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SENATE

{ REPORT
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NATIONAL SCIENCE FOUNDATION AUTHORIZATION ACT OF
1997

OCTOBER 15, 1997.—Ordered to be printed

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Mr. JEFFORDS, from the Committee on Labor and Human
Resources, submitted the following

REPORT

[To accompany S. 1046]

The Committee on Labor and Human Resources, to which was referred the bill (S. 1046) to authorize appropriations for fiscal years 1998 and 1999 for the National Science Foundation, and for other purposes, having considered the same, reports favorably thereon and recommends that the bill do pass.

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I. INTRODUCTION

The prominent role that science played during World War II firmly established the importance of government funded basic research in strengthening and preserving economic and military security. Federally funded research provided the American war effort with radar, sonar, the proximity fuse, blood plasma, sulfanilamide, penicillin, and the atomic bomb.

In 1944, President Roosevelt charged Vannevar Bush, his chief science advisor, with evaluating the most effective way to harness this technological infrastructure in peace time. The Bush report—"Science—The Endless Frontier"—established a strategy and rationale for Federal support of basic research. The report argued that "a nation which depends upon others for its new basic scientific knowledge will be slow in its industrial progress and weak in its competitive position in world trade regardless of its mechanical skill." This report provided the blueprint for the creation of the National Science Foundation (NSF).

NSF was established in 1950 to "develop and encourage the pursuit of a national policy for the promotion of basic research and education in the sciences." Eight years later, following the 1957 Soviet launch of the Sputnik satellite, this mission was expanded to provide greater support for science education and literacy. Over the next three decades, NSF became the primary Federal sponsor of basic scientific research in mathematics, physical sciences, computer science, engineering, and environmental science at colleges and universities. Equally important to the future of our Nation, NSF has become a primary catalyst for math and science education reform, and for the development of the information highway.

NSF'S ROLE IN FEDERAL RESEARCH AND DEVELOPMENT

The National Science Foundation receives over \$3 billion annually through Federal appropriations. Although the Foundation's budget accounts for only 4 percent of Federal research and development funding, NSF provides 25 percent of all Federal support to academic institutions for research. NSF's contribution is even greater in some disciplines—it provides nearly 50 percent of all Federal support for basic research in certain fields of science, including math, computer science, and environmental science. This funding supports approximately 19,000 research and education projects at more than 2,000 colleges, universities, elementary, and secondary schools, businesses and other research institutions. These grants are highly competitive. NSF funds only about 1/3 of the 30,000 proposals it reviews annually.

The importance of this investment cannot be exaggerated. Although, over the past decade, the private sector has outspent the Federal Government in scientific research and development, the Federal investment in basic science plays a preeminent role in industrial innovation in the United States. A recent review of American industrial patent applications revealed that the government or nonprofit foundations supported nearly 75 percent of the papers cited as providing the conceptual foundation for the new industrial innovation. The remaining 25 percent were funded by industry.

NSF'S ROLE IN MATH, SCIENCE AND ENGINEERING EDUCATION

At the close of World War II, the Nation found itself with a wartime deficit of men and women systematically trained in mathematics, science, and engineering. The deficit of science and technology students who would have received bachelor's degrees had they not been drafted into the war effort was projected to exceed 150,000. The deficit of scientists with advance degrees in the fields of chemistry, engineering, geology, mathematics, physics, psychol-

ogy, and the biological sciences was projected to exceed 17,000 by 1955.

As a result of these projections, the Foundation's initial education activities focused upon undergraduate and graduate math, science, and engineering education. The National Science Foundation's first two institute grants provided professional development for 102 college mathematics and science teachers. Today the Education and Human Resources Directorate will spend more than \$114 million for institutional reform, curriculum development, laboratory improvement, and training for high-performance technology industries at colleges across the country. Over \$78 million will be spent in support of graduate students. An additional \$97 million is provided for graduate and undergraduate education by the research directorates. These numbers do not include the Foundation's significant investment in undergraduate and graduate education through research grants.

Vannevar Bush, in "The Endless Frontier" noted that "improvement in the teaching of science is imperative, for students of latent scientific ability are particularly vulnerable to high school teaching which fails to awaken interest or to provide adequate instruction." By 1954, concerns about the quality of high school math and science instruction prompted NSF to support its first professional development institute for high school mathematics teachers. By 1957, the number of institutes had grown to 96, providing professional development opportunities for over 6,500 teachers. The Soviet launch of Sputnik in October 1957 spurred further growth in these programs. The Education and Human Resources Directorate now spends more than \$370 million each year in support of K-12 math and science education. Particular emphasis is given to teacher preparation, curriculum development and implementation, and systemic math and science education reform activities. The National Science Foundation provides approximately 30 percent of all Federal funding for mathematics and science education.

II. PURPOSE AND SUMMARY

In reporting S.1046, the National Science Foundation Authorization Act of 1997, the committee strengthens our Nation's investment in basic research and math, science, and engineering education through provisions that: (1) increase NSF's investment in basic and applied research by 5.4 percent in fiscal year 1998 and 6.1 percent in fiscal year 1999; (2) increase NSF's investment in math, science and engineering education by 4.2 percent in fiscal year 1998 and 6 percent in fiscal year 1999; (3) provide full funding for the construction of the South Pole Research Facility; and (4) authorize NSF's participation in the Next Generation Internet project.

III. BACKGROUND AND NEED FOR LEGISLATION

The National Science Foundation Act of 1950 authorizes NSF to initiate and support basic research and to strengthen and support mathematics, science and engineering education at all levels. On October 14, 1994, the NSF released its strategic plan noting that the Foundation must respond to the challenges which are "reshaping society's rationale for investments in science, mathematics, and

engineering.” This legislation authorizes the Foundation for fiscal years 1998 and 1999 and responds to the recommendations contained within the strategic plan.

IV. LEGISLATIVE HISTORY AND COMMITTEE ACTION

On July 22, 1997, S. 1046 was introduced by Senators Jeffords, Kennedy, Frist and Collins and referred to the Committee on Labor and Human Resources. On July 23, 1997, the committee met in executive session to consider S. 1046. A quorum being present, the committee moved to report S. 1046 favorably by voice vote.

V. EXPLANATION OF BILL AND COMMITTEE VIEWS

The purpose of the National Science Foundation Authorization Act of 1997 is to clarify and strengthen the role of the Foundation and to provide support for basic scientific research and mathematics, science and engineering education.

THE MISSION OF THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation Act of 1950 directs the Foundation to “initiate and support basic scientific research and programs to strengthen scientific research potential and science education programs at all levels.” Through its efforts to fulfill this mandate, NSF has made a significant contribution our Nation’s military and economic security.

The collapse of the Soviet Union provided an opportunity to review and evaluate many of the programs which were formed in the crucible of the Cold War. In 1994, at the request of the Congress, the National Science Board developed and endorsed a new strategic plan for the National Science Foundation entitled “NSF in a Changing World.” This plan establishes three broad goals for the Foundation: (1) enable the United States to uphold a position of world leadership in all aspects of science, mathematics, and engineering; (2) promote the discovery, integration, dissemination, and employment of new knowledge in service to society; and, (3) achieve excellence in U.S. science, mathematics, engineering, and technology education at all levels. The committee strongly supports these goals.

THE GOVERNMENT PERFORMANCE AND RESULTS ACT

The committee has worked closely with the National Science Foundation as part of its oversight activities in accordance with the Government Performance and Results Act (GPRA). The committee received its first GPRA proposal in March 1997 and a revised proposal in June 1997. To assist the Foundation, the committee has provided guidance regarding short-term and long-term goals and strategies.

The Foundation has made substantial progress in the development of the GPRA strategic plan over the past year. The committee applauds the broad objectives of the National Science Board but believes that the plan must be enhanced to ensure that the Foundation is evaluated on the basis of performance measures that are both realistic and consistent with its resources. The committee expects that further improvements will be made in the GPRA plan

prior to submission of the President's fiscal year 1999 budget request.

THIRD INTERNATIONAL MATH AND SCIENCE STUDY

The Third International Math and Science Study (TIMSS) is a critical element of the Foundation's efforts to address the current crisis in math and science education. With data on over five hundred thousand students in 41 countries, TIMSS enables us to understand how children aged 9, 13, and 17 in the United States compare to their peers around the world in math and science. The survey provides a comprehensive scientific framework for analyzing world-class standards and includes standardized math and science tests, analysis of textbooks and curricula, video tapes, and ethnographic case studies. Preliminary TIMSS findings offer vital insight for reform.

COORDINATION OF EDUCATION REFORM INITIATIVES

In 1945, Vannevar Bush warned the Nation of the folly of a national science policy which neglected pre-college mathematics and science instruction. Fifty years later, the National Science Board's strategic plan reaffirmed that world leadership in science, mathematics, and engineering cannot be achieved without an education system that provides educational excellence at every level of schooling.

Addressing our national need for math and science education reform will require commitment from teachers, students, parents, industry, State and local governments, Federal agencies, the academic community, and elementary and secondary schools across the country. The National Science Foundation can make a significant contribution to the national effort by bringing these groups together to form partnerships for systemic reform. Greater effort must be made, however, to coordinate the Foundation's programs and resources with the programs and resources of other Federal departments and agencies. Responses to TIMSS indicate that while Japanese teachers widely implement classroom strategies recommended by U.S. mathematics and science education researchers these recommendations frequently fail to enter classrooms in the United States. The committee will work closely with the Foundation to strengthen its partnerships with the Department of Education, particularly in the areas of curriculum reform and professional development, to ensure that innovations developed with Foundation support are made more widely available for use in the classroom.

PROFESSIONAL DEVELOPMENT

TIMSS clearly illustrates that teacher training and professional development must provide the basis for systemic education reform. Unlike their U.S. counterparts, Japanese and German teachers receive long-term, carefully structured apprenticeships before they assume full teaching responsibilities. American teachers receive less in-service training, frequently carry a heavier weekly teaching load, and are afforded fewer opportunities to discuss instructional and classroom related issues with their colleagues and supervisors.

Domestic studies consistently demonstrate that money spent improving the knowledge and enhancing the skills of educators yield greater gains in student performance than any other single educational investment. NSF's Directorate for Education and Human Resources annually invests over \$376 million in K-12 education reform. Of this amount, nearly \$103 million is invested in systemic reform initiatives and another \$102 million is invested in professional development programs. The committee strongly supports continued investment in K-12 math and science education and has increased the authorization levels to allow for renewed investment in the Nation's math and science teachers.

ADVANCED TECHNOLOGICAL EDUCATION PROGRAM

The committee strongly supports the Foundation's efforts to enhance science and engineering education at 2-year and community colleges. Rapid advances in science and technology require that all Americans become life-long learners in order to successfully compete in the world marketplace. These institutions educate over 10 million students each year and provide educational opportunities for the majority of students who seek post-secondary education and training. The ATE program supports curriculum and faculty development and encourages the creation of partnerships with 4 year colleges, secondary and elementary schools and industry.

UNDERGRADUATE EDUCATION

The committee is concerned about wide-spread indications that federally sponsored research is shifting the focus of faculty away from undergraduate education and that students are bearing an increasing portion of the costs of university research through increases in tuition. The committee believes that research and undergraduate education are fully compatible and can and should be integrated. The committee urges the Foundation to continue its efforts to encourage the integration of math and science research with undergraduate education.

INTEGRATED GRADUATE RESEARCH AND EDUCATION TRAINEESHIPS

The challenge of educating scientists, mathematicians, and engineers for the 21st century will require a new paradigm for graduate education and training. The committee commends the Foundation for its proposal for an agency-wide, multidisciplinary, graduate-training program. The goal of the Integrative Graduate Education and Research Training (IGERT) Program is to enable the development of innovative, research-based, graduate education and training activities that will produce a diverse group of young scientists and engineers well prepared to meet the challenges of the workplace.

FACILITY AND ADMINISTRATION COSTS

The committee is greatly concerned about the rising cost of the administration and delivery of scientific research and higher education. The College Board recently testified before the committee that over the past 15 years college costs have risen at double and triple the rates of inflation. Since 1980, tuition at private 4-year in-

stitutions has risen by 89 percent and tuition at public 4-year institutions has increased by 98 percent. During the same period, median family income grew by a mere 5 percent. In response to concerns about the affordability of higher education, the Congress established the National Commission on the Cost of Higher Education to study the reasons for the rapid growth in college and university tuition and to make recommendations regarding policies which would reduce this rate of growth. The Commission is expected to report its findings to the committee in December 1997.

In recent years university administrators have cited State and Federal regulatory burdens as well as the unreimbursed costs of conducting scientific research as contributors to the rapid growth in the cost of attending college. The President's budget reveals, however, that over one-quarter of the \$12 billion the government spends on research at colleges and universities and is used to pay for facilities and administration costs.

In 1992, the Department of Health and Human Services inspector general testified that many schools charge the Federal Government higher indirect cost rates than they charge other research sponsors, including "foundations, public corporations, and foreign Governments * * * Some schools waive the indirect cost rate, even for a \$1 million contract with a publicly traded corporation. Schools with a Federal indirect cost rate as high as 77 percent waive or reduce the rate with other entities to as little as 6 or 10 percent * * * It appears clear * * * that schools may be looking to the Federal Government to cover the overhead associated with research performed for non-Federal and foreign entities." CBO suggests in its 1996 report entitled "Reducing the Deficit" that despite the stipulation contained within OMB Circular A-21 that the Federal Government will not subsidize the indirect costs of non-Federal research, universities may still charge lower overhead rates on non-Federal grants.

The bill directs the Office of Science and Technology Policy (OSTP) to provide a report to the committee which analyzes the impact of previous changes to the facilities and administration costs paid to universities and affiliated research hospitals. The report shall compare the Federal facilities and administration reimbursement rates paid to universities and research hospitals, drawing upon available government and nongovernmental information, with facilities and administration rates (or their equivalents) paid to other entities that perform federally sponsored research and development.

The report shall analyze the distribution of the Federal facilities and administration reimbursement rates paid to colleges, universities, and affiliated research hospitals by rate category, by Carnegie Classification, and by public or private sector. The report shall also analyze the impact that changes made in OMB Circular A-21 after 1992 have had upon facilities and administration costs reimbursements. The report shall include an analysis of the benefits and burdens of various options to reduce Federal facilities and administration reimbursement rates upon the Federal Government, research institutions, and researchers. The committee also instructs OSTP to provide recommendations on the creation of a database designed to improve oversight of Federal facilities and ad-

ministration expenditures. The committee firmly believes that any savings resulting from changes in facilities and administration payments should be reinvested in university research.

In preparing this report, OSTP may draw upon relevant Federal and non-Federal studies and should work with other relevant agencies, including the Office of Management and Budget, the Office of Naval Research, the Department of Health and Human Services, the National Science Foundation, and the National Institute of Health. The report is due by December 31, 1998.

EXPERIMENTAL PROGRAM TO STIMULATE COMPETITIVE RESEARCH
(EPSCoR)

The committee strongly supports the Experimental Program to Stimulate Competitive Research (EPSCoR) as a means of developing and maintaining a meaningful science and technology base throughout the Nation. The program, which has been funded at a viable level only over the past few years, has significantly strengthened the research capabilities of and improved educational and economic development opportunities in participating states. The committee believes it incumbent upon NSF to continue to work closely with the affected States to provide them the resources they need to meet their individual goals and objectives, to insure that they are full participants in the science and technology community, and to insure that the collaborations envisioned between the program and the research directorates come to fruition. The committee requests a report by December 1, 1998, on the results of these collaborations.

INTERNET II

The committee applauds the Foundation's efforts to support the Internet II but is greatly concerned that current efforts to establish the vBNS network do not adequately include institutions from rural communities and small States. During the three preliminary grant rounds for access to vBNS, few rural institutions were funded and only one institution located in an EPSCoR State was funded. The committee is concerned that lack of access to the new high-speed networks will further impede efforts by EPSCoR States and rural institutions to strengthen their research capacity. The committee directs the Foundation to provide the committee with a plan indicating how it will involve EPSCoR institutions in the development of both vBNS and the Next Generation Internet. This report is due no later than December 1, 1998.

INTERNET REGISTRATION SERVICES

The National Science Foundation assumed responsibility for supporting Internet and domain name registration services at a time when it was anticipated that government agencies and education institutions would be the primary beneficiaries of the Internet. The Foundation has done an exemplary job of managing the registration services during a period of unexpected growth in the use of the Internet.

Today the vast majority of entities seeking domain name registration services are commercial rather than research and edu-

cation organizations. The Foundation is not, nor should it become, a regulatory agency with responsibilities for managing an increasingly commercial enterprise. The committee urges the administration to examine the proper role of the Federal Government and to transfer management of domain name registration services to an entity with appropriate experience and authority. The committee requests that the administration provide the Senate Labor and Human Resources Committee, the Senate Commerce Committee and the House Science Committee with a plan, no later than September 30, 1998, for transferring domain name registration responsibilities from the National Science Foundation to an appropriate entity.

DOMAIN NAME REGISTRATION FEE

In January 1993, NSF entered into a 5-year cooperative agreement to provide domain name registration services to Internet users. In 1995, NSF amended the agreement to authorize the collection of fees for registration services. Under the current agreement, 30 percent of the revenue generated from domain name registration fees are deposited into an account for preservation and enhancement of the Internet. The account currently contains nearly \$35 million. The committee believes that these funds should be utilized by the National Science Foundation, in addition to funds otherwise appropriated to the Foundation, in support of research and development activities associated with the Next Generation Internet. The committee expects that the Foundation will actively work to include EPSCoR institutions in these efforts.

NEXT GENERATION INTERNET

The committee's bill authorizes a total of \$30 million in Fiscal Year 1998 for NSF's participation in the interagency Next Generation Internet program—\$10 million of this total is within the authorization provided for the Computer and Information Science and Engineering activity. The remaining \$20 million is contained as a discrete authorization within the bill.

The Internet is an outgrowth of decades of Federal investment in research networks at the National Science Foundation and Department of Defense. This investment has stimulated much greater investment by industry and academia and helped spawn the large and rapidly growing world-wide system of networks we enjoy today. The Next Generation Internet is the next logical step in the cycle of evolving research, education, networking technologies and infrastructure necessary to support the U.S. research and education enterprise.

Today's Internet faces challenges brought about by its own success. Technology designed for a network of thousands is laboring to serve multiple networks with millions of users. Scientists and engineers believe that with additional research, new technologies, protocols, and standards can be developed which will offer reliable, affordable, and secure information delivery at rates thousands of times faster than is current available. The committee strongly believes that the National Science Foundation is well suited to provide leadership for this initiative and encourages the Foundation to

work closely with universities, industry, and the Federal research and education community.

BIOENGINEERING RESEARCH

The committee recognizes that the needs of our aging population demand a new understanding of the biomaterials used for medical implants and tissue replacements. To address these needs, the Directorates for Engineering and Mathematical and Physical Sciences are encouraged to promote interdisciplinary science and engineering research to develop new biomaterials which better interact with the human body.

MAJOR RESEARCH EQUIPMENT

The committee has authorized \$155 million for the major research equipment activity. The MRE activity supports the construction of major research facilities that provide unique capabilities at the cutting edge of science and engineering. All of these projects are subject to long range planning, merit review, and National Science Board approval. This authorization will support the requests for completion of construction of the Laser Interferometer Gravitational Wave Observatory (LIGO), the start of prototype development for the Millimeter Array radio telescope, and the establishment of the Polar Cap Observatory at the magnetic north pole.

UNITED STATES ANTARCTIC PROGRAM

The committee strongly supports the United States Antarctic program and recognizes the strategic and scientific importance of maintaining an active research presence in Antarctica. The United States Antarctic Program External Panel affirmed the importance of this program and expressed concern for the safety of the facilities. The authorization is consistent with the recommendations of the Panel and includes \$95 million for the rehabilitation of the South Pole station and related infrastructure activities.

ENVIRONMENTALLY CONSCIOUS MANUFACTURING

Manufacturing provides the foundation for long-term economic growth in the United States. Each 1000 new manufacturing jobs results in approximately 1300 new jobs in the service sector. Similarly, declines in the manufacturing sector produce significant declines in service sector employment. At the same time, however, new product manufacturing creates 87 percent of the waste produced in the United States, and every three months enough aluminum is discarded by consumers and industry to rebuild our Nation's commercial air fleet.

In the past, environmental protection policies in the United States and abroad have emphasized the treatment and disposal of waste products rather than striving to improve the manufacturing processes that produced them. The current cost of complying with Federally mandated pollution-control and clean-up programs has grown from \$26 billion in 1972 to \$115 billion in 1993. The European Community has responded to the growing shortage of landfill space by adopting laws requiring all manufacturers of consumer electronics to take back used electronic equipment. A second law

dictates that no more than 5 percent of a scrap automobile may go to a European landfill. Current recycling techniques, however, are only capable of reducing disposable waste to about 25 percent. Manufacturers must develop technologies to competitively comply with these requirements or be denied access to markets in the European Union.

Recent studies have shown that remanufacturing conserves 85 percent of the energy expended in the original manufacturing process and can reduce landfill volume by nearly 90 percent. The committee strongly encourages the Foundation to support basic multidisciplinary research activities at established remanufacturing research centers which will lead to the development of new technologies and processes.

VI. COST ESTIMATE

U.S. CONGRESS,
CONGRESSIONAL BUDGET OFFICE,
Washington, DC, August 8, 1997.

Hon. JAMES M. JEFFORDS,
Chairman, Committee on Labor and Human Resources, U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: The Congressional Budget Office has prepared the enclosed cost estimate for S. 1046, 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 Kathleen Gramp (for federal costs) and Pepper Santalucia (for the state and local impact).

Sincerely,

JUNE E. O'NEILL, *Director.*

Enclosure.

S. 1046—National Science Foundation Authorization Act of 1997

Summary: S. 1046 would authorize appropriations for the National Science Foundation (NSF) for fiscal years 1998 and 1999 and would revise various NSF planning, reporting, and administrative requirements. The bill also would direct the President's Office of Science and Technology Policy (OSTP) to submit a report on issues related to the federal government's reimbursement of grantee's indirect costs within one year after the date of enactment of this legislation.

Assuming the appropriation of the authorized amounts, CBO estimates that enacting S. 1046 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 contains no 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: For the purposes of this estimate, CBO assumes that all amounts authorized in S. 1046 will be appropriated by the start of each fiscal year and that outlays will follow historical spending patterns for NSF programs.

This estimate includes about \$300,000 for the OSTP study on indirect costs, assuming appropriation of the necessary amount. The estimated budgetary impact of S. 1046 is shown in the following table.

[By fiscal year, in millions of dollars]

	1997	1998	1999	2000	2001	2002
SPENDING SUBJECT TO APPROPRIATION						
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	3,636	0	0	0
Estimated outlays	0	1,041	2,738	2,301	719	209
Spending under S. 1046:						
Authorization level ¹	3,270	3,506	3,636	0	0	0
Estimated outlays	3,120	3,363	3,492	2,505	821	234

¹The 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. However, the bill would provide financial support to certain state government entities. Currently, about \$2.2 billion of NSF's budget goes to academic institutions, including public universities, to fund research, education and training, and equipment acquisition. By reauthorizing NSF's programs, the bill would allow this assistance to continue.

Estimated impact on the private sector: S. 1046 would impose no new private-sector mandates as defined in UMRA.

Previous CBO estimate: On April 18, 1997, CBO transmitted a cost estimate for H.R. 1273, the National Science Foundation Authorization Act of 1997, as ordered reported by the House Committee on Science on April 16, 1997. S. 1046 would allocate funding among NSF's program areas differently than H.R. 1273, and would authorize \$22 million more for NSF's activities in 1999 than the House bill.

Estimate prepared by: Federal Costs: Kathleen Gramp; Impact on State, Local and Tribal Governments: Pepper Santalucia.

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

VII. REGULATORY IMPACT STATEMENT

The committee has determined that there will be only a negligible increase in the regulatory burden of paperwork as a result of this legislation.

VIII. APPLICATION OF LAW TO LEGISLATIVE BRANCH

S. 1046 reauthorizes the National Science Foundation, and as such has no application to the legislative branch.

IX. SECTION-BY-SECTION ANALYSIS

Section. 1. Short Title.—The bill may be referred to as the “National Science Foundation Authorization Act of 1997.”

Section. 2. Definitions.—Defines the key terms used in the act, including: Director, Foundation, Board, and United States.

TITLE I—NATIONAL SCIENCE FOUNDATION AUTHORIZATION

Section 101. Findings; Core strategies.

Contains the Congressional findings and describes core strategies for fulfilling the mission and objectives of the National Science Foundation.

Section 102. Authorization of appropriations

(a)(1) 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 and Information Science and Engineering, \$289,170,000.

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

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

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

(vi) Social, Behavioral, and Economic Sciences, \$129,660,000.

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

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

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

(x) Next Generation Internet, \$20,000,000.

(B) Education and Human Resources, \$645,500,000.

(C) Major Research Equipment, \$155,000,000.

(D) Salaries & Expenses, \$136,950,000.

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

(b) Authorizes \$3,636,245,000 to be appropriated for the National Science Foundation for fiscal year 1999 as follows:

(A) Research & Related Activities, \$2,720,000,000 of which \$25,000,000 is for the Next Generation Internet.

(B) Education and Human Resources, \$684,245,000.

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

(D) Salaries and Expenses, \$137,000,000.

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

Section 103. Proportional reduction of research and related activities

If the amount appropriated pursuant to the Authorization is less than the amount authorized, the amount available for each of the activities described in clauses (I-x) shall be reduced by the same proportion.

Section 104. 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 annually provide Congress with a plan for the proposed construction of, and repair and upgrades to, national research facilities. The plan shall include cost estimates for the year in which the plan is submitted to Congress and for not fewer than the four succeeding years.

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

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

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 by 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 the Office of Science and Technology Policy shall prepare a report analyzing the impact of recent and proposed changes in OMB Circular A-21 on facilities and administration reimbursement rates for scientific research conducted at colleges, universities, and research hospitals.

Section 204. Financial disclosure

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

Section 205. Prohibition on lobbying

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.

Section 206. Notice

(a) Notice of Reprogramming. If any funds authorized under this act, or amendments made by or to 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 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.

(b) Notice of Reorganization. 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 Senate Committees on Labor and Human Resources, Commerce, Science, and Transportation, and Appropriations, as well as the House Committees on Science and Appropriations no later than 15 days prior to such reorganization.

Section 207. Enhancement of science and mathematics programs

The National Science Foundation is directed to donate surplus computers and other research equipment to elementary and secondary education schools to enhance the science and mathematics programs of these schools. The Director shall provide an annual report to the Senate Committee on Labor and Human Resources, the Senate Committee on Commerce, Science, and Transportation, and the Committee on Science of the House of Representatives regarding surplus equipment donations made by the Foundation.

X. CHANGES IN EXISTING LAW

In compliance with rule XXVI paragraph 12 of the Standing Rules of the Senate, the following provides a print of the statute or the part or section thereof to be amended or replaced (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
AMENDMENTS

* * * * *

FUNCTIONS OF THE FOUNDATION

SEC. 3. (a) The Foundation is authorized and directed—

* * * * *

(g) * * *

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[(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 in-

crease the overall capabilities of the networks to support such research and education activities.】

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NATIONAL SCIENCE BOARD

SEC. 4. (a) * * *

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(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).

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(k) * * *

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【(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.

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DIRECTOR OF THE FOUNDATION

SEC. 5. (a) * * *

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(e)(1) * * *

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【(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 authority 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 Committee on Labor and Human Resources, and the Committee on Commerce, Science, and Transportation, of the Senate and the Committee on Science of the House of Representatives.

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MISCELLANEOUS PROVISIONS

SEC. 14. (a)(1) * * *

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(c) The members of the Board and the members of each special commission [shall receive] shall be entitled to receive compensation for each day engaged in the business of the Foundation 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. For the purposes of determining the payment of compensation under this subsection, the time spent in travel by any member of the Board or any member of a special commission shall be deemed as time engaged in the business of the Foundation. Members of the Board and members of special commissions may waive compensation and reimbursement for traveling expenses.

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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.

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NATIONAL SCIENCE FOUNDATION AUTHORIZATION ACT,
1976 AMENDMENTS

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TITLE 42—UNITED STATES CODE

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ALAN T. WATERMAN AWARD

SEC. 1881a. (a) ESTABLISHMENT; AMOUNTS; TERMS.—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.

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NATIONAL SCIENCE FOUNDATION AUTHORIZATION ACT OF 1988 AMENDMENTS

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TITLE 42—UNITED STATES CODE

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PRESIDENTIAL AWARDS FOR TEACHING EXCELLENCE

SEC. 1881b. (1)(A) * * *

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(i) * * *

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[(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 the employees of such agency.

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(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.

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SCIENCE AND ENGINEERING EQUAL OPPORTUNITY ACT AMENDMENTS

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TITLE 42—UNITED STATES CODE

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【MINORITIES IN SCIENCE AND ENGINEERING; SUPPORT OF PROGRAM AND ACTIVITIES BY FOUNDATION FOR PROMOTION, ETC.; REPORT TO CONGRESS】 *PARTICIPATION IN SCIENCE AND ENGINEERING OF MINORITIES AND PERSONS WITH DISABILITIES*

SEC. 1885b. (a) * * *

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【(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 1885c of this title, 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 engineering. 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.

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COMMITTEE ON EQUAL OPPORTUNITIES IN SCIENCE AND ENGINEERING

SEC. 1885c. (a) ESTABLISHMENT; PURPOSES.—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 sections 1885 to 1885d of this title 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) MEMBERSHIP; CHAIRPERSON; TERM OF MEMBERS.—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) SUBCOMMITTEE ON WOMEN IN SCIENCE AND ENGINEERING; PURPOSES; MEMBERSHIP.—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) SUBCOMMITTEE ON MINORITIES IN SCIENCE AND ENGINEERING; PURPOSES; MEMBERSHIP.—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 opportunities for the participation in, and the advancement of, women, minorities, and persons with disabilities in education, training, and science and engineering research programs.”;

【(e) (d) ADDITIONAL STANDING OR AD HOC SUBCOMMITTEES.—The Committee may organize such 【additional】 standing or ad hoc subcommittees as the Committee finds appropriate.

【(f) (e) BIENNIAL REPORT.—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.

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