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NATIONAL SCIENCE FOUNDATION DOUBLING ACT

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SEPTEMBER 18, 2002.—Ordered to be printed

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Mr. KENNEDY, from the Committee on Health, Education, Labor,  
and Pensions, submitted the following

R E P O R T

[To accompany S. 2817]

The Committee on Health, Education, Labor, and Pensions, to which was referred the bill (S. 2817) to authorize appropriations for fiscal years 2003, 2004, 2005, 2006, and 2007 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

In 1944, President Franklin D. Roosevelt charged Vannevar Bush, his chief science advisor, with evaluating the most effective way to harness the nation's World War II technological infrastructure in peace time. The Bush report—"Science—The Endless Frontier"—established a strategy and rationale for Federal support of basic scientific research. "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," the report stated. The report of-

ferred the blueprint for what is now the National Science Foundation (NSF).

NSF was established officially 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, NSF’s 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 science, computer science, engineering, and environmental science at colleges and universities.

Today, NSF operates as an independent, non-political Federal agency charged with two key functions: (1) promoting high end research and development (R&D) in science, math, engineering, and technology and (2) supporting a broadly educated citizenry from kindergarten through the post-graduate level in those same fields.

In recent years, NSF-supported basic research has led to the creation of speech recognition software, doppler weather radar, retail bar codes, fiber optic technology, and magnetic resonance imaging (MRI) machines. After having taken over management of the internet from the Department of Defense, NSF funded the creation of the first world wide web browser, Mosaic, the forerunner to present-day commercial browsers, such as Netscape Communicator and Microsoft’s Internet Explorer.

NSF has also become a primary catalyst for math and science education reform. More than \$900 million in NSF funding supports education programs, many linked to teacher training and graduate student training. Elementary and secondary education level NSF programs focus on developing new models and strategies for all students to access high quality educational opportunities. Where proven successful, these models often have been expanded and used as models by the United States Department of Education. The NSF Urban and Rural Systemic Initiatives of the late 1980s directed at standards-based math and science education reform, for example, provided a model for the major education reforms of the past two decades, including the Goals 2000: Educate America Act program that served as a framework for the 1994 Improving America’s Schools Act and its progeny, the No Child Left Behind Act of 2001—all reforms that effect nearly every school district in the United States.

The largest current NSF education program is the Math and Science Partnership initiative funded at \$160 million in fiscal year 2002 and requested by the Administration to increase to \$200 million in FY03. The Partnership program brings together local school districts, university science, math, engineering, and education departments, and professional scientists to train K–12 teachers in advanced subject matter and innovative pedagogical techniques.

NSF in sum receives nearly \$5 billion in Federal appropriations. Over 80 percent of the agency’s budget is dedicated toward research and development in all of the science disciplines. The agency supplies only 4 percent of total Federal research and development funding, but it supports over 50 percent of all federally funded, non-biomedical, basic research carried out at the nation’s colleges and universities. NSF awards grants and contracts and enters into cooperative agreements with more than 1,800 institutions of higher

education annually to carry out research and development activities. Each year, over 30,000 proposals for funding are submitted to NSF. The agency makes more than 10,000 new awards annually based on a rigorous peer review process. Thus in any given year, there are approximately 20,000 outstanding NSF awards.

## II. PURPOSE AND SUMMARY

S. 2817, as reported, is directed toward five key goals.

First, the committee is committed to doubling NSF's budget authority over the next 5 years to reflect the recent history of growth in support for research at the National Institutes of Health. Doubling NSF's budget will promote increased Federal support for scientific research and development, support advancements in biomedical research, and help balance the Federal research and development portfolio among the physical and life sciences.

Second, the committee aims to improve math and science teacher training and instruction at the elementary and secondary levels to promote economic competitiveness and help meet the student achievement demands outlined in the No Child Left Behind Act of 2001.

Third, the committee intends to promote increased attention and support for the long-neglected area of systemic secondary school reform and improvement. Too often achievement gains in math and science in the early years of formal education fade by the time students graduate from high school.

Fourth, the committee seeks to increase the number of students, especially women and minorities, specializing in math and science in college and graduate school.

Finally, the committee is committed to reform of NSF's major research and facilities equipment acquisition program to guard against cost overruns and future earmarking.

S. 2817 targets annual NSF funding increases at 15 percent to double the agency's budget in 5 years. Over this 5-year period, the committee authorizes 16 percent annual increases in the Research and Related Activities account; 15 percent annual increases in the Education and Human Resources account; and 10 percent annual increases in the Major Research Equipment and Facilities Construction, Salaries and Expenses, and Inspector General accounts.

The bill includes new policy objectives to guide NSF resource allocation over the life of the authorization. These objectives include:

(1) Strengthening the Nation's lead in science and technology by increasing the national investment in basic science research; balancing the nation's research portfolio among the life sciences and fundamental disciplines that are important for the continued development of technologies necessary for sustaining international competitiveness; expanding the pool of scientists and engineers; modernizing the Nation's research infrastructure; and pursuing cooperative international agreements with premier research institutions;

(2) Improving the Nation's overall workforce skills by providing students of all ages with access to information technology; raising the quality of math and science instruction, particularly in grades K-12; increasing minority and low-income student higher education enrollment rates; and expand-

ing technical training opportunities at institutions of higher education;

(3) Strengthening innovation and scientific development by identifying model policies at the local and regional levels that foster innovation and scientific development; expanding the focus of competitiveness and innovation policy at the local and regional levels; supporting initiatives that enhance and mobilize regional innovation; and improving the Nation's overall workforce skills and strengthening innovation and scientific development; and

(4) Improving the Nation's overall workforce skills and strengthening innovation and scientific development.

The bill authorizes Math and Science Partnerships between institutions of higher education and local school districts to model ways to enhance the capacity of current K–12 teachers to provide challenging math and science instruction to all students by providing assistance from private industry and non-profit employed mathematicians, scientists, and engineers to teachers in and outside of the classroom. Funds may be used to: create opportunities for enhanced and ongoing programs of professional development that improves the subject matter knowledge of teachers; promote strong teaching skills in math and science teachers; establish summer professional development institutes; recruit math, science, and engineering post-secondary students into teaching; developing more rigorous math and science curricula; establish distance learning programs for math and science teachers and students; design programs to prepare math and science teachers to deliver professional development services to other math and science teachers; bring math and science teachers into contact with professional mathematicians and scientists; identify exemplary math and science teachers; and develop programs that encourage women and under-represented minorities to pursue post-secondary work and careers in math and science.

The bill authorizes NSF to conduct and evaluate research related to the science of teaching and learning math and science in order to develop ways in which the results of research can be applied, duplicated, and scaled up for use in low-performing elementary and secondary schools.

The bill authorizes a systemic secondary school initiative to model ways to improve secondary school student math and science performance and preparation for collegiate-level or technical work. This is accomplished through reforms such as systemic alignment between secondary school curricula and college freshman placement requirements; the creation of theme-oriented small schools that promote math and science achievement, the adoption of enriched math and science curricula for all secondary school students, and strengthened teacher training in math, science, and reading as it relates to technical and specialized texts.

The bill authorizes \$7,500 Robert C. Noyce Scholarships and stipends for college juniors and seniors majoring in math or science and stipends for post-graduate professional mathematicians, scientists, and engineers who commit to working as future teachers in high poverty schools for at least 2 years following certification.

The bill authorizes multi-year "tech talent" competitive grants to institutions of higher education to increase the number of students

studying toward and receiving undergraduate degrees in science, math, engineering, and technology disciplines. Projects may support training for interdisciplinary instruction to improve college-level teaching; undergraduate-conducted research to engage students in applied science; mentor programs for students in groups historically underrepresented in the sciences; internships with private industry to heighten the relevance of academic programs; and distance learning programs to further student access to science research.

The bill continues authority for the Experimental Program to Stimulate Competitive Research (EPSCoR) program that promotes nationally competitive research and development infrastructure in low-science resource states. It supports partnerships among State Governments, universities, and the private sector to enhance flagship institution infrastructure in strategic research areas. The bill also provides outreach to science and technology administrators and individual researchers in EPSCoR states about NSF opportunities, policies, programs, and procedures.

The bill requires NSF to carry out programs to advance the goals of the Science and Engineering Equal Opportunities Act (SEEOA), which includes increased participation by women and minorities in the sciences at the undergraduate, graduate, and post-graduate levels and in the professional world. The agency must report annually to Congress on the effectiveness of SEEOA activities.

The bill requires NSF to prioritize major research equipment projects approved for inclusion in future budget requests. NSF must rank major research equipment projects according to established criteria. At a minimum, those criteria are to include scientific merit, broad societal need and probable impact, the readiness of plans for construction and operation of a project, the applicant's management capacity, interagency and international commitments, and the broad scientific community's requested prioritization. NSF must produce an estimate for total major research equipment project costs over their full-life cycle, and the National Science Board must expressly approve any major research equipment project before NSF funds can be obligated. In order to promote Board policy-making independence from agency management, the Board is granted authority to hire its own staff.

Finally, the bill guards release of human subject research information, except in statistical or abstract forms. Only NSF-authorized personnel may access research information that identifies individual human subjects. Further, the bill authorizes a maximum \$10,000 fine and 5 years imprisonment penalty to be imposed on those who violate NSF confidentiality provisions.

### 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. NSF's authorization expires at the conclusion of fiscal year 2002. S. 2817 extends NSF's authorization through the conclusion of fiscal year 2007.

#### IV. LEGISLATIVE HISTORY AND COMMITTEE ACTION

On July 29, 2002, S. 2817, the National Science Foundation Doubling Act, was introduced by Senators Kennedy, Hollings, Bond, and Mikulski and referred to the Committee on Health, Education, Labor, and Pensions. The bill, as reported, was informed by the committee's July 19, 2002, hearing on the reauthorization of NSF and relevant legislation introduced during the 107th Congress.

In developing a bipartisan amendment in the nature of a substitute, the committee considered and incorporated elements of:

S. 461, the Mathematics and Science Partnership Act, introduced by Senator Frist on March 6, 2001;

S. 478, the Engineering, Science, Technology, and Mathematics Education Act, introduced by Senators Roberts, Bingaman, and Kennedy;

S. 1262, the National Mathematics and Science Partnerships Act, sponsored by Senators Rockefeller, Bingaman, Breaux, Cantwell, Cochran, Conrad, Harkin, Kennedy, Miller, Roberts, and Stabenow;

S. 1549, the Technology Talent Act of 2001, sponsored by Senators Lieberman, Allen, Bayh, Bingaman, Bond, Carnahan, Cochran, Dayton, Domenici, Frist, Kerry, Landrieu, Mikulski, Miller, Wellstone, and Wyden; and

S. 2902, the Mathematics and Science Education Excellence Act of 2002, sponsored by Senators Frist and Roberts.

On September 5, 2002, the committee met in executive session to consider S. 2817. A quorum being present, the committee moved to consider S. 2817. One amendment in the nature of a substitute was offered by Chairman Kennedy and Ranking Member Gregg and was agreed to by unanimous voice vote. Thereafter, the committee agreed to report S. 2817, as amended, favorably by unanimous voice vote.

#### V. EXPLANATION OF BILL AND COMMITTEE VIEWS

The overriding purpose of S. 2817 is to double the NSF budget over the next five years in order to build up basic research in the physical sciences, increase the number of students specializing in math and science at the collegiate and post-graduate levels, and support improved math and science instruction and achievement, particularly in secondary and post-secondary schools and for girls and minorities.

The committee believes that just as Congress has worked on a bipartisan basis to double funding for the National Institutes of Health (NIH) over the past 5 years, it is now time to launch a parallel effort to double the budget of NSF over the next 5 years. The success of NIH's efforts to cure deadly diseases such as cancer depends on related research and development traditionally supported by NSF.

NSF's impact over the past half century has been monumental, particularly in the field of medical technologies and research. NSF investments have spawned not only new products, but also entire industries, such as biotechnology, e-commerce, and geographic information systems. Medical technologies such as magnetic resonance imaging, ultrasound, digital mammography, and genomic mapping could not have occurred and are in danger of stalled ad-

vancement without underlying knowledge from NSF-supported work in biology, physics, chemistry, math, engineering, and computer science. As America embarks on a new Century, the committee believes it is a propitious moment to expand support for basic scientific research, understanding, and development.

#### INFORMATION TECHNOLOGY

NSF initiated support for Information Technology Centers in fiscal year 2000 to support fundamental research in computer and information science and engineering, including areas of social, ethical, and workforce issues. With fiscal year 2002 funding, 66 Information Technology Centers were supported. The committee urges the continued increase in funding for this program to expand research in integrating technology into the classroom, support digital library collections and developing systems to manage and work with digital information.

The Nation has become vulnerable to cyber-attacks, in part, because critical aspects of daily life rely on computer systems, networks and the internet, such as water systems and electricity grids. Currently available technologies provide inadequate protection, yet relatively little research is being conducted to develop new approaches to protecting computer systems and networks. The private sector has had little incentive to invest in cyber security, because the market emphasizes only speed and convenience. The Federal Government has not filled the gap, but instead has chronically underinvested in cyber security. As a result, what little research has been done on cyber security has been incremental, leaving the basic approaches to cyber security unchanged for decades. As a field with relatively modest support, few researchers, and minimal attention, cyber security fails to attract the interest of students, perpetuating the problems of a lack of trained personnel. Therefore, the committee urges the Foundation, within the funds authorized by this Act to provide strong support for research in computer and network security. The Committee expects NSF will support both individual investigators and a number of interdisciplinary research centers in computer and network security research.

The universal availability of broadband in the United States will increase productivity, create high-wage jobs, and expand access to healthcare and life-long learning. The committee believes that the NSF and research community can and should do more to support this national imperative along the lines suggested in the recent National Academy of Sciences report, *Broadband: Bringing Home the Bits*. In particular, R&D on innovative "last mile" technologies (both wired and wireless) could significantly reduce the cost of national broadband deployment, particularly in remote and rural areas. Therefore, the committee strongly urges the Foundation to make this a high priority activity by supporting competitive, merit-based research and education proposals in this area.

The committee also supports information technology workforce development and encourages NSF to work to eliminate barriers which have kept under-represented groups, such as women and minorities, out of the information technology field. The committee is aware of the continued, emerging importance of the Nation's historically black colleges and universities in helping to train the next generation of the Nation's scientists and engineers. Despite their

central role in this important task, almost all of these institutions remain significantly undercapitalized proportionate to their need. As a result, there is an overwhelming requirement to provide this class of institutions with substantial technical assistance in the evolution and construction of technology infrastructures, software applications and technology systems (teleconferencing, telecommunications, distance learning, data transmissions, etc.). Such assistance might be provided by the establishment of HBCU technology services centers. These centers could support the development of teaching and research faculty technical expertise at individual HBCU institutions that will provide exceptional first-rate capabilities for implementation of technology-enabled programs for both educational and scientific investigation. These centers could assist HBCUs in the development of multi-institutional research partnerships and consortia for research and educational activities in a broad array of disciplines, including mathematics, the physical and life sciences, the earth and environmental sciences, information technology and engineering.

#### NANOSCALE SCIENCE AND ENGINEERING

Nanoscale Science and Engineering has been funded since fiscal year 2001. The committee supports the expansion of this research initiative to create new centers and facilities which will explore nanoscale engineering.

#### PLANT GENOME RESEARCH

The Plant Genome Research Program was initiated in fiscal year 1998. It is part of a national plant genome research initiative established by the Office of Science and Technology Policy. The long-term goal of the plant genome program is to understand the structure, organization and function of plant genomes important to agriculture, the environment, energy, and health care. The committee supports the Foundation's requested increase in funding for this program and more in-depth understanding of the biological process in economically important plants. In supporting the goals of the plant genome program, the committee strongly urges NSF to award grants to institutions of higher education to establish regional plant genome and gene expression research centers that enhance the excellence of existing NSF programs and focuses on plants of economic importance. The committee anticipates NSF will develop research partnerships in particular supporting plant biotechnology targeted toward the needs of the developing world and encourages NSF to work in consort with the United States Agency for International Development in creating opportunities for United States research institutions to partner with research institutions in developing nations.

#### INNOVATION PARTNERSHIPS

Innovation Partnerships was created in fiscal year 2000 to broaden the participation of people and institutions in NSF activities. The committee supports the Foundation's ongoing efforts to support competitive, merit-based partnerships consisting of States, local and regional entities, industry, academic institutions, and other re-

lated organizations for capacity-building of local and regional science and technology development.

According to the Council on Competitiveness, the ability to successfully compete is concentrated in regions where public and private institutions, resources, and public policies are strategically combined to produce high-value products, services, and jobs. These so-called regional innovation clusters consist of competing and cooperating companies, suppliers, institutions of higher education that focus on research, education, and training, and other organizations. Regions with strong innovation clusters not only have higher rates of innovation, but also higher productivity growth, new business formation, jobs, and wages. The committee has provided sufficient funding for a regional innovation cluster initiative to support the development and implementation of strategic regional innovation plans, local and regional leadership initiatives that mobilize and enhance innovation assets, university-based knowledge transfer and innovation initiatives, and identify best practices in regional innovation development and university knowledge and technology transfer activities.

#### MATHEMATICS AND SCIENCE PARTNERSHIPS

In fiscal year 2002, NSF carried out a \$160 million Math Science Partnership program to model ways to enhance the capacity of current K-12 teachers to provide challenging math and science instruction to all students by providing assistance from private industry and non-profit employed mathematicians, scientists, and engineers to teachers in and outside of the classroom. In 2001, Congress created a duplicative Math and Science Partnership competitive grant program in the U.S. Department of Education. That program, funded at less than \$13 million is carried out pursuant to authority included in the No Child Left Behind Act. The committee is committed to non-duplication of Federal programs and non-ideological, non-political support for scientifically-based programs designed to improve teacher training and student achievement in mathematics and science. Because the National Science Foundation is well-known and well-respected in the higher education community and because it is independent of political control, the committee has shifted the No Child Left Behind Act Math and Science Partnership program to NSF and consolidated it with NSF's Math Science Partnership program. It is believed this effort will contribute to the efficient use of Federal resources, higher quality Partnership activities, and the non-politicization of math and science instruction.

The committee strongly encourages NSF to assist schools, school districts, and State educational agencies with the rigor of their grant applications and activities in order to ensure that all appropriated funds for this program are awarded. Priority in awarding grants should be given to high-need local educational agencies.

As part of its support for Math Science Partnerships, the committee encourages NSF to develop a national clearinghouse on effective methods and materials in math and science instruction and to facilitate a national dialogue among researchers and practitioners on math science instruction.

## ROBERT C. NOYCE SCHOLARSHIP

The committee is greatly concerned about the lack of well-qualified and highly trained K–12 teachers in the areas of math and science. In order to address this problem, the committee supports the continued operation of the Noyce Scholarship program that has been funded since fiscal year 2002. Noyce Scholarships are offered to juniors or seniors who are majoring in math, science or engineering who wish to become teachers. The Noyce program also provides stipends and teacher training for professional mathematicians and scientists who commit to teaching at least 2 years in a high poverty school, following certification.

SCIENCE, MATHEMATICS, ENGINEERING AND TECHNOLOGY TALENT  
EXPANSION PROGRAM

The committee is concerned about the low number of students across the Nation who pursue careers in mathematics, science and engineering. It is estimated that over the next 10 years, jobs requiring technical skills are to grow by over 50 percent. Unfortunately, the number of American students studying math and science at the college level has been flat over the last 15 years. The Science, Mathematics, Engineering, and Technology Talent program seeks to increase the number of U.S. citizens or permanent resident students pursuing an associate or baccalaureate degree in the fields of science, technology, engineering, and mathematics, by awarding grants to institutions of higher education to support such students and studies. In carrying out the “Tech Talent” program, the committee urges NSF to follow the outline of operation identified in S. 1549, The Technology Talent Act of 2001.

It is the intent of the committee that non-profit entities that partner with an institution of higher education qualify together with such institutions as an eligible applicant under the Science, Mathematics, Engineering and Technology Talent Expansion program. Such entities may include consortium of institutions of higher education and private industry that have been established for the purpose of increasing the number of and quality of students studying toward degrees in the sciences. Such cooperative efforts can encourage innovative, cost-effective and efficient means to increasing student participation, performance, retention in and graduation from mathematics, science and engineering programs. The language in this bill limits eligible non-profits to those with demonstrated experience in delivering science, mathematics, engineering and technology education. The intent is to encourage those programs, entities and participants that have demonstrated positive output in this area to continue and enhance their activities.

It is also the intent of the committee that an institution of higher education that awards baccalaureate degrees and desires to receive a grant under this section, or is a part of a partnership that desires to receive a grant, shall establish benchmarks to increase the number of students studying toward baccalaureate degrees at the institution in science, mathematics, engineering, and technology. A community college that desires to receive a grant under this section, or is a part of a partnership that desires to receive a grant, shall establish benchmarks to increase the number of student studying toward associate’s degrees in science, mathematics, engi-

neering, or technology education, or pursuing credits toward transfer to a baccalaureate degree program in science, mathematics, engineering, or technology education. In the case of students who transfer to a baccalaureate degree program, the grantee institution shall provide, or demonstrate full attempt to provide, data confirming the matriculation of students into baccalaureate degree programs in science, mathematics, engineering, or technology education.

It is the committee's view that grants should be awarded to selected applicants for a period of 5 years. If grantees fail to make satisfactory progress toward meeting their established benchmarks during the first 3 years of the grant period, NSF should consider terminating the grant in an expeditious fashion.

#### RESEARCH ON MATHEMATICS AND SCIENCE LEARNING AND EDUCATION IMPROVEMENT

The No Child Left Behind Act requires annual testing of reading and mathematics for students in grades 3 through 8. States and school districts will identify schools that are low-performing on the basis of such test results. As of school year 2007–2008, schools will be required to carry out standards-based science assessments and will be held accountable for student performance on those assessments. Due to the critical importance of mathematics and science knowledge, the committee believes that it is valuable to invest in high-quality research to determine the best methods of teaching those subjects. Empowered with the knowledge of effective mathematics and science instructional practices, the committee will be better positioned to argue effectively for more funding for the Math and Science Partnership program.

#### EXPERIMENTAL PROGRAM TO STIMULATE COMPETITIVE RESEARCH (EPSCOR)

The Experimental Program To Stimulate Competitive Research (EPSCoR) mission is to promote nationally competitive research and development infrastructure in low-science resource states. Currently, EPSCoR operates in 21 States. The committee strongly supports NSF's efforts to continue facilitating partnerships among State governments, universities, and the private sector to enhance flagship institution infrastructure in strategic research areas. Indeed the committee believes those activities should be expanded among eligible States. The committee believes that NSF should provide outreach to science and technology administrators and individual researchers in EPSCoR States to make them aware of existing opportunities, policies, programs, and procedures.

#### THE SCIENCE AND ENGINEERING EQUAL OPPORTUNITIES ACT

The committee is extremely concerned that women and minorities continue to shy away from the sciences. Women make up 45 percent of the workforce, but hold just 12 percent of science and engineering jobs. Therefore, the committee requires the NSF to carry out programs to advance the goals of the Science and Engineering Equal Opportunities Act, which includes increased participation by women and minorities in the sciences at the undergraduate, graduate, and post-graduate levels and in the professional world. The

committee looks forward to NSF's report on the success of these activities, including the meeting of specific, quantified objectives.

#### MAJOR RESEARCH INSTRUMENTATION

The Major Research Instrumentation program is designed to increase access to scientific and engineering equipment for research and research training in the Nation's institutions of learning. This program seeks to improve the quality and expand the scope of research and research training in science and engineering, and encourage research-intensive learning environments. The committee supports this program and requires the Director of the NSF to conduct a review and assessment of the major research instrumentation programs in order to determine the needs of institutions and awards which have been funded under this program.

University research programs depend on technically trained staff and the design, fabrication, maintenance and upgrade of innovative instruments to perform cutting edge research and training. Some universities have attempted to maintain central interdisciplinary research instrumentation centers to provide broad-based support for their research and research training activities. However, as a result of previous reductions in broadly focused government funding, especially in physical sciences, this capability has diminished. The phenomenon has limited the ability of institutions to train students, conduct research, and develop advanced instrumentation. It is of concern to the committee in a time when interdisciplinary research is becoming more and more important, and yet is increasingly difficult for individual groups to cover the many areas of technical expertise needed to develop state-of-the-art instruments. Therefore, the committee has included a provision in this bill directing the Office of Science and Technology Policy to assess the need for an interagency program to address this issue and to report back to the House and Senate authorizing committees with its analysis and an interagency program plan within 14 months after the date of enactment of this bill.

#### MAJOR RESEARCH EQUIPMENT AND FACILITIES CONSTRUCTION PLAN

The Major Research Equipment and Facilities Construction account helps support the construction of major research facilities that provide cutting edge capabilities in science and engineering. Last fiscal year, funding was provided for the construction of the Atacama Large Lillimeter Array, the Large Hadrom Collider, the Network for Earthquake Engineering Simulation, the South Pole Station Modernization Project, the High-performance Instrumented Airborne Platform for Environmental Research (HIAPER), IceCube, and Terascale Computing Systems. In order to continue to strengthen this program the committee will require the Foundation to prioritize major research equipment projects approved for inclusion in future budget requests and to rank major research equipment projects according to established criteria. The new criteria must include at least: scientific merit; broad societal need and probable impact; readiness of plans for construction and operation; applicant's management capacity; interagency and international commitments; and results of scientific community's formal prioritization efforts. The committee will also require the Foundation to produce an estimate for total major research equipment

project costs over their full-life cycle and the Governing Board to approve expressly any major research equipment project before NSF funds can be obligated. Funding for major research equipment and facilities construction should not be derived from research and related activity accounts.

Finally, the committee supports the effort now underway at the National Academy of Sciences to assist the Foundation in the establishment of a process to better manage and prioritize large scale research facilities. The committee urges the Foundation to help the NAS expedite the development of this study by providing the necessary financial support as expeditiously as possible.

#### INDEPENDENCE OF THE NATIONAL SCIENCE BOARD

The National Science Board has dual responsibilities as national science policy advisor to the President and the Congress, and governing board for the National Science Foundation. By law, the Board establishes the policies of NSF and provides oversight of its programs and activities and its strategic directions and budgets. The committee strongly supports and values the mission of the Board and its responsibilities—especially as an independent policy advisor to the Congress. The committee believes that the Board must have the resources to carry out its responsibilities, especially as the budget and program responsibilities of the Foundation grow. To that end, the committee has amended the National Science Foundation Act of 1950 to authorize the Board to hire its own professional staff. Further, the committee directs NSF to provide in response to a request from the National Science Board, on a non-reimbursable basis, budget development and execution assistance, personnel assistance, space, transportation support, National Science Board Committee staff support and other assistance in the same manner as it did in fiscal year 2002.

#### VI. COST ESTIMATE

U.S. CONGRESS,  
CONGRESSIONAL BUDGET OFFICE,  
*Washington, DC, September 17, 2002.*

Hon. EDWARD M. KENNEDY,  
*Chairman, Committee on Health, Education, Labor, and Pensions,  
U.S. Senate, Washington, DC.*

DEAR MR. CHAIRMAN: The Congressional Budget Office has prepared the enclosed cost estimate for S. 2817, the National Science Foundation Doubling Act.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contact is Kathleen Gramp.

Sincerely,

BARRY B. ANDERSON  
(For Dan L. Crippen, Director).

Enclosure.

#### *S. 2817—National Science Foundation Doubling Act*

Summary: S. 2817 would authorize the appropriation of \$37.7 billion over the 2003–2007 period for the activities of the National Science Foundation (NSF). Assuming implementation of the bill, NSF's appropriation would roughly double over the five-year pe-

riod, increasing from \$4.8 billion in 2002 to \$9.8 billion in 2007. This total includes funding for the Mathematics and Science Partnerships currently administered by the Department of Education. S. 2817 also would establish guidelines for allocating NSF funding and require the Office of Science and Technology Policy (OSTP) to prepare reports on issues related to research instrumentation and program duplication. Finally, the bill would outline new procedures for protecting the confidentiality of certain information collected by NSF and impose civil penalties for violations of the provision.

Assuming appropriation of the authorized amounts, CBO estimates that implementing this bill would cost a total of \$26.1 billion over the 2003–2007 period. Provisions imposing new civil penalties could increase governmental receipts (i.e., revenues), but CBO estimates that any amounts collected would be insignificant. Because S. 2817 could affect receipts, pay-as-you-go procedures would apply.

S. 2817 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA). The bill would make grants available to state and local educational agencies and institutions of higher education to support improvements in educational programs for science and mathematics. Any costs to the educational institutions would be incurred voluntarily.

Estimated cost to the Federal Government: The estimated budgetary impact of S. 2817 is shown in the following table. For this estimate, CBO assumes that the authorized amounts will be appropriated near the start of each fiscal year and that spending will occur at rates similar to existing NSF programs. Based on information from OSTP, CBO estimates that the office would incur no significant costs to implement this bill. The costs of this legislation fall within budget function 250 (general science, space, and technology).

	By fiscal year, in millions of dollars—					
	2002	2003	2004	2005	2006	2007
SPENDING SUBJECT TO APPROPRIATION						
NSF spending under current law:						
Budget authority <sup>1</sup> .....	4,802	0	0	0	0	0
Estimated outlays .....	4,037	3,229	1,124	328	124	45
Proposed changes:						
Authorization level .....	0	5,536	6,391	7,378	8,520	9,839
Estimated outlays .....	0	1,384	4,135	5,717	6,845	8,005
NSF spending under S. 2817:						
Authorization level <sup>1</sup> .....	4,802	5,536	6,391	7,378	8,520	9,839
Estimated outlays .....	4,037	4,613	5,259	6,045	6,969	8,050

<sup>1</sup>The 2002 level is the amount appropriated for that year for NSF and the \$13 million appropriated for Mathematics and Science Partnerships at the Department of Education.

Pay-as-you-go considerations: The Balanced Budget and Emergency Deficit Control Act sets up pay-as-you-go procedures for legislation affecting direct spending or receipts. Although S. 2817 could affect receipts by increasing amounts collected from civil penalties, CBO estimates that any such effects would be insignificant.

Intergovernmental and private-sector impact: S. 2817 contains no intergovernmental or private-sector mandates as defined in UMRA. The bill would make grants available to state and local educational agencies and institutions of higher education to support improvements in educational programs for science and mathematics. Any costs to the educational institutions would be incurred voluntarily.

Previous CBO estimate: On May 31, 2002, CBO transmitted a cost estimate for H.R. 4664, the Investing in America's Future Act of 2002, as ordered reported by the House Committee on Science on May 22, 2002. That bill would cover a shorter period of time, but the amounts authorized for fiscal years 2003 through 2005 are similar to the levels in S. 2817. H.R. 4664 does not include provisions regarding the confidentiality of information and therefore would not affect government receipts. Other differences between the two bills would not affect their cost.

Estimate prepared by: Federal costs: Kathleen Gramp; impact on state, local, and tribal governments: Susan Sieg Tompkins; impact on the private sector: Samuel Kina.

Estimate approved by: Peter H. Fontaine, Deputy Assistant Director for Budget Analysis.

#### VII. REGULATORY IMPACT STATEMENT

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

#### VIII. APPLICATION OF LAW TO THE LEGISLATIVE BRANCH

S. 2817 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 Doubling Act".

##### *Section 2. Definitions*

Defines the key terms used in the act, including: Board, Director, Eligible Applicant, Foundation, Institution of Higher Education, and National Research Facility.

##### *Section 3. Findings*

Contains Congressional findings and describes the contributions that the National Science Foundation has made in the United States in supporting science, mathematics, engineering, and technology education at all levels over the past 50 years. States that the National Science Foundation must be provided with sufficient resources to enable it to continue to carry out its responsibilities to develop, strengthen and enhance these disciplines to ensure the United States remains a leader in the global marketplace.

##### *Section 4. Policy objectives*

In allocating resources made available under appropriated levels, the National Science Foundation shall have the following policy objectives:

(1) To strengthen the Nation's lead in science and technology by increasing the national investment in research and strategic areas; balancing the Nation's research portfolio among life sciences and fundamental disciplines in mathematics, the physical sciences, computer information science, geoscience, engineering, and social,

behavioral and economic sciences that are important for the continued development of technologies necessary for sustaining international competitiveness; expanding the pool of scientists and engineers; modernizing the nation's research infrastructure; and pursuing cooperative international agreements with premier research institutions.

(2) To increase overall workforces skills by improving the quality of mathematics and science education, particularly in kindergarten through grade 12; providing access to information technology for all students; raising post-secondary enrollment rates for under-represented minorities in science, mathematics, engineering, and technology disciplines; increasing access to higher education in science, mathematics, engineering and technology fields for students from low-income households; and expanding technical training opportunities at institutions of higher education.

(3) To strengthen innovation by expanding the focus of competitiveness and innovation policy at the regional and local level; supporting initiatives and organizations that enhance and mobilize regional innovation; and identifying best policy practices in fostering innovation at the State, regional, and local levels.

*Section 5. Authorization of appropriations*

Subsection (a) authorizes \$5,536,390,000 for the National Science Foundation for fiscal year 2003 of which \$4,174,840,000 shall be made available to carry out research related activities; \$1,006,250,000 shall be made available for education and human resources; \$152,900,000 shall be made available for major research equipment and facilities construction; \$194,700,000 shall be made available for salaries and expenses; and \$7,700,000 shall be made available for the Office of Inspector General.

Subsection (b) authorizes \$6,390,832,000 for the National Science Foundation for fiscal year 2004 of which \$4,842,814,000 shall be made available to carry out research and related activities; \$1,157,188,000 shall be made available for education and human resources;(2) (C) \$168,190,000 shall be made available for major research equipment and facilities construction; \$214,170,000 shall be made available for salaries and expenses; and \$8,470,000 shall be made available for the Office of Inspector General.

Subsection (c) authorizes \$7,378,343,000 for the National Science Foundation for fiscal year 2005 of which \$5,617,665,000 shall be made available to carry out research and related activities; \$1,330,766,000 shall be made available for education and human resources; \$185,009,000 shall be made available for major research equipment and facilities construction; \$235,587,000 shall be made available for salaries and expenses; and \$9,317,000 shall be made available for the Office of Inspector General.

Subsection (d) authorizes \$8,519,776,000 for the National Science Foundation for fiscal year 2006 of which \$6,516,491,000 shall be made available to carry out research and related activities; \$1,530,380,000 shall be made available for education and human resources;\$203,509,900 shall be made available for major research equipment and facilities construction; \$259,145,700 shall be made available for salaries and expenses; and \$10,248,700 shall be made available for the Office of Inspector General.

Subsection (e) authorizes \$9,839,262,000 for the National Science Foundation for fiscal year 2007 of which \$7,559,130,000 shall be made available to carry out research and related activities; \$1,759,938,000 shall be made available for education and human resources; \$223,860,900 shall be made available for major research equipment and facilities construction; \$285,060,300 shall be made available for salaries and expenses; and \$11,273,570 shall be made available for the Office of Inspector General.

*Section 6. Specific program authorizations*

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

(1) Information Technology.—Support for research, education, and infrastructure in areas related to cybersecurity, terascale computing systems, software, networking, scalability, communications, and data management.

(2) Nanoscale Science and Engineering.—Support for research aimed at discovering novel phenomena, processes, materials and tools that address scientific frontier challenges in electronics, optoelectronics and magnetics, manufacturing, the environment, and healthcare. The Foundation may support new interdisciplinary research centers on the societal implications of advances in nanoscale science and engineering.

(3) Plant Genome Research.—Support for research that advances our understanding of the structure, organization, and function of plant genomes and that accelerate the use of new knowledge and innovative technologies toward a more complete understanding of basic biological processes in plants, especially economically important plants such as corn and soybeans.

(4) Innovation Partnerships.—Support for proposals that stimulate scientific innovation at the regional level, through partnerships involving disparate States, regional government entities, local government entities, industry, academic institutions, and other related organizations in strategically important fields of science and technology.

(5) Mathematics and Science Partnerships.—Support for a competitive grant math and science teacher training program during fiscal years 2003, 2004, and 2005 in accordance with the requirements of the No Child Left Behind Act of 2110. During fiscal years 2006 and 2007, the Director shall carry out a formula grant program in accordance with the requirements of the No Child Left Behind Act of 2001. If in 2006 or 2007 an eligible partnership previously awarded a grant under the competitive grant program and the grant period has not ended, the Director must reserve funds to make payments to the partnership until the completion of their awarded grant.

The Director and the Secretary of Education shall consult and coordinate in carrying out this program and not later than 120 days after the date of enactment of this Act prepare a plan for the joint administration to submit to Congress for review and comment.

At the request of an eligible partnership or a State educational agency, the Director shall provide the partnership or agency with technical assistance in meeting any requirements of the mathematics and science partnership program carried out by the Direc-

tor, including providing advice from experts on how to develop a high-quality application, and high-quality activities.

(6) Robert C. Noyce Scholarship.—A program of multi-year awards to institutions of higher education to provide future teachers, who have completed at least 2 years work toward a baccalaureate degree with a concentration in math or science, with a scholarship, stipend, and training toward teacher or alternative certification. The scholarships and stipends awarded shall be equal to the lesser of \$7,500, or the cost of attendance at the relevant institution of higher education. Awards will be issued based on academic merit, with consideration given to financial need and the goal of promoting participation of women, minorities, and persons with disabilities. Within 3 years of receiving the scholarship or stipend, Noyce scholars shall begin to teach 2 years of math or science in a high poverty school and provide the institution of higher education which they attended a certification of completed full-time employment as a math or science teacher at the end of each academic year for which they were employed.

(7) Science, Mathematics, Engineering and Technology Talent Expansion Program.—The Foundation shall provide merit-based, multi-year competitive grants to institutions of higher education and other eligible applicants to increase the number of students, particularly women, minorities, and persons with disabilities, studying toward and receiving collegiate degrees in science, mathematics, engineering, and technology. Projects funded under this subsection may include: interdisciplinary teacher training, undergraduate-conducted research, mentoring for students in under represented groups, programs that enable students from community college to matriculate directly into baccalaureate science, mathematics, engineering, or technology programs, internships carried out in partnership with industry, and the innovative use of digital technologies at institutions that serve a high percentage of economically disadvantaged students. Eligible applicants shall establish annual benchmarks for increasing the number of students studying toward and receiving associates or bachelor's degrees in science, mathematics, engineering, and technology, and must meet them in order to receive continued funding.

(8) Secondary School Systemic Initiative.—The Director shall carry out a merit-based, competitive grant program for local and State education agencies to support the planning and implementation of agency-wide secondary school reform initiatives. Such initiatives shall be directed toward preparing graduating secondary school students to read and comprehend specialized technical and scientific texts, meet the mathematics and science education needs of students at risk of not achieving state academic standards, reduce the need for basic skill training, and increase college completion rates. In making grants, priority shall be accorded those agencies that serve high poverty communities. Among other specific activities, funds may be used to refurbish or build secondary school science laboratories as part of a comprehensive program to enhance the quality of science, mathematics, engineering, and technology instruction.

(9) Experimental Program to Stimulate Competitive Research (EPSCoR).—In states which receive less than one percent of the total amount of NSF research funding, the Foundation shall offer

a series of initiatives designed to bolster research infrastructure and the geographic distribution of federal research and development support. Authorized activities include: research infrastructure improvement grants, co-funding initiatives, and outreach initiatives to make researchers aware of NSF support.

(10) The Science and Engineering Equal Opportunities Act.—Reauthorization of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885 et seq.), which provides support to minority serving institutions and individual minority and women researchers. The Director is to report to Congress on the annual and cumulative success of such ventures.

*Section 7. Research on mathematics and science learning and education improvement*

The Director shall award competitive grants to conduct and evaluate research in cognitive science, education, and related fields associated with the science of learning and teaching mathematics and science, including evaluating the effectiveness of current math and science teaching practices, and develop ways in which the results of research can be applied for use in low-performing elementary and secondary schools to improve the teaching and student achievement levels in mathematics and science.

NSF shall coordinate with the United States Department of Education in devising a research agenda, disseminating the results of the research conducted pursuant to grants awarded to elementary and secondary school teachers, and providing programming, guidance, and support to ensure that teachers both understand the implications of the research and how the research can be used to improve classroom performance.

*Section 8. Duplication of programs*

Provides that the Director shall review the education programs of the Foundation that are in operation to determine whether any are duplicated and consolidate or eliminate them accordingly. The Director of the Office of Science and Technology Policy shall review the education programs of the Foundation to ensure compliance with the provision, and submit within a year of enactment, and annually thereafter, a report to Congress on NSF compliance with this section.

*Section 9. Major research instrumentation*

The Director shall carry out an assessment of the major research instrumentation program and submit a report of findings and recommendations to Congress. The report shall include an estimate of the major research instrumentation needs of institutions of higher education, a list of the major awards and funding levels by year since the major research instrumentation program's inception, and an analysis of the impact of the programs that were documented in the Foundation's 1994 survey of academic research instrumentation needs.

*Section 10. Major research equipment and facilities construction plan*

The Director shall develop a prioritized for funding list of major research equipment and facilities projects which have been ap-

proved by the Board and shall be updated each time the Board approves a new project. Not later than 90 days after the enactment of this Act and not later than each June 15 thereafter, the Director shall submit to the Congress a report containing Board-approved criteria used to develop a prioritization list and a description of major factors for each project that determined their ranking. Ranking criteria shall include at a minimum: scientific merit; broad societal need and probable impact; consideration of the results of formal prioritization efforts by the scientific community; readiness of plans for construction and operation; the applicant's management and administrative capacity of large research facilities; international and interagency commitments; and the order in which projects were approved by the Board for inclusion in a future budget request. National research facility projects funded under this program shall only be managed by an individual whose NSF appointment is as permanent civil servant.

The NSF Board explicitly shall approve any project to be funded out of the Major Research Equipment account before any funds may be obligated. No later than September 15 of each fiscal year, the Board shall report to the Committee on Commerce, Science, and Transportation and the Committee on Health, Education, Labor, and Pensions of the Senate, and the Committee of Science of the House of Representatives on the condition of any delegation of authority under Section 4 of the National Science Foundation Act of 1950 that relates to funds appropriated for any project under this program.

*Sections 11–16. Administrative amendments*

Prohibits release of human subject research information, except in statistical or abstract forms. Only NSF authorized personnel may access research information that identifies individual human subjects. Further, the bill authorizes a maximum \$10,000 fine and 5 years imprisonment penalty to be imposed on those who violate NSF confidentiality provisions.

To ensure Board independence, section 11 provides that Board staff shall be appointed by the Chair of the Board and assigned at the direction of the Board. Within 6 months of the date of enactment of this Act, the Chair shall report to Congress on proposed procedures under which the Board will conduct its meetings to ensure greater public access to deliberations.

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):

\* \* \* \* \*

PUBLIC LAW 105–207

\* \* \* \* \*

**SEC. 2. DEFINITIONS.**

In this Act:

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

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

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

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

[(4)] (5) UNITED STATES.—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.

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

\* \* \* \* \*

**TITLE II—GENERAL PROVISIONS****SEC. 201. NATIONAL RESEARCH FACILITIES.**

(a) FACILITIES PLAN.—

[(1) IN GENERAL.—Not later than December 1, of each year, the Director shall, as part of the annual budget request, prepare and submit to Congress a plan for the proposed construction of, and repair and upgrades to, national research facilities.]

(1) IN GENERAL.—*The Director shall prepare, and include as part of the Foundation’s annual budget request to Congress, a plan for the proposed construction of, and repair and upgrades to, national research facilities, including full life-cycle cost information.*

(2) CONTENTS OF THE PLAN.—The plan shall include—

(A) estimates of the costs for the construction, repairs, and upgrades described in paragraph [(1);] (1), *including costs for instrumentation development;*

(B) estimates of the costs for the operation and maintenance of existing and proposed new facilities; [and]

(C) in the case of proposed new construction and for major upgrades to existing facilities, funding profiles, by fiscal year, and milestones for major phases of the [construction.] *construction;*

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

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

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

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

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

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

\* \* \* \* \*

**PART III—NATIONAL SCIENCE FOUNDATION  
NATIONAL SCIENCE FOUNDATION ACT OF 1950**

\* \* \* \* \*

NATIONAL SCIENCE BOARD

SEC. 4. (a) \* \* \*

\* \* \* \* \*

(e) The Board shall meet annually on the third Monday in May unless, prior to May 10 in any year, the Chairman has set the annual meeting for a day in May other than the third Monday and at such other times as the Chairman may determine, but he shall also call a meeting whenever one-third of the members so request in writing. [A majority of the members of the Board shall constitute a quorum. Each member shall be given notice, not less than fifteen days prior to any meeting, of the call of such meeting.] *The Board shall adopt procedures governing the conduct of its meetings, including a definition of a quorum and delivery of notice.*

\* \* \* \* \*

(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.] *Such staff shall be appointed by the Chairman 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 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).

\* \* \* \* \*

## MISCELLANEOUS PROVISIONS

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

\* \* \* \* \*

[(i) Information supplied to the Foundation or a contractor of the Foundation by an industrial or commercial organization in survey forms, questionnaires, or similar instruments for the purposes of subsection (a)(5) or (a)(6) of section 3 may not be disclosed to the public unless such information has been transformed into statistical or aggregate formats that do not allow the identification of the supplier. The names of organizations supplying such information may not be disclosed to the public.]

## (i) CONFIDENTIALITY OF CERTAIN INFORMATION.—

## (1) IN GENERAL.—

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

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

(C) IDENTITIES.—*The identifies of individuals and organizations supplying information described in subparagraph (A) may not be disclosed to the public.*

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

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

(B) *permit anyone other than individuals authorized by the Foundation to examine, in identifiable form, data relating to an individual, an industrial or commercial organization, or an academic, educational, or other non-profit institution that has received a pledge of confidentiality from the Foundation; or*

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

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

\* \* \* \* \*

**UNITED STATES CODE TITLE 42**

\* \* \* \* \*

**SEC. 1885. CONGRESSIONAL STATEMENT OF FINDINGS AND DECLARATION OF POLICY RESPECTING EQUAL OPPORTUNITIES IN SCIENCE AND ENGINEERING.**

(a) The Congress finds that it is in the national interest to promote the full use of human resources in science and engineering and to insure the full development and use of the scientific and engineering talents and skills of men and women, equally, of all ethnic, racial, and economic [backgrounds.] *backgrounds, including persons with disabilities.*

(b) The Congress declares it is the policy of the United States to encourage men and women, equally, of all ethnic, racial, and economic backgrounds, *including persons with disabilities*, to acquire skills in science, engineering, and mathematics, to have equal opportunity in education, training, and employment in scientific and engineering fields, and thereby to promote scientific and engineering literacy and the full use of the human resources of the Nation in science and engineering. To this end, the Congress declares that the highest quality science and engineering over the long-term requires substantial support, from currently available research and educational funds, for increased participation in science and engineering by women [and minorities], *minorities, and persons with disabilities.* The Congress further declares that the impact on women [and minorities], *minorities, and persons with disabilities* which is produced by advances in science and engineering must be included as essential factors in national and international science, engineering, and economic policies.

**TITLE II OF THE ELEMENTARY AND SECONDARY EDUCATION ACT OF 1965**

\* \* \* \* \*

**PART B—STATE AND LOCAL ACTIVITIES**

**[SEC. 2201. [20 U.S.C. 6641] PROGRAM AUTHORIZED.**

[The Secretary is authorized to make grants to State educational agencies for the improvement of teaching learning through sustained and intensive high-quality professional development activities in the core academic subjects at the State and local levels.

**[SEC. 2202. [20 U.S.C. 6642] ALLOCATION OF FUNDS.**

[(a) **RESERVATION OF FUNDS.**—From the amount available to carry out this part for any fiscal year, the Secretary shall reserve—

(1) ½ of 1 percent for the outlying areas, to be distributed among the outlying areas on the basis of their relative need, as determined by the Secretary in accordance with the purposes of this part; and

[(2) ½ of 1 percent for the Secretary of the Interior for programs under this part for professional development activities for teachers, other staff, and administrators in schools operated or funded by the Bureau of Indian Affairs.

[(b) STATE ALLOCATIONS.—The Secretary shall allocate the amount available to carry out this part and not reserved under subsection (a) to each of the 50 States, the District of Columbia, and the Commonwealth of Puerto Rico as follows, except that no State shall receive less than ½ of 1 percent of such amount:

[(1) Fifty percent shall be allocated among such jurisdictions on the basis of their relative populations of individuals aged five through 17, as determined by the Secretary on the basis of the most recent satisfactory data.

[(2) Fifty percent shall be allocated among such jurisdictions in accordance with the relative amounts such jurisdictions received under part A of title I for the preceding fiscal year, or for fiscal year 1995 only, such part's predecessor authority.

[(c) REALLOCATION.—If any jurisdiction does not apply for an allotment under subsection (b) for any fiscal year, the Secretary shall reallocate such amount to the remaining jurisdictions in accordance with such subsection.

**[SEC. 2203. [20 U.S.C. 6643] WITHIN-STATE ALLOCATIONS.**

[Of the amounts received by a State under this part for any fiscal year—

[(1) 84 percent shall be available for local allowable activities under section 2210(b), of which—

[(A) not more than 5 percent may be used for the administrative costs of the State educational agency and for State-level activities described in section 2207; and

[(B) of the remaining amount—

[(i) 50 percent shall be distributed to local educational agencies—

[(I) for use in accordance with section 2210; and

[(II) in accordance with the relative enrollments in public and private nonprofit elementary and secondary schools within the boundaries of such agencies; and

[(ii) 50 percent of such amount shall be distributed to local educational agencies—

[(I) for use in accordance with section 2210; and

[(II) in accordance with the relative amount such agencies received under part A of title I or for fiscal year 1995 for the preceding fiscal year, such part's predecessor authority; and

[(2) 16 percent shall be available to the State agency for higher education for activities under section 2211, of which not more than 5 percent may be used for the administrative costs of the State agency for higher education.

**[SEC. 2204. [20 U.S.C. 6644] CONSORTIUM REQUIREMENT.**

[(a) IN GENERAL.—A local educational agency receiving a grant under this part of less than \$10,000 shall form a consortium with another local educational agency or an educational service agency serving another local educational agency to be eligible to participate in programs assisted under this part.

[(b) WAIVER.—The State educational agency may waive the application of paragraph (1) in the case of any local educational agency that demonstrates that the amount of its allocation under this part is sufficient to provide a program of sufficient size, scope, and quality to be effective. In granting waivers under the preceding sentence, the State educational agency shall—

[(1) give special consideration to local educational agencies serving rural areas if distances or traveling time between schools make formation of the consortium more costly or less effective; and

[(2) consider cash or in-kind contributions provided from State or local sources that may be combined with the local educational agency's allocation for the purpose of providing services under this part.

[(c) SPECIAL RULE.—Each consortium shall rely, as much as possible, on technology or other arrangements to provide staff development programs tailored to the needs of each school or school district participating in a consortium described in subsection (a).

**[SEC. 2205. [20 U.S.C. 6645] STATE APPLICATIONS.**

[(a) APPLICATIONS REQUIRED.—Each State educational agency that wishes to receive an allotment under this part for any fiscal year shall submit an application to the Secretary at such time, in such form, and containing such information as the Secretary may require.

[(b) STATE PLAN TO IMPROVE TEACHING AND LEARNING.—

[(1) IN GENERAL.—Each application under this section shall include a State plan that is coordinated with the State's plan under other programs assisted under this Act, the Goals 2000: Educate America Act, and other Acts, as appropriate, consistent with the provisions of section 14306.

[(2) CONTENTS.—Each such State plan shall—

[(A) be developed in conjunction with the State agency for higher education, community-based and other nonprofit organizations of demonstrated effectiveness, institutions of higher education or schools of education, and with the extensive participation of local teachers, administrators and pupil services personnel and show the role of each such entity in implementation of the plan;

[(B) be designed to give teachers, and, where appropriate, administrators and pupil services personnel in the State, the knowledge and skills necessary to provide all students the opportunity to meet challenging State content standards and challenging State student performance standards;

[(C) include an assessment of State and local needs for professional development specifically related to subparagraph (B);

[(D) include a description of how the plan has assessed the needs of local educational agencies serving rural and urban areas, and what actions are planned to meet such needs;

[(E) include a description of how the activities assisted under this part will address the needs of teachers in schools receiving assistance under part A of title I;

[(F) a description of how programs in all core academic subjects, but especially in mathematics and science, will take into account the need for greater access to, and participation in, such disciplines by students from historically underrepresented groups, including females, minorities, individuals with limited English proficiency, the economically disadvantaged, and individuals with disabilities, by incorporating pedagogical strategies and techniques which meet such individual's educational needs;

[(G) be consistent with the State's needs assessment under subparagraph (C), and describe how the State will work with teachers, including teachers in schools receiving assistance under part A of title I, administrators, parents, local educational agencies, schools, educational service agencies, institutions of higher education, and nonprofit organizations of demonstrated effectiveness, to ensure that such individuals develop the capacity to support sustained and intensive, high-quality professional development programs in the core academic subjects;

[(H) describe how the State requirements for licensure of teachers and administrators, including certification and recertification, support challenging State content standards and challenging State student performance standards and whether such requirements are aligned with such standards;

[(I) address the need for improving teaching and learning through teacher development beginning with recruitment, preservice, and induction, and continuing throughout the professional teaching career, taking into account the need, as determined by the State, for greater access to and participation in the teaching profession by individuals from historically underrepresented groups;

[(J) describe how the State will prepare all teachers to teach children with diverse learning needs, including children with disabilities;

[(K) describe how the State will prepare teachers, and, where appropriate, paraprofessionals pupil services personnel, and other staff in the collaborative skills needed to appropriately teach children with disabilities, in the core academic subjects;

[(L) describe how the State will use technology, including the emerging national information infrastructure, to enhance the professional development of teachers, and, where appropriate, administrators and pupil services personnel;

[(M) describe how the State will provide incentives to teachers and administrators to focus their professional development on preparing such teachers and administrators to provide instruction consistent with challenging State content standards and challenging State student performance standards;

[(N) set specific performance indicators for professional development; and

- [(O) describe how parents can be involved in professional development programs to enhance the participation of parents in the education of their children.
- [(3) DURATION OF THE PLAN.—Each such State plan shall—
- [(A) remain in effect for the duration of the State’s participation under this part; and
- [(B) be periodically reviewed and revised by the State, as necessary, to reflect changes in the State’s strategies and programs under this part.
- [(c) ADDITIONAL MATERIAL.—Each State application shall include—
- [(1) a description of how the activities assisted under this part will be coordinated, as appropriate, with—
- [(A) other activities conducted with Federal funds, especially activities supported under part A of title I of this Act and the Individuals with Disabilities Education Act;
- [(B) programs supported by State and local funds;
- [(C) resources from business and industry, museums, libraries, educational television stations, and public and private nonprofit organizations of demonstrated experience; and
- [(D) funds received from other Federal agencies, such as the National Science Foundation, the Departments of Commerce, Energy, and Health and Human Services, the National Endowment for the Arts, the Institute of Museum and Library Services, and the National Endowment for the Humanities; and
- [(2) a description of the activities to be sponsored under the State-level activities under section 2207 and the higher education activities under section 2211.
- [(d) PEER REVIEW AND SECRETARIAL APPROVAL.—
- [(1) IN GENERAL.—The Secretary shall approve an application of a State educational agency under this section if such application meets the requirements of this section and holds reasonable promise of achieving the purposes of this part.
- [(2) REVIEW.—In reviewing applications under this section, the Secretary shall obtain the advice of non-Federal experts on education in the core academic subjects and on teacher education, including teachers and administrators.

**[SEC. 2206. [20 U.S.C. 6646] PRIORITY FOR PROFESSIONAL DEVELOPMENT IN MATHEMATICS AND SCIENCE.**

[(a) APPROPRIATION OF LESS THAN \$250,000,000.—In any fiscal year for which the amount appropriated for this title (other than part C) is less than \$250,000,000, each State shall ensure that all funds distributed in accordance with section 2203(1)(C) are used for professional development in mathematics and science.

[(b) APPROPRIATION EQUAL TO OR ABOVE \$250,000,000.—In any fiscal year for which the amount appropriated for this title (other than part C) is equal to or exceeds \$250,000,000, each State and local educational agency shall use for professional development activities in mathematics and science the amount of funds that would have been made available to each such agency in accordance with sections 2202 and 2203 if the amount appropriated was \$250,000,000, consistent with subsection (a), and are permitted and encouraged to use the amount of funds in excess of \$250,000,000

that is made available in accordance with sections 2202 and 2203 for professional development activities in mathematics and science.

**[SEC. 2207. [20 U.S.C. 6647] STATE-LEVEL ACTIVITIES.**

【Each State may use funds made available under section 2203(1)(A) to carry out activities described in the plan under section 2205(b), such as—

【(1) reviewing and reforming State requirements for teacher and administrator licensure, including certification and recertification, to align such requirements with the State’s challenging State content standards and ensure that teachers and administrators have the knowledge and skills necessary to help students meet challenging State student performance standards;

【(2) developing performance assessments and peer review procedures, as well as other methods, for licensing teachers and administrators;

【(3) providing technical assistance to schools and local educational agencies, especially schools and local educational agencies that receive assistance under part A of title I, to help such schools and agencies provide effective professional development in the core academic subjects;

【(4) developing or supporting professional development networks, either within a State or in a regional consortium of States, that provide a forum for interaction among teachers and that allow exchange of information on advances in content and pedagogy;

【(5) supporting partnerships between schools, consortia of schools, or local educational agencies and institutions of higher education, including schools of education, which encourage—

【(A) teachers to participate in intensive, ongoing professional development programs, both academic and pedagogical, at institutions of higher education; and

【(B) students at institutions of higher education studying to become teachers to have direct, practical experience at the schools;

【(6) providing professional development in the effective use of educational technology as an instructional tool for increasing student understanding of the core academic subjects, including efforts to train teachers in methods of achieving gender equity both in students’ access to computers and other educational technology and in teaching practices used in the application of educational technology;

【(7) providing incentives for teachers to be involved in assessment, curriculum development, and technical assistance processes for teachers and students;

【(8) providing professional development to enable teachers, and, where appropriate, pupil services personnel, and other school staff, to ensure that girls and young women, minorities, limited English proficient students, individuals with disabilities, and economically disadvantaged students have the full opportunity to achieve challenging State content standards and challenging State student performance standards in the core academic subjects by, for example, encouraging girls and young women and minorities to pursue advanced courses in mathematics and science;

[(9) professional development and recruitment activities designed to increase the numbers of minorities, individuals with disabilities, and women teaching in the core academic subjects in which such individuals are underrepresented;

[(10) providing financial or other incentives for teachers to become certified by nationally recognized professional teacher enhancement organizations;

[(11) providing professional development activities which prepare teachers, and where appropriate, pupil services personnel, paraprofessionals, and other staff in the collaborative skills needed to appropriately teach children with disabilities, in the core academic subjects;

[(12) identifying, developing, or supporting professional development strategies to better equip patients to assist their children in raising their children's achievement in the core academic subjects; and

[(13) professional development activities designed to increase the number of women and other underrepresented groups in the administration of schools.

**[SEC. 2208. [20 U.S.C. 6648] LOCAL PLAN AND APPLICATION FOR IMPROVING TEACHING AND LEARNING.**

**[(a) LOCAL APPLICATION.—**

[(1) IN GENERAL.—Each local educational agency that wishes to receive a subgrant under this part shall submit an application (singly or as a consortium as described in section 2204) to the State educational agency at such time as the State educational agency shall require, but not less frequently than every three years, that is coordinated with other programs under this Act, the Goals 2000: Educate America Act, or other Acts, as appropriate, consistent with the provisions of section 14306.

[(2) INDICATORS.—A local educational agency shall set specific performance indicators for improving teaching and learning through professional development.

**[(b) NEEDS ASSESSMENT.—**

[(1) IN GENERAL.—A local educational agency that wishes to receive a subgrant under this part shall include in its application an assessment of local needs for professional development as identified by the local educational agency and school staff.

[(2) REQUIREMENTS.—Such needs assessment shall be carried out with the involvement of teachers, including teachers in schools receiving assistance under part A of title I, and shall take into account what activities need to be conducted in order to give teachers and, where appropriate, administrators, the means, including the knowledge and skills, to provide students with the opportunity to meet challenging State or local student performance standards.

**[(c) APPLICATION CONTENTS.—**Each application under this section shall include the local educational agency's plan for professional development that—

[(1) focuses on teaching and learning in the core academic subjects; and

[(2) has been developed with the extensive participation of administrators, staff, and pupil services personnel, which teachers shall also be representative of the grade spans within

schools to be served and of schools which receive assistance under part A of title I.

[(d) PLAN CONTENTS.—

[(1) IN GENERAL.—Based on the needs assessment required under subsection (b), the local educational agency's plan shall—

[(A) include a description of how the plan contributes to the local educational agency's overall efforts for school reform and educational improvement;

[(B) include a description of how the activities funded under this section will address the needs of teachers in schools receiving assistance under part A of title I;

[(C) be aligned with the State's challenging State content standards and challenging State student performance standards;

[(D) describe a strategy, tied to challenging State content standards and challenging State student performance standards, consistent with the needs assessment under subsection (b);

[(E) be of sufficient intensity and duration to have a positive and lasting impact on the student's performance in the classroom;

[(F) describe how programs in all core academic subjects, but especially in mathematics and science, will take into account the need for greater access to, and participation in, such disciplines by students from historically underrepresented groups, including girls and women, minorities, individuals with limited English proficiency, the economically disadvantaged, and individuals with disabilities, by incorporating pedagogical strategies and techniques which meet such individual's educational need;

[(G) contain an assurance that the activities conducted with funds received under this part will be assessed at least every three years using the performance indicators;

[(H) describe how the program funded under this part will be coordinated, as appropriate, with

[(i) activities conducted under section 2131 and other services of institutions of higher education;

[(ii) similar State and local activities;

[(iii) resources provided under part A of title I and other provisions of this Act;

[(iv) resources from business, industry, public and private nonprofit organizations (including museums, libraries, educational television stations, community-based organizations, professional organizations and associations specializing in, or with a demonstrated expertise in the core academic subjects);

[(v) funds or programming from other Federal agencies, such as the National Science Foundation, the Department of Energy, the Department of Health and Human Services, the Institute of Museum and Library Services, the National Endowment for the Humanities, and the National Endowment for the Arts;

[(vi) services of educational service agencies; and

[(vii) resources provided under the Individuals with Disabilities Education Act;

[(I) identify the sources of funding that will provide the local educational agency's contribution under section 2209; and section 2209; and

[(J) describe the professional development strategies to be employed to more fully and effectively involve parents in the education of their children.

[(2) DURATION OF THE PLAN.—Each local plan described in subsection (b)(1) shall—

[(A) remain in effect for the duration of the local educational agency's participation under this part; and

[(B) be periodically reviewed and revised by the local educational agency, as necessary, to reflect changes in the local educational agency's strategies and programs under this part.

**[SEC. 2209. [20 U.S.C. 6639] LOCAL COST-SHARING.**

[(a) IN GENERAL.—Each local educational agency shall provide not less than 33 percent of the cost of the activities assisted under this part, excluding the cost of services provided to private school teachers.

[(b) AVAILABLE RESOURCES FOR COST-SHARING.—

[(1) IN GENERAL.—A local educational agency may meet the requirement of subsection (a) through one or more of the following:

[(A) Cash expenditures from non-Federal sources, including private contributions, directed toward professional development activities.

[(B) Release time for teachers participating in professional development assisted under this part.

[(C) Funds received under one or more of the following programs, so long as such funds are used for professional development activities consistent with this part and the statutes under which such funds were received, and are used to benefit students and teachers in schools that otherwise would have been served with such funds:

[(i) Helping disadvantaged children meet high standards under part A of title I.

[(ii) The Safe and Drug-Free Schools and Communities program under title IV.

[(iii) Bilingual Education Programs under part A of title VII.

[(iv) Programs under the Women's Educational Equity Act of 1994.

[(v) Programs under title III of the Goals 2000: Educate America Act.

[(vi) Programs that are related to the purposes of this Act that are administered by other Federal agencies, including the National Science Foundation, the National Endowment for the Humanities, the National Endowment for the Arts, the Institute of Museum and Library Services, and the Department of Energy.

[(vii) Programs under the Individuals with Disabilities Education Act.

[(2) SPECIAL RULE.—A local educational agency may meet the requirement of subsection (a) through contributions described in paragraph (1) that are provided in cash or in kind, fairly evaluated.

[(c) WAIVER.—The State educational agency may approve an application which has not fully met the requirements of subsection (a) and waive the requirements of subsection (a) if a local educational agency can demonstrate that such agency is unable to meet the requirements of subsection (a) due to economic hardship and that compliance with such requirements would preclude such agency's participation in the program.

**[SEC. 2210. [20 U.S.C. 6650] LOCAL ALLOCATIONS OF FUNDS AND ALLOWABLE ACTIVITIES.**

[(a) LOCAL ALLOCATION OF FUNDS.—Each local educational agency that receives funds under this part for any fiscal year—

[(1) shall use not less than 80 percent of such funds for professional development of teachers, and, where appropriate, administrators, and, where appropriate, pupil services personnel, parents, and other staff of individual schools in a manner that—

[(A) is determined by such teachers and staff;

[(B) to the extent practicable, takes place at the individual school site; and

[(C) is consistent with the local educational agency's application under section 2208, any school plan under part A of title I, and any other plan for professional development carried out with Federal, State, or local funds that emphasizes sustained, ongoing activities; and

[(2) may use not more than 20 percent of such funds for school district-level professional development activities, including, where appropriate, the participation of administrators, policymakers, and parents, if such activities directly support instructional personnel.

[(b) AUTHORIZED ACTIVITIES.—

[(1) IN GENERAL.—Each local educational agency and school that receives funds under this part shall use such funds for activities that give teachers and administrators the knowledge and skills to provide students with the opportunity to meet challenging State or local content standards and student performance standards.

[(2) PROFESSIONAL DEVELOPMENT ACTIVITIES.—Professional development activities funded under this part shall—

[(A) be tied to challenging State content standards or challenging local content standards, and challenging State student performance standards or challenging local student performance standards;

[(B) take into account recent research on teaching and learning;

[(C) provide professional development which incorporates effective strategies, techniques, methods, and practices for meeting the educational needs of diverse groups of students, including girls and women, minorities, individuals with disabilities, limited English proficient individuals, and economically disadvantaged individuals;

[(D) include strong academic content and pedagogical components; and

[(E) be of sufficient intensity and duration to have a positive and lasting impact on the teacher's performance in the classroom.

[(3) ACTIVITIES.—Funds under this part may be used for professional development activities such as—

[(A) professional development for teams of teachers, and, where appropriate, administrators, pupil services personnel, or other staff from individual schools, to support teaching consistent with challenging State content standards and challenging State student performance standards;

[(B) support and time, which in the case of teachers may include release time with pay for teachers, and where appropriate, pupil services personnel and other school staff to enable such teachers, personnel, and staff to participate in professional development in the core academic subjects that are offered through professional associations, universities, community-based organizations, and other providers, such as educational partnership organizations, science centers, and museums;

[(C) activities that provide followup for teachers who have participated in professional development activities that are designed to ensure that the knowledge and skills learned by the teacher are implemented in the classroom;

[(D) support for partnerships between schools, consortia of schools, or local educational agencies, and institutions of higher education, including schools of education, which partnerships shall encourage—

[(i) teachers to participate in intensive, ongoing professional development programs of higher education; and

[(ii) students at institutions of higher education studying to become teachers to have direct, practical experience at schools;

[(E) the establishment and maintenance of local professional networks that provide a forum for interaction among teachers and that allow exchange of information on advances in content and pedagogy;

[(F) preparing teachers in the effective use of educational technology and assistive technology as instructional tools for increasing student understanding of the core academic subjects;

[(G) professional development to enable teachers, and, where appropriate, pupil services personnel and other school staff, to ensure that girls and young women, minorities, limited English proficient students, individuals with disabilities, and the economically disadvantaged have full opportunity to achieve the challenging State content standards and challenging State student performance standards in the core academic subjects;

[(H) professional development and recruitment activities designed—

[(i) to increase the number of minorities, individuals with disabilities, and females teaching in the core academic subjects in which such individuals are underrepresented; and

[(ii) to increase the numbers of women and members of other underrepresented groups who are science and mathematics teachers, through such programs as career ladder programs that assist educational paraprofessionals to obtain teaching credentials in the core academic subjects;

[(I) providing financial or other incentives for teachers to become certified by nationally recognized professional teacher enhancement programs;

[(J) support and time for teachers, and, where appropriate, pupil services personnel, and other school staff to learn and implement effective collaboration for the instruction of children with disabilities in the core academic subject areas;

[(K) preparing teachers, and, where appropriate, pupil services personnel to work with parents and families on fostering student achievement in the core academic subjects;

[(L) professional development activities and other support for new teachers as such teachers move into the classroom to provide such teachers with practical support and to increase the retention of such teachers;

[(M) professional development for teachers, parents, early childhood educators, administrators, and other staff to support activities and services related to preschool transition programs to raise student performance in the core academic subjects;

[(N) professional development activities to train teachers in innovative instructional methodologies designed to meet the diverse learning needs of individuals students, including methodologies which integrate academic and vocational learning and applied learning, interactive and inter-disciplinary team teaching, and other alternative teaching strategies such as service learning, experiential learning, career-related education, and environmental education, that integrate real world applications into the core academic subjects;

[(O) developing professional development strategies and programs to more effectively involve parents in helping their children achieve in the core academic subjects;

[(P) professional development activities designed to increase the number of women and other underrepresented groups in the administration of schools; and

[(Q) release time with pay for teachers.

**[SEC. 2211. [20 U.S.C. 6651] HIGHER EDUCATION ACTIVITIES.**

**[(a) ACTIVITIES.—**

[(1) IN GENERAL.—From amounts made available under section 2203(2), the State agency for higher education, working in conjunction with the State educational agency (if such agencies are separate), shall make grants to, or enter into contracts or cooperative agreements with, institutions of higher education

and nonprofit organizations of demonstrated effectiveness, including museums and educational partnership organizations, which must work in conjunction with a local educational agency, consortium of local educational agencies, or schools, for—

【(A) professional development activities in the core academic subjects that contribute to the State plan for professional development;

【(B) developing and providing assistance to local educational agencies, and the teachers and staff of each such agency, for sustained, high-quality professional development activities; and

【(C) improving teacher education programs in order to promote further innovation in teacher education programs within an institution of higher education and to better meet the needs of the local educational agencies for well prepared teachers.

【(2) COMPETITIVE BASIS.—Each grant, contract, or cooperative agreement described in paragraph (1) shall be awarded on a competitive basis.

【(3) SPECIAL RULE.—No institution of higher education may receive assistance under (a)(1) of this subsection unless the institution enters into an agreement with a local educational agency, or consortium of such agencies, to provide sustained, high-quality professional development for the elementary and secondary school teachers in the schools of each such agency.

【(4) JOINT EFFORTS.—Each activity assisted under this section, where applicable, shall involve the joint effort of the institution of higher education's school or department of education, if any, and the schools or departments in the specific disciplines in which such professional development will be provided.

【(b) ALLOWABLE ACTIVITIES.—A recipient of funds under this section shall use such funds for—

【(1) sustained and intensive high-quality professional development for teams of teachers, or teachers, and, where appropriate, pupil services personnel and administrators from individual schools or school districts;

【(2) other sustained and intensive professional development activities related to achievement of the State plan for professional development; and

【(3) preservice training activities.

【(c) PARTNERSHIPS.—Each institution of higher education receiving a grant under this section may also enter into a partnership with a private industry, museum, library, educational television station, or public or private nonprofit organization of demonstrated experience to carry out professional development activities assisted under this section.】

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