

109TH CONGRESS  
1ST SESSION

# S. 2134

To strengthen existing programs to assist manufacturing innovation and education, to expand outreach programs for small and medium-sized manufacturers, and for other purposes.

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IN THE SENATE OF THE UNITED STATES

DECEMBER 16, 2005

Mr. SMITH introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

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## A BILL

To strengthen existing programs to assist manufacturing innovation and education, to expand outreach programs for small and medium-sized manufacturers, and for other purposes.

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 “Manufacturing Tech-  
5 nology Competitiveness Act of 2005”.

1 **SEC. 2. COLLABORATIVE MANUFACTURING RESEARCH**  
 2 **PILOT GRANTS.**

3 The National Institute of Standards and Technology  
 4 Act is amended—

5 (1) by redesignating the first section 32 (15  
 6 U.S.C. 271 note; as redesignated by Public Law  
 7 105–309) as section 34; and

8 (2) by inserting before the section redesignated  
 9 by paragraph (1) the following:

10 **“SEC. 33. COLLABORATIVE MANUFACTURING RESEARCH**  
 11 **PILOT GRANTS.**

12 “(a) **AUTHORITY.**—

13 “(1) **ESTABLISHMENT.**—The Director shall es-  
 14 tablish a Manufacturing Research Pilot Grants pro-  
 15 gram to make awards to partnerships consisting of  
 16 participants described in paragraph (2) for the pur-  
 17 poses described in paragraph (3). Awards shall be  
 18 made on a peer-reviewed, competitive basis.

19 “(2) **PARTICIPANTS.**—The partnerships de-  
 20 scribed in this paragraph shall include at least—

21 “(A) 1 manufacturing industry partner;  
 22 and

23 “(B) 1 nonindustry partner.

24 “(3) **PURPOSE.**—The purpose of the program  
 25 established under this section is to foster cost-shared  
 26 collaborations among firms, educational institutions,

1 research institutions, State agencies, and nonprofit  
2 organizations to encourage the development of inno-  
3 vative, multidisciplinary manufacturing technologies.  
4 Partnerships receiving awards under this section  
5 shall conduct applied research to develop new manu-  
6 facturing processes, techniques, or materials that  
7 would contribute to improved performance, produc-  
8 tivity, and the manufacturing competitiveness of the  
9 United States, and build lasting alliances among col-  
10 laborators.

11 “(b) PROGRAM CONTRIBUTION.—An award made  
12 under this section shall provide for not more than one-  
13 third of the costs of the partnership. Not more than an  
14 additional one-third of such costs may be obtained directly  
15 or indirectly from other Federal sources.

16 “(c) APPLICATIONS.—Applications for awards under  
17 this section shall be submitted in such manner, at such  
18 time, and containing such information as the Director  
19 shall require. Such applications shall describe at a min-  
20 imum—

21 “(1) how each partner will participate in devel-  
22 oping and carrying out the research agenda of the  
23 partnership;

24 “(2) the research that the grant will fund; and

1           “(3) how the research to be funded with the  
2           award will contribute to improved performance, pro-  
3           ductivity, and the manufacturing competitiveness of  
4           the United States.

5           “(d) SELECTION CRITERIA.—In selecting applica-  
6           tions for awards under this section, the Director shall con-  
7           sider at a minimum—

8           “(1) the degree to which projects will have a  
9           broad impact on manufacturing;

10           “(2) the novelty and scientific and technical  
11           merit of the proposed projects; and

12           “(3) the demonstrated capabilities of the appli-  
13           cants to successfully carry out the proposed re-  
14           search.

15           “(e) DISTRIBUTION.—In selecting applications under  
16           this section the Director shall ensure, to the extent prac-  
17           ticable, a distribution of overall awards among a variety  
18           of manufacturing industry sectors and a range of firm  
19           sizes.

20           “(f) DURATION.—In carrying out this section, the Di-  
21           rector shall conduct a single pilot competition to solicit  
22           and make awards. Each award shall be for a 3-year pe-  
23           riod.”.

1 **SEC. 3. MANUFACTURING FELLOWSHIP PROGRAM.**

2 Section 18 of the National Institute of Standards and  
3 Technology Act (15 U.S.C. 278g–1) is amended—

4 (1) by inserting “(a) IN GENERAL.—” before  
5 “The Director is authorized”; and

6 (2) by adding at the end the following new sub-  
7 section:

8 “(b) MANUFACTURING FELLOWSHIP PROGRAM.—

9 “(1) ESTABLISHMENT.—To promote the devel-  
10 opment of a robust research community working at  
11 the leading edge of manufacturing sciences, the Di-  
12 rector shall establish a program to award—

13 “(A) postdoctoral research fellowships at  
14 the Institute for research activities related to  
15 manufacturing sciences; and

16 “(B) senior research fellowships to estab-  
17 lished researchers in industry or at institutions  
18 of higher education who wish to pursue studies  
19 related to the manufacturing sciences at the In-  
20 stitute.

21 “(2) APPLICATIONS.—To be eligible for an  
22 award under this subsection, an individual shall sub-  
23 mit an application to the Director at such time, in  
24 such manner, and containing such information as  
25 the Director may require.

1           “(3) STIPEND LEVELS.—Under this section, the  
 2           Director shall provide stipends for postdoctoral re-  
 3           search fellowships at a level consistent with the Na-  
 4           tional Institute of Standards and Technology  
 5           Postdoctoral Research Fellowship Program, and sen-  
 6           ior research fellowships at levels consistent with sup-  
 7           port for a faculty member in a sabbatical position.”.

8   **SEC. 4. MANUFACTURING EXTENSION.**

9           (a) MANUFACTURING CENTER EVALUATION.—Sec-  
 10          tion 25(c)(5) of the National Institute of Standards and  
 11          Technology Act (15 U.S.C. 278k(c)(5)) is amended by in-  
 12          serting “A Center that has not received a positive evalua-  
 13          tion by the evaluation panel shall be notified by the panel  
 14          of the deficiencies in its performance and may be placed  
 15          on probation for one year, after which time the panel may  
 16          reevaluate the Center. If the Center has not addressed the  
 17          deficiencies identified by the panel, or shown a significant  
 18          improvement in its performance, the Director may conduct  
 19          a new competition to select an operator for the Center or  
 20          may close the Center.” after “sixth year at declining lev-  
 21          els.”.

22          (b) FEDERAL SHARE.—Section 25(d) of the National  
 23          Institute of Standards and Technology Act (15 U.S.C.  
 24          278k(d)) is amended to read as follows:

1       “(d) ACCEPTANCE OF FUNDS.—In addition to such  
 2 sums as may be appropriated to the Secretary and Direc-  
 3 tor to operate the Centers program, the Secretary and Di-  
 4 rector also may accept funds from other Federal depart-  
 5 ments and agencies and under section 2(c)(7) from the  
 6 private sector for the purpose of strengthening United  
 7 States manufacturing. Such funds, if allocated to a Cen-  
 8 ter, shall not be considered in the calculation of the Fed-  
 9 eral share of capital and annual operating and mainte-  
 10 nance costs under subsection (c).”.

11       (c) MANUFACTURING EXTENSION CENTER COMPETI-  
 12 TIVE GRANT PROGRAM.—Section 25 of the National Insti-  
 13 tute of Standards and Technology Act (15 U.S.C. 278k)  
 14 is amended by adding at the end the following new sub-  
 15 sections:

16       “(e) COMPETITIVE GRANT PROGRAM.—

17               “(1) ESTABLISHMENT.—The Director shall es-  
 18 tablish, within the Manufacturing Extension Part-  
 19 nership program under this section and section 26  
 20 of this Act, a program of competitive awards among  
 21 participants described in paragraph (2) for the pur-  
 22 poses described in paragraph (3).

23               “(2) PARTICIPANTS.—Participants receiving  
 24 awards under this subsection shall be the Centers, or  
 25 a consortium of such Centers.

1           “(3) PURPOSE.—The purpose of the program  
2           under this subsection is to develop projects to solve  
3           new or emerging manufacturing problems as deter-  
4           mined by the Director, in consultation with the Di-  
5           rector of the Manufacturing Extension Partnership  
6           program, the Manufacturing Extension Partnership  
7           National Advisory Board, and small and medium-  
8           sized manufacturers. One or more themes for the  
9           competition may be identified, which may vary from  
10          year to year, depending on the needs of manufactur-  
11          ers and the success of previous competitions. These  
12          themes shall be related to projects associated with  
13          manufacturing extension activities, including supply  
14          chain integration and quality management, or extend  
15          beyond the traditional areas.

16          “(4) APPLICATIONS.—Applications for awards  
17          under this subsection shall be submitted in such  
18          manner, at such time, and containing such informa-  
19          tion as the Director shall require, in consultation  
20          with the Manufacturing Extension Partnership Na-  
21          tional Advisory Board.

22          “(5) SELECTION.—Awards under this sub-  
23          section shall be peer reviewed and competitively  
24          awarded. The Director shall select proposals to re-  
25          ceive awards—



1           “(A) that utilize innovative or collaborative  
2           approaches to solving the problem described in  
3           the competition;

4           “(B) that will improve the competitiveness  
5           of industries in the region in which the Center  
6           or Centers are located; and

7           “(C) that will contribute to the long-term  
8           economic stability of that region.

9           “(6) PROGRAM CONTRIBUTION.—Recipients of  
10          awards under this subsection shall not be required  
11          to provide a matching contribution.

12          “(f) AUDITS.—A center that receives assistance  
13          under this section shall submit annual audits to the Sec-  
14          retary in accordance with Office of Management and  
15          Budget Circular A–133 and shall make such audits avail-  
16          able to the public on request.”.

17          (d) PROGRAMMATIC AND OPERATIONAL PLAN.—Not  
18          later than 120 days after the date of enactment of this  
19          Act, the Director of the National Institute of Standards  
20          and Technology shall transmit to the Committee on  
21          Science of the House of Representatives and the Com-  
22          mittee on Commerce, Science, and Transportation of the  
23          Senate a 3-year programmatic and operational plan for  
24          the Manufacturing Extension Partnership program under  
25          sections 25 and 26 of the National Institute of Standards

1 and Technology Act (15 U.S.C. 278k and 278l). The plan  
 2 shall include comments on the plan from the Manufac-  
 3 turing Extension Partnership State partners and the Man-  
 4 ufacturing Extension Partnership National Advisory  
 5 Board.

6 **SEC. 5. AUTHORIZATION OF APPROPRIATIONS FOR MANU-**  
 7 **FACTURING SUPPORT PROGRAMS.**

8 (a) MANUFACTURING EXTENSION PARTNERSHIP  
 9 PROGRAM.—There are authorized to be appropriated to  
 10 the Secretary of Commerce, or other appropriate Federal  
 11 agencies, for the Manufacturing Extension Partnership  
 12 program under sections 25 and 26 of the National Insti-  
 13 tute of Standards and Technology Act (15 U.S.C. 278k  
 14 and 278l)—

15 (1) \$110,000,000 for fiscal year 2006, of which  
 16 not more than \$1,000,000 shall be for the competi-  
 17 tive grant program under section 25(e) of such Act  
 18 (15 U.S.C. 278k(e));

19 (2) \$115,000,000 for fiscal year 2007, of which  
 20 not more than \$4,000,000 shall be for the competi-  
 21 tive grant program under section 25(e) of such Act  
 22 (15 U.S.C. 278k(e)); and

23 (3) \$120,000,000 for fiscal year 2008, of which  
 24 not more than \$4,100,000 shall be for the competi-

1        tive grant program under section 25(e) of such Act  
 2        (15 U.S.C. 278k(e)).

3        (b) COLLABORATIVE MANUFACTURING RESEARCH  
 4 PILOT GRANTS PROGRAM.—There are authorized to be  
 5 appropriated to the Secretary of Commerce for the Col-  
 6 laborative Manufacturing Research Pilot Grants program  
 7 under section 33 of the National Institute of Standards  
 8 and Technology Act—

9            (1) \$10,000,000 for fiscal year 2006;

10           (2) \$10,000,000 for fiscal year 2007; and

11           (3) \$10,000,000 for fiscal year 2008.

12        (c) FELLOWSHIPS.—There are authorized to be ap-  
 13 propriated to the Secretary of Commerce for Manufac-  
 14 turing Fellowships at the National Institute of Standards  
 15 and Technology under section 18(b) of the National Insti-  
 16 tute of Standards and Technology Act, as added by section  
 17 3 of this Act—

18           (1) \$1,500,000 for fiscal year 2006;

19           (2) \$1,750,000 for fiscal year 2007; and

20           (3) \$2,000,000 for fiscal year 2008.

21 **SEC. 6. TECHNICAL WORKFORCE EDUCATION AND DEVEL-**  
 22 **OPMENT.**

23        (a) AUTHORIZATION OF APPROPRIATIONS.—

24           (1) IN GENERAL.—There are authorized to be  
 25        appropriated to the Director of the National Science

1 Foundation, from sums otherwise authorized to be  
2 appropriated, for the programs established under  
3 section 3 of the Scientific and Advanced-Technology  
4 Act of 1992 (42 U.S.C. 1862i)—

5 (A) \$55,000,000 for fiscal year 2006,  
6 \$5,000,000 of which may be used to support  
7 the education and preparation of manufacturing  
8 technicians for certification;

9 (B) \$57,750,000 for fiscal year 2007,  
10 \$5,000,000 of which may be used to support  
11 the education and preparation of manufacturing  
12 technicians for certification; and

13 (C) \$60,600,000 for fiscal year 2008,  
14 \$5,000,000 of which may be used to support  
15 the education and preparation of manufacturing  
16 technicians for certification.

17 (2) DISTRIBUTION.—Funds appropriated under  
18 this subsection shall be made available, to the max-  
19 imum extent practicable, to diverse institutions, in-  
20 cluding historically Black colleges and universities  
21 and other minority-serving institutions.

22 (b) AMENDMENTS.—Section 3 of the Scientific and  
23 Advanced-Technology Act of 1992 (42 U.S.C. 1862i) is  
24 amended—

1 (1) in subsections (a)(1) and (c)(2), by insert-  
 2 ing “, including manufacturing,” after “advanced-  
 3 technology fields”; and

4 (2) by inserting “, including manufacturing”  
 5 after “advanced-technology fields” each place the  
 6 term appears, other than in subsections (a)(1) and  
 7 (c)(2).

8 **SEC. 7. SCIENTIFIC AND TECHNICAL RESEARCH AND SERV-**  
 9 **ICES.**

10 (a) **LABORATORY ACTIVITIES.**—There are authorized  
 11 to be appropriated to the Secretary of Commerce for the  
 12 scientific and technical research and services laboratory  
 13 activities of the National Institute of Standards and Tech-  
 14 nology—

15 (1) \$426,267,000 for fiscal year 2006, of  
 16 which—

17 (A) \$50,833,000 shall be for Electronics  
 18 and Electrical Engineering;

19 (B) \$28,023,000 shall be for Manufac-  
 20 turing Engineering;

21 (C) \$52,433,000 shall be for Chemical  
 22 Science and Technology;

23 (D) \$46,706,000 shall be for Physics;

24 (E) \$33,500,000 shall be for Material  
 25 Science and Engineering;

1 (F) \$24,321,000 shall be for Building and  
2 Fire Research;

3 (G) \$68,423,000 shall be for Computer  
4 Science and Applied Mathematics;

5 (H) \$20,134,000 shall be for Technical As-  
6 sistance;

7 (I) \$48,326,000 shall be for Research Sup-  
8 port Activities;

9 (J) \$29,369,000 shall be for the National  
10 Institute of Standards and Technology Center  
11 for Neutron Research; and

12 (K) \$18,543,000 shall be for the National  
13 Nanomanufacturing and Nanometrology Facil-  
14 ity;

15 (2) \$447,580,000 for fiscal year 2007; and

16 (3) \$456,979,000 for fiscal year 2008.

17 (b) MALCOLM BALDRIGE NATIONAL QUALITY  
18 AWARD PROGRAM.—There are authorized to be appro-  
19 priated to the Secretary of Commerce for the Malcolm  
20 Baldrige National Quality Award program under section  
21 17 of the Stevenson-Wydler Technology Innovation Act of  
22 1980 (15 U.S.C. 3711a)—

23 (1) \$5,654,000 for fiscal year 2006;

24 (2) \$5,795,000 for fiscal year 2007; and

25 (3) \$5,939,000 for fiscal year 2008.

1 (c) CONSTRUCTION AND MAINTENANCE.—There are  
 2 authorized to be appropriated to the Secretary of Com-  
 3 merce for construction and maintenance of facilities of the  
 4 National Institute of Standards and Technology—

5 (1) \$58,898,000 for fiscal year 2006;

6 (2) \$61,843,000 for fiscal year 2007; and

7 (3) \$63,389,000 for fiscal year 2008.

8 **SEC. 8. ADVANCED TECHNOLOGY PROGRAM.**

9 (a) AUTHORIZATION OF APPROPRIATIONS.—There is  
 10 authorized to be appropriated to the Secretary of Com-  
 11 merce for the Advanced Technology Program under sec-  
 12 tion 28 of the National Institute of Standards and Tech-  
 13 nology Act (15 U.S.C. 278n) \$140,000,000 for each of  
 14 the fiscal years 2006 through 2008.

15 (b) REPORT ON ELIMINATION.—Not later than 3  
 16 months after the date of enactment of this Act, the Sec-  
 17 retary shall submit to Congress a report detailing the im-  
 18 pacts of the possible elimination of the Advanced Tech-  
 19 nology Program on the laboratory programs at the Na-  
 20 tional Institute of Standards Technology.

21 (c) LOSS OF FUNDING.—At the time of the Presi-  
 22 dent's budget request for fiscal year 2007, the Secretary  
 23 shall submit to Congress a report on how the Department  
 24 of Commerce plans to absorb the loss of Advanced Tech-  
 25 nology Program funds to the laboratory programs at the

1 National Institute of Standards and Technology, or other-  
 2 wise mitigate the effects of this loss on its programs and  
 3 personnel.

4 **SEC. 9. STANDARDS EDUCATION PROGRAM.**

5 (a) PROGRAM AUTHORIZED.—(1) As part of the  
 6 Teacher Science and Technology Enhancement Institute  
 7 Program, the Director of the National Institute of Stand-  
 8 ards and Technology shall carry out a Standards Edu-  
 9 cation program to award grants to institutions of higher  
 10 education to support efforts by such institutions to develop  
 11 curricula on the role of standards in the fields of engineer-  
 12 ing, business, science, and economics. The curricula  
 13 should address topics such as—

- 14 (A) development of technical standards;
- 15 (B) demonstrating conformity to standards;
- 16 (C) intellectual property and antitrust issues;
- 17 (D) standardization as a key element of busi-  
 18 ness strategy;
- 19 (E) survey of organizations that develop stand-  
 20 ards;
- 21 (F) the standards life cycle;
- 22 (G) case studies in effective standardization;
- 23 (H) managing standardization activities; and
- 24 (I) managing organizations that develop stand-  
 25 ards.



1       (2) Grants shall be awarded under this section on a  
 2 competitive, merit-reviewed basis and shall require cost-  
 3 sharing from non-Federal sources.

4       (b) SELECTION PROCESS.—(1) An institution of  
 5 higher education seeking funding under this section shall  
 6 submit an application to the Director at such time, in such  
 7 manner, and containing such information as the Director  
 8 may require. The application shall include at a min-  
 9 imum—

10           (A) a description of the content and schedule  
 11 for adoption of the proposed curricula in the courses  
 12 of study offered by the applicant; and

13           (B) a description of the source and amount of  
 14 cost-sharing to be provided.

15       (2) In evaluating the applications submitted under  
 16 paragraph (1) the Director shall consider, at a min-  
 17 imum—

18           (A) the level of commitment demonstrated by  
 19 the applicant in carrying out and sustaining lasting  
 20 curricula changes in accordance with subsection  
 21 (a)(1); and

22           (B) the amount of cost-sharing provided.

23       (c) AUTHORIZATION OF APPROPRIATIONS.—There  
 24 are authorized to be appropriated to the Secretary of Com-  
 25 merce for the Teacher Science and Technology Enhance-

1 ment Institute program of the National Institute of Stand-  
2 ards and Technology—

3 (1) \$773,000 for fiscal year 2006;

4 (2) \$796,000 for fiscal year 2007; and

5 (3) \$820,000 for fiscal year 2008.

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