

107TH CONGRESS  
1ST SESSION

# S. 1549

To provide for increasing the technically trained workforce in the United States.

---

IN THE SENATE OF THE UNITED STATES

OCTOBER 15, 2001

Mr. LIEBERMAN (for himself, Ms. MIKULSKI, Mr. BOND, Mr. FRIST, and Mr. DOMENICI) introduced the following bill; which was read twice and referred to the Committee on Health, Education, Labor, and Pensions

---

## A BILL

To provide for increasing the technically trained workforce in the United States.

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 the “Technology Talent Act  
5 of 2001”.

6 **SEC. 2. FINDINGS; DEFINITIONS.**

7 (a) FINDINGS.—Congress makes the following find-  
8 ings with respect to the value of the technically trained  
9 workforce to the United States:

1           (1) Studies show that about half of all United  
2 States post-World War II economic growth is a di-  
3 rect result of technological innovation, and science,  
4 engineering, and technology play a central role in  
5 the creation of new goods and services, new jobs,  
6 and new capital.

7           (2) The growth in the number of jobs requiring  
8 technical skills is projected to be more than 50 per-  
9 cent over the next decade.

10          (3) A workforce that is highly trained in  
11 science, mathematics, engineering, and technology is  
12 crucial to generating the innovation that drives eco-  
13 nomic growth.

14          (4) Outside of the biomedical sciences, the num-  
15 ber of undergraduate degrees awarded in the  
16 science, mathematics, engineering, and technology  
17 disciplines has been flat or declining since 1987, de-  
18 spite rapid population growth and a significant in-  
19 crease in undergraduate enrollment over the same  
20 period.

21          (5) The demand for H-1B visas has increased  
22 over the past several years, suggesting that the  
23 United States is not training a sufficient number of  
24 scientists and engineers.

1           (6) In international comparisons of 24-year  
2 olds, there have been shown to be fewer holders of  
3 natural science and engineering degrees in the  
4 United States than in Japan, South Korea, Taiwan,  
5 the United Kingdom, and Canada.

6           (7) Technological and scientific advancements  
7 hold significant potential for elevating the quality of  
8 life and the standard of living in the United States.  
9 The quality and quantity of such advancements are  
10 dependent on a technically trained workforce.

11           (8) Arresting the trends in reduced numbers of  
12 science and engineering graduates is not only imper-  
13 ative to maintaining our Nation's prosperity, it is  
14 also important for our national security.

15 (b) DEFINITIONS.—In this Act:

16           (1) COMMUNITY COLLEGE.—The term “commu-  
17 nity college” means an institution of higher edu-  
18 cation that provides not less than a 2-year program  
19 that is acceptable for full credit toward a bachelor's  
20 degree, including institutions receiving assistance  
21 under the Tribally Controlled Community College  
22 Assistance Act of 1978 (25 U.S.C. 1801 et seq.).

23           (2) DIRECTOR.—The term “Director” means  
24 the Director of the National Science Foundation.

1           (3) INSTITUTION OF HIGHER EDUCATION.—The  
2           term “institution of higher education” has the  
3           meaning given the term in section 101(a) of the  
4           Higher Education Act of 1965 (20 U.S.C. 1001(a)).

5 **SEC. 3. DEMONSTRATION PROGRAM AUTHORIZED.**

6           (a) IN GENERAL.—The Director is authorized to  
7           award grants, on a competitive basis to institutions of  
8           higher education with science, mathematics, engineering,  
9           or technology programs to enable the institutions to in-  
10          crease the number of students studying and receiving as-  
11          sociates or bachelor’s degrees in established or emerging  
12          fields within science, mathematics, engineering, and tech-  
13          nology.

14          (b) REQUIREMENTS.—

15               (1) NUMBER.—The Director shall award not  
16               fewer than 10 grants under this Act each year con-  
17               tingent upon available funds.

18               (2) DURATION.—Grants under this Act shall be  
19               awarded for a period of 3 years, with the final year  
20               of funding contingent upon the Director’s deter-  
21               mination that satisfactory progress has been made  
22               by the institution or community college during the  
23               first 2 years of the grant period.

24               (3) PRINCIPAL INVESTIGATOR.—At least 1  
25               principal investigator must be in a position of ad-

1       ministrative leadership at the institution of higher  
2       education. Multiple principal investigators shall be  
3       permitted.

4           (4) SUBSEQUENT GRANTS.—Institutions of  
5       higher education that have received grants under  
6       this Act shall be eligible to compete for subsequent  
7       grants to enable the institutions to continue making  
8       progress toward program goals after the initial grant  
9       period ends. In reviewing the grant application from  
10      such an institution, the Director is encouraged to  
11      consider—

12           (A) the progress the institution has made,  
13      using grant funds received under this Act, to-  
14      ward achieving program goals; and

15           (B) whether the successive grant applica-  
16      tion of the institution includes a novel strategy  
17      for achieving subsequent goals.

18      (5) INCREASES.—

19           (A) INSTITUTIONS OF HIGHER EDUCATION  
20      WITH BACHELOR'S DEGREE PROGRAMS.—An in-  
21      stitution of higher education that awards bach-  
22      elor's degrees and desires to receive a grant  
23      under this Act shall propose specific increases  
24      in the number of students who are United  
25      States citizens or permanent resident aliens, ob-

1           taining bachelor's degrees at the institution in  
2           established or emerging fields within science,  
3           mathematics, engineering, or technology.

4           (B) COMMUNITY COLLEGES.—A commu-  
5           nity college that desires to receive a grant  
6           under this Act shall propose specific increases  
7           in the number of students who are United  
8           States citizens or permanent resident aliens, ob-  
9           taining associate degrees in established or  
10          emerging fields within science, mathematics, en-  
11          gineering, or technology, and are encouraged to  
12          facilitate the enrollment of such students in  
13          bachelor's degree programs.

14          (6) PEER REVIEW OF APPLICATIONS.—The Di-  
15          rector shall review grant applications under this Act  
16          on the basis of a peer review process.

17          (7) PRIORITY.—The Director is encouraged to  
18          give priority in awarding grants to institutions of  
19          higher education that enable such institutions to  
20          carry out programs—

21                 (A) that increase the number of students  
22                 studying and receiving associates and bachelor's  
23                 degrees in established or emerging fields within  
24                 science, mathematics, engineering, or tech-  
25                 nology where there is a specific industry need

1 or where the number of graduates has been flat  
2 or declining in recent years; and

3 (B) that draw on previous and existing ef-  
4 forts with demonstrated success in improving  
5 undergraduate learning and teaching, including  
6 those efforts funded by Federal grants from the  
7 National Science Foundation or other agencies.

8 (8) NATIONAL SCIENCE FOUNDATION SCIENCE  
9 AND ENGINEERING TALENT EXPANSION CENTER.—

10 An institution of higher education that is awarded a  
11 grant under this Act shall be known as a “National  
12 Science Foundation Science and Engineering Talent  
13 Expansion Center”.

14 **SEC. 4. POLICY ELEMENTS.**

15 In soliciting and evaluating grant applications from  
16 institutions of higher education under this Act, the Direc-  
17 tor shall consider supporting—

18 (1) programs that specifically aim to increase  
19 the number of traditionally underrepresented stu-  
20 dents (low-income, ethnic minorities, and women) in  
21 science, mathematics, engineering, or technology,  
22 such as mentoring programs;

23 (2) programs that expand the capacity of insti-  
24 tutions of higher education to incorporate current

1 advances in science and technology into the under-  
2 graduate learning environment;

3 (3) bridge programs that enable additional  
4 preparation for students otherwise not fully prepared  
5 to succeed in the study and practice of science,  
6 mathematics, engineering, and technology, including  
7 programs targeted at traditionally underrepresented  
8 groups in such disciplines;

9 (4) programs including interdisciplinary ap-  
10 proaches to undergraduate science, mathematics, en-  
11 gineering, and technology education;

12 (5) programs that focus directly on the quality  
13 of student learning, including those that  
14 encourage—

15 (A) high-caliber teaching, including ena-  
16 bling faculty to spend additional time teaching  
17 participating students in smaller class settings,  
18 particularly in the laboratory environment, by,  
19 for example, providing summer salary or other  
20 additional salary for faculty members or sti-  
21 pends for students;

22 (B) opportunities to develop new peda-  
23 gogical approaches including the development of  
24 web-based course strategies, distributed and col-

1 laborative digital teaching tools, or interactive  
2 course modules; and

3 (C) screening and training of teaching as-  
4 sistants;

5 (6) programs that—

6 (A) facilitate student exposure to potential  
7 careers, including cooperative programs with in-  
8 dustry or government that place students in in-  
9 ternships as early as the summer following their  
10 first year of study;

11 (B) provide part-time employment in in-  
12 dustry during the school year; or

13 (C) provide opportunities for undergradu-  
14 ates to participate in industry or government  
15 sponsored research;

16 (7) programs that assist institutions of higher  
17 education in States that participate in the Experi-  
18 mental Program to Stimulate Competitive Research  
19 (EPSCoR) to broaden the science, engineering,  
20 mathematics, and technology student base or in-  
21 crease retention in these fields;

22 (8) programs to encourage undergraduate re-  
23 search on- or off-campus;

1           (9) programs that provide financial incentives  
2 to students entering and persisting in the study of  
3 science, mathematics, engineering, or technology;

4           (10) programs that leverage the Federal invest-  
5 ment by providing matching funds from industry,  
6 from State or local government sources, or from pri-  
7 vate sources; and

8           (11) other innovative approaches to achieving  
9 program goals.

10 **SEC. 5. EVALUATION AND DISSEMINATION OF INFORMA-**  
11 **TION.**

12       (a) **EVALUATION.**—The Director, in consultation  
13 with the advisory committee established under section 7—

14           (1) shall evaluate, at least once each year, the  
15 progress of institutions of higher education that are  
16 assisted under this Act in achieving the goal of in-  
17 creasing the number of students obtaining degrees in  
18 science, mathematics, engineering, or technology;  
19 and

20           (2) shall award at least 1 grant or contract to  
21 an independent evaluative organization to develop  
22 metrics and evaluate the program approaches as-  
23 sisted under this Act that are most effective, includ-  
24 ing those most cost-effective, in increasing the num-  
25 ber of students obtaining degrees in such disciplines.

1 (b) DISSEMINATION OF INFORMATION.—The Direc-  
2 tor, at least once each year, shall disseminate information  
3 on the activities and the results of the program assisted  
4 under this Act to participating institutions of higher edu-  
5 cation and other interested institutions of higher edu-  
6 cation.

7 **SEC. 6. REPORTS.**

8 (a) LIST.—Not later than 90 days after the date of  
9 enactment of this Act, the Director shall develop, and dis-  
10 seminate to institutions of higher education, a list of ex-  
11 amples of existing institutional and government efforts rel-  
12 evant to the program assisted under this Act.

13 (b) INTERIM PROGRESS REPORT.—At the end of the  
14 second year of the program assisted under this Act, the  
15 Director shall submit to Congress an interim progress re-  
16 port that includes an evaluation of programmatic features  
17 assisted under this Act that are most effective in increas-  
18 ing the number of students studying science, mathematics,  
19 engineering, or technology.

20 (c) FINAL REPORT.—The Director shall submit to  
21 Congress a final report in 2007 regarding activities as-  
22 sisted under this Act, including—

23 (1) an evaluation of the features described in  
24 subsection (b);

1           (2) the number of degrees granted to students  
2 under this Act; and

3           (3) information on the number of graduates as-  
4 sisted under this Act who elected to pursue graduate  
5 degrees, and other career paths taken by individuals  
6 assisted under this Act.

7 **SEC. 7. ADVISORY COMMITTEE.**

8           The Director shall establish an advisory committee,  
9 that includes significant representation from industry and  
10 academic leaders, for the grant program assisted under  
11 this Act. The advisory committee shall—

12           (1) assist the Director in securing active indus-  
13 try, and State and local government, participation in  
14 the program assisted under this Act;

15           (2) recommend to the Director new innovative  
16 approaches to furthering the mission of the pro-  
17 gram; and

18           (3) critique and advise the Director regarding  
19 program metrics, implementation and performance  
20 of the program, and program progress reports.

21 **SEC. 8. AUTHORIZATION OF APPROPRIATIONS; FUNDING**

22           (a) AUTHORIZATION OF APPROPRIATIONS.—There is  
23 authorized to be appropriated to the National Science  
24 Foundation to carry out this Act—

25           (1) \$25,000,000 for fiscal year 2002; and

1           (2) such sums as may be necessary for each  
2           subsequent fiscal year.

3           (b) FUNDING.—In addition to any other purposes for  
4           which such funds are available, any funds made available  
5           to the Director under section 286(s) of the Immigration  
6           and Nationality Act (8 U.S.C. 1356(s)) shall be available  
7           to carry out this Act.

○