

# Union Calendar No. 189

110TH CONGRESS  
1ST SESSION

# H. R. 2773

[Report No. 110–302]

To enhance research, development, demonstration, and commercial application  
of biofuels related technologies, and for other purposes.

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## IN THE HOUSE OF REPRESENTATIVES

JUNE 19, 2007

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

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 italic]

[For text of introduced bill, see copy of bill as introduced on June 19, 2007]

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## A BILL

To enhance research, development, demonstration, and com-  
mercial application of biofuels related 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,*

1 **SECTION 1. SHORT TITLE.**

2       *This Act may be cited as the “Biofuels Research and*  
3 *Development Enhancement Act”.*

4 **SEC. 2. BIOFUELS AND BIOREFINERY INFORMATION CEN-**  
5 **TER.**

6       (a) *IN GENERAL.*—*The Secretary of Energy (in this*  
7 *Act referred to as the “Secretary”), in cooperation with the*  
8 *Secretary of Agriculture, shall establish a technology trans-*  
9 *fer center to make available information on research, devel-*  
10 *opment, and commercial application of technologies related*  
11 *to biofuels and biorefineries, including—*

12           (1) *biochemical and thermochemical conversion*  
13 *technologies capable of making fuels from*  
14 *lignocellulosic feedstocks;*

15           (2) *biotechnology processes capable of making*  
16 *biofuels with an emphasis on development of bio-*  
17 *refinery technologies using enzyme-based processing*  
18 *systems;*

19           (3) *biogas collection and production technologies*  
20 *suitable for vehicular use;*

21           (4) *cost-effective reforming technologies that*  
22 *produce hydrogen fuel from biogas sources;*

23           (5) *biogas production from cellulosic and recy-*  
24 *clled organic waste sources and advancement of gas-*  
25 *eous storage systems and advancement of gaseous stor-*  
26 *age systems; and*

1           (6) *other advanced processes and technologies*  
 2           *that will enable the development of biofuels.*

3           (b) *ADMINISTRATION.*—*In administering this section,*  
 4           *the Secretary shall ensure that the center shall—*

5                 (1) *continually update information provided by*  
 6                 *the center;*

7                 (2) *make information available on biotechnology*  
 8                 *processes; and*

9                 (3) *make information and assistance provided by*  
 10                 *the center available for those involved in energy re-*  
 11                 *search, development, demonstration, and commercial*  
 12                 *application.*

13   **SEC. 3. BIOFUELS AND ADVANCED BIOFUELS INFRASTRUC-**  
 14                 **TURE.**

15           *Section 932 of the Energy Policy Act of 2005 (42*  
 16           *U.S.C. 16232) is amended by adding at the end the fol-*  
 17           *lowing new subsection:*

18           “(f) *BIOFUELS AND ADVANCED BIOFUELS INFRA-*  
 19           *STRUCTURE.*—*The Secretary, in consultation with the Sec-*  
 20           *retary of Transportation and the Assistant Administrator*  
 21           *for Research and Development of the Environmental Protec-*  
 22           *tion Agency, shall carry out a program of research, develop-*  
 23           *ment, and demonstration as it relates to existing transpor-*  
 24           *tation fuel distribution infrastructure and new alternative*  
 25           *distribution infrastructure. The program shall focus on the*

1 *physical and chemical properties of biofuels and efforts to*  
2 *prevent or mitigate against adverse impacts of those prop-*  
3 *erties in the following areas:*

4           “(1) *Corrosion of metal, plastic, rubber, cork, fi-*  
5           *berglass, glues, or any other material used in pipes*  
6           *and storage tanks.*

7           “(2) *Dissolving of storage tank sediments.*

8           “(3) *Clogging of filters.*

9           “(4) *Contamination from water or other*  
10          *adulterants or pollutants.*

11          “(5) *Poor flow properties related to low tempera-*  
12          *tures.*

13          “(6) *Oxidative and thermal instability in long-*  
14          *term storage and use.*

15          “(7) *Microbial contamination.*

16          “(8) *Problems associated with electrical conduc-*  
17          *tivity.*

18          “(9) *Such other areas as the Secretary considers*  
19          *appropriate.”.*

20 **SEC. 4. BIODIESEL.**

21          (a) *BIODIESEL STUDY.*—Not later than 180 days after  
22 *the date of enactment of this Act, the Secretary shall submit*  
23 *to Congress a report on any research and development chal-*  
24 *lenges inherent in increasing to 2.5 percent the proportion*

1 of diesel fuel sold in the United States that is biodiesel  
 2 (within the meaning of section 211(o) of the Clean Air Act).

3 (b) *MATERIALS FOR THE ESTABLISHMENT OF STAND-*  
 4 *ARDS.*—The Director of the National Institute of Standards  
 5 and Technology shall make publicly available the physical  
 6 property data and characterization of biodiesel, as is de-  
 7 fined in subsection (a), in order to encourage the establish-  
 8 ment of standards that will promote their utilization in the  
 9 transportation and fuel delivery system.

10 **SEC. 5. BIOGAS.**

11 Not later than 180 days after the date of enactment  
 12 of this Act, the Secretary shall submit to Congress a report  
 13 on any research and development challenges inherent in in-  
 14 creasing to 5 percent of the transportation fuels sold in the  
 15 United States fuel with biogas or a blend of biogas and nat-  
 16 ural gas.

17 **SEC. 6. BIORESEARCH CENTERS FOR SYSTEMS BIOLOGY**  
 18 **PROGRAM.**

19 Section 977(a)(1) of the Energy Policy Act of 2005 (42  
 20 U.S.C. 16317(a)(1)) is amended by inserting before the pe-  
 21 riod at the end the following: “, including the establishment  
 22 of at least 5 bioresearch centers of varying sizes, as appro-  
 23 priate, that focus on biofuels, of which at least 1 center shall  
 24 be located in each of the 5 Petroleum Administration for  
 25 Defense Districts, which shall be established for a period

1 of 5 years, after which the grantee may reapply for selection  
 2 on a competitive basis”.

3 **SEC. 7. GRANTS FOR BIOFUEL PRODUCTION RESEARCH**  
 4 **AND DEVELOPMENT IN CERTAIN STATES.**

5 (a) *IN GENERAL.*—The Secretary shall provide grants  
 6 to eligible entities for research, development, demonstration,  
 7 and commercial application of biofuel production tech-  
 8 nologies in States with low rates of ethanol production, in-  
 9 cluding low rates of production of cellulosic biomass eth-  
 10 anol, as determined by the Secretary.

11 (b) *ELIGIBILITY.*—To be eligible to receive a grant  
 12 under this section, an entity shall—

13 (1)(A) be an institution of higher education (as  
 14 defined in section 2 of the Energy Policy Act of 2005  
 15 (42 U.S.C. 15801)) located in a State described in  
 16 subsection (a); or

17 (B) be a consortium including at least 1 such in-  
 18 stitution of higher education, and industry, State  
 19 agencies, Indian tribal agencies, National Labora-  
 20 tories, or local government agencies located in the  
 21 State; and

22 (2) have proven experience and capabilities with  
 23 relevant technologies.

24 (c) *AUTHORIZATION OF APPROPRIATIONS.*—There are  
 25 authorized to be appropriated to the Secretary to carry out

1 *this section \$25,000,000 for each of fiscal years 2008*  
 2 *through 2010.*

3 **SEC. 8. BIOREFINERY ENERGY EFFICIENCY.**

4 *Section 932 of Energy Policy Act of 2005 (42 U.S.C.*  
 5 *16232), is amended by adding at the end the following new*  
 6 *subsections:*

7 *“(g) BIOREFINERY ENERGY EFFICIENCY.—The Sec-*  
 8 *retary shall establish a program of research, development,*  
 9 *demonstration, and commercial application for increasing*  
 10 *energy efficiency and reducing energy consumption in the*  
 11 *operation of biorefinery facilities.*

12 *“(h) RETROFIT TECHNOLOGIES FOR THE DEVELOP-*  
 13 *MENT OF ETHANOL FROM CELLULOSIC MATERIALS.—The*  
 14 *Secretary shall establish a program of research, develop-*  
 15 *ment, demonstration, and commercial application on tech-*  
 16 *nologies and processes to enable biorefineries that exclu-*  
 17 *sively use corn grain or corn starch as a feedstock to*  
 18 *produce ethanol to be retrofitted to accept a range of bio-*  
 19 *mass, including lignocellulosic feedstocks.”.*

20 **SEC. 9. STUDY OF INCREASED CONSUMPTION OF ETHANOL-**  
 21 **BLENDED GASOLINE WITH HIGHER LEVELS**  
 22 **OF ETHANOL.**

23 *(a) IN GENERAL.—The Secretary, in cooperation with*  
 24 *the Secretary of Agriculture, the Administrator of the Envi-*  
 25 *ronmental Protection Agency, and the Secretary of Trans-*

1 *portation, shall conduct a study of the methods of increas-*  
2 *ing consumption in the United States of ethanol-blended*  
3 *gasoline with levels of ethanol that are not less than 10 per-*  
4 *cent and not more than 40 percent.*

5 *(b) STUDY.—The study under subsection (a) shall in-*  
6 *clude—*

7 *(1) a review of production and infrastructure*  
8 *constraints on increasing consumption of ethanol;*

9 *(2) an evaluation of the environmental con-*  
10 *sequences of the ethanol blends described in subsection*  
11 *(a) on evaporative and exhaust emissions from on-*  
12 *road, off-road, and marine vehicle engines;*

13 *(3) an evaluation of the consequences of the eth-*  
14 *anol blends described in subsection (a) on the oper-*  
15 *ation, durability, and performance of on-road, off-*  
16 *road, and marine vehicle engines; and*

17 *(4) an evaluation of the life cycle impact of the*  
18 *use of the ethanol blends described in subsection (a)*  
19 *on carbon dioxide and greenhouse gas emissions.*

20 *(c) REPORT.—Not later than 1 year after the date of*  
21 *enactment of this Act, the Secretary shall submit to Con-*  
22 *gress a report describing the results of the study conducted*  
23 *under this section.*



1 **SEC. 10. STUDY OF OPTIMIZATION OF FLEXIBLE FUELED**  
2 **VEHICLES TO USE E-85 FUEL.**

3 (a) *IN GENERAL.*—The Secretary, in consultation with  
4 the Secretary of Transportation, shall conduct a study of  
5 whether optimizing flexible fueled vehicles to operate using  
6 E-85 fuel would increase the fuel efficiency of flexible fueled  
7 vehicles.

8 (b) *REPORT.*—Not later than 180 days after the date  
9 of enactment of this Act, the Secretary shall submit to the  
10 Committee on Science and Technology of the House of Rep-  
11 resentatives the Committee on Energy and Natural Re-  
12 sources of the Senate a report that describes the results of  
13 the study under this section, including any recommenda-  
14 tions of the Secretary.

15 **SEC. 11. STUDY OF ENGINE DURABILITY AND PERFORM-**  
16 **ANCE ASSOCIATED WITH THE USE OF BIO-**  
17 **DIESEL.**

18 (a) *IN GENERAL.*—Not later than 30 days after the  
19 date of enactment of this Act, the Secretary shall initiate  
20 a study on the effects of the use of biodiesel on the perform-  
21 ance and durability of engines and engine systems.

22 (b) *COMPONENTS.*—The study under this section shall  
23 include—

24 (1) an assessment of whether the use of biodiesel  
25 lessens the durability and performance of conven-  
26 tional diesel engines and engine systems; and

(2) *an assessment of the effects referred to in subsection (a) with respect to biodiesel blends at varying concentrations, including the following percentage concentrations of biodiesel:*

(A) *5 percent biodiesel.*

(B) *10 percent biodiesel.*

(C) *20 percent biodiesel.*

(D) *30 percent biodiesel.*

(E) *100 percent biodiesel.*

(c) *REPORT.—Not later than 24 months after the date of enactment of this Act, the Secretary shall submit to the Committee on Science and Technology of the House of Representatives the Committee on Energy and Natural Resources of the Senate a report that describes the results of the study under this section, including any recommendations of the Secretary.*

**SEC. 12. BIOENERGY RESEARCH AND DEVELOPMENT, AUTHORIZATION OF APPROPRIATION.**

(a) *Section 931 of the Energy Policy Act of 2005 (42 U.S.C. 16231) is amended—*

(1) *in subsection (b)—*

(A) *at the end of paragraph (2) by striking “and”;*

(B) *at the end of paragraph (3) by striking the period and inserting “; and”; and*

1           (C) by adding at the end the following new  
2           paragraph:

3           “(4) \$963,000,000 for fiscal year 2010.”; and  
4           (2) in subsection (c)—

5           (A) in paragraph (2), by striking  
6           “\$251,000,000” and inserting “\$377,000,000”;

7           (B) in paragraph (3), by striking  
8           “\$274,000,000” and inserting “\$398,000,000”;  
9           and

10          (C) by adding at the end the following new  
11          paragraph:

12          “(4) \$419,000,000 for fiscal year 2010, of which  
13          \$150,000,00 shall be for section 932(d).”.

14   **SEC. 13. ENVIRONMENTAL RESEARCH AND DEVELOPMENT.**

15          (a) *AMENDMENTS.*—Section 977 of the Energy Policy  
16   Act of 2005 (42 U.S.C. 16317) is amended—

17          (1) in subsection (a)(1), by striking “and com-  
18          putational biology” and inserting “computational bi-  
19          ology, and environmental science”; and

20          (2) in subsection (b)—

21               (A) in paragraph (1), by inserting “in sus-  
22               tainable production systems that reduce green-  
23               house gas emissions” after “hydrogen”;

24               (B) at the end of paragraph (3), by striking  
25               “and”;

1                   (C) by redesignating paragraph (4) as  
2                   paragraph (5); and

3                   (D) by inserting after paragraph (3) the fol-  
4                   lowing new paragraph:

5                   “(4) develop cellulosic and other feedstocks that  
6                   are less resource and land intensive and that promote  
7                   sustainable use of resources, including soil, water, en-  
8                   ergy, forests, and land, and ensure protection of air,  
9                   water, and soil quality; and”.

10           (b) *TOOLS AND EVALUATION.*—The Secretary, in con-  
11 sultation with the Administrator of the Environmental Pro-  
12 tection Agency and the Secretary of Agriculture, shall estab-  
13 lish a research and development program to—

14                   (1) improve and develop analytical tools to fa-  
15 cilitate the analysis of life-cycle energy and green-  
16 house gas emissions, including emissions related to di-  
17 rect and indirect land use changes, attributable to all  
18 potential biofuel feedstocks and production processes;  
19 and

20                   (2) promote the systematic evaluation of the im-  
21 pact of expanded biofuel production on the environ-  
22 ment, including forestlands, and on the food supply  
23 for humans and animals.

24           (c) *SMALL-SCALE PRODUCTION AND USE OF*  
25 *BIOFUELS.*—The Secretary, in cooperation with the Sec-

1 *retary of Agriculture, shall establish a research and develop-*  
 2 *ment program to facilitate small-scale production, local,*  
 3 *and on-farm use of biofuels, including the development of*  
 4 *small-scale gasification technologies for production of*  
 5 *biofuel from cellulosic feedstocks.*

6 **SEC. 14. STUDY OF OPTIMIZATION OF BIOGAS USED IN NAT-**  
 7 **URAL GAS VEHICLES.**

8 *(a) IN GENERAL.—The Secretary of Energy shall con-*  
 9 *duct a study of methods of increasing the fuel efficiency of*  
 10 *vehicles using biogas by optimizing natural gas vehicle sys-*  
 11 *tems that can operate on biogas, including the advancement*  
 12 *of vehicle fuel systems and the combination of hybrid-elec-*  
 13 *tric and plug-in hybrid electric drive platforms with nat-*  
 14 *ural gas vehicle systems using biogas.*

15 *(b) REPORT.—Not later than 180 days after the date*  
 16 *of enactment of this Act, the Secretary of Energy shall sub-*  
 17 *mit to the Committee on Energy and Natural Resources of*  
 18 *the Senate and the Committee on Science and Technology*  
 19 *of the House of Representatives a report that describes the*  
 20 *results of the study, including any recommendations of the*  
 21 *Secretary.*

22 **SEC. 15. STANDARDS FOR BIOFUELS DISPENSERS.**

23 *In the absence of appropriate private sector standards*  
 24 *adopted prior to the date of enactment of this Act, and con-*  
 25 *sistent with the National Technology Transfer and Ad-*

1 *vancement Act of 1995, the Secretary of Energy, in con-*  
2 *sultation with the Director of the National Institute of*  
3 *Standards and Technology, shall develop standards for*  
4 *biofuel dispenser systems in order to promote broader*  
5 *biofuels adoption and utilization.*

6 **SEC. 16. ALGAL BIOMASS.**

7 *Not later than 90 days after the date of enactment of*  
8 *this Act, the Secretary shall submit to the Committee on*  
9 *Science and Technology of the House of Representatives and*  
10 *the Committee on Energy and Natural Resources of the Sen-*  
11 *ate a report on the progress of the research and development*  
12 *that is being conducted on the use of algae as a feedstock*  
13 *for the production of biofuels. The report shall identify con-*  
14 *tinuing research and development challenges and any regu-*  
15 *latory or other barriers found by the Secretary that hinder*  
16 *the use of this resource, as well as recommendations on how*  
17 *to encourage and further its development as a viable trans-*  
18 *portation fuel.*



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