To authorize funding for University Nuclear Science, Engineering, and Health Physics Programs at the Department of Energy for fiscal years 2005 through 2008.

IN THE HOUSE OF REPRESENTATIVES

FEBRUARY 25, 2004

Mrs. Biggert introduced the following bill; which was referred to the Committee on Science

A BILL

To authorize funding for University Nuclear Science, Engineering, and Health Physics Programs at the Department of Energy for fiscal years 2005 through 2008.

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

SECTION 1. SHORT TITLE.

This Act may be cited as the “Department of Energy University Nuclear Science, Engineering, and Health Physics Act”.

SECTION 2. FINDINGS.

The Congress finds the following:
(1) United States university nuclear science, engineering, and health programs are in a state of serious decline. The supply of bachelor degree nuclear science, engineering, and health physics personnel in the United States is lower than the number of jobs available, resulting in a shortage of these critical professionals. The number of 4-year degree nuclear engineering programs has declined 50 percent to approximately 25 programs nationwide. Over 2/3 of the faculty in these programs are 45 years or older and there are few tenure track junior faculty positions available.

(2) Universities are finding it increasingly difficult to fund the operational costs of their research and training reactors. Since 1980, the number of small training reactors in the United States has declined by over 50 percent to 27 reactors. Most of these reactors were built in the late 1950’s and 1960’s with 30- to 40-year operating licenses, and will require relicensing in the next several years.

(3) The neglect in human investment and training infrastructure is affecting 50 years of national research and development investment. The decline in a competent nuclear workforce, and the lack of adequately trained nuclear scientists, engineers, and
health physicists, will affect the ability of the United States to solve future waste storage issues, operate existing and design future fission reactors in the United States, respond to future nuclear events worldwide, help stem the proliferation of nuclear weapons, and design and operate naval nuclear reactors.

(4) Future neglect in the Nation’s investment in human resources for the nuclear sciences will lead to a downward spiral. As the number of nuclear science departments shrinks, faculties age, and training reactors close, the appeal of nuclear science will be lost to future generations of students.

(5) Current projections are that 50 percent of industry’s nuclear workforce can retire in 10 to 15 years, and 76 percent of the nuclear workforce at our national labs can retire in the next 5 years. A new supply of trained scientists and engineers to replace this retiring workforce is urgently needed.

(6) The Department of Energy’s Office of Nuclear Energy, Science, and Technology is well suited to help maintain tomorrow’s human resource and training investment in the nuclear sciences. Through its support of research and development pursuant to the Department’s statutory authorities, the Office of
Nuclear Energy, Science, and Technology is the principal Federal agent for civilian research in the nuclear sciences for the United States. The Office maintains the Nuclear Engineering and Education Research Program which funds basic nuclear science and engineering. The Office funds the Nuclear Energy and Research Initiative which funds applied collaborative research among universities, industry, and national laboratories in the areas of proliferation-resistant fuel cycles and future fission power systems. The Office funds universities to refuel training reactors from highly enriched to low-enriched proliferation-tolerant fuels, performs instrumentation upgrades, and maintains a program of student fellowships for nuclear science, engineering, and health physics.

SEC. 3. DEPARTMENT OF ENERGY PROGRAM.

(a) ESTABLISHMENT.—The Secretary of Energy, through the Office of Nuclear Energy, Science, and Technology, shall support a program to invest in human resources and infrastructure in the nuclear sciences, engineering, and health physics fields, consistent with the Department’s statutory authorities related to civilian nuclear research and development.
(b) DUTIES.—In carrying out the program under this Act, the Secretary shall—

(1) establish a graduate and undergraduate fellowship program to attract new and talented students;

(2) establish a Junior Faculty Research Initiation Grant Program to assist institutions of higher education in recruiting and retaining new faculty in the nuclear sciences, engineering, and health physics;

(3) support fundamental nuclear sciences, engineering, and health physics research through the Nuclear Engineering Education Research Program;

(4) encourage collaborative nuclear research and training among industry, National Laboratories, and institutions of higher education; and

(5) support communication and outreach related to nuclear science, engineering, and health physics.

(c) STRENGTHENING UNIVERSITY RESEARCH AND TRAINING REACTORS AND ASSOCIATED INFRASTRUCTURE.—Activities under this section may include—

(1) converting research reactors currently using high-enrichment fuels to low-enrichment fuels, upgrading operational instrumentation, and sharing of reactors among institutions of higher education;
(2) providing technical assistance, in collaboration with the United States nuclear industry, in relicensing and upgrading training reactors as part of a student training program; and

(3) providing funding, through the Innovations in Nuclear Infrastructure and Education Program, for reactor improvements as part of a focused effort that emphasizes research, training, and education.

(d) UNIVERSITY-DOE LABORATORY INTERACTIONS.—The Secretary of Energy, through the Office of Nuclear Energy, Science, and Technology, shall develop—

(1) a sabbatical fellowship program for professors at institutions of higher education to spend extended periods of time at Department of Energy laboratories in the areas of nuclear science and technology; and

(2) a visiting scientist program in which National Laboratory staff can spend time in academic nuclear science, engineering, and health physics departments.

The Secretary may under subsection (b)(1) provide fellowships for students to spend time at National Laboratories in the areas of nuclear science, engineering, and health
physics with a member of the Laboratory staff acting as
a mentor.

(e) OPERATIONS AND MAINTENANCE.—Funding for
a research project provided under this section may be used
to offset a portion of the operating and maintenance costs
of a research reactor at an institution of higher education
used in the research project.

(f) MERIT REVIEW REQUIRED.—All grants, con-
tracts, cooperative agreements, or other financial assist-
ance awards under this Act shall be made only after inde-
pendent merit review.

SEC. 4. AUTHORIZATION OF APPROPRIATIONS.

(a) TOTAL AUTHORIZATION.—The following sums
are authorized to be appropriated to the Secretary of En-
ergy, to remain available until expended, for the purposes
of carrying out this Act:

(1) $35,200,000 for fiscal year 2005.
(2) $44,350,000 for fiscal year 2006.
(3) $49,200,000 for fiscal year 2007.
(4) $54,950,000 for fiscal year 2008.

(b) GRADUATE AND UNDERGRADUATE FELLOW-
SHIPS.—Of the funds authorized under subsection (a), the
following sums are authorized to be appropriated to carry
out section 3(b)(1):

(1) $3,000,000 for fiscal year 2005.
(2) $3,100,000 for fiscal year 2006.
(3) $3,200,000 for fiscal year 2007.
(4) $3,200,000 for fiscal year 2008.

(c) JUNIOR FACULTY RESEARCH INITIATION GRANT PROGRAM.—Of the funds authorized under subsection (a), the following sums are authorized to be appropriated to carry out section 3(b)(2):

(1) $2,275,000 for fiscal year 2005.
(2) $3,675,000 for fiscal year 2006.
(3) $4,150,000 for fiscal year 2007.
(4) $5,150,000 for fiscal year 2008.

(d) NUCLEAR ENGINEERING EDUCATION RESEARCH AND NUCLEAR HEALTH PHYSICS.—Of the funds authorized under subsection (a), the following sums are authorized to be appropriated to carry out section 3(b)(3):

(1) $11,000,000 for fiscal year 2005, of which $3,000,000 shall be for the nuclear health physics.
(2) $15,600,000 for fiscal year 2006, of which $3,600,000 shall be for the nuclear health physics.
(3) $17,000,000 for fiscal year 2007, of which $4,000,000 shall be for the nuclear health physics.
(4) $19,000,000 for fiscal year 2008, of which $4,500,000 shall be for the nuclear health physics.

(e) COMMUNICATION AND OUTREACH RELATED TO NUCLEAR SCIENCE, ENGINEERING, AND HEALTH PHYS-
1. Of the funds authorized under subsection (a), the following sums are authorized to be appropriated to carry out section 3(b)(5):

(1) $500,000 for fiscal year 2005.
(2) $550,000 for fiscal year 2006.
(3) $600,000 for fiscal year 2007.
(4) $650,000 for fiscal year 2008.

(f) Refueling of Research Reactors and Instrumentation Upgrades.—Of the funds authorized under subsection (a), the following sums are authorized to be appropriated to carry out section 3(c)(1):

(1) $6,000,000 for fiscal year 2005.
(2) $6,500,000 for fiscal year 2006.
(3) $7,000,000 for fiscal year 2007.
(4) $7,500,000 for fiscal year 2008.

(g) Relicensing Assistance.—Of the funds authorized under subsection (a), the following sums are authorized to be appropriated to carry out section 3(c)(2):

(1) $700,000 for fiscal year 2005.
(2) $1,100,000 for fiscal year 2006.
(3) $1,200,000 for fiscal year 2007.
(4) $1,300,000 for fiscal year 2008.

(h) Innovations in Nuclear Infrastructure and Education Program.—Of the funds authorized
under subsection (a), the following sums are authorized to be appropriated to carry out section 3(c)(3):

(1) $10,000,000 for fiscal year 2005.
(2) $12,000,000 for fiscal year 2006.
(3) $14,000,000 for fiscal year 2007.
(4) $15,000,000 for fiscal year 2008.

(i) UNIVERSITY-DOE LABORATORY INTER-
ACTIONS.—Of the funds authorized under subsection (a), the following sums are authorized to be appropriated to carry out section 3(d):

(1) $1,725,000 for fiscal year 2005.
(2) $1,825,000 for fiscal year 2006.
(3) $2,050,000 for fiscal year 2007.
(4) $3,150,000 for fiscal year 2008.