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Congress of the United States
House of Representatives
Washington, DC 20515

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ARMED SERVICES
SUBCOMMITTEE ON AIR AND
LAND FORCES
SUBCOMMITTEE ON MILITARY READINESS
SCIENCE AND TECHNOLOGY
SUBCOMMITTEE ON ENERGY
AND ENVIRONMENT
FOREIGN AFFAIRS
SUBCOMMITTEE ON
THE WESTERN HEMISPHERE

Solar Energy Research and Advancement Act of 2007
(H.R. 2774)

110th CONGRESS
1st Session
H.R. 2774
[Report No. 110-303]

To support the research, development, and commercial application of solar energy technologies, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

June 19, 2007

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

August 3, 2007

Additional sponsors: Mr. MITCHELL, Mr. ROHRABACHER, Ms. EDDIE BERNICE JOHNSON of Texas, Mr. DAVIS of Illinois, Mr. BARTLETT of Maryland, Mr. COHEN, Mr. COSTA, Mr. HINCHEY, Ms. BORDALLO, Mr. INSLEE, Mr. DONNELLY, Ms. LINDA T. SANCHEZ of California, Mr. REYES, Mr. HONDA, Mr. ABERCROMBIE, Mr. GRIJALVA, Mr. LANTOS, Mr. LAMPSON, and Mr. SMITH of Texas

August 3, 2007

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 *italics*]

A BILL

To support the research, development, and commercial application of solar energy technologies, and for other purposes.

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

[Struck out->] SECTION 1. SHORT TITLE. [<-Struck out]

[Struck out->] This Act may be cited as the `Solar Energy Research and Advancement Act of 2007'. [<-Struck out]

[Struck out->] SEC. 2. DEFINITIONS. [<-Struck out]

[Struck out->] For purposes of this Act: [<-Struck out]

[Struck out->] (1) The term `Department' means the Department of Energy. [<-Struck out]

[Struck out->] (2) The term `Secretary' means the Secretary of Energy. [<-Struck out]

[Struck out->] SEC. 3. THERMAL ENERGY STORAGE RESEARCH AND DEVELOPMENT PROGRAM. [<-Struck out]

[Struck out->] (a) Establishment- The Secretary shall establish a program of research and development to provide lower cost and more viable thermal energy storage technologies to enable the shifting of electric power loads on demand and extend the operating time of concentrating solar power electric generating plants. [<-Struck out]

[Struck out->] (b) Authorization of Appropriations- There are authorized to be appropriated to the Secretary for carrying out this section \$5,000,000 for fiscal year 2008, \$7,000,000 for fiscal year 2009, \$9,000,000 for fiscal year 2010, \$10,000,000 for fiscal year 2011, and \$12,000,000 for fiscal year 2012. [<-Struck out]

[Struck out->] SEC. 4. CONCENTRATING SOLAR POWER COMMERCIAL APPLICATION STUDIES. [<-Struck out]

[Struck out->] (a) Integration- The Secretary shall conduct a study on methods to integrate concentrating solar power into regional electricity transmission systems, and to identify new transmission or transmission upgrades needed to bring electricity from high concentrating solar power resource areas to growing electric power load centers throughout the United States. The study shall analyze and assess approaches for management and integration of concentrating solar power into regional electric transmission grids to improve electric reliability, to efficiently manage load, and to reduce demand on the natural gas transmission system for electric power. The Secretary shall submit a report to Congress on the results of this study not later than 12 months after the date of enactment of this Act. [<-Struck out]

[Struck out->] (b) Water Consumption- Not later than 6 months after the date of the enactment of this Act, the Secretary of Energy shall transmit to Congress a report on the results of a study on methods to reduce the amount of water consumed by concentrating solar power systems. [<-Struck out]

SECTION 1. SHORT TITLE.

This Act may be cited as the 'Solar Energy Research and Advancement Act of 2007'.

SEC. 2. DEFINITIONS.

For purposes of this Act:

- (1) The term 'Department' means the Department of Energy.*
- (2) The term 'Secretary' means the Secretary of Energy.*

SEC. 3. THERMAL ENERGY STORAGE RESEARCH AND DEVELOPMENT PROGRAM.

(a) Establishment- The Secretary shall establish a program of research and development to provide lower cost and more viable thermal energy storage technologies to enable the shifting of electric power loads on demand and extend the operating time of concentrating solar power electric generating plants.

(b) Authorization of Appropriations- There are authorized to be appropriated to the Secretary for carrying out this section \$5,000,000 for fiscal year 2008, \$7,000,000 for fiscal year 2009, \$9,000,000 for fiscal year 2010, \$10,000,000 for fiscal year 2011, and \$12,000,000 for fiscal year 2012.

SEC. 4. CONCENTRATING SOLAR POWER COMMERCIAL APPLICATION STUDIES.

(a) Integration- The Secretary shall conduct a study on methods to integrate concentrating solar power into regional electricity transmission systems, and to identify new transmission or transmission upgrades needed to bring electricity from high concentrating solar power resource areas to growing electric power load centers throughout the United States. The study shall analyze and assess cost-effective approaches for management and large-scale integration of concentrating solar power into regional electric transmission grids to improve electric reliability, to efficiently manage load, and to reduce demand on the natural gas transmission system for electric power. The Secretary shall submit a report to Congress on the results of this study not later than 12 months after the date of enactment of this Act.

(b) Water Consumption- Not later than 6 months after the date of the enactment of this Act, the Secretary of Energy shall transmit to Congress a report on the results of a study on methods to reduce the amount of water consumed by concentrating solar power systems.

SEC. 5. SOLAR ENERGY CURRICULUM DEVELOPMENT AND CERTIFICATION GRANTS.

(a) Establishment- The Secretary shall establish in the Office of Solar Energy Technologies a competitive grant program to create and strengthen solar industry workforce training and internship programs in installation, operation, and maintenance of solar energy products. The goal of this program is to ensure a supply of well-trained individuals to support the expansion of the solar energy industry.

(b) Authorized Activities- Grant funds may be used to support the following activities:

(1) Creation and development of a solar energy curriculum appropriate for the local educational, entrepreneurial, and environmental conditions, including curriculum for community colleges.

(2) Support of certification programs, such as the North American Board of Certified Energy Practitioners, for individual solar energy system installers, instructors, and training programs.

(3) Internship programs that provide hands-on participation by students in commercial applications.

(4) Activities required to obtain certification of training programs and facilities by the Institute of Sustainable Power or an equivalent industry-accepted quality-control certification program.

(5) Incorporation of solar-specific learning modules into traditional occupational training and internship programs for construction-related trades.

(6) The purchase of equipment necessary to carry out activities under this section.

(7) Support of programs that provide guidance and updates to solar energy curriculum instructors.

(c) Administration of Grants- Grants may be awarded under this section for up to 3 years. The Secretary shall award grants to ensure sufficient geographic distribution of training programs nationally. Grants shall only be awarded for programs certified by the Institute of Sustainable Power or an equivalent industry-accepted quality-control certification institution, or for new and growing programs with a credible path to certification. Due consideration shall be given to women, underrepresented minorities, and persons with disabilities.

(d) Report- The Secretary shall make public, via the website of the Department or upon request, information on the name and institution for all grants awarded under this section, including a brief description of the project as well as the grant award amount.

(e) Authorization of Appropriations- There are authorized to be appropriated to the Secretary for carrying out this section \$10,000,000 for each of the fiscal years 2008 through 2012.

SEC. 6. DAYLIGHTING SYSTEMS AND DIRECT SOLAR LIGHT PIPE TECHNOLOGY.

(a) Establishment- The Secretary shall establish a program of research and development to provide assistance in the demonstration and commercial application of direct solar renewable energy sources to provide alternatives to traditional power generation for lighting and illumination, including light pipe technology, and to promote greater energy conservation and improved efficiency. All direct solar renewable energy devices supported under this program shall have the capability to provide measurable data on the amount of kilowatt-hours saved over the traditionally powered light sources they have replaced.

(b) Reporting- The Secretary shall transmit to Congress an annual report assessing the measurable data derived from each project in the direct solar

renewable energy sources program and the energy savings resulting from its use.

(c) *Definitions-* For purposes of this section--

(1) the term `direct solar renewable energy' means energy from a device that converts sunlight into useable light within a building, tunnel, or other enclosed structure, replacing artificial light generated by a light fixture and doing so without the conversion of the sunlight into another form of energy; and

(2) the term `light pipe' means a device designed to transport visible solar radiation from its collection point to the interior of a building while excluding interior heat gain in the nonheating season.

(d) *Authorization of Appropriations-* There are authorized to be appropriated to the Secretary for carrying out this section \$3,500,000 for each of the fiscal years 2008 through 2012.

SEC. 7. SOLAR AIR CONDITIONING RESEARCH AND DEVELOPMENT PROGRAM.

(a) *Establishment-* The Secretary shall establish a research, development, and demonstration program to promote less costly and more reliable decentralized distributed solar-powered air conditioning for individuals and businesses.

(b) *Authorized Activities-* Grants made available under this section may be used to support the following activities:

(1) *Advancing solar thermal collectors, including concentrating solar thermal and electric systems, flat plate and evacuated tube collector performance.*

(2) *Achieving technical and economic integration of solar-powered distributed air-conditioning systems with existing hot water and storage systems for residential applications.*

(3) *Designing and demonstrating mass manufacturing capability to reduce costs of modular standardized solar-powered distributed air conditioning systems and components.*

(4) *Improving the efficiency of solar-powered distributed air-conditioning to increase the effectiveness of solar-powered absorption chillers, solar-driven compressors and condensers, and cost-effective precooling approaches.*

(5) *Researching and comparing performance of solar-powered distributed air conditioning systems in different regions of the country, including potential integration with other onsite systems, such as solar, biogas, geothermal heat pumps, and propane assist or combined propane fuel cells, with a goal to develop site-specific energy production and management systems that ease fuel and peak utility loading.*

(c) *Cost Sharing-* The non-Federal share of research and development projects supported under this section shall be not less than 20 percent, and for demonstration projects shall be not less than 50 percent.

(d) *Authorization of Appropriations-* There are authorized to be appropriated to the Secretary for carrying out this section \$2,500,000 for each of the fiscal years 2008 through 2012.

SEC. 8. PHOTOVOLTAIC DEMONSTRATION PROGRAM.

(a) In General- The Secretary shall establish a program of grants to States to demonstrate advanced photovoltaic technology.

(b) Requirements-

(1) ABILITY TO MEET REQUIREMENTS- To receive funding under the program under this section, a State must submit a proposal that demonstrates, to the satisfaction of the Secretary, that the State will meet the requirements of subsection (f).

(2) COMPLIANCE WITH REQUIREMENTS- If a State has received funding under this section for the preceding year, the State must demonstrate, to the satisfaction of the Secretary, that it complied with the requirements of subsection (f) in carrying out the program during that preceding year, and that it will do so in the future, before it can receive further funding under this section.

(3) FUNDING ALLOCATION- Each State submitting a qualifying proposal shall receive funding under the program based on the proportion of United States population in the State according to the 2000 census. In each fiscal year, the portion of funds attributable under this paragraph to States that have not submitted qualifying proposals in the time and manner specified by the Secretary shall be distributed pro rata to the States that have submitted qualifying proposals in the specified time and manner.

(c) Competition- If more than \$25,000,000 is available for the program under this section for any fiscal year, the Secretary shall allocate 75 percent of the total amount of funds available according to subsection (b)(3), and shall award the remaining 25 percent on a competitive basis to the States with the proposals the Secretary considers most likely to encourage the widespread adoption of photovoltaic technologies.

(d) Proposals- Not later than 6 months after the date of enactment of this Act, and in each subsequent fiscal year for the life of the program, the Secretary shall solicit proposals from the States to participate in the program under this section.

(e) Competitive Criteria- In awarding funds in a competitive allocation under subsection (c), the Secretary shall consider--

(1) the likelihood of a proposal to encourage the demonstration of, or lower the costs of, advanced photovoltaic technologies; and

(2) the extent to which a proposal is likely to--

(A) maximize the amount of photovoltaics demonstrated;

(B) maximize the proportion of non-Federal cost share; and

(C) limit State administrative costs.

(f) State Program- A program operated by a State with funding under this section shall provide competitive awards for the demonstration of advanced photo-voltaic technologies. Each State program shall--

(1) require a contribution of at least 60 percent per award from non-Federal sources, which may include any combination of State, local, and private funds, except that at least 10 percent of the funding must be supplied by the State;

(2) endeavor to fund recipients in the commercial, industrial, institutional, governmental, and residential sectors;

(3) limit State administrative costs to no more than 10 percent of the grant;

- (4) report annually to the Secretary on--
 (A) the amount of funds disbursed;
 (B) the amount of photovoltaics purchased; and
 (C) the results of the monitoring under paragraph (5);
- (5) provide for measurement and verification of the output of a representative sample of the photovoltaics systems demonstrated throughout the average working life of the systems, or at least 20 years; and
- (6) require that applicant buildings must have received an independent energy efficiency audit during the 6-month period preceding the filing of the application.
- (g) *Unexpended Funds-* If a State fails to expend any funds received under subsection (b) or (c) within 3 years of receipt, such remaining funds shall be returned to the Treasury.
- (h) *Reports-* The Secretary shall report to Congress 5 years after funds are first distributed to the States under this section--
 (1) the amount of photovoltaics demonstrated;
 (2) the number of projects undertaken;
 (3) the administrative costs of the program;
 (4) the amount of funds that each State has not received because of a failure to submit a qualifying proposal, as described in subsection (b)(3);
 (5) the results of the monitoring under subsection (f)(5); and
 (6) the total amount of funds distributed, including a breakdown by State.
- (i) *Authorization of Appropriations-* There are authorized to be appropriated to the Secretary for the purposes of carrying out this section--
 (1) \$15,000,000 for fiscal year 2008;
 (2) \$30,000,000 for fiscal year 2009;
 (3) \$45,000,000 for fiscal year 2010;
 (4) \$60,000,000 for fiscal year 2011; and
 (5) \$70,000,000 for fiscal year 2012.

Union Calendar No. 190

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