

112TH CONGRESS  
1ST SESSION

# S. 938

To establish a research, development, demonstration, and commercial application program to promote research of appropriate technologies for heavy duty plug-in hybrid vehicles, and for other purposes.

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## IN THE SENATE OF THE UNITED STATES

MAY 10, 2011

Ms. COLLINS (for herself, Mrs. FEINSTEIN, and Mr. KOHL) introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

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## A BILL

To establish a research, development, demonstration, and commercial application program to promote research of appropriate technologies for heavy duty plug-in hybrid vehicles, 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 “Heavy Duty Hybrid  
5       Vehicle Research, Development, and Demonstration Act of  
6       2011”.

1 **SEC. 2. ADVANCED HEAVY DUTY HYBRID VEHICLE TECH-**  
2 **NOLOGY RESEARCH, DEVELOPMENT, DEM-**  
3 **ONSTRATION, AND COMMERCIAL APPLICA-**  
4 **TION PROGRAM.**

5 (a) DEFINITIONS.—In this section:

6 (1) ADVANCED HEAVY DUTY HYBRID VEHI-  
7 CLE.—The term “advanced heavy duty hybrid vehi-  
8 cle” means a vehicle with a gross weight between  
9 14,000 pounds and 33,000 pounds that is fueled, in  
10 part, by a rechargeable energy storage system.

11 (2) GREENHOUSE GAS.—The term “greenhouse  
12 gas” means—

- 13 (A) carbon dioxide;
- 14 (B) methane;
- 15 (C) nitrous oxide;
- 16 (D) hydrofluorocarbons;
- 17 (E) perfluorocarbons; or
- 18 (F) sulfur hexafluoride.

19 (3) PLUG-IN HYBRID VEHICLE.—The term  
20 “plug-in hybrid” means a vehicle fueled, in part, by  
21 electrical power that can be recharged by connecting  
22 the vehicle to an electric power source.

23 (4) PROGRAM.—The term “program” means  
24 the competitive research, development, demonstra-  
25 tion, and commercial application program estab-  
26 lished under this section.

1           (5) RETROFIT.—The term “retrofit” means the  
2           process of creating an advanced heavy duty hybrid  
3           vehicle by converting an existing, fuel-powered vehi-  
4           cle.

5           (6) SECRETARY.—The term “Secretary” means  
6           the Secretary of Energy.

7           (b) ESTABLISHMENT.—The Secretary shall establish  
8           a competitive research, development, demonstration, and  
9           commercial application program under which the Sec-  
10          retary shall provide grants to applicants to carry out  
11          projects to advance research and development, and to  
12          demonstrate technologies, for advanced heavy duty hybrid  
13          vehicles.

14          (c) APPLICATIONS.—

15               (1) IN GENERAL.—The Secretary shall issue re-  
16               quirements for applying for grants under the pro-  
17               gram.

18               (2) SELECTION CRITERIA.—

19                       (A) IN GENERAL.—The Secretary shall es-  
20                       tablish selection criteria for awarding grants  
21                       under the program.

22                       (B) FACTORS.—In evaluating applications,  
23                       the Secretary shall—

1 (i) consider the ability of applicants to  
2 successfully complete both phases described  
3 in subsection (d); and

4 (ii) give priority to applicants who are  
5 best able to—

6 (I) fill existing research gaps and  
7 achieve the greatest advances beyond  
8 the state of current technology; and

9 (II) achieve the greatest reduc-  
10 tion in fuel consumption and emis-  
11 sions.

12 (3) PARTNERS.—An applicant for a grant  
13 under this section may carry out a project in part-  
14 nership with other entities.

15 (4) SCHEDULE.—

16 (A) APPLICATION REQUEST.—

17 (i) IN GENERAL.—Not later than 180  
18 days after the date of the enactment of  
19 this Act, the Secretary shall publish in the  
20 Federal Register, and elsewhere as appro-  
21 priate, a request for applications to under-  
22 take projects under the program.

23 (ii) APPLICATION DEADLINE.—The  
24 applications shall be due not later than 90  
25 days after the date of the publication.

1 (B) APPLICATION SELECTION.—Not later  
2 than 90 days after the date on which applica-  
3 tions for grants under the program are due, the  
4 Secretary shall select, through a competitive  
5 process, all applicants to be awarded a grant  
6 under the program.

7 (5) NUMBER OF GRANTS.—

8 (A) IN GENERAL.—The Secretary shall de-  
9 termine the number of grants to be awarded  
10 under the program based on the technical mer-  
11 its of the applications received.

12 (B) MINIMUM AND MAXIMUM NUMBER.—  
13 The number of grants awarded under the pro-  
14 gram shall be not less than 3 and not more  
15 than 7 grants.

16 (C) PLUG-IN HYBRID VEHICLE TECH-  
17 NOLOGY.—At least half of the grants awarded  
18 under this section shall be for plug-in hybrid  
19 technology.

20 (6) AWARD AMOUNTS.—The Secretary shall  
21 award not more than \$3,000,000 to a recipient per  
22 year for each of the 3 years of the project.

23 (d) PROGRAM REQUIREMENTS; 2 PHASES.—

24 (1) IN GENERAL.—As a condition of the receipt  
25 of a grant under this section, each grant recipient

1 shall be required to complete 2 phases in accordance  
2 with this subsection.

3 (2) PHASE 1.—

4 (A) IN GENERAL.—In phase 1, the recipi-  
5 ent shall conduct research and demonstrate ad-  
6 vanced hybrid technology by producing or retro-  
7 fitting 1 or more advanced heavy duty hybrid  
8 vehicles.

9 (B) REPORT.—Not later than 60 days  
10 after the completion of phase 1, the recipient  
11 shall submit to the Secretary a report con-  
12 taining data and analysis of—

13 (i) the performance of each vehicle in  
14 carrying out the testing procedures devel-  
15 oped by the Secretary under subparagraph  
16 (E);

17 (ii) the performance during the test-  
18 ing of the components of each vehicle, in-  
19 cluding the battery, energy management  
20 system, charging system, and power con-  
21 trols;

22 (iii) the projected cost of each vehicle,  
23 including acquisition, operating, and main-  
24 tenance costs; and

1 (iv) the emission levels of each vehicle,  
2 including greenhouse gas levels.

3 (C) TERMINATION.—The Secretary may  
4 terminate the grant program with respect to the  
5 project of a recipient at the conclusion of phase  
6 1 if the Secretary determines that the recipient  
7 cannot successfully complete the requirements  
8 of phase 2.

9 (D) TIMING.—Phase 1 shall—

10 (i) begin on the date of receipt of a  
11 grant under the program; and

12 (ii) have a duration of 1 year.

13 (E) TESTING PROCEDURES.—

14 (i) IN GENERAL.—The Secretary shall  
15 develop standard testing procedures to be  
16 used by recipients in testing each vehicle.

17 (ii) VEHICLE PERFORMANCE.—The  
18 procedures shall include testing the per-  
19 formance of a vehicle under typical oper-  
20 ating conditions.

21 (3) PHASE 2.—

22 (A) IN GENERAL.—In phase 2, the recipi-  
23 ent shall demonstrate advanced manufacturing  
24 processes and technologies by producing or ret-

1           rofitting 50 advanced heavy duty hybrid vehi-  
2           cles.

3           (B) REPORT.—Not later than 60 days  
4           after the completion of phase 2, the recipient  
5           shall submit to the Secretary a report con-  
6           taining—

7                   (i) an analysis of the technological  
8                   challenges encountered by the recipient in  
9                   the development of the vehicles;

10                   (ii) an analysis of the technological  
11                   challenges involved in mass producing the  
12                   vehicles; and

13                   (iii) the manufacturing cost of each  
14                   vehicle, the estimated sale price of each ve-  
15                   hicle, and the cost of a comparable non-hy-  
16                   brid vehicle.

17           (C) TIMING.—Phase 2 shall—

18                   (i) begin on the conclusion of phase 1;

19                   and

20                   (ii) have a duration of 2 years.

21           (e) RESEARCH ON VEHICLE USAGE AND ALTER-  
22           NATIVE DRIVE TRAINS.—

23                   (1) IN GENERAL.—The Secretary shall conduct  
24                   research into alternative power train designs for use  
25                   in advanced heavy duty hybrid vehicles.



1           (2) COMPARISON.—The research shall compare  
2           the estimated cost (including operating and mainte-  
3           nance costs, the cost of emission reductions, and fuel  
4           savings) of each design with similar nonhybrid power  
5           train designs under the conditions in which those ve-  
6           hicles are typically used, including (for each vehicle  
7           type)—

8                   (A) the number of miles driven;

9                   (B) time spent with the engine at idle;

10                  (C) horsepower requirements;

11                  (D) the length of time the maximum or  
12                  near maximum power output of the vehicle is  
13                  needed; and

14                  (E) any other factors that the Secretary  
15                  considers appropriate.

16           (f) REPORT TO CONGRESS.—Not later than 60 days  
17           after the date the Secretary receives the reports from  
18           grant recipients under subsection (d)(3)(B), the Secretary  
19           shall submit to Congress a report containing—

20                   (1) an identification of the grant recipients and  
21                   the projects funded;

22                   (2) an identification of all applicants who sub-  
23                   mitted applications for the program;

24                   (3) all data contained in reports submitted by  
25                   grant recipients under subsection (d);

1           (4) a description of the vehicles produced or  
2 retrofitted by recipients in phases 1 and 2 of the  
3 program, including an analysis of the fuel efficiency  
4 of the vehicles; and

5           (5) the results of the research carried out under  
6 subsections (e) and (i).

7           (g) COORDINATION AND NONDUPLICATION.—To the  
8 maximum extent practicable, the Secretary shall coordi-  
9 nate, and not duplicate, activities under this section with  
10 other programs and laboratories of the Department of En-  
11 ergy and other Federal research programs.

12          (h) COST-SHARING.—Section 988 of the Energy Pol-  
13 icy Act of 2005 (42 U.S.C. 16352) shall apply to the pro-  
14 gram.

15          (i) ELECTRICAL GRID RESEARCH PILOT PRO-  
16 GRAM.—The Secretary, acting through the National Lab-  
17 oratories and Technology Centers of the Department of  
18 Energy, shall establish a pilot program to research and  
19 test the effects on the domestic electric power grid of the  
20 widespread use of plug-in hybrid vehicles, including plug-  
21 in hybrid vehicles that are advanced heavy duty hybrid ve-  
22 hicles.

23          (j) AUTHORIZATION OF APPROPRIATIONS.—

24           (1) IN GENERAL.—There are authorized to be  
25 appropriated to the Secretary to carry out this sec-

1       tion \$16,000,000 for each of fiscal years 2012  
2       through 2014.

3           (2) LIMITATIONS.—Of the funds authorized  
4       under paragraph (1), not more than \$1,000,000 of  
5       the amount made available for a fiscal year may be  
6       used—

7           (A) to carry out the research required  
8       under subsection (e);

9           (B) to carry out the pilot program required  
10       under subsection (i); and

11          (C) to administer the program.

12 **SEC. 3. EXPANDING RESEARCH IN HYBRID TECHNOLOGY**  
13 **FOR LARGE VEHICLES.**

14       Subsection (g)(1) of the United States Energy Stor-  
15       age Competitiveness Act of 2007 (42 U.S.C. 17231(g)(1))  
16       is amended by inserting “vehicles with a gross weight over  
17       16,000 pounds,” before “stationary applications,”.

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