, and the Academy of Engineering; and the U.S. National Academies of Science and of Engineering and the Institute of Medicines. In addition, there are representatives of both Mexican and American businesses who are members of the Board.

The Foundation is binational in structure and has the ability to be flexible in selection of priority areas which are defined as being of mutual interest and potential benefit to both countries. The Foundation has a proven track record of supporting high-quality research projects selected with a peer-review system. The Foundation also currently supports a visiting scientist program, a Hewlett Foundation training program in S&T policy and graduate and summer scholarship programs.

The Mexicans have agreed to provide additional funds to the Foundation, contingent upon a U.S. contribution.

IX. COST ESTIMATE

Clause 7(a) of rule XIII of the Rules of the House of Representatives requires each committee report accompanying each bill or joint resolution of a public character to contain: (1) an estimate, made by such Committee, of the costs which would be incurred in carrying out such bill or joint resolution in the fiscal year in which it is reported, and in each of the 5 fiscal years following such fiscal year (or for the authorized duration of any program authorized by such bill or joint resolution, if less than 5 years); (2) a comparison of the estimate of costs described in subparagraph (1) of this paragraph made by such Committee with an estimate of such costs made by any government agency and submitted to such Committee; and (3) when practicable, a comparison of the total estimated funding level for the relevant program (or programs) with the appropriate levels under current law. However, clause 7(d) of that rule provides that this requirement does not apply when a cost estimate and comparison prepared by the Director of the Congressional Budget Office under section 403 of the Congressional Budget Act of 1974 has been timely submitted prior to the filing of the report and included in the report pursuant to clause 2(1)(3)(C) of rule XI. A cost estimate and comparison prepared by the Director of the Congressional Budget Office under section 403 of the Congressional Budget Act of 1974 has been timely submitted prior to the filing of this report and included in Section X of this report pursuant to clause 2(1)(3)(C) of rule XI.

Clause 2(1)(3)(B) of rule XI of the Rules of the House of Representatives requires each committee report that accompanies a measure providing new budget authority (other than continuing appropriations), new spending authority, or new credit authority, or changes in revenues or tax expenditures to contain a cost estimate, as required by section 308(a)(1) of the Congressional Budget Act of 1974 and, when practicable with respect to estimates of new budget authority, a comparison of the total estimated funding level for the

relevant program (or programs) to the appropriate levels under current law. H.R. 1273 does not contain any new budget authority, credit authority, or changes in revenues or tax expenditures. Assuming that the sums authorized under the bill are appropriated, H.R. 1273 does authorize additional discretionary spending, as described in the Congressional Budget Office report on the bill, which is contained in Section X of this report.

X. CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

U.S. CONGRESS,
CONGRESSIONAL BUDGET OFFICE,
Washington, DC, April 18, 1997.

Hon. F. JAMES SENSENBRENNER, Jr.,
*Chairman, Committee on Science,
House of Representatives, Washington, DC.*

DEAR MR. CHAIRMAN: The Congressional Budget Office has prepared the enclosed cost estimate for H.R. 1273, the National Science Foundation Authorization Act of 1997.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contacts are Kristen Layman (for federal costs), and Pepper Santalucia (for the state and local impact).

Sincerely,

JAMES L. BLUM
(For June E. O'Neill, Director).

Enclosure.

CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

Summary: H.R. 1273 would authorize appropriations for the National Science Foundation (NSF) for fiscal years 1998 and 1999. In addition, the legislation would revise various policies governing NSF's administration and grants. The Director of the foundation would be required to submit a status report for each uncompleted construction project, along with the previously required plan for proposed construction and repairs of national research facilities. H.R. 1273 stipulates that no funds authorized by the bill are to be used for the next generation Internet, except as a continuation of programs that were funded in fiscal year 1997.

Assuming appropriation of the authorized amounts, CBO estimates that enacting H.R. 1273 would result in additional discretionary spending of about \$7 billion over the 1998–2002 period. The legislation would not affect direct spending or receipts; therefore, pay-as-you-go procedures would not apply. The legislation also does not contain any intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act of 1995 (UMRA), and would not impose any costs on state, local, or tribal governments.

Estimated cost to the Federal Government: The estimated budgetary impact of H.R. 1273 is shown in the table below. For the purposes of this estimate, CBO assumes that all amounts authorized in H.R. 1273 will be appropriated by the start of each fiscal year and that outlays will follow historical spending patterns for NSF programs.

SPENDING SUBJECT TO APPROPRIATION

[By fiscal year, in millions of dollars]

	1997	1998	1999	2000	2001	2002
NSF spending under current law:						
Budget authority ¹	3,270	0	0	0	0	0
Estimated outlays	3,120	2,322	754	204	102	25
Proposed changes:						
Authorization level	0	3,506	3,614	0	0	0
Estimated outlays	0	1,039	2,732	2,296	713	206
NSF spending under H.R. 1852:						
Authorization level ¹	3,270	3,506	3,614	0	0	0
Estimated outlays	3,120	3,361	3,486	2,500	815	231

¹ The 1997 level is the amount appropriated for that year.

The costs of this legislation fall within budget functions 050 (national defense) and 250 (general science, space, and technology).

Pay-as-you-go considerations: None.

Estimated impact on State, local, and tribal governments: The bill contains no intergovernmental mandates as defined in UMRA, but it would create new eligibility criteria for universities and colleges seeking NSF research funding, which could reduce the income of state educational institutions that apply for grants.

Section 205 would make eligibility for NSF funding contingent upon policies regarding students called to active military duty. In order to receive funding after fiscal year 1997, colleges and universities would have to provide that students called to active duty will be restored to their previous educational status without loss of tuition, fees, scholarships, or grant funding paid prior to the commencement of military duty. According to Department of Defense officials and higher education associations, most colleges and universities are already complying with this provision. Therefore, CBO does not expect that this provision would significantly affect the eligibility of public institutions of higher education for NSF funding.

Two other provisions in the bill would affect eligibility for federal grants. The first would require compliance with the "Buy American Act." The second would exclude grantees from consideration for awards if they had received funds under any other federal grant program that was not subject to a competitive, merit-based award process. The latter provision could change the allocation of funds among grant recipients, including state universities and colleges. CBO cannot predict how the share of research funding awarded to public universities and colleges would change because of this provision.

Estimated impact on the private sector: This legislation contains no new private-sector mandates as defined in the Unfunded Mandates Reform Act of 1995.

Estimate prepared by: Federal cost: Kristen Layman; Impact on State, local, and tribal governments: Pepper Santalucia.

Estimate approved by: Robert A. Sunshine, Deputy Assistant Director for Budget Analysis.

XI. COMPLIANCE WITH PUBLIC LAW 104-4

H.R. 1273 contains no unfunded mandates.

XII. COMMITTEE OVERSIGHT FINDINGS AND RECOMMENDATIONS

Clause 2(1)(3)(A) of rule XI of the Rules of the House of Representatives requires each committee report to include oversight findings and recommendations required pursuant to clause 2(b)(1) of rule X. The Committee has no oversight findings.

XIII. OVERSIGHT FINDINGS AND RECOMMENDATIONS BY THE COMMITTEE ON GOVERNMENT REFORM AND OVERSIGHT

Clause 2(1)(3)(D) of rule XI of the Rules of the House of Representatives requires each committee report to contain a summary of the oversight findings and recommendations made by the House Government Reform and Oversight Committee pursuant to clause 4(c)(2) of rule X, whenever such findings and recommendations have been submitted to the Committee in a timely fashion. The Committee on Science has received no such findings or recommendations from the Committee on Government Reform and Oversight.

XIV. CONSTITUTIONAL AUTHORITY STATEMENT

Clause 2(1)(4) of rule XI of the Rules of the House of Representatives requires each report of a committee on a bill or joint resolution of a public character to include a statement citing the specific powers granted to the Congress in the Constitution to enact the law proposed by the bill or joint resolution. Article I, section 8 of the Constitution of the United States grants Congress the authority to enact H.R. 1273.

XV. FEDERAL ADVISORY COMMITTEE STATEMENT

This legislation does not establish or authorize the establishment of a new advisory committee.

XVI. CONGRESSIONAL ACCOUNTABILITY ACT

The Committee finds that H.R. 1273 does not relate to the terms and conditions of employment or access to public services or accommodations within the meaning of section 102(b)(3) of the Congressional Accountability Act (Public Law 104-1).

XVII. CHANGES IN EXISTING LAW MADE BY THE BILL, AS REPORTED

In compliance with clause 3 of rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in *italic*, existing law in which no change is proposed is shown in roman):

NATIONAL SCIENCE FOUNDATION ACT OF 1950

* * * * *

FUNCTIONS OF THE FOUNDATION

SEC. 3. (a) * * *

* * * * *

[(g) In carrying out subsection (a)(4), the Foundation is authorized to foster and support access by the research and education communities to computer networks which may be used substantially for purposes in addition to research and education in the sciences and engineering, if the additional uses will tend to increase the overall capabilities of the networks to support such research and education activities.]

NATIONAL SCIENCE BOARD

SEC. 4. (a) * * *

* * * * *

(g) The Board may, with the concurrence of a majority of its members, permit the appointment of a staff consisting of not more than five professional staff members and such clerical staff members as may be necessary. Such staff shall be appointed by the Director and assigned at the direction of the Board. The professional members of such staff may be appointed without regard to the provisions of title 5, United States Code, governing appointments in the competitive service, and the provisions of chapter 51 of such title relating to classification, and compensated at a rate not exceeding [the appropriate rate provided for individuals in grade GS-18 of the General Schedule under section 5332] *the maximum rate payable under section 5376* of such title, as may be necessary to provide for the performance of such duties as may be prescribed by the Board in connection with the exercise of its powers and functions under this Act. Each appointment under this subsection shall be subject to the same security requirements as those required for personnel of the Foundation appointed under section 14(a).

* * * * *

[(k)] (l) Members of the Board shall be required to file a financial disclosure report under title II of the Ethics in Government Act of 1978 (5 U.S.C. App. 92 Stat. 1836), except that such reports shall be held confidential and exempt from any law otherwise requiring their public disclosure.

DIRECTOR OF THE FOUNDATION

SEC. 5. (a) * * *

* * * * *

(e)(1) The Director may make grants, contracts, and other arrangements pursuant to section 11(c) only with the prior approval of the Board, or under authority delegated by the Board, and subject to such conditions as the Board may specify.

[(2) Any delegation of authority or imposition of conditions under the preceding sentence shall be effective only for such period of time, not exceeding two years, as the Board may specify, and shall be promptly published in the Federal Register and reported to the Committees on Labor and Human Resources and Commerce, Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives. On October 1 of each odd-numbered year the Board shall submit to the Congress a concise report which explains and justifies any actions taken by the Board under this subsection to delegate its au-

thority or impose conditions within the preceding two years. The provisions of this subsection shall cease to be effective at the end of fiscal year 1989.]

(2) *Any delegation of authority or imposition of conditions under paragraph (1) shall be promptly published in the Federal Register and reported to the Committees on Labor and Human Resources and Commerce, Science, and Transportation of the Senate and the Committee on Science of the House of Representatives.*

* * * * *

MISCELLANEOUS PROVISIONS

SEC. 14. (a) * * *

* * * * *

(c) The members of the Board and the members of each special commission shall *be entitled to* receive compensation for each day engaged in the business of the Foundation, *including traveltime*, at a rate fixed by the Chairman but not exceeding [the rate specified for the daily rate for GS-18 of the General Schedule under section 5332] *the maximum rate payable under section 5376* of title 5, United States Code, and shall be allowed travel expenses as authorized by section 5703 of title 5, United States Code. *Members of the Board and special commissions may waive compensation and reimbursement for travel expenses.*

* * * * *

SECURITY PROVISIONS

SEC. 15. (a) The Foundation shall not support any research or development activity in the field of nuclear energy, nor shall it exercise any authority pursuant to section 11(e) in respect to that field, without first having obtained the concurrence of the [Atomic Energy Commission] *Secretary of Energy* that such activity will not adversely affect the common defense and security. To the extent that such activity involves restricted data as defined in the Atomic Energy Act of 1954 the provisions of that Act regarding the control of the dissemination of restricted data and the security clearance of those individuals to be given access to restricted data shall be applicable. Nothing in this Act shall supersede or modify any provision of the Atomic Energy Act of 1954.

* * * * *

**SECTION 6 OF THE NATIONAL SCIENCE FOUNDATION
AUTHORIZATION ACT, 1976**

SEC. 6. (a) The National Science Foundation is authorized to establish the Alan T. Waterman Award for research or advanced study in the mathematical, physical, medical, biological, engineering, behavioral, [social,] social, or other sciences. The award authorized by this section shall consist of a suitable medal and a grant to support further research or study by the recipient. The

National Science Board will periodically establish the amounts and terms of such grants under this section.

* * * * *

SECTION 117 OF THE NATIONAL SCIENCE FOUNDATION AUTHORIZATION ACT OF 1988

PRESIDENTIAL AWARDS FOR TEACHING EXCELLENCE

SEC. 117. (a)(1)(A) The President is authorized to make Presidential Awards for Excellence in Mathematics and Science Teaching to kindergarten through grade 12 school teachers of mathematics and science who have demonstrated outstanding teaching ability in the field of teaching mathematics or science.

(B) Each year the President is authorized to make no fewer than 108 awards under subparagraph (A). In selecting teachers for an award authorized by this subsection, the President shall select at least two teachers—

(i) * * *

* * * * *

[(v) from the United States Department of Defense Dependents' School.]

(v) from schools established outside the several States and the District of Columbia by any agency of the Federal Government for dependents of its employees.

(2) The President shall carry out this subsection, including the establishment of the selection procedures, after consultation with the Director and other appropriate officials of Federal agencies.

(3)(A) Funds to carry out this subsection for any fiscal year shall be made available from amounts appropriated pursuant to annual authorization of appropriations for the Foundation for [Science and Engineering Education] *Education and Human Resources*.

* * * * *

SCIENCE AND ENGINEERING EQUAL OPPORTUNITIES ACT

* * * * *

PART B—WOMEN, MINORITIES, SCIENCE, AND ENGINEERING

* * * * *

[MINORITIES IN SCIENCE]

PARTICIPATION IN SCIENCE AND ENGINEERING OF MINORITIES AND PERSONS WITH DISABILITIES

SEC. 34. (a) The Foundation is authorized (1) to undertake or support a comprehensive science and engineering education program to increase the participation of minorities in science and engineering, and (2) to support activities to initiate research at minority institutions.

[(b) By September 30, 1981, the Director, with the advice and assistance of the Committee on Equal Opportunities in Science and Technology established in section 36, shall prepare and transmit to the Committee on Labor and Human Resources of the Senate and the Committee on Science and Technology of the House of Representatives a report proposing a comprehensive and continuing program at the Foundation to promote the full participation of minorities in science and technology. Such report shall contain budgetary and legislative recommendations for the carrying out of such program by the Foundation.]

(b) The Foundation is authorized to undertake or support programs and activities to encourage the participation of persons with disabilities in the science and engineering professions.

* * * * *

COMMITTEE ON EQUAL OPPORTUNITIES IN SCIENCE AND ENGINEERING

SEC. 36. (a) There is established within the Foundation a Committee on Equal Opportunities in Science and Engineering (hereinafter referred to as the "Committee"). The Committee shall provide advice to the Foundation concerning (1) the implementation of the provisions of this Act and (2) other policies and activities of the Foundation to encourage full participation of women, [minorities, and other groups currently underrepresented in scientific] *minorities, and persons with disabilities in scientific, engineering, and professional fields.*

(b) Each member of the Committee shall be appointed by the Director [with the concurrence of the National Science Board. The Chairperson of the National Science Board Committee on Minorities and Women shall be an ex officio member of the Committee.]. *In addition, the Chairman of the National Science Board may designate a member of the Board as a member of the Committee.* Members of the Committee shall be appointed to serve for a three-year term, and may be reappointed to serve one additional term of three years.

[(c) There shall be a subcommittee of the Committee which shall be known as the Subcommittee on Women in Science and Engineering. The Subcommittee on Women in Science and Engineering shall have responsibility for all Committee matters relating to (1) the participation in and opportunities for the education, training, and research of women in science and engineering and (2) the impact of science and engineering on women. The Subcommittee shall be composed of all the women members of the Committee and such other members of the Committee as the Committee may designate.

[(d) There shall be a subcommittee of the Committee which shall be known as the Subcommittee on Minorities in Science and Engineering. The Subcommittee on Minorities in Science and Engineering shall have responsibility for all Committee matters relating to (1) the participation in and opportunities for education, training, and research for minorities in science and engineering and (2) the impact of science and engineering on minorities. The Subcommittee shall be composed of all minority members of the Committee and such other members of the Committee as the Committee may designate.]

(c) *The Committee shall be responsible for reviewing and evaluating all Foundation matters relating to participation in, opportunities for, and advancement in education, training, and research in science and engineering of women, minorities, and persons with disabilities.*

[(e)] (d) The Committee may organize such [additional] standing or ad hoc subcommittees as the Committee finds appropriate.

[(f)] (e) Every two years, the Committee shall prepare and transmit to the Director a report on its activities during the previous two years and proposed activities for the next two years. The Director shall transmit to Congress the report, unaltered, together with such comments as the Director deems appropriate.

* * * * *

SECTION 822 OF THE NATIONAL DEFENSE AUTHORIZATION ACT FOR FISCAL YEAR 1991

SEC. 822. [CRITICAL TECHNOLOGIES INSTITUTE] *SCIENCE AND TECHNOLOGY POLICY INSTITUTE*

(a) ESTABLISHMENT.—There shall be established a federally funded research and development center to be known as the “[Critical Technologies Institute] *Science and Technology Policy Institute*” (hereinafter in this section referred to as the “Institute”).

(b) INCORPORATION.—[As determined by the chairman of the committee referred to in subsection (c), the] *The Institute* shall be—

(1) administered as a separate entity by an organization currently managing another federally funded research and development center; or

(2) incorporated as a nonprofit membership corporation.

[(c) OPERATING COMMITTEE.—(1) The Institute shall have an Operating Committee composed of six members as follows:

[(A) The Director of the Office of Science and Technology Policy, who shall chair the committee.

[(B) The Director of the National Institutes of Health.

[(C) The Under Secretary of Commerce for Technology.

[(D) The Director of the Defense Advanced Research Projects Agency.

[(E) The Director of the National Science Foundation.

[(F) The Under Secretary of Energy having responsibility for science and technology matters.

[(2) The Operating Committee shall meet not less than four times each year.]

[(d)] (c) DUTIES.—The duties of the Institute shall include the following:

(1) The assembly of timely and authoritative information regarding significant developments and trends in *science and technology* research and development in the United States and abroad, [with particular emphasis on information relating to the technologies identified in the most recent biennial report submitted to Congress by the President pursuant to section 603(d) of the National Science and Technology Policy, Organization, and Priorities Act of 1976 (42 U.S.C. 6683(d)).] *and de-*

veloping and maintaining relevant informational and analytical tools.

(2) Analysis and interpretation of the information referred to in paragraph (1) **to determine whether such developments and trends are likely to affect United States technology policies** *with particular attention to the scope and content of the Federal science and technology research and develop portfolio as it affects interagency and national issues.*

[(3) Initiation of studies and analyses (including systems analyses and technology assessments) of alternatives available for ensuring long-term leadership by the United States in the development and application of the technologies referred to in paragraph (1), including appropriate roles for the Federal Government, State governments, private industry, and institutions of higher education in the development and application of such technologies.]

(3) Initiation of studies and analysis of alternatives available for ensuring the long-term strength of the United States in the development and application of science and technology, including appropriate roles for the Federal Government, State governments, private industry, and institutions of higher education in the development and application of science and technology.

(4) Provision, upon the request of the Director of the Office of Science and Technology Policy, of technical support and assistance—

(A) to the committees and panels of the President's Council of Advisers on Science and Technology that provide advice to the Executive branch on *science and technology policy*; and

[(B) to the committees and panels of the Federal Coordinating Council for Science, Engineering, and Technology that are responsible for planning and coordinating activities of the Federal Government to advance the development of critical technologies and sustain and strengthen the technology base of the United States.]

(B) to the interagency committees and panels of the Federal Government concerned with science and technology.

[(e) (d) CONSULTATION ON INSTITUTE ACTIVITIES.—In carrying out the duties referred to in subsection [(d)] (c), personnel of the Institute shall—

(1) consult widely with representatives from private industry, institutions of higher education, and nonprofit institutions; and

(2) to the maximum extent practicable, incorporate information and perspectives derived from such consultations in carrying out such duties.

[(f) (e) ANNUAL REPORTS.—The committee shall submit to the President an annual report on the activities of the committee under this section. Each report shall be in accordance with requirements prescribed by the President.

[(g) SPONSORSHIP.—(1) The Director of the National Science Foundation shall be the sponsor of the Institute.

[(2) The Director of the National Science Foundation, in consultation with the chairman of the committee, shall enter into a

sponsoring agreement with respect to the Institute. The sponsoring agreement shall require that the Institute carry out such functions as the chairman of the committee may specify consistent with the duties referred to in subsection (d). The sponsoring agreement shall be consistent with the general requirements prescribed for such a sponsoring agreement by the Administrator for Federal Procurement Policy.】

(f) SPONSORSHIP.—The Director of the Office of Science and Technology Policy shall be the sponsor of the Institute.

XVIII. COMMITTEE RECOMMENDATIONS

On April 16, 1997, a quorum being present, the Committee favorably reported the National Science Foundation Authorization Act of 1992, by a voice vote and recommends its enactment.

ADDITIONAL VIEWS

As a scientist trained as a physician, I recognize the importance of scientific advancement, and generally support the merits of the National Science Foundation. However, during this time of financial uncertainty, I cannot support the proposed budgetary increase, regardless of how insignificant it might seem, especially in the area of Education and Human Resources.

Furthermore, the NSF has proven to be less than a good steward with taxpayer dollars. For instance, the Office of the Inspector General found that one community college which received a four year grant of \$314,521 had “significant problems with the community college’s financial management of the grant” totaling \$258,955—82 percent of the total award. The IG investigation found that the college: paid an employee \$46,048 for time he did not work on the award; charged \$50,563 for travel costs in excessive amounts and could not provide reports or receipts; charged \$43,320 of participant support funds and other costs without NSF’s approval; charged \$33,190 for unallowable food, entertainment, personal items and indirect costs; did not contribute \$84,921 for the community college’s share of cost sharing proposed under the award.¹

Because of such inefficiency and mismanagement, I do not believe the NSF needs an authorization above and beyond the FY 97 level.

Tom A. Coburn.

¹National Science Foundation, Office of Inspector General, Semiannual Report to the Congress, Number 14, October 1, 1995–March 31, 1996, April 30, 1996 p. 17, 22.

**XX. RESULTS OF ROLLCALL VOTE TAKEN AT FULL COMMITTEE
MARKUP ON APRIL 16, 1997**

**Subject: H.R. 1273—Coburn amendment.
Total votes: ayes 11, nays 26, not voting 2.**

Representative	Aye	Nay	Not voting	Representative	Aye	Nay	Not voting
Mr. Sensenbrenner		X		Mr. Brown		X	
Mr. Boehlert		X		Mr. Hall			
Mr. Fawell		X		Mr. Gordon		X	
Mrs. Morella		X		Mr. Traficant			
Mr. Curt Weldon		X		Mr. Roemer		X	
Mr. Rohrabacher			X	Mr. Cramer		X	
Mr. Schiff ¹			X	Mr. Barcia		X	
Mr. Barton	X			Mr. McHale		X	
Mr. Calvert		X		Ms. Johnson		X	
Mr. Bartlett	X			Mr. Hastings		X	
Mr. Ehlers		X		Ms. Rivers		X	
Mr. Dave Weldon	X			Ms. Lofgren		X	
Mr. Salmon	X			Mr. Doggett		X	
Mr. Thomas Davis		X		Mr. Doyle		X	
Mr. Gutknecht	X			Ms. Jackson-Lee		X	
Mr. Foley	X			Mr. Luther		X	
Mr. Ewing				Mr. Capps			
Mr. Pickering				Ms. Stabenow		X	
Mr. Cannon	X			Mr. Etheridge			
Mr. Brady	X			Mr. Lampson		X	
Mr. Cook	X			Ms. Hooley		X	
Mr. English		X					
Mr. Nethercutt	X						
Mr. Coburn	X						
Mr. Sessions							

¹ Absent.

