

110TH CONGRESS  
1ST SESSION

# H. R. 3776

To provide for a research, development, and demonstration program by the Secretary of Energy to support the ability of the United States to remain globally competitive in energy storage systems for vehicles, stationary applications, and electricity transmission and distribution.

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## IN THE HOUSE OF REPRESENTATIVES

OCTOBER 9, 2007

Mr. GORDON of Tennessee introduced the following bill; which was referred to the Committee on Science and Technology

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## A BILL

To provide for a research, development, and demonstration program by the Secretary of Energy to support the ability of the United States to remain globally competitive in energy storage systems for vehicles, stationary applications, and electricity transmission and distribution.

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 “Energy Storage Tech-  
5 nology Advancement Act of 2007”.

### 6 **SEC. 2. DEFINITIONS.**

7 For purposes of this Act—

1           (2) the term “Secretary” means the Secretary  
2       of Energy.

3           (1) the term “Department” means the Depart-  
4       ment of Energy; and

5   **SEC. 3. ENERGY STORAGE SYSTEM PROGRAM.**

6       The Secretary shall carry out a research, develop-  
7       ment, and demonstration program to support the ability  
8       of the United States to remain globally competitive in en-  
9       ergy storage systems for vehicles, stationary applications,  
10      and electricity transmission and distribution.

11   **SEC. 4. BASIC RESEARCH PROGRAM.**

12      (a) IN GENERAL.—The Secretary shall conduct a  
13      basic research program to support the development of en-  
14      ergy storage systems for vehicles, stationary applications,  
15      and electricity transmission and distribution, including re-  
16      search on—

17           (1) materials design;

18           (2) materials synthesis and characterization;

19           (3) electrolytes;

20           (4) surface and interface dynamics;

21           (5) modeling and simulation; and

22           (6) thermal behavior and life degradation mech-  
23      anisms.

24      (b) AUTHORIZATION OF APPROPRIATIONS.—There  
25      are authorized to be appropriated to the Secretary for car-

1 rying out this section \$50,000,000 for each of the fiscal  
2 years 2009 through 2014.

3 **SEC. 5. APPLIED RESEARCH PROGRAM.**

4 (a) IN GENERAL.—The Secretary shall conduct an  
5 applied research program on energy storage systems to  
6 support vehicle, stationary application, and electricity  
7 transmission and distribution technologies, including re-  
8 search on—

9 (1) ultracapacitors;

10 (2) flywheels;

11 (3) batteries and battery systems (including  
12 flow batteries);

13 (4) compressed air energy systems;

14 (5) power conditioning electronics;

15 (6) manufacturing technologies for energy stor-  
16 age systems; and

17 (7) thermal management systems.

18 (b) AUTHORIZATION OF APPROPRIATIONS.—There  
19 are authorized to be appropriated to the Secretary for car-  
20 rying out this section \$80,000,000 for each of the fiscal  
21 years 2009 through 2014.

22 **SEC. 6. ENERGY STORAGE SYSTEMS DEMONSTRATIONS.**

23 (a) IN GENERAL.—The Secretary shall carry out 6  
24 new demonstrations of advanced energy storage systems.  
25 These demonstrations shall be regionally diversified and

1 shall expand on the Department’s existing technology  
2 demonstration program. These demonstrations should in-  
3 clude the participation of a range of stakeholders, includ-  
4 ing rural electric cooperatives, investor owned utilities,  
5 municipally owned electric utilities, energy storage sys-  
6 tems manufacturers, vehicle manufacturers, the renewable  
7 energy production industry, State or local energy offices,  
8 the fuel cell industry, and universities. Each of the fol-  
9 lowing objectives shall be included in at least one of the  
10 technology demonstrations under this subsection:

11           (1) Energy storage to improve the feasibility of  
12           “micro-grids” or “islanding”, or the transmission  
13           and distribution capability to improve reliability in  
14           rural areas.

15           (2) Integration of an energy storage system  
16           with self-healing circuits.

17           (3) Use of energy storage to improve security to  
18           emergency response infrastructure.

19           (4) Integration with a renewable energy produc-  
20           tion source, either at the source or away from the  
21           source.

22           (5) Use of energy storage to provide ancillary  
23           services, such as frequency response or spinning re-  
24           serve services, for grid management.

1           (6) Advancement of power conversion systems  
2           to make them smarter, more efficient, able to com-  
3           municate with other inverters, and able to control  
4           voltage.

5           (7) Use of energy storage to optimize trans-  
6           mission and distribution operation and power qual-  
7           ity, which could address overloaded lines and main-  
8           tenance of transformers and substations.

9           (8) Use of advanced energy storage for peak  
10          shaving of homes, businesses, or grid.

11          (9) Use of energy storage devices such as plug-  
12          in hybrid vehicles to fill up the night time valley for  
13          electricity demand to make better use of existing  
14          grid assets.

15          (b) AUTHORIZATION OF APPROPRIATIONS.—There  
16          are authorized to be appropriated to the Secretary for car-  
17          rying out this section such sums as may be necessary for  
18          each of the fiscal years 2009 through 2014.

19      **SEC. 7. VEHICLE ENERGY STORAGE DEMONSTRATION.**

20          (a) IN GENERAL.—The Secretary shall carry out a  
21          program of vehicle energy storage technology demonstra-  
22          tions. These technology demonstrations shall be conducted  
23          through consortia, which may include energy storage sys-  
24          tems manufacturers and their suppliers, vehicle manufac-  
25          turers, rural electric cooperatives, investor owned utilities,

1 municipal and rural electric utilities, State and local gov-  
2 ernments, metropolitan transportation authorities, and  
3 universities. The program shall demonstrate one or more  
4 of the following:

5 (1) Novel, high capacity, high efficiency energy  
6 storage, charging, and control systems, along with  
7 the collection of data on performance characteristics  
8 such as battery life, energy storage capacity, and  
9 power delivery capacity.

10 (2) Advanced onboard energy management sys-  
11 tems, highly efficient battery cooling systems.

12 (3) Integration of such systems on a prototype  
13 vehicular platform.

14 (4) New technologies and processes that reduce  
15 manufacturing costs.

16 (5) Integration of advanced vehicle technologies  
17 with electricity distribution system and smart meter-  
18 ing technology.

19 (b) AUTHORIZATION OF APPROPRIATIONS.—There  
20 are authorized to be appropriated to the Secretary for car-  
21 rying out this section such sums as may be necessary for  
22 each of the fiscal years 2009 through 2014.

23 **SEC. 8. COST SHARING.**

24 The Secretary shall carry out the programs under  
25 sections 6 and 7 in compliance with section 988 (a)

- 1 through (d) of the Energy Policy Act of 2005 (42 U.S.C.
- 2 16352(a) through (d)).

