

107TH CONGRESS
1ST SESSION

H. R. 2126

To authorize funding for University Nuclear Science and Engineering Programs at the Department of Energy for fiscal years 2002 through 2006.

IN THE HOUSE OF REPRESENTATIVES

JUNE 12, 2001

Mrs. BIGGERT (for herself, Ms. BALDWIN, Mr. BARTLETT of Maryland, Mr. KNOLLENBERG, Mr. EHLERS, Mr. SIMPSON, Ms. HOOLEY of Oregon, Mrs. WILSON, Mr. STRICKLAND, Mr. OTTER, and Mr. CALVERT) introduced the following bill; which was referred to the Committee on Science

A BILL

To authorize funding for University Nuclear Science and Engineering Programs at the Department of Energy for fiscal years 2002 through 2006.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as “Department of Energy
5 University Nuclear Science and Engineering Act”.

6 **SEC. 2. FINDINGS.**

7 The Congress finds the following:

8 (1) U.S. university nuclear science and engi-
9 neering programs are in a state of serious decline.

1 The supply of bachelor degree nuclear science and
2 engineering personnel in the United States is at a
3 35-year-low. The number of four year degree nuclear
4 engineering programs has declined 50 percent to ap-
5 proximately 25 programs nationwide. Over two-
6 thirds of the faculty in these programs are 45 years
7 or older.

8 (2) Universities cannot afford to support their
9 research and training reactors. Since 1980, the
10 number of small training reactors in the United
11 States have declined by over 50 percent to 28 reac-
12 tors. Most of these reactors were built in the late
13 1950's and 1960's with 30- to 40-year operating li-
14 censes, and will require re-licensing in the next sev-
15 eral years.

16 (3) The neglect in human investment and train-
17 ing infrastructure is affecting 50 years of national
18 R&D investment. The decline in a competent nuclear
19 workforce, and the lack of adequately trained nu-
20 clear scientists and engineers, will affect the ability
21 of the United States to solve future waste storage
22 issues, operate existing and design future fission re-
23 actors in the United States, respond to future nu-
24 clear events worldwide, help stem the proliferation of

1 nuclear weapons, and design and operate naval nu-
2 clear reactors.

3 (4) Future neglect in the nation's investment in
4 human resources for the nuclear sciences will lead to
5 a downward spiral. As the number of nuclear science
6 departments shrink, faculties age, and training reac-
7 tors close, the appeal of nuclear science will be lost
8 to future generations of students.

9 (5) Current projections are that 50 percent of
10 industry's nuclear workforce can retire in 10 to 15
11 years, and 76 percent of the nuclear workforce at
12 our national labs can retire in the next 5 years. A
13 new supply of trained scientists and engineers to re-
14 place this retiring workforce is urgently needed.

15 (6) The Department of Energy's Office of Nu-
16 clear Energy, Science and Technology is well suited
17 to help maintain tomorrow's human resource and
18 training investment in the nuclear sciences. Through
19 its support of research and development pursuant to
20 the Department's statutory authorities, the Office of
21 Nuclear Energy, Science and Technology is the prin-
22 cipal federal agent for civilian research in the nu-
23 clear sciences for the United States. The Office
24 maintains the Nuclear Engineering and Education
25 Research Program which funds basic nuclear science

1 and engineering. The Office funds the Nuclear En-
2 ergy and Research Initiative which funds applied
3 collaborative research among universities, industry
4 and national laboratories in the areas of prolifera-
5 tion resistant fuel cycles and future fission power
6 systems. The Office funds Universities to refuel
7 training reactors from highly enriched to low en-
8 riched proliferation tolerant fuels, performs instru-
9 mentation upgrades and maintains a program of
10 student fellowships for nuclear science and engineer-
11 ing.

12 **SEC. 3. DEPARTMENT OF ENERGY PROGRAM.**

13 (a) ESTABLISHMENT.—The Secretary of Energy,
14 through the Office of Nuclear Energy, Science and Tech-
15 nology, shall support a program to maintain the nation’s
16 human resource investment and infrastructure in the nu-
17 clear sciences and engineering consistent with the Depart-
18 ment’s statutory authorities related to civilian nuclear re-
19 search and development.

20 (b) DUTIES OF THE OFFICE OF NUCLEAR ENERGY,
21 SCIENCE AND TECHNOLOGY.—In carrying out the pro-
22 gram under this Act, the Director of the Office of Nuclear
23 Science and Technology shall—

1 (1) develop a robust graduate and under-
2 graduate fellowship program to attract new and tal-
3 ented students;

4 (2) assist universities in recruiting and retain-
5 ing new faculty in the nuclear sciences and engineer-
6 ing through a Junior Faculty Research Initiation
7 Grant Program;

8 (3) maintain a robust investment in the funda-
9 mental nuclear sciences and engineering through the
10 Nuclear Engineering Education Research Program;

11 (4) encourage collaborative nuclear research be-
12 tween industry, national laboratories and universities
13 through the Nuclear Energy Research Initiative; and

14 (5) support communication and outreach re-
15 lated to nuclear science and engineering.

16 (c) MAINTAINING UNIVERSITY RESEARCH AND
17 TRAINING REACTORS AND ASSOCIATED INFRASTRUC-
18 TURE.—Within the funds authorized to be appropriated
19 pursuant to this Act, the amounts specified under section
20 4(b) shall, subject to appropriations, be available for the
21 following research and training reactor infrastructure
22 maintenance and research:

23 (1) Refueling of research reactors with low en-
24 riched fuels, upgrade of operational instrumentation,
25 and sharing of reactors among universities.

1 (2) In collaboration with the U.S. nuclear in-
2 dustry, assistance, where necessary, in re-licensing
3 and upgrading training reactors as part of a student
4 training program.

5 (3) A reactor research and training award pro-
6 gram that provides for reactor improvements as part
7 of a focused effort that emphasizes research, train-
8 ing, and education.

9 (d) UNIVERSITY-DOE LABORATORY INTER-
10 ACTIONS.—The Secretary of Energy, through the Office
11 of Nuclear Science and Technology, shall develop—

12 (1) a sabbatical fellowship program for univer-
13 sity professors to spend extended periods of time at
14 Department of Energy laboratories in the areas of
15 nuclear science and technology; and

16 (2) a visiting scientist program in which labora-
17 tory staff can spend time in academic nuclear
18 science and engineering departments. The Secretary
19 may under section 3(b)(1) provide for fellowships for
20 students to spend time at Department of Energy
21 laboratories in the area of nuclear science under the
22 mentorship of laboratory staff.

23 (e) OPERATIONS AND MAINTENANCE.—For the re-
24 search programs described, portions thereof may be used
25 to supplement operation of the research reactor during in-

1 vestigator's proposed effort provided the host institution
2 provides cost sharing in the reactor's operation.

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

7 **SEC. 4. AUTHORIZATION OF APPROPRIATIONS.**

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

12 (1) \$30,200,000 for fiscal year 2002.

13 (2) \$42,000,000 for fiscal year 2003.

14 (3) \$47,850,000 for fiscal year 2004.

15 (4) \$55,600,000 for fiscal year 2005.

16 (5) \$64,100,000 for fiscal year 2006.

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

21 (1) \$3,000,000 for fiscal year 2002.

22 (2) \$3,100,000 for fiscal year 2003.

23 (3) \$3,200,000 for fiscal year 2004.

24 (4) \$3,200,000 for fiscal year 2005.

25 (5) \$3,200,000 for fiscal year 2006.

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

- 5 (1) \$5,000,000 for fiscal year 2002.
- 6 (2) \$7,000,000 for fiscal year 2003.
- 7 (3) \$8,000,000 for fiscal year 2004.
- 8 (4) \$9,000,000 for fiscal year 2005.
- 9 (5) \$10,000,000 for fiscal year 2006.

10 (d) NUCLEAR ENGINEERING AND EDUCATION RE-
11 SEARCH PROGRAM.—Of the funds under subsection (a),
12 the following sums are authorized to be appropriated to
13 carry out section 3(b)(3):

- 14 (1) \$8,000,000 for fiscal year 2002.
- 15 (2) \$12,000,000 for fiscal year 2003.
- 16 (3) \$13,000,000 for fiscal year 2004.
- 17 (4) \$15,000,000 for fiscal year 2005.
- 18 (5) \$20,000,000 for fiscal year 2006.

19 (e) COMMUNICATION AND OUTREACH RELATED TO
20 NUCLEAR SCIENCE AND ENGINEERING.—Of the funds
21 under subsection (a), the following sums are authorized
22 to be appropriated to carry out section 3(b)(5):

- 23 (1) \$200,000 for fiscal year 2002.
- 24 (2) \$200,000 for fiscal year 2003.
- 25 (3) \$300,000 for fiscal year 2004.

1 (4) \$300,000 for fiscal year 2005.

2 (5) \$300,000 for fiscal year 2006.

3 (f) REFUELING OF RESEARCH REACTORS AND IN-
4 STRUMENTATION UPGRADES.—Of the funds under sub-
5 section (a), the following sums are authorized to be appro-
6 priated to carry out section 3(c)(1):

7 (1) \$6,000,000 for fiscal year 2002.

8 (2) \$6,500,000 for fiscal year 2003.

9 (3) \$7,000,000 for fiscal year 2004.

10 (4) \$7,500,000 for fiscal year 2005.

11 (5) \$8,000,000 for fiscal year 2006.

12 (g) RE-LICENSING ASSISTANCE.—Of the funds under
13 subsection (a), the following sums are authorized to be ap-
14 propriated to carry out section 3(c)(2):

15 (1) \$1,000,000 for fiscal year 2002.

16 (2) \$1,100,000 for fiscal year 2003.

17 (3) \$1,200,000 for fiscal year 2004.

18 (4) \$1,300,000 for fiscal year 2005.

19 (5) \$1,300,000 for fiscal year 2006.

20 (h) REACTOR RESEARCH AND TRAINING AWARD
21 PROGRAM.—Of the funds under subsection (a), the fol-
22 lowing sums are authorized to be appropriated to carry
23 out section 3(c)(3):

24 (1) \$6,000,000 for fiscal year 2002.

25 (2) \$10,000,000 for fiscal year 2003.

1 (3) \$14,000,000 for fiscal year 2004.

2 (4) \$18,000,000 for fiscal year 2005.

3 (5) \$20,000,000 for fiscal year 2006.

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

8 (1) \$1,000,000 for fiscal year 2002.

9 (2) \$1,100,000 for fiscal year 2003.

10 (3) \$1,200,000 for fiscal year 2004.

11 (4) \$1,300,000 for fiscal year 2005.

12 (5) \$1,300,000 for fiscal year 2006.

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