

# Union Calendar No. 169

111<sup>TH</sup> CONGRESS  
1<sup>ST</sup> SESSION

# H. R. 3585

[Report No. 111-302]

To guide and provide for United States research, development, and demonstration of solar energy technologies, and for other purposes.

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## IN THE HOUSE OF REPRESENTATIVES

SEPTEMBER 16, 2009

Ms. GIFFORDS introduced the following bill; which was referred to the Committee on Science and Technology

OCTOBER 15, 2009

Additional sponsors: Mr. GORDON of Tennessee, Mr. TONKO, Mr. LUJÁN, Mr. HONDA, Mr. CHANDLER, Mr. LIPINSKI, Mr. INSLEE, Mr. COOPER, Mr. BAIRD, Mr. MCCAUL, Mrs. BONO MACK, Mr. HEINRICH, Mr. PETERS, Mr. KLEIN of Florida, Mr. HALL of New York, Mr. RODRIGUEZ, Mr. CARNAHAN, Ms. SLAUGHTER, Mrs. HALVORSON, Mr. BISHOP of New York, Mr. WELCH, Mrs. MILLER of Michigan, Mr. MORAN of Virginia, Mrs. DAVIS of California, Mr. HIGGINS, Mr. POLIS of Colorado, Mr. WAMP, Mr. BARTLETT, Mr. ROTHMAN of New Jersey, Mr. HIMES, Mr. YOUNG of Florida, and Mr. THOMPSON of California

OCTOBER 15, 2009

Reported with an amendment, committed to the Committee of the Whole House on the State of the Union, and ordered to be printed

[Strike out all after the enacting clause and insert the part printed in italic]

[For text of introduced bill, see copy of bill as introduced on September 16, 2009]

# **A BILL**

To guide and provide for United States research, development, and demonstration of solar energy technologies, 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 “Solar Technology Road-*  
5 *map Act”.*

6 **SEC. 2. DEFINITIONS.**

7        *In this Act:*

8            (1) *SECRETARY.*—*The term “Secretary” means*  
9 *the Secretary of Energy.*

10           (2) *SOLAR TECHNOLOGY.*—*The term “solar tech-*  
11 *nology” means—*

12            (A) *photovoltaic technologies, including*  
13 *technologies utilizing—*

14                    (i) *crystalline silicon;*

15                    (ii) *cadmium telluride;*

16                    (iii) *semiconductor materials con-*  
17 *taining copper, indium, and selenium;*

18                    (iv) *thin film silicon;*

19                    (v) *gallium arsenide alloy and multi-*  
20 *junctions;*

21                    (vi) *dye-sensitized and organic solar*  
22 *cell technologies;*

23                    (vii) *concentrating photovoltaics; and*

24                    (viii) *other photovoltaic methods iden-*  
25 *tified by the Secretary;*

1           (B) solar thermal electric technology, in-  
2           cluding linear concentrator systems, dish/engine  
3           systems, and power tower systems;

4           (C) solar thermal water heating technology;

5           (D) solar heating and air conditioning tech-  
6           nologies;

7           (E) passive solar design in architecture, in-  
8           cluding both heating and lighting applications;  
9           and

10          (F) related or enabling technologies, includ-  
11          ing thin films, semiconducting materials, trans-  
12          parent conductors, optics, and technologies that  
13          increase durability or decrease cost or weight.

14 **TITLE I—SOLAR TECHNOLOGY**  
15 **RESEARCH, DEVELOPMENT,**  
16 **AND DEMONSTRATION**

17 **SEC. 101. PROGRAM.**

18          (a) *IN GENERAL.*—The Secretary shall conduct a pro-  
19 gram of research, development, and demonstration for solar  
20 technology, including—

21           (1) photovoltaics;

22           (2) solar hot water and solar space heating and  
23           cooling;

24           (3) concentrating solar power;

1           (4) *lighting systems that integrate sunlight and*  
2           *electrical lighting in complement to each other in*  
3           *common lighting fixtures for the purpose of improv-*  
4           *ing energy efficiency;*

5           (5) *manufacturability of low cost, high-quality*  
6           *solar energy systems;*

7           (6) *development of solar technology products that*  
8           *can be easily integrated into new and existing build-*  
9           *ings; and*

10          (7) *other areas as the Secretary considers appro-*  
11          *priate.*

12          (b) *AWARDS.—The Secretary shall provide awards*  
13          *under this section to promote a diversity of research, devel-*  
14          *opment, and demonstration activities for solar technology*  
15          *on a merit-reviewed, competitive basis to—*

16               (1) *academic institutions, national laboratories,*  
17               *Federal research agencies, State research agencies,*  
18               *nonprofit research organizations, industrial entities,*  
19               *or consortia thereof for research, development, and*  
20               *demonstration activities; and*

21               (2) *industry-led consortia for research, develop-*  
22               *ment, and demonstration of advanced techniques for*  
23               *manufacturing a variety of solar energy products.*

24          (c) *SENSE OF CONGRESS.—It is the sense of Congress*  
25          *that at least 75 percent of funding for solar technology re-*

1 *search, development, and demonstration activities con-*  
2 *ducted by the Department of Energy after fiscal year 2014*  
3 *support a diversity of activities identified by and rec-*  
4 *ommended under the Solar Technology Roadmap as de-*  
5 *scribed in section 102.*

6 (d) *SPECIAL CONSIDERATION.—As a criteria for pro-*  
7 *viding awards under this Act, the Secretary shall consider*  
8 *areas with high unemployment.*

9 (e) *COMPETITIVENESS.—In carrying out section 105,*  
10 *the Department of Energy shall strongly consider projects*  
11 *utilizing solar technologies manufactured in the United*  
12 *States.*

13 **SEC. 102. SOLAR TECHNOLOGY ROADMAP.**

14 (a) *IN GENERAL.—Not later than 18 months after the*  
15 *date of enactment of this Act, the Solar Technology Road-*  
16 *map Committee established under section 103 shall develop*  
17 *and transmit to the Secretary of Energy and the Congress*  
18 *a Solar Technology Roadmap that—*

19 (1) *presents the best current estimate of the near-*  
20 *term (up to 2 years), mid-term (up to 7 years), and*  
21 *long-term (up to 15 years) research, development, and*  
22 *demonstration needs in solar technology; and*

23 (2) *provides guidance to the solar technology re-*  
24 *search, development, and demonstration activities*  
25 *supported by the Federal Government for the purposes*

1       *of meeting national priorities in energy security,*  
2       *United States competitiveness, mitigation of adverse*  
3       *environmental impacts, and energy diversification.*

4       **(b) CONTENTS.**—*The Solar Technology Roadmap*  
5       *shall—*

6               (1) *identify research, development, and dem-*  
7       *onstration needs for a diversity of solar technologies*  
8       *to address—*

9                       (A) *the key solar energy production chal-*  
10       *lenges of intermittency, transience, storage, and*  
11       *scaling, including determining—*

12                               (i) *which solar-related technological so-*  
13       *lutions are appropriate for various applica-*  
14       *tions, locations, and seasons;*

15                               (ii) *how to store excess solar energy in*  
16       *batteries, supercapacitors, compressed air,*  
17       *flywheels, hydrogen, synthetic fuels, thermal*  
18       *storage, or superconductors, or through*  
19       *other means;*

20                               (iii) *how and when to integrate solar*  
21       *energy into the electricity grid effectively,*  
22       *including—*

23                                       (I) *the integration of solar tech-*  
24       *nologies with a Smart Grid;*

25                                       (II) *electrical power smoothing;*

- 1                    *(III) microgrid integration;*  
2                    *(IV) solar resource forecasting;*  
3                    *(V) long distance transmission op-*  
4                    *tions, including direct current and*  
5                    *superconducting transmission; and*  
6                    *(VI) ways to address arbitrage*  
7                    *over minutes, hours, days, weeks, and*  
8                    *seasons with respect to the full range of*  
9                    *project scales; and*  
10                   *(iv) how best to integrate solar tech-*  
11                   *nologies into buildings;*  
12                   *(B) modeling and simulation;*  
13                   *(C) the design, materials, and manufacture*  
14                   *of solar technologies, as well as related factory*  
15                   *sciences;*  
16                   *(D) the development of standards;*  
17                   *(E) the need for demonstration facilities;*  
18                   *(F) optimized packaging methods;*  
19                   *(G) environmental, safety, and health con-*  
20                   *cerns including reuse, recycling, hazardous mate-*  
21                   *rials disposal, and photovoltaic waste issues; and*  
22                   *(H) other areas identified by the Secretary;*  
23                   *(2) identify opportunities for coordination with*  
24                   *partner industries such as those for semiconductors,*



1       *lighting, energy storage, Smart Grid, and wind that*  
2       *can benefit from similar advances;*

3               *(3) establish research, development, and dem-*  
4       *onstration goals with recommended timeframes with*  
5       *respect to solar technologies for—*

6                       *(A) improving performance;*

7                       *(B) decreasing cost of electricity generated;*

8                       *(C) improving reliability; and*

9                       *(D) decreasing potential negative environ-*  
10       *mental impacts and maximizing the environ-*  
11       *mental benefits of solar technologies;*

12               *(4) include recommendations, as appropriate, to*  
13       *guide solar technology research, development, and*  
14       *demonstration activities; and*

15               *(5) outline the various technologies and practices*  
16       *considered by the Committee and the benefits and*  
17       *shortcomings of each, as appropriate.*

18       *(c) REVISIONS AND UPDATES.—*

19               *(1) REVISIONS.—Once every 3 years after com-*  
20       *pletion of the first Solar Technology Roadmap under*  
21       *this Act, the Solar Technology Roadmap Committee*  
22       *shall conduct a comprehensive review and revision of*  
23       *the Solar Technology Roadmap.*

1           (2) *UPDATES.*—*The Solar Technology Roadmap*  
2           *Committee shall update the Solar Technology Road-*  
3           *map annually as necessary.*

4 **SEC. 103. SOLAR TECHNOLOGY ROADMAP COMMITTEE.**

5           (a) *ESTABLISHMENT.*—*Not later than 4 months after*  
6           *the date of enactment of this Act, the Secretary shall estab-*  
7           *lish, and provide support for as necessary, a Solar Tech-*  
8           *nology Roadmap Committee.*

9           (b) *MEMBERSHIP.*—

10           (1) *IN GENERAL.*—*The Solar Technology Road-*  
11           *map Committee shall consist of at least 11 members.*  
12           *Each member shall be appointed by the Secretary*  
13           *from among subject matter experts representing—*

14                   (A) *different sectors of the domestic solar*  
15                   *technology industry, including manufacturers*  
16                   *and equipment suppliers;*

17                   (B) *national laboratories;*

18                   (C) *academia;*

19                   (D) *relevant Federal agencies;*

20                   (E) *relevant State and local government en-*  
21                   *tities;*

22                   (F) *private research institutions; and*

23                   (G) *other entities or organizations, as ap-*  
24                   *propriate.*

25           (2) *TERMS.*—

1           (A) *IN GENERAL.*—*Except as provided in*  
2           *subparagraph (B), the term of a member of the*  
3           *Solar Technology Roadmap Committee shall be 3*  
4           *years.*

5           (B) *ORIGINAL TERMS.*—*Of the members ap-*  
6           *pointed originally to the Solar Technology Road-*  
7           *map Committee, approximately  $\frac{1}{3}$  shall be ap-*  
8           *pointed for a 2-year term, approximately  $\frac{1}{3}$*   
9           *shall be appointed for a 3-year term, and ap-*  
10          *proximately  $\frac{1}{3}$  shall be appointed for a 4-year*  
11          *term.*

12          (3) *LIMIT ON TERMS.*—*A member of the Solar*  
13          *Technology Roadmap Committee may serve more*  
14          *than 1 term, except that such member may not serve*  
15          *a subsequent term unless 2 years have elapsed since*  
16          *the end of a previous term.*

17          (4) *INDUSTRY PARTICIPATION.*—*At least  $\frac{1}{3}$  and*  
18          *not more than  $\frac{1}{2}$  of the members of the Solar Tech-*  
19          *nology Roadmap Committee shall be individuals de-*  
20          *scribed in paragraph (1)(A).*

21          (5) *CHAIR.*—*The Secretary shall select a Chair*  
22          *from among the members of the Committee. The Chair*  
23          *shall not be an employee of the Federal Government.*

1           (6) *CONFLICTS OF INTEREST.*—*The Secretary, in*  
2           *appointing members to the Committee, shall make*  
3           *every effort to ensure that—*

4                   (A) *no individual appointed to serve on the*  
5                   *Committee has a conflict of interest that is rel-*  
6                   *evant to the functions to be performed, unless*  
7                   *such conflict is promptly and publicly disclosed*  
8                   *and the Secretary determines that a waiver is*  
9                   *appropriate;*

10                   (B) *the Committee membership is fairly*  
11                   *balanced as determined by the Secretary to be*  
12                   *appropriate for the functions to be performed;*  
13                   *and*

14                   (C) *the final report of the Committee will be*  
15                   *the result of the Committee’s independent judg-*  
16                   *ment.*

17           *The Secretary shall require that individuals that are*  
18           *appointed or intended to be to appointed to serve on*  
19           *the Committee inform the Department of Energy of*  
20           *any individual’s conflicts of interest that are relevant*  
21           *to the functions to be performed.*

22           (c) *EXPERT ADVICE.*—*In developing the Solar Tech-*  
23           *nology Roadmap, the Solar Technology Roadmap Com-*  
24           *mittee may establish subcommittees, working groups com-*  
25           *prised of experts outside the membership of the Solar Tech-*

1 *nology Roadmap Committee, and other means of gathering*  
2 *expert advice on—*

3           (1) *particular solar technologies or technological*  
4 *challenges;*

5           (2) *crosscutting issues or activities relating to*  
6 *more than 1 particular solar technology or techno-*  
7 *logical challenge; or*

8           (3) *any other area the Solar Technology Road-*  
9 *map Committee considers appropriate.*

10       (d) *COMPENSATION AND EXPENSES.—A member of the*  
11 *Solar Technology Roadmap Committee shall not be com-*  
12 *pensated for service on the Committee, but may be allowed*  
13 *travel expenses, including per diem in lieu of subsistence,*  
14 *in accordance with subchapter I of chapter 57 of title 5,*  
15 *United States Code.*

16       (e) *FEDERAL ADVISORY COMMITTEE ACT.—The Fed-*  
17 *eral Advisory Committee Act (5 U.S.C. App.) shall not*  
18 *apply to the Solar Technology Roadmap Committee.*

19 **SEC. 104. INTERAGENCY COORDINATION.**

20       *The Director of the Office of Science and Technology*  
21 *Policy shall review and coordinate Federal interagency ac-*  
22 *tivities identified in and related to the Solar Technology*  
23 *Roadmap as appropriate.*

1 **SEC. 105. SOLAR TECHNOLOGY DEMONSTRATION**  
2 **PROJECTS.**

3 (a) *ESTABLISHMENT OF PROGRAM.*—The Secretary  
4 shall establish a program to provide grants for demonstra-  
5 tion projects to support the development of solar energy pro-  
6 duction, consistent with the Solar Technology Roadmap as  
7 available.

8 (b) *IMPLEMENTATION.*—In carrying out the dem-  
9 onstration program under this section, to the extent prac-  
10 ticable, the Secretary shall—

11 (1) include at least 10 photovoltaic technology  
12 projects that generate between 1 and 3 megawatts;

13 (2) include at least 3 but not more than 5 solar  
14 technology projects that generate greater than 30  
15 megawatts; and

16 (3) make awards for projects that—

17 (A) are located and can be replicated at a  
18 wide range of sites;

19 (B) are located and can be replicated in a  
20 variety of regions and climates;

21 (C) demonstrate technologies that address  
22 intermittency, transience, storage challenges, and  
23 independent operational capability;

24 (D) facilitate identification of optimum  
25 techniques among competing alternatives;

1           (E) include business commercialization  
2 plans that have the potential for production of  
3 equipment at high volumes;

4           (F) improve United States competitiveness  
5 and lead to development of manufacturing tech-  
6 nology;

7           (G) demonstrate positive environmental per-  
8 formance through life-cycle analysis;

9           (H) provide the greatest potential to reduce  
10 energy costs for consumers;

11           (I) promote overall electric infrastructure  
12 reliability and sustainability should grid func-  
13 tions be disrupted or damaged; and

14           (J) satisfy other criteria that the Secretary  
15 considers necessary to carry out the program.

16       (c) GRANT AWARDS.—Funding provided under this  
17 section may be used, to the extent that funding is not other-  
18 wise available through other Federal programs or power  
19 purchase agreements, for—

20           (1) a necessary and appropriate site engineering  
21 study;

22           (2) a detailed economic assessment of site-specific  
23 conditions;

24           (3) appropriate feasibility studies to determine  
25 whether the demonstration can be replicated;

1           (4) *installation of equipment, service, and sup-*  
2           *port;*

3           (5) *operation for a minimum of 3 years and*  
4           *monitoring for the duration of the demonstration; and*

5           (6) *validation of technical, economic, and envi-*  
6           *ronmental assumptions and documentation of lessons*  
7           *learned.*

8           (d) *GRANT SELECTION.*—*Not later than 90 days after*  
9           *the date of enactment of this Act and annually thereafter,*  
10          *the Secretary shall conduct a national solicitation for ap-*  
11          *plications for grants under this section. Grant recipients*  
12          *shall be selected on a merit-reviewed, competitive basis. The*  
13          *Secretary shall give preference to proposals that address*  
14          *multiple elements described in subsection (b).*

15          (e) *LIMITATIONS.*—*Funding shall not be provided*  
16          *under this section for more than 50 percent of the costs of*  
17          *the project for which assistance is provided. Not more than*  
18          *a total of \$300,000,000 shall be provided under this section*  
19          *for the period encompassing fiscal years 2011 through 2015.*

20          **SEC. 106. PHOTOVOLTAIC PERFORMANCE STUDY.**

21          (a) *IN GENERAL.*—*Not later than one year after the*  
22          *date of enactment of this Act, the Secretary shall transmit*  
23          *to the Congress and the Solar Technology Roadmap Com-*  
24          *mittee the results of a study that analyzes the performance*  
25          *of photovoltaic installations in the United States. The study*



1 *shall assess the current performance of photovoltaic installa-*  
2 *tions and identify opportunities to improve the energy pro-*  
3 *ductivity of these systems. Such study shall include—*

4 *(1) identification of the average energy produc-*  
5 *tivity of current commercial and residential installa-*  
6 *tions;*

7 *(2) assessment of areas where energy produc-*  
8 *tivity is reduced, including wire loss, module mis-*  
9 *match, shading, dust, and other factors;*

10 *(3) identification of technology development and*  
11 *technical standards that improve energy productivity;*

12 *(4) analysis of the potential cost savings and en-*  
13 *ergy productivity gains to the Federal, State, and*  
14 *local governments, utilities, private enterprise, and*  
15 *consumers available through the adoption, installa-*  
16 *tion, and use of high-performance photovoltaic tech-*  
17 *nologies and practices; and*

18 *(5) an overview of current government incentives*  
19 *at the Federal, State, and local levels that encourage*  
20 *the adoption of highly efficient photovoltaic systems*  
21 *and practices.*

22 *(b) PUBLIC INPUT.—The Secretary shall ensure that*  
23 *interested stakeholders, including affected industry stake-*  
24 *holders and energy efficiency advocates, have a meaningful*  
25 *opportunity to provide comments, data, and other informa-*

1 *tion on the scope, contents, and conclusions of the study.*  
2 *All forums for the Department to receive this input from*  
3 *interested stakeholders shall be announced in the Federal*  
4 *Register.*

5 **SEC. 107. SOLAR ENERGY PROGRAM REAUTHORIZATION.**

6 (a) *IN GENERAL.*—*There are authorized to be appro-*  
7 *priated to the Secretary to carry out section 101(a)—*

8 (1) *\$350,000,000 for fiscal year 2011;*

9 (2) *\$400,000,000 for fiscal year 2012;*

10 (3) *\$450,000,000 for fiscal year 2013;*

11 (4) *\$500,000,000 for fiscal year 2014; and*

12 (5) *\$550,000,000 for fiscal year 2015.*

13 (b) *ROADMAP IDENTIFIED ACTIVITIES.*—*The Secretary*  
14 *shall dedicate a percentage of funding received pursuant to*  
15 *subsection (a) for research, development, and demonstration*  
16 *activities identified by and recommended under the Solar*  
17 *Technology Roadmap in the following percentages:*

18 (1) *For fiscal year 2012, at least 30 percent.*

19 (2) *For fiscal year 2013, at least 45 percent.*

20 (3) *For fiscal year 2014, at least 60 percent.*

21 (4) *For fiscal year 2015, at least 75 percent.*

22 (c) *SOLAR TECHNOLOGY ROADMAP.*—*The Secretary*  
23 *may use up to \$2,000,000 of the funds appropriated pursu-*  
24 *ant to subsection (a) for each fiscal year to support the es-*

1 *tablissement and maintenance of the Solar Technology*  
2 *Roadmap.*

3 (d) *EXTENSION OF AUTHORIZATIONS.*—*Of funds au-*  
4 *thorized by subsection (a), there are authorized to be appro-*  
5 *priated to the Secretary to carry out—*

6 (1) *section 602 of the Energy Independence and*  
7 *Security Act of 2007 (42 U.S.C. 17171) \$12,000,000*  
8 *for each of the fiscal years 2013 through 2015;*

9 (2) *section 604 of the Energy Independence and*  
10 *Security Act of 2007 (42 U.S.C. 17172) \$10,000,000*  
11 *for each of the fiscal years 2013 through 2015;*

12 (3) *section 605 of the Energy Independence and*  
13 *Security Act of 2007 (42 U.S.C. 17173) \$3,500,000*  
14 *for each of the fiscal years 2013 through 2015; and*

15 (4) *section 606 of the Energy Independence and*  
16 *Security Act of 2007 (42 U.S.C. 17174) \$2,500,000*  
17 *for each of the fiscal years 2013 through 2015.*

18 **SEC. 108. EXISTING PROGRAMS.**

19 *Except as otherwise specified in this Act, this Act shall*  
20 *supersede any duplicative solar research, development, and*  
21 *demonstration programs within the Department of Energy.*

22 **SEC. 109. REPEALS.**

23 *The following are hereby repealed:*

1           (1) *The Solar Energy Research, Development,*  
2           *and Demonstration Act of 1974 (42 U.S.C. 5551 et*  
3           *seq.), except for section 10.*

4           (2) *The Solar Photovoltaic Energy Research, De-*  
5           *velopment, and Demonstration Act of 1978 (42 U.S.C.*  
6           *5581 et seq.).*

7           (3) *Section 4(a)(2) and (3) of the Renewable En-*  
8           *ergy and Energy Efficiency Technology Competitive-*  
9           *ness Act of 1989 (42 U.S.C. 12003(a)(2) and (3)).*

10           ***TITLE II—PHOTOVOLTAIC***  
11           ***RECYCLING***

12           ***SEC. 201. PHOTOVOLTAIC DEVICE RECYCLING RESEARCH,***  
13           ***DEVELOPMENT, AND DEMONSTRATION.***

14           (a) *DEFINITION.*—*In this section, the term “photo-*  
15           *voltaic device” includes photovoltaic cells and the electronic*  
16           *and electrical components of such devices.*

17           (b) *IN GENERAL.*—*In order to address the issues de-*  
18           *scribed in section 102(b)(1)(G), the Secretary shall award*  
19           *multiyear grants for research, development, and demonstra-*  
20           *tion activities to create innovative and practical ap-*  
21           *proaches to increase reuse and recycling of photovoltaic de-*  
22           *vices and, through such activities, to contribute to the pro-*  
23           *fessional development of scientists, engineers, and techni-*  
24           *cians in the fields of photovoltaic and electronic device man-*

1 *ufacturing, design, refurbishing, and recycling. The activi-*  
2 *ties supported under this section shall address—*

3 *(1) technology to increase the efficiency of photo-*  
4 *voltaic device recycling and maximize the recovery of*  
5 *valuable raw materials for use in new products while*  
6 *minimizing the life-cycle environmental impacts such*  
7 *as greenhouse gas emissions and water usage;*

8 *(2) expanded uses for materials from recycled*  
9 *photovoltaic devices;*

10 *(3) development and demonstration of environ-*  
11 *mentally responsible alternatives to the use of haz-*  
12 *ardous materials in photovoltaic devices and the pro-*  
13 *duction of such devices;*

14 *(4) development of methods to separate and re-*  
15 *move hazardous materials from photovoltaic devices*  
16 *and to recycle or dispose of those materials in a safe*  
17 *manner;*

18 *(5) product design and construction to facilitate*  
19 *disassembly and recycling of photovoltaic devices;*

20 *(6) tools and methods to aid in assessing the en-*  
21 *vironmental impacts of the production of photovoltaic*  
22 *devices and photovoltaic device recycling and dis-*  
23 *posal;*

24 *(7) product design and construction and other*  
25 *tools and techniques to extend the life cycle of photo-*

1        *voltaic devices, including methods to promote their*  
2        *safe reuse;*

3            (8) *strategies to increase consumer acceptance*  
4        *and practice of recycling of photovoltaic devices; and*

5            (9) *processes to reduce the costs and environ-*  
6        *mental impact of disposal of toxic materials used in*  
7        *photovoltaic devices.*

8        (c) *MERIT REVIEW.*—*Grants shall be awarded under*  
9        *this section on a merit-reviewed, competitive basis.*

10       (d) *APPLICATIONS.*—*Each application shall include a*  
11       *description of—*

12            (1) *the project that will be undertaken and the*  
13        *contributions of each participating entity;*

14            (2) *the applicability of the project to increasing*  
15        *reuse and recycling of photovoltaic devices with the*  
16        *least environmental impacts as measured by life-cycle*  
17        *analyses, and the potential for incorporating the re-*  
18        *search results into industry practice; and*

19            (3) *how the project will promote collaboration*  
20        *among scientists and engineers from different dis-*  
21        *ciplines, such as electrical engineering, materials*  
22        *science, and social science.*

23        (e) *DISSEMINATION OF RESULTS.*—*The results of ac-*  
24        *tivities supported under this section shall be made publicly*  
25        *available through—*

1           (1) *development of best practices or training ma-*  
2           *terials for use in the photovoltaics manufacturing, de-*  
3           *sign, refurbishing, or recycling industries;*

4           (2) *dissemination at industry conferences;*

5           (3) *coordination with information dissemination*  
6           *programs relating to recycling of electronic devices in*  
7           *general;*

8           (4) *demonstration projects; and*

9           (5) *educational materials for the public produced*  
10          *in conjunction with State and local governments or*  
11          *nonprofit research organizations on the problems and*  
12          *solutions related to reuse and recycling of photovoltaic*  
13          *devices.*

14          (f) *PHOTOVOLTAIC MATERIALS PHYSICAL PROPERTY*  
15          *DATABASE.—*

16           (1) *IN GENERAL.—The Secretary shall establish*  
17           *a comprehensive physical property database of mate-*  
18           *rials for use in photovoltaic devices. This database*  
19           *shall include—*

20                   (A) *identification of materials used in pho-*  
21                   *tovoltaic devices;*

22                   (B) *a list of commercially available*  
23                   *amounts of these materials;*

1           (C) amounts of these materials projected to  
2           be available through mining or recycling of pho-  
3           tovoltaic and other electronic devices; and

4           (D) a list of other significant uses for each  
5           of these materials.

6           (2) *PRIORITIES.*—*The Secretary, working with*  
7           *private industry, shall develop a plan to establish pri-*  
8           *orities and requirements for the database under this*  
9           *subsection, including the protection of proprietary in-*  
10          *formation, trade secrets, and other confidential busi-*  
11          *ness information.*

12          (3) *COORDINATION.*—*The Secretary shall coordi-*  
13          *nate with the Director of the National Institute of*  
14          *Standards and Technology and the Administrator of*  
15          *the Environmental Protection Agency to facilitate the*  
16          *incorporation of the database under this subsection*  
17          *with any existing database for electronic manufac-*  
18          *turing and recycling.*





Union Calendar No. 169

11<sup>TH</sup> CONGRESS  
1<sup>ST</sup> Session

**H. R. 3585**

[Report No. 111-302]

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## **A BILL**

To guide and provide for United States research, development, and demonstration of solar energy technologies, and for other purposes.

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OCTOBER 15, 2009

Reported with an amendment, committed to the Committee of the Whole House on the State of the Union, and ordered to be printed